THE ECONOMIC IMPACT OF HIV/AIDS MORBIDITY ON HOUSEHOLDS IN UPPER-NORTH THAILAND: PHAYAO CASE STUDY

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ABSTRACT

Background objectives

Previous research has documented the substantial household economic impact of a recent HIV/AIDS death. There is limited information about the household economic impact of HIV/AIDS illness or forms of coping strategies used by households with different levels of available care and support services.

The study aimed to understand the economic impact of chronic adult HIV morbidity and examine how households cope with the situation. Specifically the study aimed to: 1) explore the coping strategies used by households to reduce the impact of chronic HIV/AIDS, 2) document the levels and forms of utilisation of support and health services by households affected by chronic HIV/AIDS, 3) explore whether the availability of services influences the household economic impact of chronic HIV/AIDS morbidity, and the coping strategies used by households, 4) explore the implications of the findings for policies to mitigate the impact of HIV/AIDS on households and communities.

Study design and setting

The study was conducted in Phayao province in Northern Thailand where people of this province were highly affected by HIV illness and death. Two study districts were identified: Mueng had active support services and Pong had less active services. Within each district, 9 villages were randomly selected and within each village a mapping survey of all households was conducted to identify 'case household' (household with chronically ill adult (CIA)) and 'control household' (household where there was no history of chronic illness in the past 6 months or household member aged 15-49 years died from chronic diseases). In each district, 150 case and 150 control households were selected for interview conducted by trained interviewers in Thai.

Outcome indicators

The main outcome indicators were: the reported availability and use of support services, medical care expenditure in the past six months, source and level of income, coping mechanism of households e.g. saving and borrowing money, selling of assets and transfer money. The main outcome indicators compared among case households between two districts were the direct and indirect costs associated with having CIAs, the reported loss of income and how care of children and the elderly was affected by chronic illness.

Data entry and analysis

The data were entered twice and cleaned before the final analysis was conducted. Descriptive statistics were used to obtain the demographic and household socio-economic profile and estimates of the socio-economic impact. Tabulations, t-test, bivariate and regression analyses were used to identify factors associated with impact and the coping mechanisms of households.

Results

The case and control samples were relatively comparable. Support services in the last six months were more available in Mueng than in Pong in either case or control households. Regression results suggest that having a CIA significantly reduced the reported use of all services.

A significantly lower percentage of household members aged 15-59 years were employed in case households than in control households in both districts. Case households as well as households in Mueng were less likely to have cash income and among households with a cash income HIV/AIDS morbidity did not impact on the per capita household cash income and this was confirmed from the regression analysis.

About one-third of all households reported having savings. Two-thirds of case households in Mueng and half of case households in Pong reported using their savings for health care cost. Case households in both districts had a lower value of assets per capita than control households. About half of all households reported being in debt. Case households reported being in debt less than control households. Case households borrowed for daily consumption and health care while control households borrowed for investment.

To cope with HIV illness, case households used their savings, sold their assets, cut their consumption and obtained transfer-in and supports from extended family members for care for children and the elderly. Various strategies were used to maintain family productivity including increasing family members' workload, hiring labours and withdrawal of children (especially girls) from school.

The study documented 324 CIAs from 300 case households. Caregivers who took care of CIAs at home were parents, spouses or children of the CIA, with over a quarter of the adult care-givers stopping working and almost three quarters of child caregivers stopping going to school.

In the past 6 months, the average health care expenditure in case households was significantly higher than in control households in both districts and the case households in Mueng reported significantly lower health care expenditure than in Pong. The percentage of case households in Mueng that paid health care expenditure by households was half of that in Pong. This was supported by the proportion of health care card usage among the case households in Mueng which was significantly higher than those in Pong.

There were 24% and 39% of case households in Mueng and in Pong reported having experienced being discrimination against.

Conclusions

This thesis highlights how chronic HIV morbidity impacts on household income, savings and assets. The study has illustrated how chronic HIV/AIDS morbidity impacts substantially on household labour supply and family production. This impact in case households was relatively more than in control households.

Our findings suggest that the Free Medical Program for the poor under the Ministry of Public Health did not reach the poorest section of the case households in Pong. It is important that methods to increase coverage to these vulnerable groups are identified.

Case households in Mueng appeared to be less affected by consumption reduction than case households in Pong. This might be because the case households in Mueng had, on average, higher incomes, higher value of assets, lower medical care cost and lower income loss than those of case households in Pong. Our study therefore confirms that the poor families with chronic HIV/AIDS morbidity suffer more consumption reduction.

The study has important policy implications to ensure that households can support themselves and meet their medical care needs without jeopardising the wellbeing and future of other household members.

ABBREVIATIONS

AIDS	Acquired Immuno-Deficiency Syndrome
ARVs	Anti-Retroviral drugs
ANC	Ante-Natal Care
CHC	Community Health Centre
CIAs	Chronically ill adults
CSWs	Commercial Sex Workers
CSMBS	Civil Servant Medical Benefit Scheme
DHO	District Health Office
FGD	Focus Group Discussion
HHC	Home Health Care
HIV	Human Immuno-Deficiency Virus
IVDUs	Intravenous drug users
MOPH	Ministry Of Public Health
NESDB	National Economic And Social Development Board
NGO	Non-Government Organisation
OI	Opportunistic Infection
OPD	Out-Patient Department
OR	Odds ratio
PAAC	Phayao AIDS Action Centre
PHO	Provincial Health Office
PRA	Participatory Rural Appraisal
PLWHA	People Living With HIV and AIDS
PWA	People With AIDS
PWHIV	People With HIV
STD	Sexually Transmitted Diseases
TAO	Tambon Administrative Organisation
THB	Thai Baht (equal to $US 43, GBP 64)
UN	United Nations
UNAIDS	Joint United Nations Programme On HIV/AIDS
VHV	Village Health Volunteer.

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DEDICATION

To my father, mother and grandmother

With love and gratitude

To my husband

For the sacrifice and devotion

And

To my household respondents and families living with HIV/AIDS

in Mueng and Pong

CHAPTER 1

INTRODUCTION

1 Introduction

1.1 Research on the economic impact of HIV/AIDS on households in Thailand

A rapid increase in reported AIDS cases in Thailand in the last few years, a fast rise in the number of persons found to be HIV positive, and an alarming future estimate of HIV/AIDS cases in Thailand have raised concern among Thai policymakers that HIV/AIDS could have a substantial impact on the social and economic development of Thailand. Although ARVs offer some hope (Kunanusont, 1995), the cost to treat and prolong the life of an AIDS patient is very expensive and a large amount of the nation's resources has already been diverted to HIV/AIDS prevention and care.

Although the socioeconomic implications of HIV/AIDS on national development have been widely discussed in recent years and a number of speculations have been made concerning its impact on society, there are very few in-depth, field-based studies of the nature and extent of the impact of HIV/AIDS at the microeconomic or macroeconomic level of Thailand.

In Thailand, 80% of the population lives in rural areas outside Bangkok, largely in poverty (NESDB, 1998). Today, the majority of HIV/AIDS cases are in these rural areas (MOPH, 1996; MOPH, 1998). Working adults aged between 15 to 44 years have the highest prevalence (MOPH, 1997). Their illness represents loss of income and labour supply to both the nation and the affected household. It affects the welfare of other surviving household members, their extended family and the community. Families affected by HIV/AIDS are burdened not only by medical care costs but also by other direct and indirect costs. An adult illness from HIV/AIDS can result in lost income and lost labour supply for the family. The family's consumption may be reduced because family resources have to be diverted to health care costs (Kongsin et al., 2000b). Investment in children's education may also be affected if children are needed to help in family production or to participate in market work to help increase family income. Therefore, it is important to understand the nature and the extent of the economic impact of HIV/AIDS on households, since a household is the first and immediate unit to experience the burden caused by the infection of a household member.

Research on the economic implications of HIV/AIDS is a relatively new field, and a number of such studies are ongoing.

I have previously conducted a household survey on the economic impact of an adult HIV/AIDS mortality in Thailand in 1994. This involved conducting interviews with 116 rural households with recent experience of an HIV/AIDS death in 27 sub-districts of 5 major districts of Chiangmai province in the upper northern region of Thailand (Kongsin, 1997; Pitayanon et al., 1997). The main objectives of this study were to estimate the economic impact of HIV/AIDS mortality on the affected households in rural Thailand and to examine how these households cope with the situation. Results of the study indicate that rural households experiencing HIV/AIDS mortality were mainly the lowest income group. Households were burdened by the very high cost of medical treatment and by lost income from deceased members. Family production was also affected from lost labour supply of deceased members. Orphans and the elderly became a problem for a large proportion of households. Various strategies were used

by households to cope with the situation, of which many have serious consequences on the welfare of surviving members. These strategies include reduction of household consumption, sale of household assets, borrowing, withdrawing children from school, and depending on an extended family system and the community to take care of orphans and the elderly. The study also discussed policy implications of public campaigns against AIDS, health care financing, health manpower development as well as alternative health care systems for HIV/AIDS patients.

However, the study focused on the impact of a recent AIDS death and did not look at the impact of chronic HIV/AIDS morbidity. In addition, no study in Thailand has looked at whether care and support services reduce the burden of HIV/AIDS morbidity or mortality.

For these reason, my major concern in my doctoral research was to find out about the impact of HIV/AIDS morbidity on households, and how they cope; the cost of care at the household level, and whether available support and care activities in the communities reduce the burden of HIV/AIDS morbidity. The research measures and analyses the economic impact of chronic adult AIDS illness on rural households in Thailand using data from a survey of 600 rural households in two districts of Phayao province, in Upper-North Thailand.

This chapter starts by giving an overview of the HIV/AIDS epidemic in Thailand, and the objectives of study, it then presents an overview of the research methodology and the organisation of the thesis.

1.2 Overview of the HIV epidemic in Thailand

HIV/AIDS has emerged as one of the most serious epidemics facing the developing world, with consequences that reach far beyond the health sector. In many societies, it has had a substantial economic and social impact on individuals, on families and households, on communities and groups and on society as a whole (National AIDS Committee, 1996; National AIDS Committee, 1997; Whiteside, 1998). This section presents background information on the HIV/AIDS situation in Thailand.

1.2.1 Sources of epidemiological data

Many studies and surveys have been conducted in Thailand to document the extent of the HIV/AIDS epidemic. There are two major sources of statistics on HIV infection and AIDS:

- the AIDS Voluntary Reporting System, and
- Semi-annual Sentinel Seroprevalence Surveillance System (National HIV Serosurveillance)

After the first AIDS case was reported in 1984, the Ministry of Public Health (MOPH) established a system to report the number of AIDS cases (Ministry of Public Health, 1999).The AIDS Voluntary Reporting System provides information on the number of persons affected with AIDS and/or other symptomatic HIV infection. This information is used primarily for the planning of community and hospital care.

Government and selected private health institutes in every province are requested to report information about individual HIV/AIDS cases in Forms 506/1, 507/1. As in most countries, under-reporting of AIDS cases remains problematic. This under-reporting occurs for several

reasons (Im-em, 1999). Firstly, people with AIDS (PWA) who do not seek care and treatment at the heath institutions designated to submit these forms to the MOPH are excluded from this source of AIDS statistics, e.g. hospitals in medical schools, private clinics. Secondly, even if PWA attend the designated health institutions, it is not known how many will actually be recorded in the forms. Information obtained from several local health personnel suggests that they did not report all PWA detected for fear that their health institutions would be blamed for not being in control of the AIDS situation. Some health personnel believed that a high number of reported AIDS cases would reflect their poor performance in HIV/AIDS prevention and care. Thirdly, PWA dying at home are excluded from the reports, and causes of death reported by the village death registrars are not reliable. Therefore, the actual number of reported AIDS cases in Thailand is believed to be considerably higher than the number of official reported cases.

The Sentinel Seroprevalence Surveillance System monitors the trends of the HIV/AIDS epidemic. This system is used to estimate the HIV situation among the general population and to project the extent of the HIV/AIDS epidemic in the future (Wongkhomthong et al., 1995).

The Sentinel Seroprevalence Surveillance System is a cross-sectional HIV sero-survey among specific population groups. Started in June 1989, the surveys are carried out twice a year in June and December. The first survey covered 14 provinces scattered throughout Thailand. The second survey expanded to include 31 provinces, and all subsequent surveys covered all 76 provinces including Bangkok. Eighteen rounds of HIV Serosurveillance have been performed from 1989 to June 2000. The Provincial Public Health Offices conduct the HIV blood tests among nine population groups: female sex workers, male sex workers, injecting drug users, men attending STD clinics, foreign workers, fishermen, young men under military conscription, pregnant women and blood donors.

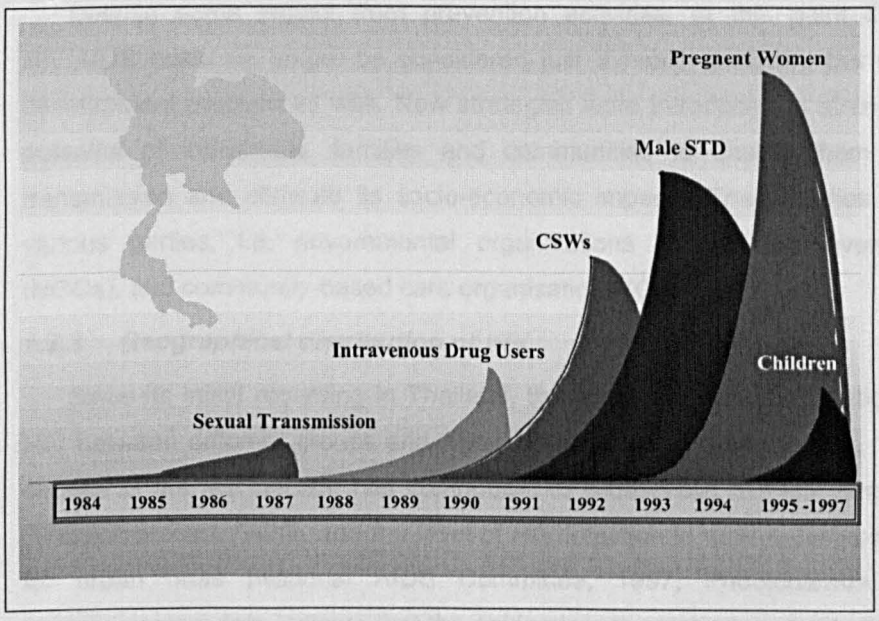
Two major indicators that have been used for monitoring the HIV/AIDS situation in Thailand are the HIV prevalence rate in military conscripts and HIV prevalence among pregnant women attending ANC clinics. The trend of HIV infection in the general population can be shown by these two sets of data: firstly, the Royal Thai Army's information on the HIV infection rate among its roughly 60,000 annual military conscripts, selected randomly from 21 year old Thai males; and secondly, the sero-surveillance tests of the MOPH's Division of Epidemiology, which have been conducted by sampling pregnant women in all 76 provinces every June and December since 1989.

1.2.2 The evolution of the HIV/AIDS epidemic in Thailand: patterns of Spread

The evolution of the epidemic can be described in four waves (Figure 1.1). The first AIDS case was reported in Thailand in 1984 (Limsuwan et al., 1986; Thongcharoen, 1991). Early cases were generally confined to Thai homosexual males returning from abroad. This was followed by an explosive spread of HIV infection among injecting drug users (IDUS) in 1987 and 1988 (Vanichseni et al 1989). Since then progressive numbers of AIDS cases and HIV infected people have been reported.

In the second wave of HIV infection (between 1991 and 1994), the virus continued spread to male and female sex workers and their clients, and into the wider population, with the result that heterosexual transmission became increasingly important (Sittitri, Phanupak et al. 1991). The negative implications and discrimination against people with AIDS became more apparent in the family and community. At this stage, the epidemic was clearly confirmed among homosexuals, intravenous drug users, and commercial sex workers.

Figure 1.1 Pattern of HIV Spread in Thailand



A range of services introduced by various government agencies, and a strategy of 100% use of condoms among sex workers and those who are utilising prostitution services was promoted. Other services, such as education and counselling programmes, were introduced in STD clinics and rehabilitation centres. This proved successful at certain levels – for example, there was an 80% decrease in STD incidence among new military recruits during this period, and sero-prevalence of HIV infection among new military conscripts also decreased between 1988–1995 (Rojanapithayakorn & Hanenberg, 1996).

A study of three cohorts of new military conscripts in the six northern provinces from 1991–1995 reflected two crucial sexual behavioural changes. The first is the decreasing proportion having sex with commercial sex workers (CSWs), from 57.1% in 1991 to 23.8% in 1995. Individuals who continued to have sex with CSWs increased condom use from 61% of cohort in 1991 to 92.6% in 1995 (Armed Forces Research Institute of Medical Sciences (AFRIM), 1998).

The third wave of the HIV infection began between 1991 and 1994, when infection increasingly spread to the general population. The extent to which HIV is now widespread among the general population can be seen from the surveillance figures amongst ante-natal women - in 1997, at least 3% of pregnant women attending ante-natal care clinics tested HIV positive (MOPH 1997). With this rate increases in mother to child HIV transmission - in 1995 the AIDS Division estimated that approximately 20,000 pregnant mothers would carry the HIV

virus and would produce about 6,000 new born infants with AIDS (Ungchusak, Thanprasertsuk et al. 1996).

In the fourth wave the HIV epidemic enters the family. Recent statistics show a dramatic increase in infections among pregnant women (housewives). In 1995, over 2% of the pregnant women attending antenatal care clinics tested HIV positive. This number increased to 3% in 1997 (Ministry of Public Health, 1997a). The perinatal transmission rate was approximately 24-45% in 1995 (Chaitongwongwatana & Limpongsanurak, 1998; Limpongsanurak, 1999).

Despite some impact from prevention activities, at this point it was recognised that HIV/AIDS could no longer be considered just a health problem, but was also a social and development problem as well. New strategies were introduced to strengthen and develop the potential of individuals, families and communities to enable them to prevent HIV/AIDS transmission and alleviate its socio-economic impacts. The activities involved support from various parties, i.e. governmental organisations (GOs), non-governmental organisations (NGOs), and community-based care organisations (CBOs).

1.2.3 Geographical distribution of HIV

Since its initial recording in Thailand, there has been wide variation in the prevalence of HIV between different groups and within different areas (Brown et al., 1994). Rapid economic change in the last decade has contributed to widespread mobility among people in Thailand (Wibulpolprasert, 1998), and the level of HIV infection in rural areas is now comparable to that for urban ones (National AIDS Committee, 1997; Phoolchareon, 1997a). Sources of epidemiological data indicate that the epidemic was most advanced in the north and the largest number of AIDS cases were reported from that part of the country. Studies show that northern women represent one of the largest categories of CSWs in the country; many more of them enter this kind of work as children compared to other regions (Kaime-Atterhog & others, 1994). In traditional northern Thai society women played an important role as family breadwinners and in maintaining parental old age security (Phongphit & Hewison, 1990). Consequently, prostitution was seen as a source of high income to provide for family welfare (National AIDS Prevention and Control Programme, 1994; Phongpaichit, 1992). The north is also noted as a gateway through which young women from Myanmar are recruited and trained as CSWs (Beyrer 2001). In addition, this region attracts a large number of tourists, which, along with local demand, increases the incidence of HIV transmission from CSWs to clients and vice versa (Beyrer et al., 1995; Boonchalaski & Guest, 1994; Phongpaichit, 1992).

Cohort studies indicate that in the 1990s there has been a decrease in the incidence rate of HIV infection. The military conscripts' HIV incidence rate fell from 3 per 100 person-years between 1991 and 1993 to 0.3 per 100 person-years in 1995 (Boonyoen, 1995). In a cohort of repeat blood donors in the northern provinces the incidence rate decreased from 1.7 per 100 person-years in 1989 to 0.5 per 100 person-years in 1994 (Boonyoen, 1995). National surveys of sexual behaviour suggested that both extra-marital sex and sex with commercial sex workers (CSWs) decreased from 22% in 1990 to 10% in 1997 (Ministry of Public Health,

1997d). This implies that male abstinence from risk behaviour may have decreased the number of infected individuals by 50%.

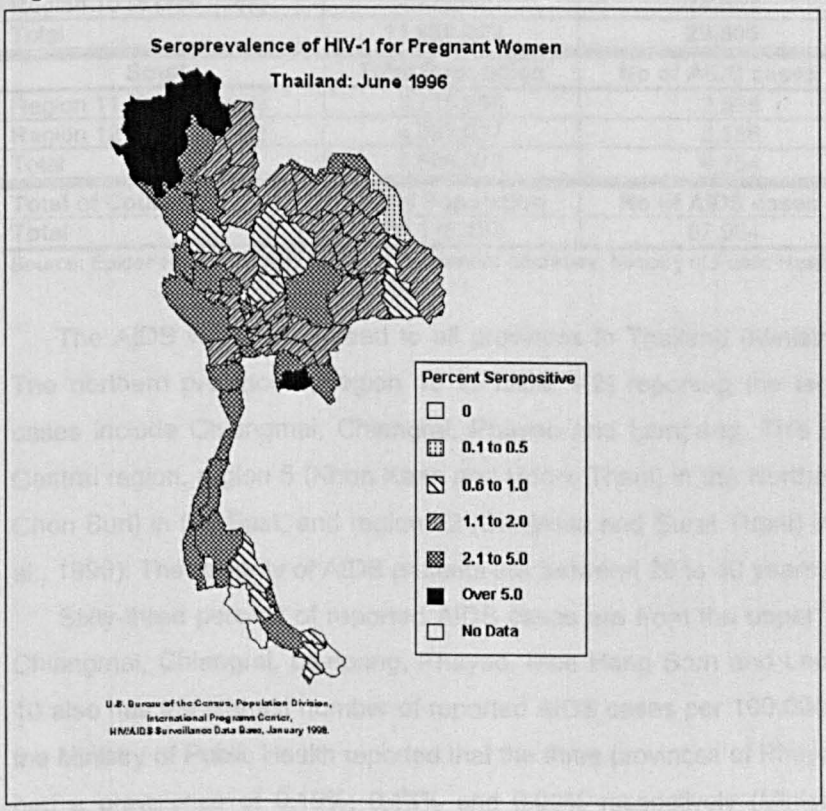
A sequential study in Bangkok metropolitan population has confirmed that the male clients of STD clinics, factory workers and vocational students had a lower reported rate of sex with CSWs in 1996 relatively to period between 1993 to 1996. Furthermore, the percentage reporting sex with a non-regular partner other than CSWs in 1997 decreased relative to the 3-year period before 1996 (Ungchusak et al., 1997).

The success story of Thailand was reputed when the prevalence rate among military conscripts decreased from 3.7% in 1993 to 1.9% in 1996, regardless of sustained HIV prevalence among pregnant women and increasing HIV prevalence among IVDUs and Thai men reporting multiple sex partners. In addition, the epidemic is geographically widespread. During 1997-1999, about 1/3 (27/65) of Thailand's provinces had a prevalence among pregnant women of more than 2%. That proportion has remained the same, while the proportion of provinces with a prevalence rate among pregnant women of over 1% increased from 77% (58/75) in 1997-1998 to 87% (65/75) in 1999.

Table 1.1 Number of provinces with HIV prevalence among pregnant women (ANC) more than 1% and 2% by year

	1997	1998	1999
Prevalence with ANC>1%	57	58	65
Prevalence with ANC>2%	27	27	26

Figure 1.2 Seroprevalence of HIV-1 for pregnant women, Thailand, June 1998



1.2.4 Geographic distribution of cumulative AIDS cases

At the time of the start of fieldwork, the largest proportion of AIDS cases were in the upper northern provinces of Thailand, which are comprised largely of rural areas (Ministry of Public Health, 1998). Phayao had the highest prevalence of HIV/AIDS in that region (Kongsin et al., 2000a; Lertchayantee, 1998).

In February 1998, the cumulative number of AIDS cases reached 81,178 (with a ratio of 4.4 male to 1 female). Of the total, about 21,418 people have died from AIDS and 4,225 babies have been born to HIV infected mothers (Ministry of Public Health, 1998).

Table 1.2 Distribution of reported AIDS cases by geographical region in Thailand (Data as of August 31,1997)

Central	Total Population	No of AIDS cases (Cumulative)	/100,000 population
Region 1 (6 provinces) Including Bangkok	8,870,393	9,875	111.33
Region 2 (6 provinces)	2,991,599	2,094	70.00
Region 3 (7 provinces)	3,757,915	6,533	173.85
Region 4 (7 provinces)	3,825,703	5,151	134.64
Total	**19,445,610**	**23,653**	**121.64**
Northeast	**Total Population**	**No of AIDS cases**	**/100,000 population**
Region 5 (5 provinces)	7,353,834	2,950	40.12
Region 6 (7 provinces)	7,169,259	3,948	55.07
Region 7 (7 provinces)	6,353,107	2,794	43.98
Total	**20,876,200**	**9,692**	**46.43**
North	**Total Population**	**No of AIDS cases**	**/100,000 population**
Region 8 (5 provinces)	3,274,769	1,866	56.98
Region 9 (6 provinces)	3,938,359	3,276	83.18
Region 10 (6 provinces)	4,773,171	24,663	516.70
Total	**11,986,299**	**29,805**	**248.66**
South	**Total Population**	**No of AIDS cases**	**/100,000 population**
Region 11 (8 provinces)	3,715,036	2,568	69.12
Region 12 (7 provinces)	4,093,037	2,186	53.41
Total	7,808,073	4,754	60.89
Total of Country	**Total Population**	**No of AIDS cases**	**/100,000 population**
Total	60,116,182	67,904	112.95

Source: Epidemiology Division, Office of Permanent Secretary, Ministry of Public Health, Thailand

The AIDS virus has spread to all provinces in Thailand (Ministry of Public Health, 1999). The northern provinces (Region 10 in Table 1.2) reporting the largest number of HIV/AIDS cases include Chiangmai, Chiangrai, Phayao and Lampang. This is followed by Bangkok in Central region, region 5 (Khon Kaen and Udorn Thani) in the Northeast, region 3 (Rayong and Chon Buri) in the East, and region 12 (Songkhla and Surat Thani) in the South (Ungchusak et al., 1996). The majority of AIDS patients are between 20 to 40 years of age.

Sixty-three percent of reported AIDS cases are from the upper northern area of Thailand: Chiangmai, Chiangrai, Lampang, Phayao, Mae Hong Sorn and Lamphun (region 10). Region 10 also has the highest number of reported AIDS cases per 100,000-population (517). In 1997, the Ministry of Public Health reported that the three provinces of Phayao, Chiangrai and Lampang had a prevalence of 0.19%, 0.13% and 0.09% respectively (Ministry of Public Health, 1998;

Ministry of Public Health, 1999). Therefore, the northern region of Thailand is that most affected by the HIV epidemic.

Table 1.3 shows the number of AIDS cases for selected endemic areas in 1998, as calculated from Sentinel Surveillance. In practise, it is recognised that the figures given are likely to be under-estimated, since there will be a large number of AIDS cases that are not identified by the Ministry of Public Health's surveillance system. Indeed, it is estimated that the real number of individuals with AIDS is 2-3 times higher than the reported figures (National Economic and Social Development Board (NESBD), 1994; Phoolchareon, 1997a; Ramasoota, 1994; Ungchusak et al., 1997). From Table 1.3 in 1998 Chiangmai had the highest number of individuals with AIDS. However, the figures suggest that Phayao was the province with the highest proportion of AIDS cases per population.

Table 1.3 The number of AIDS cases in selected endemic areas in 1998, as calculated from Sentinel Surveillance

Province	Number AIDS cases*	Population**	AIDS cases / population proportion (%)
Chiangmai	10,915	1,573,757	0.69
Bangkok	10,454	5,604,772	0.19
Chiangrai	9,355	1,261,138	0.74
Phayao	**5,710**	**517,622**	**1.10**
Lampang	4,685	807,362	0.58
Rayong	3,318	504,631	0.66
Lamphun	2,546	408,804	0.60

*Number of AIDS cases obtained from Epidemiology Division, **The total number of population obtained from Institute of Population Studies, Chulalongkorn University, Bangkok, Thailand

1.2.5 Burden of illness and death

Sentinel Surveillance figures collected by the Epidemiology Division of the MOPH show that 104,199 AIDS cases were reported from both public and private health care facilities in Thailand from 1984 to 1998, including 28,693 who died. In the year 1998 alone, there were 14,220 reported AIDS cases and 3,221 deaths. The ratio of male to female cases of AIDS was 4:1. Prevalence was higher in 23-29 year olds. The majority of HIV transmission was through heterosexual intercourse. Half of these cases resided in the upper north of the country where HIV was widespread throughout the region (six provinces including Chiangrai, Chiangmai, Phayao, Mae Hong Son, Lampang and Lamphun).

In 1994, 9% of the military recruits in Chiangmai and Chiangrai provinces were HIV-infected. In 1997, the highest HIV seroprevalence in the whole country was in Phayao, where it was 0.77% as compared to 0.53% in Chiangmai in August. The family is becoming particularly susceptible to the HIV epidemic particularly in rural areas with recent statistics show a dramatic increase in infection among married women (Havanon, 1998; Phoolchareon, 1997a; Piot, 1997).

1.2.5.1 The Thai epidemic today

The Thai national planners, the AIDS Division of the MOPH and the NESDB were supported by UNAIDS and USAID to develop a new model and new set of HIV/AIDS projections for use in preparing the Ninth National Economic and Social Development Plan

(The Thai Working Group on HIV/AIDS Projection, 2001). The current state of the Thai epidemic is as follows:

- 984,000 people (951,000 adults and 33,000 children) have been infected with HIV in Thailand since the start of the epidemic.
- 289,000 of these people have subsequently died of AIDS.
- 695,000 people are currently living with HIV and AIDS in the country.
- 29,000 new infections will occur in 2001 of which 4,200 are children.
- 55,000 Thais will develop serious AIDS related illness in 2001 requiring medical care and approximately the same number will die of AIDS complications.

1.2.5.2 Projection of the future numbers of HIV Infected persons

Assuming behaviours remain as they are today (2001), through the end of the Ninth National Plan (The Thai Working Group on HIV/AIDS Projection, 2001), it is projected that:

- In 2005, approximately 2% of Thai men and 1% of Thai women will be living with HIV.
- Infection levels in the adult male population will remain above 1.5% through the end of the Ninth Plan (2001-2005).
- In each year of the Ninth Plan (2001-2005) over 50,000 Thais will die from AIDS-related causes.
- Over 90% of AIDS-related deaths will occur in people aged 20-44, the most productive sector of the workforce.

At present, an increasing number of people with AIDS and other symptomatic HIV infection cases are seeking medical and hospital care. HIV-related mortality could be the leading cause of death in Thailand in 1999 (Kongsin et al., 2000a; Piyavorawong et al., 1999; Porapakkham, 1996; Pothisiri et al., 1998). AIDS-related mortality among infants and young children will increase, and may reverse many of the important gains made by effective national child health programmes, such as the Control of Diarrhoeal Diseases and Expanded Programme on Immunisation. In addition, the number of orphans due to AIDS will become an increasingly large problem.

1.2.6 AIDS mortality distribution in Thailand

The cumulative number of reported AIDS deaths by the end of April 1999 is shown in Table 1.4. These figures were summarised from forms 506/1 and 507/1 of the Epidemiological Division of the Thai MOPH (from September 1984 to April 30, 1999).

Table 1.4 Reported cumulative AIDS deaths distributed by sex and year of death (as of April 30 1999)

Sex	1984-1992	1993	1994	1995	1996	1997	1998	April 1999	Total	%
Male	641	1370	2925	4200	4878	5417	5230	513	25174	80.27
Female	95	233	488	834	1150	1562	1652	175	6189	19.73
Total	**736**	**1603**	**3413**	**5034**	**6028**	**6979**	**6882**	**688**	**31363**	**100.00**

Source: Epidemiology Division, Office of Permanent Secretary, Ministry of Public Health, Thailand

One of the potential data sources to verify the AIDS situation is to identify the distribution of AIDS deaths throughout the country. If the emergence of AIDS has led to increasing numbers of deaths in the past few years, the vital statistics on death should also be increased especially in 1997-1998 (Table 1.4). It was found that AIDS deaths were higher among males than females. Increased death rates among women were evident in the past four years (1997) but the increases were smaller than for men (Im-em, 1999).

1.2.7 AIDS mortality distribution in Northern Thailand

The six northern provinces of Chiangmai, Chiangrai, Lamphun, Lampang, Mae Hongsorn and Phayao have a population of 4,773,171 (data as of December 31,1996). A total of 24,663 cases of AIDS were notified in the six provinces in August 1997 (516.7 per 100,000 population). Looking at the preceding several years, it appears that an increasing trend has been established after 1994, with average annual increases of notifications between 1994 and 1996. AIDS deaths in Thailand were reported as 18,088 cases (about 26.64% of total AIDS reported cases).

Studies of mortality and morbidity data were conducted in 1998 to measure the impact of the HIV epidemic in India and Thailand (Godwin et al., 1998). Data from Chiangmai (one province in upper north Thailand) suggest that the increased death rate among men was evident in 1994, and the death rate among men aged 25-29 years for 1996 was close to 600% higher than the 1987-1989 death rate baseline.

1.3 The national response to HIV/AIDS

Thailand's National AIDS Programme began in 1987 following a Cabinet decision to develop a national response. Since then, the Royal Thai Government has successfully focused the country's attention on the HIV/AIDS epidemic, and has developed comprehensive national strategies to address the numerous health, social and economic aspects of AIDS. The Ministry of Public Health has made important progress in securing the support of other government ministries, public and private sectors, as well as community based and non-governmental organisations.

In the National Plan for Prevention and Alleviation of HIV/AIDS 1997-2001 (National AIDS Committee 1997), the government outlined its plan to increasingly focus resources on meeting the needs of HIV infected persons and those with AIDS, and the creation of an enabling environment that is conducive to AIDS prevention and control activities nation-wide. This will comprise an integration of efforts undertaken by all interested parties.

The dramatically increasing number of people with HIV highlights the need to develop a comprehensive and integrated process to address the associated needs, including services and activities to provide counselling and psychosocial support, nursing and medical care, legal, financial, and practical services in Thailand (National AIDS Committee, 1996). Recent models of care have specifically provided the responses toward care for people with HIV/AIDS. Comprehensive care across a continuum in Thailand comprises four interrelated elements:

1. Clinical management: including the early diagnosis, rational treatment and planning for follow-up care of HIV-related illness.

2. Nursing care: including care to promote and maintain hygiene and nutrition, provide palliative care, educate individuals, families and community members in providing care and practice infection control.

3. Counselling: including both pre-test and post-test counselling for HIV/AIDS patients, as well as counselling for people affected with HIV/AIDS, caregivers, family members and community members, promoting positive living and networking, and promoting behavioural change

4. Social support: including providing linkages to social welfare systems.

1.3.1 Models of care

A range of different models for community and family based care for HIV/AIDS infected persons are being developed, involving religious institutions, community-based organisations and government services. Community care centres are being discussed to provide humane, voluntary and compassionate physical, psychological and social care for HIV/AIDS infected persons. A steep increase in the incidence of AIDS patients is expected based on the current point prevalence of HIV. The implications of this trend will be a rapidly increasing demand for health care, medical treatment and psychosocial support related to HIV infection. As those currently infected with HIV gradually fall sick with HIV-related symptoms, existing government hospitals will be obliged to care for increasing numbers of persons sick with AIDS and symptomatic HIV.

Unfortunately, specific service centres for persons with AIDS or relief centres have been discriminated against and forced out of the local areas. Many communities and individuals have been unwilling to accept persons living with HIV/AIDS within their vicinity. This lack of acceptance by society has led to much stress for persons living with HIV/AIDS, particularly for those already facing economic problems (Kongsin et al., 2000a; Wibulpolprasert, 1998). Counselling services for this target group have often been inadequate and inappropriate. While some persons living with AIDS may cause undesirable social problems of different forms, they are discriminated against (Chandrtat na Ayuthya et al., 1998).

1.4 Study objectives

Many factors will determine how HIV/AIDS morbidity and mortality impact upon the economic welfare of household members. To date, empirical information on the socio-economic impact of HIV/AIDS on households and communities in developing countries is scarce and of variable quality. The results from the first systematic studies examining the household impact of HIV/AIDS and coping strategies in developing countries have only just become available (Kongsin, 1997; Pitayanon et al., 1997). Generally, research to date has focused on documenting the socio-economic impact of an AIDS death on a household. The short or long-term coping mechanisms used by households and communities, and how these differ between communities, are not known (Forsythe, 1998). Such information is important as

it could be used to help identify the most vulnerable households, and to inform the development of policies to support existing coping mechanisms (Barnett, 2000b). However, it is likely that a household's ability to cope with HIV/AIDS will depend upon many factors, acting at the individual, household and community level in terms of production effect, investment and consumption, health and composition (Over, 1992; Over et al., 1992a; Over et al., 1992b). The main forms of impacts were described by Barnett and Blaikie (1992) and Hunter and Williamson (1997), and include poor physical, mental health, reduced schooling of children (as income is lost and demand for child labour increases), and a reduction of productive asset base. This can affect the future potential and sustainability of the household unit itself.

In Thailand, there is little information about the impact of HIV/AIDS morbidity on families, about the patterns of expenditure and cost of care at household level, and there has been no assessment of the extent to which support and care activities may reduce the economic burden of HIV morbidity. Since poverty eradication and income distribution are of great importance in Thailand's current and future development policies, data on the nature and extent of HIV/AIDS impact on the economy of poor families, and how they cope with the situation, will help the Thai government to develop appropriate policies and measures to assist the poor.

This study therefore focuses on the household impact of HIV symptomatic morbidity, and explores whether there were differences in impact and coping mechanisms between communities where there were very active support services, and other communities with less active services. The overall goal of the study is to inform policies to mitigate the impact of an adult illness from AIDS on household members and communities in Northern Thailand. Specifically the study aims to:

- Explore and compare the short term strategies used by households and communities to reduce the economic impact of chronic HIV/AIDS morbidity of an adult;
- Document the levels and forms of utilisation of HIV/AIDS support and health-care services by households affected by chronic HIV/AIDS morbidity in Northern Thailand;
- Explore whether the availability of services influences the household economic impact of chronic HIV/AIDS morbidity, and the short term coping strategies used by households;
- Explore the implications of the findings for policies to mitigate the impact of HIV/AIDS on households and communities.

1.5 Summary of research methodology

The study was conducted in Phayao province, which is highly affected by HIV. Following an initial formative and household mapping phase of research, respondents from 600 rural households in Phayao province were interviewed. The sample consisted of 300 randomly selected "case" households that had recently experienced HIV/AIDS chronic morbidity, and 300 randomly selected "control" households that had not experienced recent chronic morbidity or mortality. Half of the households came from a district where there are very active support services; the other half from a district with less active services. The sample was chosen to enable comparisons to be made between households with current chronic morbidity and those with no recent chronic morbidity. The household interviews drew upon the methods used in

Living Standards Measurement Study surveys, and a previous cross-sectional household survey on the economic impact of adult HIV/AIDS mortality conducted in Chiangmai, Thailand (Ainsworth & Van Der Gaag, 1988; Pitayanon et al., 1997). Information was collected from a respondent (household heads or the caregivers), and others involved in the treatment and support of HIV symptomatic ill adults.

All questionnaires were pre-coded and entered directly from the completed record form (see in Annex 1). The first round of data entry was done continuously in study locations. The special database setting in this programme helped in searching for inconsistencies in the data. Missed information and some errors were corrected by the interviewers. Preliminary results were produced locally for the dissemination phase, including a workshop for local and national key informants, and representatives of research financing agencies.

1.6 Organisation of the thesis

The thesis is divided into 11 chapters. The current chapter, Chapter one, has presented an overview of the whole thesis and the HIV epidemic in Thailand. This chapter has also summarised the research methods used.

Chapter two presents background information on the study area of Phayao province, including general information on study location, HIV/AIDS in Phayao, care and support from people affected by HIV/AIDS as well as the state health service system and the services in relation to HIV/AIDS.

Chapter three reviews theoretical background and framework used to conceptualise the research questions, develop working hypotheses, develop the research and interpret study results. It includes on over-view of household theories and frameworks developed to conceptualised the economic impact of HIV on households and household coping strategies.

Chapter four presents the empirical literature related to household studies regarding the socio-economic impact of HIV/AIDS mortality on the household and communities. This is used to conceptualise the household impact and coping mechanisms. Presented is a review of survey-based studies of the household including a discussion of the methodologies used to explore these issues, and the implications of these for the current study.

Chapter five presents in detail the research methodology and the field techniques used to conduct a comparative analysis of households affected and not affected by chronic HIV/AIDS morbidity, and between affected households within communities with different levels of available services.

Chapter six to chapter ten presents the results from the economic household survey. Chapter six presents the results from the formative research and the enumeration study. The key issues explored are the availability/accessibility of services and the selection of study households.

Chapter seven presents a description of the samples obtained, their representativeness and the degree of comparability of sub-samples within and between the active and less active districts. The results from this chapter are used as a basis from which more detailed analysis is presented in subsequent chapters.

Chapter eight presents the data collected on the reported health of household members in each district, information on the reported availability and utilisation of different health and support services, and household expenditure on the use of health services.

Chapter nine presents an analysis of the economic impact of chronic HIV/AIDS morbidity on household production, income and ownership of assets. This is used to explore whether there are differences between the two districts.

Chapter ten presents the direct costs or out-of-pocket expenses associated with a household member having chronic HIV/AIDS morbidity. The direct expenses of medical treatment and the travel costs associated with obtaining medical care are assessed. In addition, a number of the indirect costs associated with chronic illness are estimated: income foregone by caregivers; income foregone of the ill persons, income foregone from loss of household production caused by lost labour supply in the family, as well as time lost of other household members. This chapter also explores other factors related to socio-economic impact including changes in the patterns of care for children and the elderly.

Chapter eleven presents evidence of the short-term coping mechanisms used by households. Patterns of money transfer in and out, patterns of household debt, and consumption are described. Social stigmatisation and discrimination against HIV/AIDS chronic morbidity and their families as well as case households coping mechanisms during the severe illness stage of a household member were also examined.

Chapter twelve outlines the main findings of the study. The overall implications for the two districts of Phayao province, and by extension, rural communities are discussed. Further research questions are also identified.

CHAPTER 2

HIV/AIDS CARE AND SUPPORT SERVICES IN PHAYAO

2 HIV/AIDS care and support services in Phayao

2.1 Introduction

As a background to the thesis this chapter presents general information on the study location (Phayao province), the HIV/AIDS situation in Phayao and the responses to HIV/AIDS by the Phayao AIDS Action Centre (PAAC), administrative division of Phayao, Phayao provincial health office and epidemiological division of the Ministry of Public Health. It describes the interventions conducted in Phayao and discusses factors affecting the implementation of the activities which lead to the success, obstacles and limitations in prevention and alleviation of AIDS problems in the province.

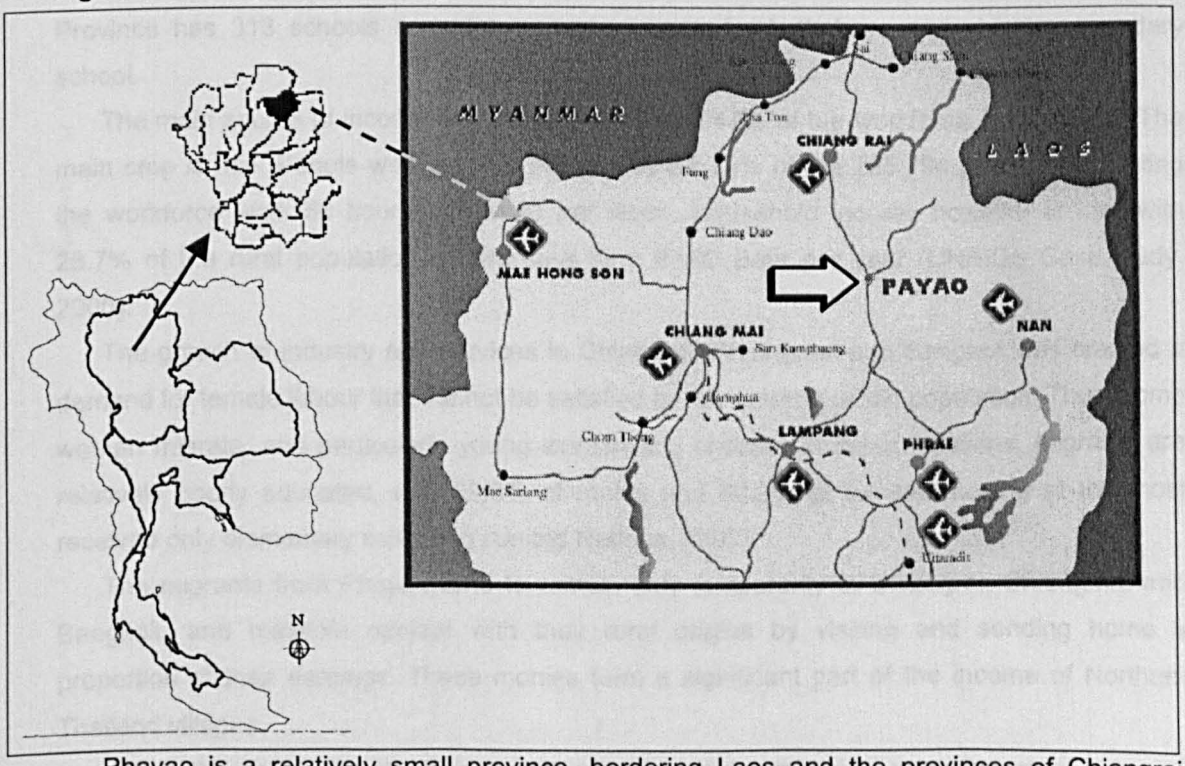
Phayao was selected as the study region both because it is a region with one of the highest HIV/AIDS prevalence rates in Thailand (Ministry of Public Health, 1999; Phayao Provincial Health Office, 1998), because of variation in levels of services and because it is currently providing multi-sectoral assistance to people and communities affected by AIDS.

In particular, information is provided about two districts in Phayao, "Mueng" and "Pong", which were chosen as the study sites. Mueng district represents a setting where there is an active response to HIV/AIDS, and Pong district a community with a less active response to HIV/AIDS.

This section benefits greatly from information from Phayao provincial health office related to the care and support for people affected by HIV/AIDS.

2.2 General information on study location

Figure 2.1 Study location: Phayao, Thailand



Phayao is a relatively small province, bordering Laos and the provinces of Chiangrai, Lampang, Nan and Phrae. Phayao is separated from Laos by the Mekhong River. Phayao

Municipality is a rural province, spread along Phayao Lake and occupying an overall area of 6,335.1 square kilometres. Phayao is a new province of Thailand, separated from Chiangrai Province in August 28, 1977, located 691 kilometres from Bangkok.

Phayao is the second poorest region in Thailand (Phongphit & Hewison, 1990). The province has a mountainous terrain, with rice farming concentrated in densely settled narrow valleys. There are approximately 500,000 people living in Phayao (Table 2.1). Twenty-two percent of the population is children under 15. In 1986, before AIDS hit the province, the crude death rate was 5.3 per 1,000. The crude birth rate is now estimated as 12.7 per 1,000 (UNAIDS Case study, 2000).

Table 2.1 Population information about Phayao Province

District	No. of Sub-district	No. of Villages	No. of Households	Total Population	Hilltribe Population
Mueng	16	176	37,809	131,031	456
Chiangkam	10	110	21,939	80,781	3,982
Dokkamtai	12	117	21,856	77,666	358
Jun	7	68	15,550	55,396	-
Pong	7	79	13,728	54,140	7,067
Maejai	6	61	10,735	39,129	686
Poosang	5	48	9,467	37,103	368
Municipality	2	-	7,197	21,828	-
Chiangmuan	3	29	6,049	20,183	1,192
8 districts and 1 municipality	**68**	**688**	**144,332**	**517,257**	**14,109**

Source: Administrative division, Phayao, 1996

The infrastructure in Phayao is good. Almost all villages (99%) have access to electricity. The road system is excellent, with very few villages situated away from a paved road. The Province has 313 schools and high enrolment rates for both boys and girls in secondary school.

The main source of income is agriculture, in which 44% of the workforce is employed. The main crop is rice. People work hard in Phayao. A full 70% of the 255,794 people constituting the workforce work 50 hours and more per week. Household income however is low, with 28.7% of the rural population making less than 6,000 Baht per year (UNAIDS Case study, 2000).

The growth of industry and services in Chiangrai, Chiangmai and Bangkok has created a demand for female labour that cannot be satisfied by the existing urban population. Thus, some women migrate, and particularly young women and children to these locations. Migrants are relatively poorly educated, with 69.8% of males and 80.3% of females having at the most received only elementary schooling (United Nations, 1992).

The migrants from Phayao tend to remain only temporarily in Chiangrai, Chiangmai and Bangkok, and maintain contact with their rural origins by visiting and sending home a proportion of their earnings. These monies form a significant part of the income of Northern Thailand villages.

Within the valley communities, social cohesion and community commitment is generally judged to be high (Yoddumnern-Attig, 1993).

Northern village life is marked by respect, assistance, co-operation and sharing (Chongsatitmun, 1995; Havanon, 1998). Most Northern villages maintain a traditional way of life. While the extended family is the basic social unit, the family is based on natural and cultural kinship. Grandparents may share the household, contributing to household activities. Parents are honoured and supported by their children until the children marry, reflecting the respect of juniors for seniors. Although men assume formal authority and the role of head of the household, the kinship system in the North is matrilineal, with traditional residence and inheritance of the parental home by the youngest daughter (Langkarpint & Kaewkantha, 1998). The youngest daughter assumes responsibility for caring for elderly parents, discussing Thai social relationships, says that social relationships are ordered hierarchically and shaped by gratefulness and reciprocity. Prestige and status, which are so important in Thai society, are achieved by gaining power and resources. Explaining social interactions, the true intentions and meanings are hidden behind smooth and polite social exchanges which distance people from each other, allowing them to maintain polite relationships. Traditionally, village people produce for their own consumption and for the making of merit. Produce may be shared with neighbours, monks and spirits (Chongsatitmun, 1995; Havanon, 1998).

2.3 General information on study communities

The two study communities (Mueng and Pong) were chosen with the collaboration of the Phayao provincial office, and the district hospitals. The criteria were based on the severity of the HIV/AIDS problem in the area and the number of NGOs working on HIV/AIDS programme within that area. All together 18 sub-districts were chosen randomly: 9 from Mueng district and 9 from Pong district. All study communities, in Mueng there are a lot of NGOs working in the same area, but there was very few in Pong.

Mueng District is approximately 10 kilometres from Phayao city. Its population is 129,127 and the rate of population increase is 0.14% (Phayao Provincial Health Office, 1998 unpublished). It is a flat, rice-growing area. A main highway bisects the district and approximately mid-way along this road is the town of municipality, which is the administrative centre. The provincial hospital (240 beds) and the district health office are situated here. Sited on subsidiary roads in 16 tambons (subdistricts) are 177 villages.

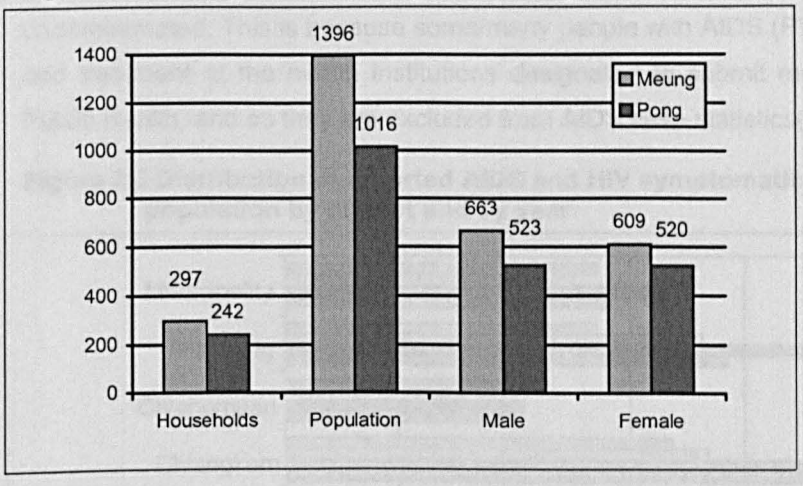
Pong District is approximately 77 kilometres from Phayao city. Its population is 53,029 and the rate of population increase is 0.09% (Phayao Provincial Health Office, 1998 unpublished). It is a mountainous, agricultural area. The community hospital (30 beds) and the district health office are situated here. There are 10 sub-districts and 98 villages.

The study community villages of Mueng are 57 in 9 sub-districts in the south eastern corner of the district, while 60 villages are in 9 sub-districts in Pong in the north western corner. The two districts are approximately 65-70 kms apart.

The main occupation of the villagers is agriculture, although some of the villagers supplement their incomes as daily workers during the off-season (December to April).

The study villages in Mueng are noticeable larger than the ones in Pong, as shown in Figure 2.2 below.

Figure 2.2 Average size of villages in Mueng district and Pong district



Source: Administrative division, Phayao, 1996

Due to larger village size, the average household size of study villages is correspondingly larger in Mueng than in Pong: approximately 4.7 persons per household as compared to 4.2 in Pong. The numbers, however, are average and do not imply anything about household structure.

2.4 HIV/AIDS in Phayao

In Phayao the number of reported AIDS cases has increased steadily, with the male to female ratio changing from 4.8:1 in 1992 to 1.2:1 in 2000, with women relatively more represented among AIDS cases in Phayao than at the national level (Table 2.2). HIV seroprevalence among pregnant women decreased from 11% in 1992 to 4.9% in 1997. Among military conscripts, HIV seroprevalence decreased from 20% in 1992 to 5-7% in 1997 (UNAIDS Case study, 2000).

From the report from the eight hospitals in Phayao province, by March 2000 there were 7,014 AIDS cases and 2,139 HIV symptomatic cases. Among this group there were 2,068 deaths, representing about 22.6% of the reported cases (Ministry of Public Health, 1999; Phayao Provincial Health Office, 1998).

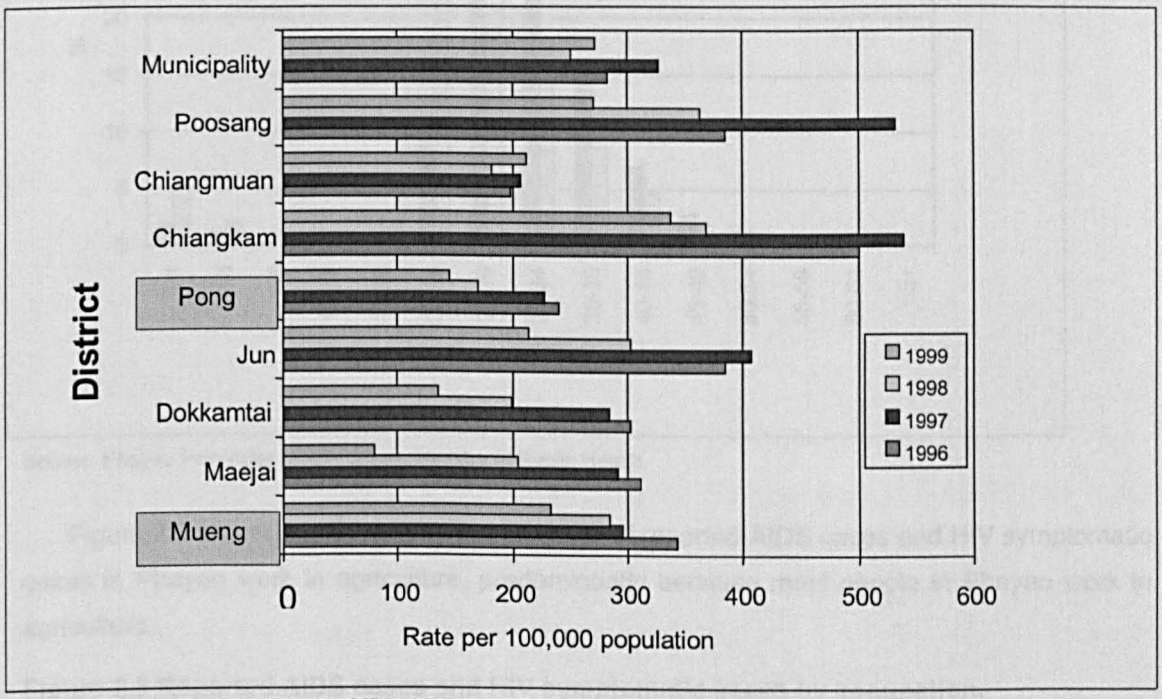
Table 2.2 Reported HIV symptomatic and AIDS cases, Phayao Province, by year, from 1989 to March 2000

Year	AIDS cases	HIV symptomatic cases	Total	Death cases	M:F ratio in Phayao	M:F ratio at national level
1989-1991	21	25	46	14	5.6:1	6.8:1
1992	114	25	139	47	4.8:1	6.1:1
1993	330	77	407	108	4.9:1	6.6:1
1994	571	211	782	186	3.7:1	5.5:1
1995	1,181	423	1,604	480	3.1:1	4.7:1
1996	1,356	380	1,736	411	2.7:1	4.0:1
1997	1,367	450	1,817	332	2.1:1	3.3:1
1998	1,082	307	1,389	254	1.7:1	3.1:1
1999	902	214	1,116	218	1.6:1	3.5:1
2000	90	27	117	18	1.2:1	3.3:1
Total	**7,014**	**2,139**	**9,153**	**2,068**	**2.4:1**	**3.5:1**

Source: Phayao Provincial Health Office, Ministry of Public Health

However, the reported number of HIV symptomatic and AIDS cases is believed to be underestimated. This is because some/many people with AIDS (PWA) may not be seeking care and treatment at the health institutions designated to submit report forms to the Ministry of Public Health, and so they are excluded from AIDS case statistics(Im-em, 1999).

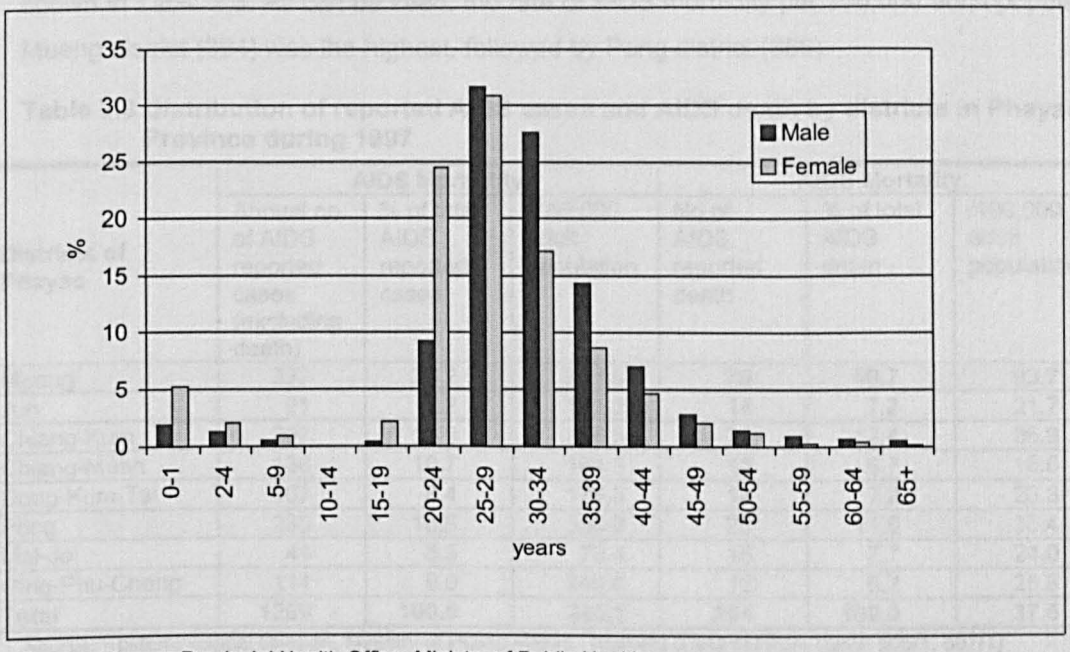
Figure 2.3 Distribution of reported AIDS and HIV symptomatic cases per 100,000 population by district and by year



Source: Phayao Provincial Health Office, Ministry of Public Health

Figure 2.3 presents reported AIDS and HIV symptomatic cases per 100,000 population by district and by year in Phayao. The data suggest that the reported cases of AIDS decreased in Pong (239 to 145) and Mueng (343 to 233) between 1996 and 1999. Figure 2.4 shows that the age group 25-29 years were the majority of this group (31.4%), then 30-34 years (24.5%) and 20-24 years (13.8%). The proportion of males to females was 2.4:1 (6,424 cases were male and 2,729 cases were female). More than 80% of the AIDS cases were in the age range 15-49 years.

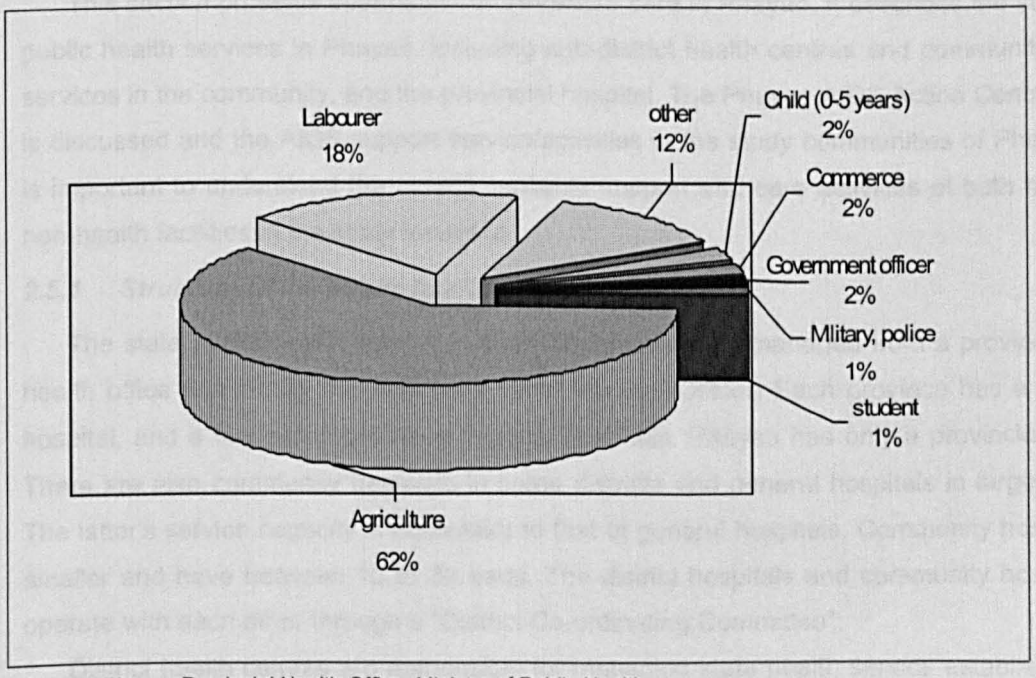
Figure 2.4 Reported AIDS cases and HIV symptomatic cases by age and by sex, Phayao Province, 1989- March 2000



Source: Phayao Provincial Health Office, Ministry of Public Health

Figure 2.5 shows that the highest percentage of reported AIDS cases and HIV symptomatic cases in Phayao work in agriculture, predominantly because most people in Phayao work in agriculture.

Figure 2.5 Reported AIDS cases and HIV symptomatic cases by occupation, Phayao province, 1989–March 2000



Source: Phayao Provincial Health Office, Ministry of Public Health

The number of reported AIDS cases and deaths in each district in Phayao during 1997 is shown in Table 2.3. As can be seen, the rate of AIDS morbidity per 100,000 adult population in Mueng district (394) was the highest, followed by Pong district (366).

Table 2.3 Distribution of reported AIDS cases and AIDS death by districts in Phayao Province during 1997

Districts of Phayao	AIDS Morbidity			AIDS Mortality		
	Annual no. of AIDS reported cases (excluding death)	% of total AIDS reported cases	/100,000 adult population	No of AIDS reported death	% of total AIDS death	/100,000 adult population
Mueng	332	26.2	393.8	79	40.7	93.7
Jun	91	7.2	141.2	14	7.2	21.7
Chiang-Kum	207	16.3	318.5	24	12.4	36.9
Chiang-Muan	136	10.7	194.3	13	6.7	18.6
Dong-Kum-Tai	107	8.4	178.3	14	7.2	23.3
Pong	238	18.8	366.2	23	11.9	35.4
Mai-Jai	44	3.5	70.4	15	7.7	24.0
Ging-Phu-Chang	114	9.0	244.6	12	6.2	25.8
Total	**1269**	**100.0**	**245.1**	**194**	**100.0**	**37.5**

Source: Epidemiological Division, Ministry of Public Health, Thailand (Data set from report 506/1, 507/1)

From personal communication with health officials in Pong district it was gathered that AIDS hit Pong first in the past 10 years. Considering the number of PWA living in villages and number known deaths related to AIDS (Table 2.3) during 1997, the HIV/AIDS situation of Mueng's villages was more severe than the situation in Pong.

2.5 HIV/AIDS Care in Phayao

This section presents information on HIV/AIDS care in Phayao. It describes the structure of public health services in Phayao, including sub-district health centres and community hospital services in the community, and the provincial hospital. The Phayao AIDS Action Centre (PAAC) is discussed and the AIDS support service/activities in the study communities of Phayao. This is important to understand the overall available support and care activities of both health and non-health facilities in the study locations.

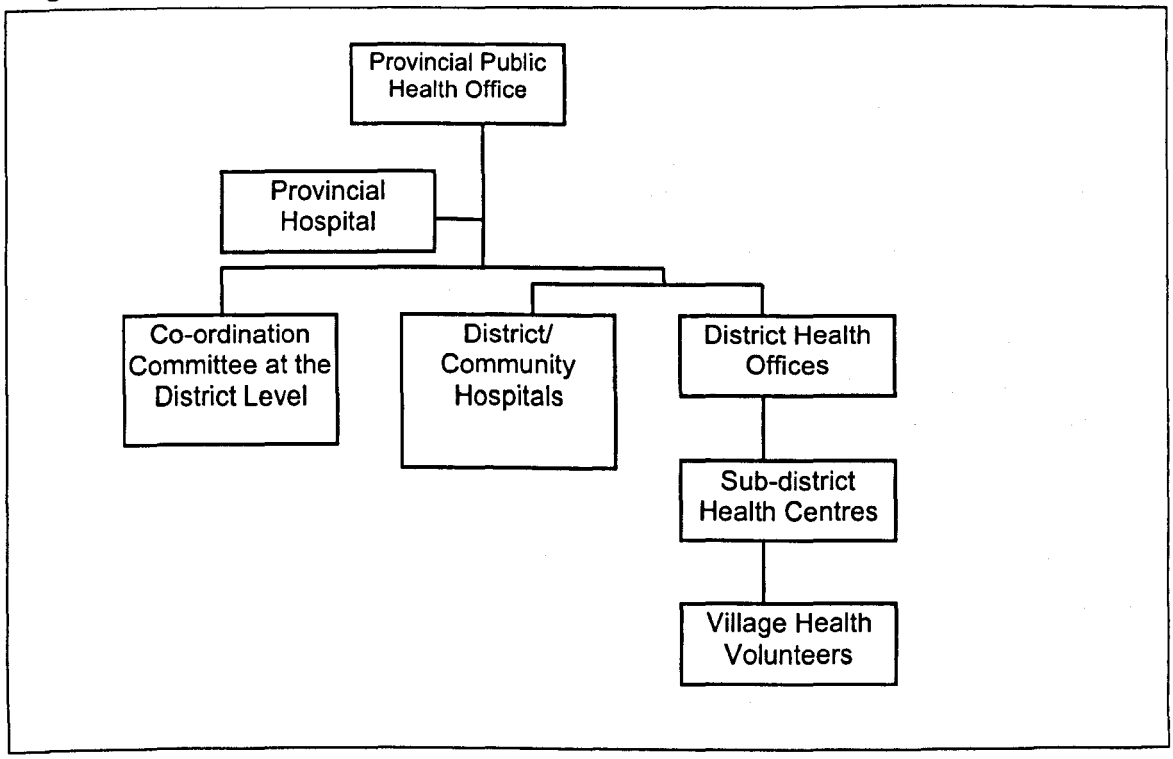
2.5.1 Structure of the public health service in Phayao

The state public health service in each Thai province is managed from a provincial public health office headed by the Provincial Chief Medical Officer. Each province has a provincial hospital, and a few provinces have regional hospitals. Phayao has only a provincial hospital. There are also community hospitals in some districts and general hospitals in larger districts. The latter's service capacity is equivalent to that of general hospitals. Community hospitals are smaller and have between 10 to 30 beds. The district hospitals and community hospitals co-operate with each other through a "District Co-ordinating Committee".

District health centres are responsible for managing state health service establishments at lower levels, i.e. sub-district health centres, which form the base of the health system structure. Sub-district health centres are responsible at sub-district level. In some remote villages there are also community health care centres providing health services.

Each sub-district health centre has "village health volunteers" who are members of the communities. The village health volunteers provide primary health care to their communities without cash payment. Instead, they and their families, including spouses, children and parents, receive medical treatment from government hospitals free of charge. Generally, a village health volunteer is responsible for about 10 households. Figure 2.6 shows the organisation of state health service in Phayao.

Figure 2.6 Organisation of State Health Services in Phayao



2.5.1.1 Sub-district health centre services

Sub-district health centres are the closest government agencies to the community. They provide basic health care such as contraception, pregnancy care, vaccination and treatment of basic illnesses (Havanon, 1997; Havanon, 1998). With the advent of AIDS, the sub-district health centres also provide pregnant women with counselling for voluntary HIV testing (VCT); woman agreeing to a blood test would be sent to the community or district hospital. Few pregnant women refuse VCT. If the result is positive, the sub-district health centre asks the woman to obtain the result of the test at a hospital, where she will be identified as a number to ensure her confidentiality and anonymity. The hospital also provides a counselling service after the test result.

Some sub-district health centres provide blood tests for the clients. The blood samples are sent to be tested in hospital labs, and the results returned to the health centre. Usually a health centre will suggest that the test be taken at a hospital, so the well-trained counsellors in the hospital can provide counselling. Counselling services at sub-district health centres are generally required for people who suspect that they might have HIV/AIDS.

In addition, sub-district health centres follow up and provide health care to HIV infected persons who are referred from hospitals or a Centre for Operational Action on AIDS, or "AIDS centre" for short (detail of the AIDS centre will be presented in the section 2.4.2). Mostly, the follow up and health care involve home health care including general advice or bringing milk, soap, or detergent when visiting the HIV infected persons. In terms of treatment, the sub-district health centre itself lacks the knowledge and skill to deal with AIDS associated illness. They can only provide medicine for symptoms such as itching, some diarrhoeas, headache, and fever.

Under the state health system, if a symptomatic HIV patient comes for treatment but the sub-district health centre cannot serve him/her properly, it will issue a referral document to pass them on to the district hospital. They may proceed to the hospital initially. Many AIDS patients have a health insurance card. This costs THB 500 (approx. 8 GBP) and covers care from government health care establishments for five members of the family for one year. A health insurance card entitles the holder to free health treatment (Ministry of Public Health, 1997c; Pannarunothai & Mills, 1997). Those who are on a low income (currently monthly income less than 2,000 Baht per person and 2,800 Baht per family) can obtain free care by using a welfare card under the medical welfare scheme. Holders of these cards are expected to attend the nearest village health centre first, and be referred if necessary to the district hospital (Kachondham & Chunharas, 1993). However, a patient with AIDS who possesses the card does not have to hold a referral document to go to community or district hospitals.

Another major task of sub-district health centres coping with patients with AIDS is co-ordinating and guiding village heath volunteers to provide home visits to these patients, and encouraging them to have conversations with neighbours to show concern for those living with AIDS. Each village has one or two village health volunteers who work on AIDS related problems (Akarasewi, 1998; Appsornthanasombat, 1994). PWA tended to seek advice and basic treatment from sub-district health centres because the centre is familiar and accessible to them, though it has limited capacity to help them (Akarasewi, 1998; Appsornthanasombat, 1994; Havanon, 1997).

Although sub-district health centres have a limited role in AIDS treatment, they are crucial in providing information and understanding to the community on AIDS prevention, patient care and life with PWA. The sub-district health officials attend village meetings once a month and provide AIDS information.

2.5.1.2 Community hospital services

The community hospital in this study (in the less active district, "Pong") has 30 beds and provides services for AIDS patients including voluntary testing and counselling and treatment for opportunistic infections, with confidentiality of the test results. When a new HIV case is identified, the hospital will inform a district public-health office, which will refer the case to a health centre for further care. Usually, a seriously ill patient is referred to the provincial hospital (Muangman, 1987; Nitayarumphong, 1990). There is one district general hospital in Chieng Kam, Phayao province that provides the same services as those in a provincial general hospital, but it is not located in the study location. In an HIV voluntary testing and counselling

clinic at general hospitals, there are about 3-4 counsellors while only one can be found in a community hospital.

Under co-operation with these district centres (community hospital and sub-district health centre), HIV voluntary testing and counselling clinics have set up the HIV-infected clubs. Workers from both organisations arrange weekly activities and meetings among the people with AIDS, such as meditation training, group-counselling, information exchange, individual treatment and herbal medicine sales.

2.5.1.3 Phayao provincial general hospital services

The provincial general hospital has 240-beds with similar services to the district general hospitals and is located in the active district ("Mueng"). However, since the provincial general hospital is a recipient of the seriously-ill patients referred from the community hospitals as well as taking care of its own direct people with AIDS, a large number of both out- and in-patients visit every day. The hospital statistics show that in 1998 there were 2,266 visits from the symptomatic HIV-infected and AIDS outpatients in a year, approximately 8.8 visits a day. For the in-patients, the rate of bed occupation rose to 34.5% among male and 11.8% among females (data from Internal medicine department only). On average, 20 patients with AIDS stayed at the hospital per day. In 1998, the hospital spent about 3.9 million Baht (US$ 97,500) for the services (AIDS Care) or 4,079 Baht (US$ 102) per one AIDS patient (Lertchayantee, 1998).

Due to the fact that the provincial general hospital is the destination of all governmental service providers in each province, no further referral of patients can be done. As a result, the provincial general hospital needs to carefully manage its resources, whether in human power, medical supplies or budget, in the face of the increasing number of patients. In each year, it needs to balance between the quality of care provided and the existing resources. Like other hospitals, the Phayao provincial general hospital also provides an HIV voluntary testing and counselling clinic for both the out- and in-patients who are suspected to be HIV infected. The counsellors give advice to the symptomatic HIV-infected or the early full-blown AIDS people who want to stay at the hospital but are denied by the doctors due to insufficient beds and more seriously-ill patients. If the patients insist on their own demands, they will be sent to talk with counsellors. Also these counsellors welcome the general public who can go directly to them, without the registration process. This is more convenient than going to the general disease section. However, only the counselling advice is given here. If a patient shows some signs of symptoms, they need to go through the ordinary process and register as an outpatient (Chalamwong, 1997; Chandrtat na Ayuthya et al., 1998; Chantcharas et al., 1998; National AIDS Prevention and Control Programme, 1994).

2.5.2 Phayao AIDS Action Centre (PAAC)

The Phayao AIDS Action Centre (PAAC) was set up to help implement a multi-sectoral response to HIV/AIDS.

At provincial level, the Committee is chaired by the provincial governor and the Provincial Chief Medical Officer acts as secretary. The committee has appointed a Provincial Centre for

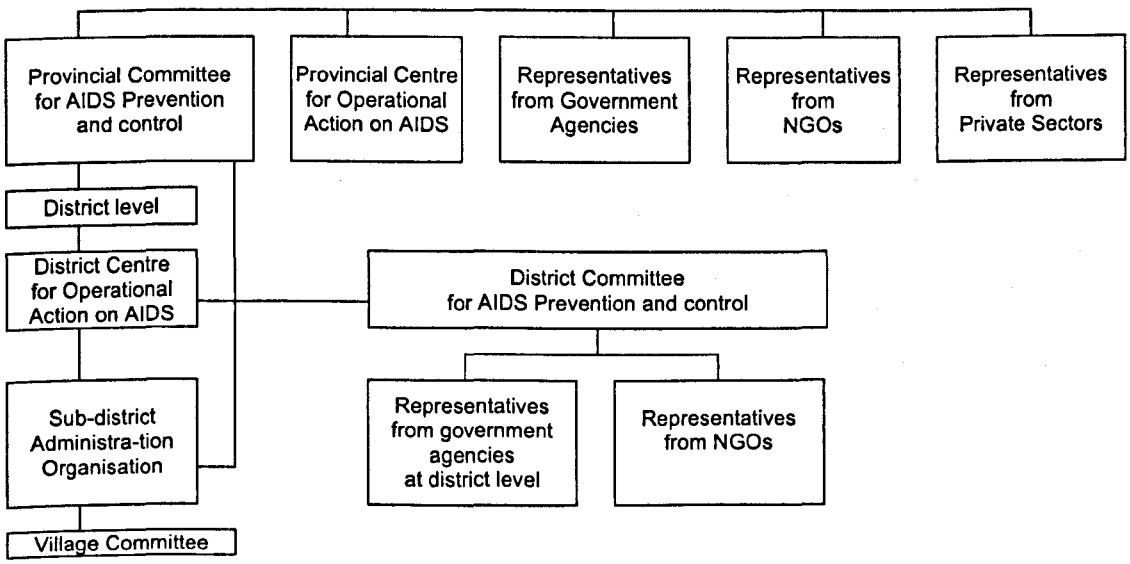
Operational Action on AIDS, which is responsible for all tasks related to AIDS such as information, planning and budgets, co-ordination of research projects and medical training assessments. The centre is chaired by the Deputy Provincial Governor and the Provincial Chief Medical Officer is the vice chairperson. Other members include representatives from government and private agencies in Phayao such as Agriculture Office, Primary Education Office, Secondary Education Office, Administration Office, Supanimit foundation, and Care International (Havanon, 1998).

At district level the District Centre for Operational Action on AIDS co-ordinates seven districts of Phayao. Chaired by a district governor, the centre is responsible for co-ordinating and supporting implementation, follow-up, project assessment, and development project proposals on AIDS at district level (Havanon, 1998; UNAIDS Case study, 2000).

At sub-district level there is no agency working specifically on AIDS. Implementation of AIDS projects and policies is integrated in the existing local administration system. However at village level, there are village committees for HIV prevention and control.

In practice, the committee is integrated into the body of existing village committees. The National Plan for Prevention and Alleviation of HIV/AIDS forcefully stated that programmes and projects related to AIDS must be implemented on a holistic basis (Kaime-Atterhog & others, 1994; Wongkhomthong et al., 1995). All concerned agencies were advised to co-ordinate closely in conceptualisation and implementation, share responsibilities, collaborate in problem solving, and join in programme monitoring and evaluation (Phoolchareon, 1997b; Porapakkham, 1996). In recent years, individual ministries have been assigned by the Thai government to share responsibilities in AIDS problems by allocating budgets and including activities related to AIDS into their implementation plans. However, there has been a lack of efficient machinery to establish a real and effective collaboration among different sectors to tackle the AIDS problems at the local level in a comprehensive manner.

Figure 2.7 Structure of Phayao AIDS Action Centre



Source: Phayao Provincial Health Office, 1998

At the district level, the district AIDS-related policies depend on the interest and problem orientation of the district high-ranking administrators to urge the government agencies for the realisation of critical AIDS problems and solution (Havanon, 1997; Havanon, 1998). However, the projects were seldom targeted at those who have been directly affected from AIDS since most of the governmental projects are based on the old framework that targeted the overall group of people (Chalamwong, 1997). Many examples prove it - cattle-raising vocational promotion by the district Cattle workers, fish-feeding promotion by the district Fishery workers. All of these projects are aimed at the general population. The allocated budget did not directly target vocational training for the HIV-infected. The district-level governmental agency that works directly with AIDS is the Office of Social Work, which organises a fund for the infected and AIDS patients.

The province has been, so far, one of a few provinces to develop mechanisms for integrating AIDS-related activities at the district level. The District Centre for Operational Action on AIDS, which is called "the AIDS Centre", was founded by the District Committee for AIDS Protection and Control. The centre is not directly under governmental administration but a sort of provisional organisation. It is set up specifically only in some districts and might be dissolved in many places due to many factors; for example, lack of personnel or budget. This study purposely selected a district that had a strong and ongoing AIDS centre and a second district that had less activities to explore, in order to compare the short term strategies used by households and communities to reduce the economic impact of chronic HIV/AIDS morbidity of an adult.

This AIDS Centre plays a vital role in co-ordinating governmental agencies and non-governmental organisations. It is a governmental unit administered by a committee chaired by the district governor. Other members include representatives from various other district-level governmental agencies, as well as the chief of the district public-health office and the physician who heads the Social Medicine Unit in the district general hospital. The AIDS Centre also co-operates with non-governmental organisations to operate their activities. Most of the jobs include preparing the name list for funding recipients, for example, the fund for orphans of AIDS victims or co-ordinating the HIV-infected volunteer projects.

In late 1994, Phayao was one of the six provinces in the north recognised by the government as having a high prevalence of HIV/AIDS. The "Accelerated Projects" were launched in each of the six provinces. The projects were aimed at building the capacity of the individual, the family and community in preventing HIV/AIDS, and alleviating its impact (Havanon, 1998; National AIDS Prevention and Control Programme, 1994). The main strategy was to strengthen the potential of community-based organisations in creating a social environment for community members who would be HIV positive, and in preparing for the involvement of families and community in care and support for people affected by HIV/AIDS. Each province was advised to set up a Provincial AIDS Committee to perform duties in accordance with the goals and strategies of the project.

Phayao has been one of the most active provinces in their efforts to strengthen support networks among various organisations and sectors. At provincial level, the Committee for AIDS Prevention and Control is responsible for setting policies, objectives, strategies, planning, implementation and approving projects related to AIDS. At the district level, the District Centre for Operational Action on AIDS is responsible for co-ordinating and supporting implementation follow up, project assessment, and development project proposals on AIDS. At sub-district level, the implementation of AIDS projects and policies is integrated in the existing local administration systems. At the village level, there are village committees for AIDS prevention and control, often integrated into existing village committees.

Although the structure and implementation of services related to AIDS has expanded beyond the MOPH, public health agencies at provincial, district and sub-district levels are the main organisations responsible for co-ordinating activities to cope with AIDS. State agencies such as the Welfare Department, Rural Development Department, and Agricultural Development Department are marginally involved in coping with AIDS problems. Most of the governmental AIDS-related work at the district and provincial levels emphasises counselling and treatment services. Few governmental organisations focus on the social and economic impact of HIV, although it is likely that there are non-governmental organisations addressing this issue. Government agencies and NGOs have been very active: in 1996, Phayao Province allocated US$ 2 per capita to 75 projects in response to HIV/AIDS (UNAIDS Case study, 2000).

As a result, within Phayao as a whole there are various support networks in place, which are provided under a programme of multi-sectoral expanded assistance. Within any one village, possible assistance may involve a broad range of services, provided by governmental and non-governmental organisations, community-based support, and the private sector. In practice however, there is some variation in the forms of services available in different districts and sub-districts within Phayao. Differences in services may occur firstly in the forms of government services and subsidies available (including health care and financial schemes to provide free health care, schemes to ensure free education for children, job creation programmes and activities to reduce stigmatisation concerning HIV/AIDS), and secondly, in private sector, NGO and community activities (including support groups, counselling, training of care providers, income generation schemes and support to families affected by HIV/AIDS).

2.5.3 The AIDS services/activities in the study communities

Table 2.4 shows the range of AIDS and other support services/activities in the community of Phayao. Some of these services overlap with the health and non-health services/activities such as social welfare services, lunch support for school children, a club for the elderly etc.

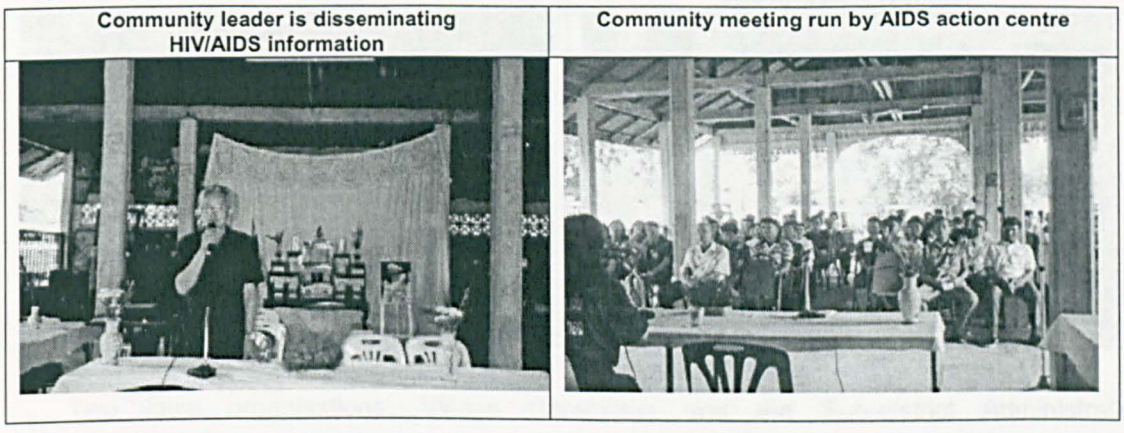
Table 2.4 Description of services available in the communities

Title of service	Description
Social welfare services	Fund organised by government to provide health care services to members from whom 3% of monthly salary will be deducted as a fee. Maximum deduction per month is 450 baht.
Lunch support for school children	A government funded project; children in the public schools in the low-income areas are provided with free lunch and milk. This is to relieve the burden on impoverished parents and to encourage them to send their children to school.
Club for elderly persons	Generally the members are 60 years old and over. The active programs include education on health, food, and exercise. The clubs are financially supported by local administration.
Project for community agricultural development	The project's aim is to improve farming productivity. Providing the farmers with agricultural knowledge, advance techniques and seeds of commercial crops e.g. corns, peas, peanuts etc. is basic function of the project. The project is funded by the government.
Project for orphans or community child care	To alleviate burden the project takes care of the children in the daytime period to free up parents to work. In case of orphans the project takes care of the children full time. Subsidised by the government, local and central; no fee is charged.
Group of housewives and community development	The aim of the project is mainly for a group of housewives to participate in community activities which involve fundraising for local events, organising religious celebration etc.
Project for giving consultation on extra earning activity for the community's housewives	The program helps organise the group of housewives who normally have free time during the day to be able to earn extra income for families by working in self initiated projects. Such projects are, for example, local fruit preservation, carving, weaving etc.
Project for donation or food loan, working material, money e.g. village funding, district aid funding,	The project is funded by local residents in the form of donation. Money will be loaned to members and non-members with lower interest rate or without interest in selective cases. The loans are strictly for the purpose of food, investment on agricultural equipment etc.
Project for community of patient	It is a government supported project set up to take care of villager patients to relieve the burden on their families.
Project for job finding in the community	This is a local administration funded project. Its main objective is to be a source of information for villagers to find jobs both locally and outside of communities.
Community participation and community acceptance in target decision	This is another government promotion to encourage the residents of the community to participate in decision making process. Public hearing is normally organised.
Consultation services	The services aim to educate the HIV infected people on how to live their lives with others in community, diet, treatment etc.
Complementary health care services	The services provide the HIV/AIDS patients with knowledge of traditional medicine, use of herbs and other alternative medicine.
Project on education an community nutrition	Education on diet is provided for community residents in general such as nutrition, food preservation etc.
Project on training of nursing aid of patient in the family and community	The project attempts to train family members to be able to take care of patients within the family and community, and educate them to avoid complications and opportunistic infection. Support is mostly from local health centre.
Vocational training and support for income of household and community	To enhance ability of the community to earn more income, the project provides know-how for vocational skills such as cooking, mechanics, handicraft etc.
Treatment and group consultation	This is another form of treatment and consultation stressing group participation, consolation and promotion of group understanding.
Meditation	The programme focuses on religion related activities e.g. meditation, chanting etc. to boost morale and calm patients' minds. The is programme generally conducted by buddhist monks.
Group support for patients suffering from target disease and self health group	The group's main function is to give moral support and consultation to patients. This is voluntary work.

Community leaders in Mueng, in co-operation with sub-district health centres, have played an important role in disseminating HIV/AIDS information (Appsornthanasombat, 1994), and in

reducing public panic and stigma towards HIV infected people (Chandrtat na Ayuthya et al., 1998). HIV infected peer leaders have played a vital role in changing the community's attitude towards HIV infected individuals. One key non-governmental project in the active district operated by the AIDS Centre selected HIV infected people as volunteers (Figure 2.8).

Figure 2.8 Community leader and community response to HIV/AIDS in Mueng



All volunteers in each village had been fully trained about the infection, self-care, food preparation, living, as well as self-adjustment. This training was conducted either by NGOs or the AIDS Centre. Sometimes it was arranged together with the training of Village Health Volunteers. These volunteers are given a monthly salary of 1,000-3,000 Baht (US$ 25-75), depending on their duties.

It was reported that at first the peer leaders were branded as having no pride, future or capability. However, as these volunteers have been trained and have a wider knowledge about HIV/AIDS than others in the communities, they are perceived as being capable, active, and strong. As such they have become role models for other HIV infected individuals and have led the struggle for better acceptance by the community in the active district.

The community activities in both districts conducted by AIDS student volunteers and the very important community institutes contribute to better care for people with AIDS and reduction of the impact and problems of HIV/AIDS in the community (Figure 2.9).

Figure 2.9 AIDS student volunteers in Pong

Community activities, including community meetings, sometimes take place in the local Buddhist monastery (there is at least one in each sub-district), which is the centre of communal life.

Figure 2.10 HIV infected peer leaders, and volunteers in Mueng

HIV infected peer leaders	Brain storming with community members how to prevent HIV/AIDS.
	

Two local organisations, Village Committee and the Sub-district Administration Organisation in each district, have been set up in a village having a minimal role to tackle AIDS (Havanon, 1997). Generally, AIDS problems are raised in meetings by the village headman just to find assistance for a new HIV-infected applicant. But such cases are usually forwarded to the District Social Worker for further assistance. These organisations do not consider AIDS to be a community problem or tackle this problem together. It has been reported that they believe that AIDS is a problem that needs to be solved by the family, i.e. the family should solve the problem themselves (Ramitanondh, 1995). Even the Sub-district Administrative Organisation in each district, which has a budget for social development, limits its participation in activities against AIDS. For example, only a small amount of budget was given for the production of AIDS-related literature. No long-term projects have been planned. In their opinion, AIDS comes under the responsibility of district governmental agencies. If the government wants the Sub-district Administration Organisation to have greater participation, additional funds should be given directly to AIDS activities (Chalamwong, 1997; Chandrtat na Ayuthya et al., 1998; Chantcharas et al., 1998; Chongsatitmun, 1995; National AIDS Prevention and Control Programme, 1994).

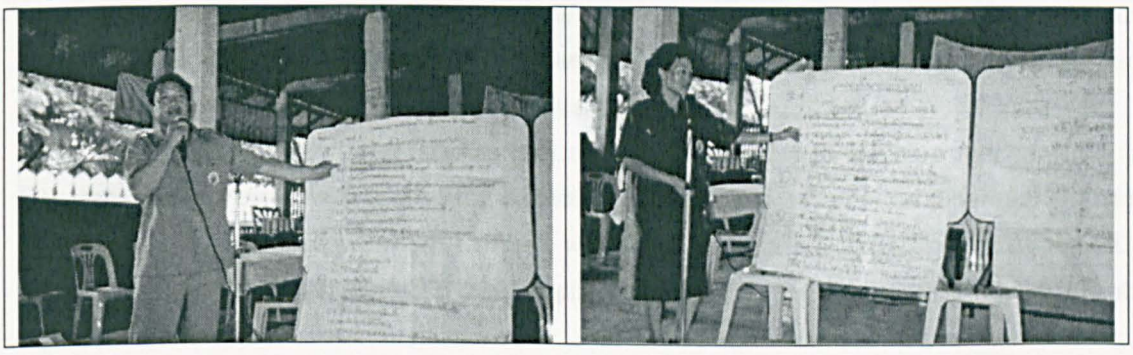
Among community leaders, especially village headmen, it is reported that they have a good understanding about the AIDS crisis. They can play a vital role in building understanding among community members and promote mutual activities between HIV-infected and uninfected individuals (Appsornthanasombat, 1994; UNAIDS Case study, 2000). The monthly meeting between sub-district health personnel and villagers leads to a better understanding in the community. However, there remain no projects to help the HIV infected people economically.

Monks and teachers have a minimal role, mostly in boosting better understanding or minimising negative reaction towards the PLWHA. School plays an important role in education on the prevention of HIV infection through sex education, as well as protecting HIV-infected

children from negative reactions. However, most teachers feel no commitment to tackle safer sex behaviours together with the community in Phayao (Havanon, 1998). The relationship of monks with the community is in the participation in funerals or merit-making ceremonies.

For the governmental public health centres - no matter whether community hospital, district and provincial general hospital - the relationship with villages is more receptive in style. Community members consider a hospital as the place to visit during one's illness. Each service also takes considerable time. Most people go to hospitals when seriously ill. Those with milder illness will buy medicine at the drugstore, take herbal medicine or go to the health-centre (Havanon, 1998).

Figure 2.11 Health officers provide health education in Mueng



2.6 Discussion

Phayao was selected both because it has the highest HIV/AIDS prevalence in Thailand and because it currently provides multi-sectoral assistance to people and communities affected by AIDS. Two districts from eight districts in Phayao, "Mueng" and "Pong", were chosen as the study location. The rate of AIDS morbidity per 100,000 adult population in Mueng district (394) was the highest, followed by Pong district (366).

From a report of eight hospitals in Phayao province in 1999, there were 7,014 AIDS cases and 2,139 HIV symptomatic cases. Among this group there were 2,068 deaths or about 22.6% of reported cases. The age group 25-29 years formed the majority (31.4%) of cases; more than 80% of AIDS cases were in the age range 15-49 years. Agriculture was the primary occupation of 62% of cases was , followed by labourer (18%).

The state public health service in each province is managed from a provincial public health office headed by the Provincial Chief Medical Officer. There are various levels of health care in Phayao, from the provincial hospital, through community hospitals, down to local sub-district health centres, with referral systems for transferring patients between the different levels. At sub-district level there is at least one sub-district health centre as the base of the health system structure. Each sub-district health centre has "village health volunteers" who are members of the community and provide primary health care to their community without cash payment. Community leaders, in co-operation with sub-district health centres, have played an important role in disseminating HIV/AIDS information, and in reducing public panic and stigma towards the HIV infected people.

Phayao has been one of the most active provinces in its efforts to strengthen support networks among various organisations and sectors, with various support networks in place. These are provided under a programme of multi-sectoral expanded assistance provided by governmental and non-governmental organisations. In practice however, there is some variation in the forms of services available and used in different districts and sub-districts within Phayao.

Since the first case of AIDS appeared in Phayao in 1989, the Phayao provincial health office has initiated many activities to provide care for people with HIV/AIDS, both in the hospital and in the community. Hospital care includes counselling and testing services, anti-retroviral clinics, home visits and home health care, day-care centres, nutritional support, prevention of mother-to-child transmission, INH prophylaxis for prevention of tuberculosis in HIV positives, treatment of opportunistic infections, combined drug therapy, networking and referral system, care and support provided by the religious priests.

Phayao province has been, so far, one of a few provinces to develop mechanisms for integrating AIDS related activities at the district level. The District Centre for Operational Action on AIDS, which is called "the AIDS Centre", was founded by the District Committee for AIDS Protection and Control. The AIDS Centre plays a vital role in co-ordinating governmental agencies and NGOs.

The "Accelerated Projects" were launched in six provinces including Phayao. These projects were aimed at building the capacity of the individual, the family and community in preventing HIV/AIDS, and alleviating its impact by strengthening the potential of the community via the involvement of families and the community in care and support for people affected by HIV/AIDS. The Phayao AIDS Action Centre (PAAC) was also set up to help implement a multi-sectoral response.

Although the structure and implementation of services related to AIDS has expanded beyond the MOPH, public health agencies at provincial, district and sub-district levels are the main organisations responsible for co-ordinating activities to cope with AIDS. As a result, within Phayao as a whole there are various support networks in place, which are provided under a programme of multi-sectoral expanded assistance. Within any one village, possible assistance may involve a broad range of services, provided by governmental and non-governmental organisations, community-based support, and the private sector. In practice however, there is substantial variation in the forms of services available in different districts and sub-districts within Phayao. Differences in services may occur firstly due to the forms of government services and subsidies available and secondly due to differences in private sector, NGO and community activities. There are differences in the availability of services between the active and less active districts studied, with the active district having better availability in: 1) PWHIV support groups, 2) Support group meetings for PLWHA and others affected, 3) Counselling services, and 4) Training on care of PLWHA to health volunteers.

2.7 Conclusion

Phayao was selected as the study region because it is a region with one of the highest HIV/AIDS prevalence rates in Thailand, it has made a strong response to HIV/AIDS, and with a wide range of support services available in the province. Two districts were selected in Phayao- one district had "active services" (Mueng) while the other had "less active services" (Pong). All study communities, with exception of Pong district, have few, if any NGOs working in them. The economy is agriculturally based, supplemented by remittances from migrant workers, who are mostly working in Chiangrai, Chiangmai and Bangkok. Incomes in Phayao are low, and agricultural wages especially so.

There were differences between the two districts not related to the levels of service availability, which could influence the validity of later findings. During the study period, the stage of epidemic (measured from the reported morbidity and mortality rate) in Mueng appears to be more advanced than in Pong. In particular, because of the more advanced epidemic, there was a greater number of NGOs and international agencies (JICA) involved in HIV/AIDS services/activities in Mueng than in Pong. Although both districts had VHVs throughout the Phayao AIDS Action Centre (PAAC), not all of them actually participate in village activities. Likewise, there may be other differences in the quality of services provided between the two sites. In both districts, the out-migrating population worked in agriculture in other provinces during the dry season months from December to April or in cities outside the province, and a small number worked overseas.

CHAPTER 3

REVIEW OF THEORETICAL LITERATURE AND ECONOMIC MODELS OF HOUSEHOLDS

3 Review of theoretical literature and economic models of households

3.1 Introduction

A theoretical framework was used to conceptualise the research questions, to address the hypothesis, and to help inform the research methodology and the subsequent analysis. Economic theories of the household try to capture the complex structure of households and their behaviour. Information on the demographic structure, decision making process, resource allocation, income earning mechanisms and gender division is used to design the household survey, its methodology, its bias and its limitation. This chapter is divided into six sections. The first introduces some of the main theories of the household before discussing the difficulty involved in capturing the dynamics of the household, its definitions and variations, and the designation of household heads in a survey. It then reviews household theories, including the farm household model, new household economics, the Low model, intra-household resource allocation models, and concepts of how risk affects household behaviour. The implications for household economic research to assess household impact and coping mechanisms of HIV/AIDS are then discussed.

3.2 Theories of the household

This section reviews different economic theories about households and discusses the strength and limitations of each. It presents a brief discussion of the theories of the household, such as the unitary, collective and bargaining models. An overview of these models is intended to shed some light on, and provide a theoretical foundation to, the construction of and usefulness of the household survey, as means to improve existing surveys.

It is obvious that finding a tenable definition of the household is a complicated task. Household behaviour includes many different dimensions and is affected by many different factors. All economic models assume that the household is a rationally behaving unit. The value of time of household members and value of consumption and production of goods are determined by market mechanisms. Therefore, the household should consist of two or more people. Decisions on purchases, sales and consumption can be analysed as decisions of the group.

The unitary model is the prevailing, widely applied model of resource and labour time distribution within a household. It assumes that decisions within the household are made jointly and that the household maximises a single set of objectives for all its members (Ellis, 1988). A household acts as a unit when all household members have exactly the same preferences and subsequently the same utility functions.

In the unitary model, the household is considered not only as a consumer, but also as a producer. In this case, the household is comparable to a competitive firm in a market economy. A household faces a production possibility frontier. Within a given time period, a household has limited resources, but also alternative uses and fixed technologies for home production. It is

important to be aware that the approach, which considers the household to consist of only one member (as all become one), is a simple solution to a complicated problem.

Collective models of household behaviour try to capture the different preferences, conflicts and inequalities evolving among household members. These models prescribe to the individuality of household members rather than the joint decision making process. Collective models are divided into two types: cooperative and non-cooperative. Cooperative models assume that individuals form a household if this option is more beneficial for each party than remaining unattached. Non-cooperative models imply that individuals have separate economics within one household and they do not enter into enforceable contracts with each other (Strauss & Duncan, 1995). However, as more variables are included in the analysis, the collective models introduce complexity and additional assumptions (Strauss & Duncan, 1995). This again creates problems if the formulation of public policies is based on these models.

To find a more flexible definition of household and its operations, one option lies in the possibility of re-defining the concept of the household to reflect the focus of the research, its geographical area, and purpose. Environment, cultural background and historical setting can further affect this definition (Mattila, 1992).

The simplest and earliest household theory which has dominated empirical research until recently is Becker's New Household Economics (Becker, 1965), where the concept of benevolent dictator and "black box" were coined. It is the most complete presentation of the unitary household model. Becker assumes only one central decision-maker per household, an altruistic adult male, who aggregates the preferences of all household members into a single joint utility function (Becker, 1965; Chayanov, 1966).

However, in the 1980s the neo-classical economists, such as Becker, were criticised for ignoring various aspects of household activities, such as individualism in decision-making, intra-household allocation of resources, and gender relations in the household (Bourguignon & Chiappori, 1992). Documentation of systematic intra-household inequalities in physical wellbeing, especially along the lines of age and gender, in South Asia also challenges the central neo-classical advocacy for a joint welfare maximisation within the purely altruistic household (Kabeer, 1998).

Since then, alternative household theories have emerged to closer approximate empirical reality. These "non-unified models", according to Kabeer (1998), include the collective and non-cooperative models, which share the assumption of possible differences in preferences among household members but differ in other assumptions. There are two versions of the collective model. The first one assumes the household is efficient in decision-making, but relies on empirical analysis to establish the decision-maker because it is uncertain how such efficiency is achieved (Chiappori, 1992; Kabeer, 1997). The second one incorporates a bargaining model in household decision-making, where outcome allocation favours those with the greatest bargaining power. Meanwhile, the non-cooperative model acknowledges each household member's abilities to control and use their income subject to their resource constraints (Kabeer, 1997).

Sen (1990) has extended the above into the "cooperative conflict" model of the household, which addresses the more explicit issues of gender and power within the household. Sen assumes that members of the household have a choice between alternative cooperative outcomes or not to cooperate at all, and that cooperation between household members will take place as long as the cooperative outcome outweighs the non-cooperative or conflict outcome (Kabeer, 1997; Sen, 1990). Accordingly, since the bargaining model incorporates the format of cooperative conflict, it also helps to capture one aspect of family relations between adults (Sen, 1983).

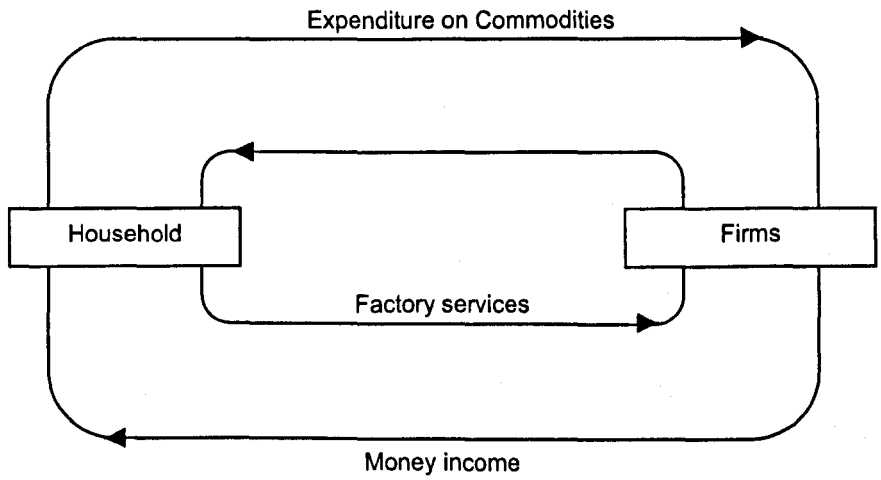
It appears that Sen's cooperative conflict model of household replicates reality better than the other theories of household, especially in capturing the dynamic of household and individualism. In addition, Hart (1995) argues that the non-unified approach is firmly grounded in the positivist methodology and the analysis of large-scale survey data, which makes it ideal for empirical research (Hart, 1995).

The strength of the non-unified model lies in its recognition of the household as a collective process involving more than one decision unit or utility function. Furthermore, these models stress the need for a conceptual understanding of intra-household and inter-household relations as a guide to empirical research, and to conceptualise them within a paradigm of individual decision-making in order to define an appropriate research methodology (Bourguignon & Chiappori, 1992). The investigation of intra- and inter-household relations will also capture the pooling and redistribution of income and physical assets among different households. These relationships within and between households illustrate that a household does not exist on its own, but cooperates with others to maximise its welfare. Such pooling of resources and household relations show that the household is far from a natural unit.

Several models have been developed to model the economics of households with agricultural production.

The general equilibrium approach recognises the interdependence among all sectors in the economic system, the markets of all factors of production as well as the fact that the prices in all markets are determined simultaneously. The Figure 3.1 helps illustrate a simple view of the circular flow of income in an economy.;

Figure 3.1 The circular flow of income in an economy



In this simple economy, the consumer sector comprises of households while the production sector comprises of producers (firms). Producers pay for factor services supplied by consumers (labour), while consumers spent spend their income an on goods produced by firms, thereby establishing a circular flow of income and expenditure between firms and households.

A commercial firm which sells its produce in the market place could be treated simply as a firm (Colman & Young, 1989). In Thailand, many farms are not of this type, but are rather agricultural households which produce for both consumption and for sale. There are also other households that produce exclusively for home consumption, with no marketed surplus.

3.2.1 Farm household model

In Thailand, as in other developing countries in Southeast Asia, agriculture remains a principal source of income for the majority of the population, an important earner of foreign currency as a main export product (especially "rice"), and consequently a main concern of Thai politicians and Royal Thai government policymakers. The typical Thai rural household would be that of a small farmer with complex behavioural patterns. As small-holders, they produce partly for sale and partly for consumption. They also purchase some of their inputs and provide some from their own resources (Singh et al., 1986). Any change in households concerning agricultural activities will therefore affect not only production but also consumption and labour supply patterns. These relationships can only be captured by modelling the behaviour of the small farm household in a way that acknowledges this dual character of rural households as producers and consumers.

In order to be able to predict the likely response by farm households if one adult household member is ill, it is important to know what factors determine the level of farm production and the demand for inputs as well as factors that determine consumption and labour supply patterns. Farm household models are designed to capture these relationships in a theoretically consistent fashion so that the results of analysis can be applied empirically to illuminate the

consequences of interventions to help household coping. Such models can be used to examine the consequences of alternative policies in three dimensions:

(i) The effects of alternative policies on the wellbeing of farm households - wellbeing here refers to household income;

(ii) The spillover effects of government policies on other segments of the rural population - since most rural investment programmes are designed to increase farm incomes, some of them may not reach landless households or households engaged in non-agricultural activities;

(iii) The performance of the agricultural sector from a multi-sectoral perspective.

The farm household model has a number of limitations. Given the numerous imperfections that characterise the product and factor markets in developing countries, a model based on neo-classical assumptions of a perfectly competitive economy cannot be appropriate for predicting and understanding household behaviour here. Secondly, households may produce both tradable and non-tradable outputs so that changes in relative price structure will induce them to switch resources in response. A key determinant of welfare will therefore be the extent to which such production switching is possible in both the short and long run. Thirdly, farmers may be using tradable intermediate inputs as well as being risk averse.

These and other structural constraints may mean that the farmer's production response curve differs from the one used in the farm household model. The production function in developing countries is likely to be a function of the physical qualities of land and other capital resources (implements, education credit etc). As observed by Mellor (1966), the marginal productivity of labour is likely to be high at the initial stages of production, because of natural soil fertility (Mellor, 1966). However, as labour is added to the same piece of land, its marginal productivity is likely to decrease and reach zero at some point. The speed at which marginal productivity of labour approaches zero is also a function of the availability of technological innovations, capital resources and credit resource availability. According to Mellor (1966), the nature of the production function in many developing countries is characterised by an early rise in the marginal productivity of labour, which eventually falls down to zero after some point. The steepness of the curve at the early stages (e.g. the productivity of labour) differs according to the soil and rainfall conditions of a given area. Marginal productivities are higher in fertile areas than in less fertile areas.

New household economic models have been developed which, to a large extent, attempt successfully to incorporate most of the variables discussed above (Becker, 1965; Chayanov, 1966).

3.2.2 New household economics

It is important to be aware that households have a dual characteristic as they produce partly for sale and partly for their own consumption. HIV/AIDS has an effect on both the consumption and the production of households, as well as on the household as a supplier of labour. These aspects can, within certain limits, be analysed separately. This is because household theory, especially General Equilibrium Models, is not yet able to integrate the three

functions in a single framework. However, it is important to realise that these functions are fundamentally interrelated (Singh, Squire et al., 1986).

In addition the most commonly used household models are unitary in their approach. They assume that decisions are made jointly and that the household maximises one set of objectives for all members (Ellis, 1988). Such an argument is based on the unrealistic belief that all individuals within the household have the same preferences and the same utility function.

While Chayanov considers both the consumption and production aspects of farm households, his main assumption is of the absence of a labour market, which restricts the predictive power of his model. Improved models of household behaviour have recently been developed. The main ones were developed by Singh, Squire and Strauss (Singh et al., 1986) and later extended by Low (Low, 1986). These models both have their roots in Chayanov's Subjective Equilibrium theory (later updated in the Nakajima model) and in a branch of neoclassical economic theory called the 'New household economics'. The latter originates from Becker's household production model (Becker, 1965) which describes the household as combining the time of household members with market goods to produce outputs or commodities it ultimately requires (Z-goods). For example, both time and market goods are needed to produce a meal, which gives the family nourishment (Ellis, 1988). In the Chayanov model, demographic characteristics determine the production and consumption behaviour of households (Ellis, 1988).

The basic model by Singh and colleagues concentrates on semi-commercialised farms (Singh et al., 1986). They take into account the interdependence of production, consumption, and labour supply for a household. This is done by combining the household concept with that of a firm. The household is assumed to be a price taker in all markets for commodities that it consumes and produces. In the production process, it is assumed to use a single variable input, labour, for which there is a market to hire in and hire out.

3.2.3 The Low model

Allan Low (1986) developed a model allowing differentiation between household members according to their potential for earning wage income. His model partially criticises the earlier models and partly builds on them. The model was developed to describe the determinants specific to peasant household behaviour among Southern African subsistence farmers (Low, 1986). Two important factors which Low takes into account are the presence of differential wage rates for different categories of persons and a dual food price, where farm gate rates differ from the retail price of purchasing food back from the market.

The model then explains the division of labour by the comparative advantage in the household sector versus the market sector. Only those household members whose opportunity cost of time, measured in terms of the real wage, is lower than their marginal physical product for labour would be predicted to work on the farm. For members with a higher opportunity cost in the labour market, they would be expected to work away from the farm in order to maximise household income.

The model predicts that household members with the greatest disadvantage in wage employment will produce subsistence first, followed by those with increasing comparative advantage until the requirement of goods is satisfied or until the next person's wage rate exceeds the opportunity cost of purchase (Low, 1986).

However, as with the other models, Low's model has been criticised because it relies on a labour market and market prices which makes a peasant farm similar to a profit maximising firm. It ignores intra-household allocation of resources and it does not adequately consider the element of risk.

3.2.4 *Intra-household resource allocation models*

Another group of household economic models has attempted to explain how time is allocated between household members, and how equal marginal revenue between wage work and home goods production is achieved.

Folbre (1986) criticises the concept of joint-utility function (as assumed in the above models) for ignoring the existence of possible conflicts and inequalities within the household. She adopts a bargaining power approach, arguing that women's unequal economic bargaining power relative to that of men limits their ability in pursuit of self interest (Folbre, 1986). Sen (1987) likewise considers it prudent to see gender divisions as bargaining problems which are a kind of co-operative conflict. She looks at the differential command over goods of men and women in terms of entitlement systems (Sen, 1981; Sen, 1987) wherein exists a bias against women in their inferior power.

3.2.5 *Modelling the impact of risk on household behaviour*

According to Lipton (1968), poor small farmers are of necessity risk averse (Lipton, 1983). Instead of producing at an optimal level where the expected marginal value product is equal to marginal cost, they operate at a point where the expected marginal product is greater than marginal cost, implying that they use variable resource inputs at below capacity level.

A number of authors cited in Ellis (1988) propose that peasant farmers are risk adverse. Schluter and Mont (1976), Dillon and Scandizzo (1978), Binswanger and Sillers (1983), Wolgin (1975) and Bliss and Stern (1982) conclude that this results in depending on suboptimal resource allocation. They argue that this risk aversion results in cropping patterns designed to increase family security rather than maximise output or profit. This may take the form of allocating a higher proportion of land to subsistence food crops than is warranted by relative net returns between food and cash crops. Alternatively, it may consist of cultivating practices such as mixed cropping, which achieve security at the expense of lower net returns (Ellis, 1988). Further, Wolgin (1975) and Norman (1974,1977) concur that households follow allocation practices designed to increase security rather than income (Ellis, 1988).

It is further argued that peasant risk aversion inhibits the diffusion and adoption of innovation, which could improve the output and incomes of peasant farm households. Risk aversion is assumed to be a negative function of wealth (Ellis, 1988).

3.2.6 Definition of the household: an overview

A major focus of the study is to understand the household response to chronic HIV morbidity. In the literature the concept "household" is far from self-evident. It can be understood in two senses. Firstly, households can be viewed as a social and economic institution, which is assumed to be organised on the basis of either close kinship relations or division of labour between a primary breadwinner and the primary child-bearer (Barrett & McIntosh, 1991). Secondly, the concept of households has been deeply influenced by ideology, such as that of the capitalist society, which states that members of a nuclear family should live together and those not related should not (Harris, 1983). And that a household has a functional, economic view, where common productive, consumptive and reproductive activities directed toward the satisfaction of needs take place (Netting et al., 1984).

In the context of this study, the concepts of household and family are treated as interchangeable. Though it also recognises that the concept of household is descriptive, while the term family is normative, with legal definition attached to it (Marsh & Arber, 1992).

Enormous varieties in kinship system and residential arrangement among households have been found in anthropological research. Over the years, anthropologists and other social scientists have argued that the household should not be viewed as a natural, universal unit, but as a complex, culturally varied and dynamic set of relationships (Hart, 1995). Due to this complexity and variability, the nature of household organisation and its relations cannot be assumed, as is frequently done in household surveys. Instead, it warrants further investigation, and many determinants must be considered, including the different types of power or bargaining relations between members of a household and their consequences.

According to Guyer and Peter (1987), "the ideological construction of the household, and the range of cultural meanings attributed to domestic unit, conjugal and age relations, and residential patterns are also critical to a fuller understanding of the dynamics of production and consumption that generate the diverse social units we call household". As such, there is no need to over-emphasise the formal structure and rule in order to analyse the economic relationships within the households, as in household survey (Guyer & Peter, 1987).

The complexity of conceptualising the household and the dynamic processes of household formation and reconstitution make the practical definition of household in a household survey extremely difficult (Copeland & White, 1991). There is no uniformity in the definitions of the household concept across different surveys. Nonetheless, they are all concerned with living and eating together, and sometimes with the pooling of funds (Deaton, 1997). For example, the Kagera Health and Development Survey defined a household as "a person or group of persons who live in the same dwelling and eat meals together for at least three of the twelve months proceeding the date of the survey" (Ainsworth & Koda, 1993b; Ainsworth & Rwegarulira, 1992).

In practice, the definition of household used is critical to the interpretation of a study. Thus it should be developed using in-depth information about household patterns of behaviour. For example, instead of the minimum of eating together for at least three months of the twelve proceeding the survey, a suggestion to improve on the Kagera definition could be that

members living together should preferably eat together for more than 50% of their main meals in a set time period. So, if dinner is a household main meal, which is also when household members are most likely to be together, then eating together for at least 4 times a week could be the requirement to be part of a household. In practice, the length of living together could also depend on the season for crop-planting, such as the length of time to cultivate or harvest the main crops, which could be the minimum time of living together to be considered as a household member.

In addition, for prospective studies of households, instead of setting the criteria for new-comers into the household, who must stay until the next wave of interview to be considered a household member, it may be possible for the dynamics of the household to be observed by recording the movements of household members in and out of their declared dwelling; as well as non-household member's movement into dwellings other than theirs. The length of their stay away from their household dwelling should also be observed, with a stay of longer than a few weeks or months resulting in their contribution to the other household being recorded. Although living for a length of time away from ones own or self-declared dwelling does not necessarily mean joining another household, it could have implications on the other household's resources. Such observation could then be used against those already quantified to cast more light on the survey's analysis, or provide some explanation of significant changes in the quantifiable variables, such as a significant increase in household income.

As households are likely to pool resources with other households, information on the movement of resources, especially income, to whom and when should also to be recorded. The more regularly the household receives or sends money, the more significant the transfer is on analysis of the economic impact of HIV/AIDS on the household. This is because with a regular transfer, it can be assumed that the household may be supporting close relatives or friends who could be close enough to be a household member, but s/he lives elsewhere, and does not eat with the household.

Therefore, in this study a household is recognised as a group of more than one individual (although a single individual can also constitute a household), who share economic activities necessary for the survival of the household and for the generation of wellbeing for household members. Although the household members have varying aims and objectives as well as individual goals, they also share a common concern for the wellbeing of each other.

'Household' in this study was a group of people linked by close kin relationship and usually sharing the same house (who have lived under the same 'roof' or within the same compound/homestead/stand at least 15 days out of the past year), although some relatives may migrate to other areas in search of work. Household members were all the people who usually live in the household and who eat their meals together or contribute to food expenses (when they are together they share food from a common source, i.e. they cook and eat together). Members contribute to, or share in, a common resource pool (i.e. they contribute to the household through wages and salaries or other cash and in-kind income, or they may be

benefiting from this income but not contributing to it, e.g. children and other non-economically active people in the household). Visitors were excluded from this definition.

3.2.7 *Household head*

A household survey normally organises and defines a household according to the identification of a single household member, who is assumed to be answerable to other members of the domestic unit (Harris, 1983). Generally this person is taken to be the most senior adult male in the household (where there are males in the household).

However, empirical evidence contradicts this assumption of the male benevolent dictator. Moore (1988) argues that the control and allocation of resources within the household is a complex process, which has to be viewed in relation to a web of rights and obligations (Moore, 1988). The management of labour, income and resources, he further argues, is crucially tied up with the household organisation and the sexual division of labour.

Even in cultures where patriarchal ideology is deeply rooted, it is found that the culturally assumed male household head only enjoys unwavering power in certain conditions. Thus, the authority exercised by the male household head, such as exclusive control over distribution, is rarely absolute (Harris, 1983). The practice of division of labour within the household also suggests that knowledge of consumption, production or child-rearing often does not exclusively belong to the household head, male or female.

In some societies, men pay their wives, and vice versa, for each's contribution to the other's crop production (Ramitanondh, 1995). Studies have also reported that female maintains a separate budget and purse, rather than pool their income into a common household funds (Hart, 1995). There is also evidence of female-headed households where children are found to be better off nutritionally than children in other households (Folbre, 1986). All these findings suggest not only that income and resources are spent differently when in the hands of females, but also the possibility of more than one wage earner and decision-maker in the household.

Referring to the context of the developing countries, especially in rural areas, the main problems with the concept of a single household head when conducting detailed economic household studies are:

(i) in the absence of this head during the interview, who would be the appropriate household member(s) who could act on his/her behalf; and/or

(ii) when this head is uncertain about the answers to the questionnaires, to whom should the head turn to for the correct answer, and should the head be allowed to confer with his/her household members.

Thus, it may be appropriate to appoint one or two household members to act on behalf of the head, in the absence or death of the latter, as well as allowing the head to confer with the appropriate household member(s) on issues he/she is uncertain about. This could be conducted under the supervision of the interviewers, to maintain confidentiality and accuracy in the data collected.

Acknowledging the argument, in the British census in the 1980s, adult households were given the freedom to nominate anyone they wished to as the household head. Households

were even allowed to nominate more than one person, as joint household heads! Despite the debate on the culturally assumed male household head and the single household head, 98% of men with spouses were nominated as first choice, while almost nobody insisted on being described as "joint head of household" (Marsh & Arber, 1992).

While the idea for joint heads of household was not taken up in British society in the 1980s, it is possible that this idea may appeal to the British population today or in other societies. Nonetheless, having learned from this experience, it may be wise to suggest new ideas or to rephrase the initial debate of the single household head.

The discussion on the theories of household, the dynamic and self-defining processes of household, and the nomination of a household head, acknowledge that the construction of household survey is not an easy task. The gender relations within and among the household also indicate that a household survey should not be used on its own in policy making, but be complemented by or conducted alongside qualitative studies.

3.3 Models of economic impact of adult HIV on household

There are a number of models of how illness can impact economically on households, and the strategies used by households and communities to minimise this. The processes involved are complex. In general, the economic impact of HIV infection will depend upon a range of factors, including the stage of infection, the role that the infected person normally plays within the household, and the resources and forms of support available from within and outside the household.

HIV/AIDS generally strikes adults during their most economically productive years, causing it to have far greater social and economic impact than any other disease. Adopting the definition by Feachem, adults are those aged 15-59 years, which include nearly all those who are economically productive, biologically reproductive, and responsible for the support of children and elderly dependants (Feachem, 1992a). Children are defined as those younger than 15 years, and the elderly are those aged 60 years and older (Feachem, 1992a). Moreover, three-quarters of men in the most-affected age groups are the main breadwinner or head of their households. Meanwhile, female-headed households are also on the rise in high prevalence areas.

HIV-related illness and death in households will lead to loss of earnings, increased medical expenses and the withdrawal of children from much-needed education. The latter causes potential losses in human capital acquisition and significantly reduces future earnings. Not only does the burden of medical and treatment costs fall mainly on the household, the death of HIV-positive parent(s) will leave their children as orphans, who are often too young and with insufficient skills to fend for themselves.

A simulation exercise based on data from Cote d'Ivoire has shown the extreme effects of HIV/AIDS has on household income, consumption and savings, indicating the high possibility of households being left in severe poverty, such that malnutrition among household members, especially young children, has been reported (Alban, 1999; Topouzis, 1998). The AIDS mortality of prime-aged adults has huge potential impact on families, children and community

(Hunter & Williamson, 1997). The impact of AIDS on children occurs because there are fewer breadwinners to support them (Barnett & Blaikie, 1992; Hunter & Williamson, 1998). Table 3.1 below summarises the potential impact of AIDS on households.

Table 3.1 Potential impact of AIDS on households

Potential impact of AIDS on families	Impact of AIDS on children	Community stresses
* Loss of members, grief * Impoverishment * Change in family composition and in adult and child roles * Loss of labour *Forced migration * Dissolution * Stress * Inability to parent and care for children * Loss of income for medical care and education * Demoralisation * Long term pathologies (increased depressive behaviour in children) * Number of multigenerational households lacking middle generation will increase	* Loss of family and identity * Depression * Reduced well-being * Increased malnutrition, starvation * Failure to immunise or provide health care * Loss of health status * Increased demands on labour * Loss of schooling/educational opportunities * Loss of inheritance * Forced migration * Homelessness, vagrancy, crime * Increased street living * Exposure to HIV infection	* Reduced labour * Increased poverty * Inability to maintain infrastructure * Loss of skilled labour, including health workers and teachers * Loss of agricultural inputs and labour * Reduced access to health care * Elevated morbidity and mortality * Psychological stress and breakdown * Inability to marshal resources for community-wide funding schemes or insurance

Source: (Hunter & Williamson, 1997)

The household is chosen as the main unit of analysis because it is where the impact of HIV/AIDS is felt most. As the afflicted households feel the burden of HIV/AIDS first, the first line of response should be to mitigate the impact on these households (Hunter & Williamson, 1997). As the smallest economic, consumption, production and reproduction unit, changes in the important variables, such as income, food consumption, medical and non-medical expenditures, can also be easily observed and captured.

Countries with high HIV/AIDS prevalence are witnessing the disintegration of their households, so research at household level must be pursued to ensure their survival, their wellbeing and to prevent the population from shrinking any further.

For the purpose of policy design, advocacy and implementation, it is important that the epidemic is surveyed from several levels of society, including the household, before finally assessing the impact at macroeconomic level (Alban, 1999). Thus, by understanding the responses at the microeconomic level, policies to alleviate the impact of HIV/AIDS can be targeted effectively and efficiently at the most deserving strata in society, where the impact is most significant (Deaton, 1997).

Table 3.2 A framework for considering the economic impact of adult illness

	Before illness	During illness	At time of death	Long term
Production and earning	- Organisation of household activity - choice of area of residence	- Reduced productivity of affected person - Reallocation of labour	- Lost output of deceased member - Lost output of deceased member	Reallocation of land and labour
Consumption and investment	- Insurance - Preventive health care - Precautionary savings - Transfers to other households	- Medical costs of treatment - Dissavings - Change in consumption and investment - Receipt of transfers	- Funeral costs - Receipt of transfers - Payment of legal fees	- Changes in type and amount of consumption and investment
Household health and composition	- Household size - Fertility	- Changes in allocation of time to health maintenance - Disutility of ill individual	- Loss of member - Grief of survivors	- Dissolution or reconstitution of households - Migration - Poor health of survivor

Source: Over et al. 1990

The impact of HIV/AIDS on a household will change as the disease progresses and after the household member with HIV/AIDS dies. Three main areas of impact can be identified, namely the impact on household production and earnings, on consumption and investment, and on health and composition. These different impacts occur during the four phases of the disease, namely before illness, during illness, at time of death, and over the longer term. Over et al. (1990) identified ways in which the household of a person with HIV would be affected. These are described in Table 3.2.

3.4 Measuring economic impact on the household

As with the definitional problem of the household concept, the tools to measure the economic impact of HIV/AIDS on households are also varied and diverse. There is no generic measurement or best practice to guide researchers, and no tool is available to conduct a direct comparison between household surveys undertaken by different researchers in different geographical areas. The problem with analysing impact is that it is a subjective state of affairs. There is no objective way of defining economic impact because individuals have different ideas about what constitutes a socio-economic impact (Foster & Lucus, 1991; Gertler, 1993).

One of the objectives at the 3rd International Conference on AIDS in Asia and the Pacific in 1995 was, "to assess the usefulness of different research approaches in answering questions about how best to define economic impact, how best to measure it, and how best to describe household coping mechanisms" (UNAIDS/WHO, 1995). From this conference, it was clear that it is impossible to deal adequately with all the possible impacts of the disease on a household (Basu et al., 1997). Thus, knowledge on the more important scope and type of impact, such as

the direct cost of the impact, and socio-economic impact respectively, is vital in defining and understanding the economic impact of this epidemic. Needless to say, the scope and type of impact studied, and the definition of economic impact, will depend on the hypothesis and objective of the household survey. Participants at the conference also felt that it is important to clearly distinguish between the impacts of, responses to and outcomes of HIV/AIDS (UNAIDS/WHO, 1995).

In addition, the factors affecting economic impact must also be identified, in order to define variables that will capture the economic impact. The World Bank report *Confronting AIDS* (1997) lists three factor groups that determine the individual, household and community economic impact of a morbidity and mortality. These are factors of the ill or deceased individual, such as age, sex, income and cause of death; those of the household, such as composition and assets; and those of the community, such as attitudes toward helping needy households and the availability of resources.

Observing and recording the changes in the important economic variables that concern the household, such as income, food consumption or medical and non-medical expenditure, are crucial to measuring the economic impact throughout the period of illness, and following the death of the individual. More research is needed to quantify the economic impact of HIV/AIDS illness on the infected individual(s), his or her household, the community and the society at large.

3.5 Models of household coping

The coping strategies used by households change over time, and will be dependent upon a range of socio-economic characteristics, including annual household income and the degree of ownership of assets and land. For example, when an individual first falls ill, they may reduce work and seek medical care. The lost income from work reduction, and increased medical expenses will result in fewer resources being available for the rest of the family to meet their needs. As a result, other family members may reorganise their time to minimise income loss and consumption. Some households may also sell assets to pay for medical care and other expenditures, possibly compromising future earning ability. Community factors will also affect the impact and coping mechanisms used. The use of services and/or support from neighbours or relatives may reduce the impact of illness. In settings where there is a large stigma and/or fear about HIV/AIDS, other members of the household may leave the home, or lose employment.

In the event of a household member becoming ill with HIV/AIDS, that individual and their household members will try to minimise the effect of the epidemic on the welfare of all concerned by adopting numerous coping strategies (UNAIDS, 1999). UNAIDS (1999) recently summarised household's coping strategies into three basic categories, namely strategies aimed at improving food security, raising income and alleviating the loss of labour, as listed below in Table 3.3.

Table 3.3 Household coping strategies

Strategies aimed at improving food security	-Reduce consumption of the item -Substitute cheaper commodities -Beg -Send children away to live with relatives
Strategies aimed at raising and supplementing income so as to maintain household expenditure patterns	-Income diversification -Loans -Sale of assets -Use of savings or investment -Sales of agricultural produce -Migrate in search of new jobs
Strategies aimed at alleviating the loss of labour, either in agricultural, domestic or other types of work.	-Intra-household labour reallocation -Withdrawing of children from school -Lengthening of working days -Hire labour and draught power -Change agricultural crop production and substitute with other crop -Relatives come to help -Diversity source of income

Source: UNAIDS, 1999 (with some adaptations)

(Over et al., 1992b) argue that a household's coping strategies are mainly dependent on the resources available to the individual and household, and the timing of the illness or HIV/AIDS infection. In destitute households, adult death from AIDS often has more serious and longer term impact than in better off households (World Bank, 1997).

There is no doubt that the household's coping processes are costly and may even be a poverty trap for the already under-resourced and poor households. At the individual level, coping may cause a reduction in income and farm or domestic production. At the household and community level, those who fill in for or assist the ill may be drawn away from other productive activities. Investment in education or human capital may also be sacrificed if children are taken out of school (Over et al., 1992b).

Since households have all the private information, most risk management can take place at the household level (Holzmann & Jorgensen, 1999). Donahue (1998) reported that households manage their internal economies by developing strategies to reduce their economic risk (by reducing their exposure to the epidemic) and to manage loss (by mitigating the negative consequences of a possible or actual loss). Households manage losses in three stages based on reversible and irreversible strategies (Donahue, 1998). Reversible strategies have little or no impact on the household's future income-earning or production capacity, such as reducing food consumption. Irreversible strategies are either difficult to undo or cannot be undone because they involve the sale of productive assets, which reduces the household's economic resources and future capacity to generate income and produce food. Table 3.4 below lists the three stages of loss management, along with accompanying strategies.

Table 3.4 The three stages of loss management

Stages	Loss Management Strategies
Reversible mechanisms and disposal of self-insuring assets	-Seeking wage labour or migrating temporarily to find paid work -Switching to producing low-maintenance subsistence food crops (which are usually less nutritious) -Liquidating savings accounts or stores of value such as jewellery or livestock (excluding draught animals) -Tapping obligations from extended family or community members -Soliciting family or marriage remittances -Borrowing from formal or informal sources or credit -Reducing consumption -Decreasing spending on education, non-urgent health care, or other human capital investments
Disposal of productive assets	-Selling land, equipment or tools -Borrowing at exorbitant interest rates -Further reducing consumption, education or health expenditures -Reducing amount of land farmed and types of crops produced
Destitution	-Depending on charity -Breaking up household -Distress migration

Source: Donahue (1998)

A comparison between Tables 3.3 and 3.4 indicates that most of the household strategies aimed at improving food security are reversible mechanisms, while the strategies to raise income and alleviate the loss of labour can be either reversible or irreversible. Hence, it can be deduced that so long as households are able to cope, irrespective of the effectiveness of the strategies employed, they will never be in destitution. At least this appears to be true based on available literature to date, for no surveys have reported destitution or dissolution of the household.

Becker's household theory not only captures the reallocation of time and activities in the household, but also theorises that the effectiveness and efficiency of such intra-household reallocation will depend on appointing the member with the most comparative advantage or efficient skills to substitute for the sick. This exemplifies the strength of Becker's theory in household surveys, because the household's coping strategies can be enhanced by applying the theory of comparative advantage to intra-household allocation of time and activities.

On the other hand, I should not neglect the strengths of Sen's model of co-operative conflict is an important issue that underlies the household's decision-making process to select the next best member for a task in light of intra-household reallocation of labour.

Hence, Becker's and Sen's theories of the household should be incorporated into future household surveys, in general and for HIV/AIDS studies. It would be interesting to explore this, for example, how household theories are inferior/superior/useful for conducting household surveys; and what we could do to adapt such household theories or to improve on it. The way to incorporate this is to compare the methodology from this study against that of the traditional ones.

3.6 Conclusion

Since Becker put forward his 'new household economic theory' in the 1960s, household theories have evolved in complexity to consider such issues as individual preferences among household members and gender relations.

The discussion on the twofold concept of the household (its dynamics and self-defining processes of the household) and the nomination of household head acknowledges that the construction of a household survey is not an easy task.

The analysis highlights the need in household economic surveys to extend the definition of household to include migrant workers and others with "claims" on the household, or in a position to make contributions to the household. It may also be important to replace the term "household head" with "household representative".

The recent developments in the economic theories of the household have highlighted the importance of collecting information on gender and power relations, allocation of time and money. This could help improve our understanding of the dynamics of the household, and subsequently unravel some of the underlying causes of the changes in the economic variables collected.

Methodologically, the findings highlight the importance in this study of collecting a broad range of data about the household. A better understanding of the impact of chronic illness and household coping can only be gained if detailed data on household composition, income, consumption and expenditure are collected, in combination with contextual information about key external factors, such as support from relatives.

CHAPTER 4

REVIEW OF STUDIES ON THE HOUSEHOLD IMPACT OF HIV MORBIDITY AND MORTALITY

4 Review of studies on the household impact of HIV morbidity and mortality

4.1 Introduction

This chapter reviews the empirical literature on the socio-economic impact of HIV/AIDS mortality and morbidity on households and communities.

Section 4.2 presents current research on the socio-economic impact of HIV/AIDS that have demonstrated its devastating impact. It reviews 5 in-depth studies on the household impact of an adult AIDS death, in Tanzania, Uganda, Côte d'Ivoire, Zambia and Thailand, and goes on to consider other previous studies on the economic impact of HIV/AIDS in Thailand. For each it discusses the aims, methods used and the key findings. To conceptualise household impact and coping mechanisms for this study, it is necessary to understand the distribution of impact and household coping mechanisms. Section 4.3 discusses the assessment of the household impact of HIV/AIDS morbidity, presenting knowledge on household survey methodology for assessing the impact of HIV/AIDS morbidity and household coping mechanisms. Section 4.4 presents the questions remaining and what research is needed to address them, according to the literature. Section 4.5 discusses the implications for this study.

4.2 Dimension of the socio-economic impact of HIV/AIDS

HIV/AIDS is not solely a medical issue, but has profound social implications. Normally, when a person is ill the household provides emotional and economic support, and care (Ainsworth & Rwegarulira, 1992). Experience from Thailand and elsewhere has shown, however, that HIV morbidity and mortality may substantially disrupt patterns of support.

HIV and AIDS are clearly taking an immense and growing human toll. The direct impact can be seen in decreased life expectancy, an increased number of orphans, mother-to-child transmission, and a slow down in economic and population growth rates (Stanecki & Over, 1997). The impact on development of AIDS mortality was first highlighted internationally in the 1997 Human Development Report. Life expectancy provides one-third of the weighting for the calculation of the Human Development Index (HDI), a measure of economic wellbeing. Bloom and Godwin (1997) examined the impact of the AIDS epidemic on the UNDP's HDI. They demonstrated that even though the epidemic is unlikely to affect average per capita income significantly, it may nevertheless adversely affect the HDI, primarily through its negative effects on life expectancy (Bloom & Godwin, 1997). In particular, they found that the HDI is reduced by nearly 0.002 for every increase in the cumulative AIDS epidemic. For example, Botswana experienced the greatest decrease in life expectancy, by 13.9 years, followed by Zambia (Whiteside et al., 1999). Their HDI also fell respectively by 26 and 10 points. It was estimated that Sri Lanka's HDI in 2005 will be 0.0019 below its projected level of 0.765.

Bloom and others (1996) used socio-economc and AIDS data from 51 countries to examine empirically the question of whether the AIDS epidemic has had a significant effect on economic growth during the past decade. According to their findings, the AIDS epidemic has had a negative but statistically insignificant effect on the rate of growth of real income per capita (Bloom et al., 1996). Specifically, they found that an annual average increase in cumulative

AIDS prevalence of 1 per 1,000 adults will reduce the annual rate of growth of real income per capita by a statistically insignificant 0.04%. This result was used to evaluate the impact of the AIDS epidemic on economic growth in Sri Lanka. According to their forecasts, the cumulative AIDS prevalence was expected to increase from its 1994 level of per 1,000 adults to about 1.064 per 1,000 adults by 2005, which amounts to an average annual increase in cumulative AIDS prevalence of about 0.095 per 1,000 adults. Based on these estimations, from 1994 to 2005, the AIDS epidemic would reduce the rate of growth of real income per capita by 0.0038 percentage points below its trade rate. This confirms that the epidemic's macro-economic impact in Sri Lanka has been very little.

A previous study of the economic impact of HIV/AIDS on households in Thailand found that the current practice, medical treatment costs per case of AIDS were more than per capita GNP (Pitayanon et al., 1997). Without substantial reductions in average cost per AIDS case, the medical costs alone will place tremendous strains on the ability of individuals and the Thai health system to cope with the disease (Pothisiri et al., 1998). The resources used to treat AIDS patients also raise concerns about the potential impact of the epidemic on the availability of care for other diseases. While the medical treatment costs of AIDS care are large in comparison to average income per capita in Thailand, the discounted streams of foregone earnings of the deceased AIDS patient are considerably greater. The impacts of fatal illness on surviving members of a household are at least partially absorbed by "coping mechanisms" of the household, extended family and community, which can be hypothesised to offset welfare loss to the survivors at some cost to the surrounding community. Such mechanisms include financial support for medical and funeral expenses, reallocation of time among household members, changes in household composition (including fostering of children and remarriage), and changes in savings, assets and consumption.

For a number of reasons, adult AIDS deaths may impose a larger burden on households and communities than do adult deaths from other diseases (Ainsworth & Over, 1992a). First, because HIV infection is transmitted sexually, in vitro to offspring, and sometimes from parent to child by blood transfusion, there is a strong probability of multiple cases within a household. This increases the probability of female-headed households, and of orphaned children, both of which are likely to have serious implications for the welfare of the remaining family. The sexual nature of the disease means that two of the only economic opportunities open to widows -- remarriage within the husband's family and prostitution -- impose serious social costs in the form of disease transmission. Furthermore, some survivors who are not infected are nevertheless stigmatised, which interferes with their ability to recover (Vithayasai, 1998). Secondly, the high prevalence of AIDS deaths in some localities may induce a breakdown in the ability of households and communities to absorb the costs of additional illness and deaths. Thus, the disease has a potentially large impact on healthy households in high prevalence areas.

Barnett and Blaikie (1992) looked at both AIDS affected households and AIDS afflicted households in Africa. They found that income and productivity decrease because neither ill

family members nor their caregivers are able to work sufficiently to sustain or expand earlier levels of output. Furthermore, school-age children often interrupt their education to become carers for ill parents or siblings, to contribute to household income or food needs, or simply because the family can no longer afford school fees (Barnett & Blaikie, 1992).

AIDS affected households are those households which have been affected by the disease either through the death of a family (not necessarily household) member who was contributing cash, labour and other support, or because the death or illness of a family member has meant that additional demands have been placed on existing resources (for example, orphans have joined the household). AIDS afflicted households are those which have directly experienced the impact of the disease through the illness or death of a household member. Households can be both afflicted and affected (Barnett & Blaikie, 1992). Most of the AIDS deaths are prime-aged adults. It has been suggested that the epidemic will increase the share of households comprised solely of survivors, particularly children (Barnett & Blaikie, 1992; Hunter & Williamson, 1998)

Using data collected and analysed from a series of interviews and case studies, Barnett and Blaikie summarised the main impacts of AIDS at household level to be the following:

(1) Loss of income-earning opportunities in both agricultural and non agricultural sectors;

(2) Diversion of productive labour time of still healthy family members to caring for the sick;

(3) Diversion of cash to medical expenses, both palliative and searching for a cure for afflicted household members;

(4) Diversion of food reserve to funeral ceremonies and cash for coffin and other funeral expenses;

(5) Withdrawal of children from school to reduce cash expenditure and increase available labour time on the farm;

(6) Altered patterns of consumption and production by households receiving orphans from other households that no longer have adults capable of caring for and looking after children.

4.2.1 Studies on the household impact of an adult AIDS death

There have been five in-depth published studies assessing the economic impact of adult illness and death from AIDS and other causes on surviving household members (Bechu, 1998; Menon et al., 1998; Mutangadura & Webb, 1998; Pitayanon et al., 1997; World Bank, 1997). In addition, there have been a number of other studies, for example studies on the impact of AIDS on households in Uganda (Barnett & Blaikie, 1992), Tanzania (Over et al., 1994) and Nepal (Neupane et al., 1993). The preliminary results from three studies on household impact were presented at the IAEN Economics of AIDS Symposium in Durban, South Africa in July 2000 (Kongsin, 2000; Kongsin et al., 2001; Lundberg, 2000; Mutangadura, 2000a; Nampanya, 2000). Compared with the other studies, the five in-depth studies used more detailed survey instruments and followed the households over time. The five studies were carried out in Kagera in Tanzania, Abidjan in Côte d'Ivoire, Rakai in Uganda, Chiangmai in Thailand and Kafue town in Zambia, with over 800, 107, 1,667, 324 and 345 households surveyed, respectively (Table 4.1).

Table 4.1 Summary of studies on the household impact of HIV/AIDS morbidity and mortality

Location and year of studies	Title	Study type/ Sample	Main issued explored	Key findings	References
1. Kagera Region of Tanzania (1991-1994)	Confronting AIDS Evidence from the developing world	- Longitudinal study, with control (a sample of both "healthy" and severely affected households was followed over 18 months, at 6- to 7-month intervals) - four-round panel surveys (over 800 households)	-What are the economic cost and impacts of illness and death from AIDS and other causes among adults on households and communities? - How can the government target patient and or survivor assistance programme in order to maximise the benefit to survivors for a given government budget?	The key findings present in studies: (Ainsworth et al., 1996; Ainsworth & Over, 1992b; Lundberg et al., 2000)	Ainsworth M., Fransen L. and Over M.: 'Confronting AIDS Evidence from the developing world', The European Commission, Brussels and the World Bank, Washington D.C., 1998.
(Kagera, Tanzania, 1992)	The Economic Impact of Fatal Adult Illness from AIDS and Other Causes in Sub-Saharan Africa		What are the economic effects of AIDS-related illness and death among adults on households in Northwest Tanzania? And what are the implications of these effects for survivor assistance programs?	The research confirmed that adult mortality and morbidity rates are extremely high in Kagera. The economic consequences for households of the high mortality can be summarised under three general themes, each with implications for policies related to AIDS and poverty alleviation in Kagera and in Tanzania	Measuring the Impact of Fatal Adult Illness in Sub-Saharan Africa: An Annotated Questionnaire. Living Standards Measurement Study Working Paper 90. Washington, DC: World Bank (Ainsworth, Martha, Godlike Koda, George Lwihula, and others. 1992)
(Kagera ,Tanzania, 1993-1994)	The Impact of AIDS Mortality on Fertility: Evidence from Tanzania	This research reviewed the channels through which increased adult and child mortality due to AIDS will affect individuals' demand for children and estimated the relationship between adult mortality and the fertility of surviving women	Projections of the demographic impact of the AIDS epidemic assume no interaction between heightened mortality due to AIDS and fertility behaviour.	The death of an adult female household member and the death of a sibling or a husband were found to be associated with lower recent fertility for surviving women. The reasons that surviving women have lower fertility in areas of high adult mortality might include reduced long-run economic benefits of higher demand for women's time; lower income following an adult death; and the need to absorb orphaned	The Impact of AIDS Mortality on Fertility: Evidence from Tanzania, World Bank, Policy Research Department, Washington, DC. (Ainsworth, Martha, Deon Filmer, and

Location and year of studies	Title	Study type/ Sample	Main issued explored	Key findings	References
				children, which might reduce a household's own demand for children. Elevated community child death rates were associated with higher recent fertility, as expected, whereas higher community adult death rates were associated with lower recent fertility. The results for the three proximate measures of fertility intentions from the Tanzania Knowledge, Attitudes, and Practices survey supported the finding of a reduction in recent fertility in response to higher adult mortality.	Innocent Semali. 1996.
(Kagera, Tanzania, published in 2000)	Sources of financial assistance for households suffering an adult death in Kagera, Tanzania	The study investigates the nature of coping mechanisms among a sample of households in Kagera, Tanzania in 1991-94, by estimating the magnitude and timing of receipts of private transfers, public assistance and loans by households with different characteristics.	- How well do informal institutions for risk spreading help households after a death? - How effectively do formal-sector interventions support household coping efforts? - What policies might be implemented to increase the effectiveness of local risk-bearing Institutions?	The less poor households (i.e. those with more physical and human capital) benefit from larger receipts of private assistance, but receive less public assistance initially after the death. On the other hand, poor households rely more than less poor ones on loans for up to a year after a death. Though the loans in this sample are largely private, these results suggest that the expansion of micro-credit programs as well as targeted grant programs may help the poorest households in areas hard-hit by the AIDS epidemic.	Lundberg, M., M. Over, et al. (2000). "Sources of financial assistance for households suffering an adult death in Kagera, Tanzania." South African Journal of Economics 68(5): 947-984.
2. Rakai, Uganda (1989–1992)	The economic impact of adult mortality on households in Rakai district, Uganda	- Cohort study (1989-1992) - 1,667 households - in-depth survey of 327 households	- Household consumption - Other social and economic measures of well-being - Effect of mass STD treatment on the incidence of AIDS	For the economic impact of adult mortality, the characteristics of two types of households (households that experienced an adult death between the first and the last visit and households that did not) at the time of the baseline survey suggested that - Most households that experience the "shock" of an HIV-related death suffer long-term economic drain through the loss of expected lifetime stream of income, - Among 327 households, two-thirds of these household sold property to pay for medical	Menon, Rekha, Wawer M. J., Konde-Lule J. K., Sewankambo N. K. and Li C. (1996). 'The Impact of Adult Mortality on Households in Rakai District, Uganda.

Location and year of studies	Title	Study type/ Sample	Main issued explored	Key findings	References
				treatment and burial cost - Households cope with an adult death by altering in size and composition - Households dealing with the death of an HIV positive adult incur economic losses through a depletion of some durable goods.	
Rakai, Uganda (1996)	Impact of AIDS on families in Rakai District	- Rakai survey (longitudinal sero-epidemiological study) - Households where there is no adult death of an HIV positive person (control household)	- The economic and demographic impact of adult mortality (15-50 year olds) are assessed	- The findings suggested that compared with an average monthly household income of US$18, AIDS related expenditures were US$20 for a burial and US$40 for the medical costs of a terminal patient. In addition, 65% of the households in the survey were obliged to sell property to cover costs of AIDS care - Extended family members and local community and non-governmental organisations contributed to medical and burial costs in 40% to 68% of the cost - Evidence reported that orphan households in Rakai are lower socio-economic status (measured in term of per capita income) than households without orphans	- Konde Luke JK, Sewankambo N, Sengonzi R and Wawer MJ (1996) Impact of AIDS on families in Rakai District. 11(2), 49 pages
3. Abidjan in Cote d'Ivoire (1996)	The impact of AIDS on the economy of families in in Cote d'Ivoire	- 107 households (no control group) did not include households that did not experience on AIDS illness and death	- Household consumption - Household expenditure on health	Following an AIDS death, average household consumption falls by 44% on previous years, and households with an AIDS patient spend twice as much on medical expenses as those without and AIDS patient. In mid 1990s, the average expenditure on care for male AIDS patient was 25% of annual net income in the north and 50% of annual net income (=US$300) in Mid-West.	- Bechu N. (1996), 'Les Effets du Sida sur l'Economie Familiale en Cote d'Ivoire: Analyse empirique de l'evolution de la consommation des menages touches en Cote d'Ivoire'. - (Bechu, 1998)
4. Kafue, Zambia, (December 1997 – February 1998)	The socio-economic impact of adult morbidity and mortality on household in Kafue district,	- Cross-sectional household survey (two urban resident suburbs in Kafue town : 177 and Kafue Estate : 168, a rural village in Kafue district : 213)	- How does morbidity and mortality affect household in three different socio-economic situation? - What are the coping responses employed by affected households/	This study has indicated that how poverty intensified the impacts, particularly in Zambia compound where constraints on capital and work opportunities prevent households from diversifying their income. The creation of a favourable macro environment and development of infrastructure has an important role to play in	(Mutangadura & Webb, 1998; Mutangadura et al., 1998)

Location and year of studies	Title	Study type/ Sample	Main issued explored	Key findings	References
	Zamia	- 578 households	communities? - What mitigation strategies can be recommended to help household cope?	HIV/AIDS mitigation. Female-headed households are especially more vulnerable and require the most assistance with coping. Findings also suggest that in order to help household cope better with the impacts, it is necessary to look not only at household level, but to encourage community based strategies which foster support to affected households, such as home-based care, labour capital sharing, orphan support and training and outreach programme on prevention.	
5. Chiangmai, Thailand (March 1994)	The economic impact of HIV/AIDS mortality on households in Thailand	- Cross-sectional household survey - 116 households with HIV/AIDS death - 100 households with non HIV/AIDS death but death from other chronic diseases (control group) - 108 households with no death (control group)	- Measure and analyse the economic impact of an adult AIDS death on a rural household in Thailand basing on a primary survey data of rural households in Chiangmai province where AIDS case were reported the highest in 1992-1993. - Investigate if there exists a linkage between adult AIDS mortality and low income and poverty in the rural areas - Ability to cope of households with different socio-economic status whether if an adult AIDS death is different from death by other non AIDS in term of economic impact on the households	The study found that the economic impact of an adult AIDS death was sizeable and significant after all coping strategies. The lowest income and the least educated households engaged in agricultural work were identified as the least able to cope. The economic impact of an adult AIDS death was more severe than the impact of death by other causes. This is due largely to the fact that AIDS infects a different population mainly the disadvantaged group with less ability to cope. Policy implications of the study and policy suggestions, in particular the broadening and strengthening of existing government measures to alleviate rural poverty to cover the rural households badly affected by an adult AIDS death were discussed.	(Pitayanon et al., 1997)

Each of these five studies used detailed survey instruments to explore the socio-economic impact of HIV/AIDS at the household level. Only the Kagera study was longitudinal.

The study objectives, research questions, study designs, methodological issues and main findings of each of these studies are outlined below. The study in Thailand is described in greater detail, because of its relevance to the current study.

4.2.1.1 Study on the household impact of an adult death in Kagera, Tanzania

The Kagera study was conducted by the World Bank in 1992-1994. It used information from three main sources, namely the Living Standards Measurement Study (Ainsworth & Over, 1992b), *Confronting AIDS: Public Priorities in Changing Global Epidemic* (Ainsworth & Over, 1997), and *Confronting AIDS: Evidence from the Developing World* (Ainsworth & Semali, 1998).

Study Objectives: The main objectives of the study were to characterise and measure the economic impact of adult deaths and to support the development of policies to assist remaining family and household members. Of particular interest were the ways in which households are able to cope with the death of one of their members by finding ways to maintain consumption despite acute income reduction.

Research questions: There were main six research questions: (1) Is the impact on the survivors of a prime-age adult death greater if the death is from AIDS? (2) Does the occurrence of an adult death in the household greatly increase the chances that the household will be poor in the subsequent period? (3) Are some kinds of household more vulnerable to the death of a prime-age adult than others? (4) What would be the effects, beneficial and otherwise, of targeting formal assistance programmes to households that have suffered the death of a prime-age adult? (5) What are the costs of operating survivor assistance programmes? (6) Given the different kinds of benefits delivered by different kinds of assistance programmes, can the cost-effectiveness of programmes be compared?

Study Design: The research work was conducted as part of a study of the 'Economic Impact of Fatal Adult Illness from AIDS and Other Causes in sub-Saharan Africa' conducted jointly by the World Bank and the University of Dar Es Salaam, Tanzania (Ainsworth & Koda, 1993a; Ainsworth & Rwegarulira, 1992; Over et al., 1994).

Methodological issues: In order to estimate the true nature and magnitude of impact, and understand its distribution across different categories of households and their members, the study collected data on all aspects of household behaviour that could play a role in the coping process. For example, a wide range of income information is collected on individual's formal sector jobs, including detailed questions about wages, bonuses and various forms of in-kind compensation. Information is sought on secondary as well as principal jobs. At the household level, lengthy agriculture and small enterprise modules are designed to yield estimates of net household income from these activities. A variety of household characteristics are also noted (including on health, education, fertility and migration) from the same households. Data were collected prospectively, in order to follow the dynamics of the coping process, and controlled for unmeasured, household-specific covariates. The following typology was used to describe the

possible impact of and coping responses to an adult death at different stage of illness (Table 4.2).

Table 4.2 Typology of possible impacts of and coping responses to adult death

	Prior to Illness	During Illness	At death	After death
Production effects	Organisation of activity	Lower productivity	Lost output of deceased	Reallocate land and labour
Investment and consumption	Informal and formal insurance	Treatment cost Forced liquidation	Funeral cost Asset transfers	Withdraw Children from school
Health and Composition			Loss of deceased	Sick survivors

Source: (Over et al., 1994)

The study considered three main forms of household economic impact: production and earnings, consumption and investment, and household health and consumption imposed by illness and death.

Main findings: Four waves of household survey were conducted, with households being surveyed every six months during the study (Ainsworth & Rwegarulira, 1992). In data collected in the first wave on households that had experienced the death of a female member, a statistically significant reduction in the number of hours children spent at school (especially for children aged 15-19 years) was observed. In aggregate data, no clear relationship was perceptible between the reported prevalence of AIDS at district level and household poverty. At the level of individual households, movements of household/family members into and out of the household were evident both in the six months prior to death and in the period immediately following the death of a household member. These movements, which frequently started in apparent anticipation of death, most probably had an important role to play in household coping. The effects of an HIV/AIDS-related death can be seen for up to 18 months before until 30 months after the death in a variety of economic indicators, including household expenditure, per capita measures of expenditure growth, household consumption and remittance income. Households which had suffered the death of a prime-age adult rarely disintegrated or dispersed; instead they used the strategies described in the household impact typology to minimise the net impact on the well-being of surviving household members. Where there had been a death, funeral expenditures were twice as large as medical expenditures prior to death. The rate of growth of total household consumption was more dispersed across households after a death and the median value was smaller. The epidemic was more likely to affect some parts of the population before others and the impact of the crisis differed significantly across areas (Ainsworth & Semali, 1998).

4.2.1.2 Côte d'Ivoire study on "Les Effects du Sida sur L'Economie Familiale en Côte d'Ivoire: analyse empirique de l'evolution de la comsommation des menages touches en Côte d'Ivoire"

A study on the socio-economic dynamics within families affected by HIV/AIDS in Abidjan and Dabou, an urban and semi-urban area in Côte d'Ivoire, was conducted in collaboration with the Centre International de l'Enfance, Paris between 1992-1993 (Bechu, 1998).

Study objective: The studies aimed to improve understanding of the social and economic consequences of HIV illness on family organisation, living conditions and coping strategies. Of particular interest were changes in the distribution of tasks and responsibilities, the social situation of children, modifications to expenses and transfers, and changes in the level and nature of incomes. Two phases of survey were undertaken.

Study design: The survey began with a sample size of 200 households that have at least one member with HIV/AIDS. After 7 1/2 months, only 107 remained in the study, with 93 households eliminated from the sample population by the researchers. Six interviews with the 107 households were held, one every 2 months. During this period, 24 people died of AIDS. The study report often refers to the period of the research with 200 households as the "first part of the survey" and the period with 107 households as the "second part of the survey".

Methodological issues: The first interview for the second part of the survey took place at the end of November 1992. The survey ended in December 1993. Since no information on the selection criteria for the 107 households was reported by the researchers, this report assumes that some of the households were eliminated either because the member with AIDS had departed or the household moved away from the study area.

Main findings: Marked changes were noted in the economic activities of households, with a steady decline in the number of economically active household members throughout the course of the study. The proportion of family income derived from the affected person declines over time and the proportion of money transfers from the broader "family of solidarity" increases.

Methodologically, a number of lessons were learned about conducting studies in a time of substantial social disruption. Obtaining reliable data in the household economic survey proved difficult, as many households did not keep track of income and expenditures.

4.2.1.3 Study on the economic impact of adult mortality on households in Rakai district, Uganda

In this study, the morbidity and mortality of an economically active adult is reported to cause changes in household size and composition, and a decline in the household's socio-economic status (Menon et al., 1998).

Study objectives: The study aimed to assess the economic impact of adult mortality on households in the Rakai district of southwestern Uganda, looking at the impact of "shock" on the household due to the death of an economically active adult (15-50 years), the impact of adult mortality on household composition and on socio-economic status indicators.

Study designs: A cohort study was conducted between 1989-1992 in the Rakai district in Uganda.

Methodological issues: The household survey questionnaire focuses on epidemiological issues regarding the effect of mass STD treatment on the incidence of AIDS, with only a few questions related to economic well-being.

Key findings: Mortality among HIV-positive adults was tenfold higher than among HIV-negative adults in the same age group. As such, it may be appropriate to infer that the underlying cause of death for the HIV-positives who died was HIV-related.

Among households that completed the questionnaire, detailed information on socio-economic and -demographic characteristics of the head of household was available in 1,343 households (80.6%); 27% of these households were headed by a woman. The average age of the head was 43 years, 43.7% of household heads had at least completed primary school, and 87% were Christian. For the survivor assistance, two key things were:

- Households cope with an adult death by altering in size and composition,
- Households dealing with the death of an HIV-positive adult incur economic losses through a depletion of some durable goods.

4.2.1.4 Study on the socio-economic impact of adult morbidity and mortality on households in Kafue district, Zambia

This study looked at the socio-economic impact of adult mortality and morbidity on households in urban Zambia (Mutangadura & Webb, 1998; Mutangadura et al., 1998).

Study objectives: The objectives of the study were to evaluate the socio-economic impact of adult mortality and morbidity on the micro/household level in an urban setting, and to identify emerging policy implications for short and long-term mitigation strategies.

Study design: The study sites were two urban residential suburbs in Kafue town - (1) Zambia compound, a densely populated residential suburb (n=177), and (2) Kafue Estates, a medium populated residential suburb (n=168) - and one rural site, 'Chanyanya' (n=213). A quantitative household survey was conducted in each site. Both quantitative and qualitative research methods were used. Fieldwork was conducted by means of a household survey, focus group discussion and visits to affected households over three months. The household sample was stratified by study site and whether a household had a chronically ill patient or a death in the past two years. There was no control group in this study. The qualitative method included in-depth interviews on 15 households revisited in each site and 5 focus group discussions in each area.

Methodological issues: Cross-sectional methodology was adopted in this study. The study conducted a household survey using a structured questionnaire. The questionnaire was used to get information on the household demographic, household income, household expenditures, assets ownership, health-related direct costs and coping strategies used by the households affected by adult death or chronic illness. The survey was conducted by 10 enumerators in the urban areas and 11 enumerators in the rural area. A two-day training session was conducted before the survey began.

Main findings: The survey of 636 households revealed that 19% contained a chronically ill patient at the time of the study and 15% had experienced an adult death within the past five years. Preliminary results indicated that the prevalence of chronically ill patients is about 20% of all the households. The study has shown that households cannot be viewed as homogenous

units in both the urban and rural sites, since this masks the important differences in the impact of morbidity and mortality, and thereby reduces the successful targeting of mitigating strategies. Women-headed households are particularly vulnerable and require the most assistance with coping. Findings also suggest that in order to help households cope better with the impact, it is necessary to look not only at household-level coping mechanisms, but to encourage community-based strategies which foster support to the affected households, such as home-based care, labour and capital sharing, orphan support and training, and outreach programmes on prevention.

4.2.1.5 Study on the economic impact of HIV/AIDS mortality on households in Chiangmai, Thailand

This study on the economic impact of HIV/AIDS mortality on households in Thailand was supported by ADB/UNDP and conducted in Chiangmai province, Thailand in 1994 (Pitayanon et al., 1996; Pitayanon et al., 1997).

Objectives: The objectives of this investigation were to assess the direct and indirect costs of an adult HIV/AIDS-related death on rural households in an area seriously affected by HIV/AIDS, and to examine the abilities of households to cope.

Study designs: A field-based survey of 116 households that had recently experienced an HIV/AIDS-related death was conducted. Responses in these households were compared with those in 100 households that had experienced a non-HIV/AIDS-related death, and in 108 households with no death. Cross-sectional and retrospective data were collected by interviewing the household head or, in some cases, his or her representative.

Methodological issues: Information was sought about the household's socio-economic background; health history; migration and work history; causes of household deaths; financing of illness; perceptions of the children and community leader; consumption patterns; investment in children's education; and support for household dependants (such as orphans and elderly relatives). Household children were also interviewed to validate information obtained from adults. Interviews were conducted in March 1994 with 116 rural households in Chiangmai which had had recent experience of an HIV/AIDS death. The households were selected from among those recorded as having had HIV/AIDS-related deaths during 1992 and 1993 in hospitals controlled by the Ministry of Public Health in Chiangmai Province. All households in the hospital records were first grouped by district of origin. The five districts with the highest number of reported HIV/AIDS-related deaths (Mae Rim, San Kam Pang, San Sai, Hang Dong and Fa-ang) were then selected, and their households were classified by sub-district (tambon) of origin. Only the 27 sub-districts with at least three HIV/AIDS-related deaths were chosen for the study. Of the 168 eligible households, the local public health workers in charge of each sub-district, who were supervised by senior public health workers at the district level, selected 116 for interview.

As the survey was specifically intended to explicate the economic impacts of HIV/AIDS on households, only those were selected where there had be a death in the past of someone of working age (15-65 years).

Main findings: The economic impact of an HIV/AIDS-related death was found to be generally greater than that for a non HIV/AIDS-related death during the same period (Table 4.3). The largest part of the economic cost was the loss of earning of the deceased, but loss of household income from other sources was also important – with concomitant decreases in household consumption. HIV/AIDS-related deaths also had an impact upon the structure and functioning of households, most particularly in relation to the care of children and the elderly.

Nineteen percent of the households surveyed sold assets and 60% spent all their savings in response to the epidemic. Orphans were left in 16% of the households with AIDS-death, 17% of these children were sent to orphanages.

Table 4.3 Direct and indirect costs of HIV/AIDS death and non-HIV/AIDS death on a household

	HIV/AIDS households	Non HIV/AIDS households
Direct costs (Baht)		
- Medical treatment	24,344	22,075
- Travel expense	1,571	1,332
- Funeral expense	38,440	46,850
- Total direct cost	64,355	70,258
Indirect cost (Baht)		
- Income loss of care provider	2,541	1,944
- Income loss of the deceased		
regular job (per month)	3,875	3,681
(per year)	46,500	44,172
- regular + supplementary job (per month)	6,050	4,655
(per year)	72,600	55,860
- Income foregone of the deceased (*)		
- regular job	714,800	550,500
- regular + supplementary job	1,188,750	705,350
TOTAL indirect costs		
- without supplementary job	717,341	552,444
- with supplementary job	1,191,291	707,350
TOTAL DIRECT and INDIRECT COSTS (Baht)		
- without supplementary job	781,696	622,702
- with supplementary job	1,255,646	777,552

(*) Average 30 lost work years for HIV/AIDS death and 20 lost work years for non-HIV/AIDS death with 5% discount rate *Source: Calculated from survey (March 1994) data*

Table 4.3 presents the data collected on the medical care costs for each HIV/AIDS patient. On average, out-of-pocket medical expenditure from the beginning of the illness until death equals 6 months of average total household income (THB 24,344). Income loss from regular work of the HIV/AIDS patients during sickness and after death represented a large proportion of household current income (83%). On average, THB 3,875 per month was lost. If supplementary work income is included, the amount lost would increase to THB 6,050 per month, which is 30% higher than average current household monthly income.

There were 361 persons in the households with an AIDS death, or 3.11 persons per household. This is rather low by rural Thai standards, but could arguably be explained by the recent death of a household member. The size of the households with a death from other causes was the same as in households with an AIDS death, but smaller than among households with no death, where it was four persons per household.

The study's main findings on households with HIV/AIDS illness and death were: (1) these households were mainly in the lowest income group in rural communities; (2) during the illness, the household was burdened by the very high cost of medical care (income loss, loss of labour supply); (3) orphans and the elderly became a problem for a large proportion of households; (4) the main coping strategies were reduction of consumption, sale of assets, borrowing, withdrawing children from school; (5) an extended family system and the community were expected to take care of orphans and the elderly (Pitayanon et al., 1997).

In term of orphans and the elderly, 15% of school-aged children were withdrawn from school and sent to work to help restore family income. Since compulsory schooling in Thailand is 6 years, children aged 12-15 years are most likely to be affected. Sixteen percent of households left orphans. Though 83% of orphans were taken care of by their extended family, the rest - 17% - became a community burden and were cared for in orphanages. Nearly half the households had problems with elderly care. Although the extended family could assist 41% of the elderly, 57% were left to take care of themselves and 2% ended up in orphanages and temples.

The study revealed the negative impact of HIV/AIDS deaths on the household labour supply available for family support, because the majority of the HIV/AIDS deaths were males of prime working age (15-44 years old). Their death represents a loss of income and labour supply, and affects the welfare of other surviving household members, their extended family and the community. Thirty-five percent of households with agricultural production felt a serious impact from the illness and death of a family member due to HIV/AIDS. About half of family production (49.4%) was lost from lost labour supply, leading to 47.5% reduction in family income.

To cope with the situation, households used various strategies, including use of savings, borrowing and selling possessions including land, vehicles and livestock, which each had a different impact. The main coping strategies of households with HIV/AIDS illness and death were the following;

- Fifty-two percent of the households reduced consumption by an average of 41%.
- From this reduction, 29% of households felt a serious impact on their welfare while 23% felt a small impact.
- Sixty percent of households spent all their savings on medical care costs.
- Nineteen percent of households sold assets ranging from land, vehicles and jewellery to livestock.
- Eleven percent of households borrowed money to meet medical care costs and maintain household consumption.

4.2.2 Economic studies on HIV/AIDS in Thailand

In this section, previous studies on the economic impact of HIV/AIDS in Thailand are reviewed. To date, there are very few such studies. The first and most widely referred to is the study by Viravaidya, Obremskey and Myers on the economic impact of AIDS on Thailand

(Viravaidya et al., 1993). The purpose of the study was to estimate the direct costs (health care and system costs) and the indirect costs (the value of lost wages) of AIDS in Thailand based on differing future paths of the epidemic. The study began by analysing the sentinel surveillance data, which suggested that the number of HIV positive people at the end of 1991 would be between 200,000 and 400,000. Projections were then made with the Interagency Working Group (IWG) AIDS and Chin/Lwanga models, which indicated that in the absence of effective prevention and behaviour change, 3.4 to 4.3 million Thais could be infected by the year 2000, and cumulative AIDS deaths could reach 500,000. Health care costs for people with AIDS are then conservatively estimated at between US$ 658-1,016 per year; which is 30 to 50% of annual household income for the average Thai family, or more than 25 times the current annual government per capita health expenditures. Indirect costs to the economy due to the premature death of adults in their prime working years are conservatively estimated to average US$ 22,000 per death. Between 1991 and 2000 the present value of the aggregate direct and indirect costs of the projected AIDS cases and AIDS deaths would total between US$ 7.3 billion and US$ 8.5 billion. The study also discussed the broader impact of AIDS on the Thai economy, particularly on tourism, foreign direct investment, and labour remittances from abroad. The study quoted that Thailand would spend an estimated US$ 100 million on AIDS prevention efforts in 1991-92. If there were significant behavioural changes and aggressive treatment of patients suffering from sexually transmitted diseases by the end of 1993, alternative projections indicate that by the year 2000, 3.5 million fewer people would become infected and US$ 5.1 billion could be saved.

Another study, completed in 1992, was on "Hospital Care Cost Analysis of ARC/AIDS Patients in Thailand" by Kongsin, Rerks-ngarm and others of the AIDS Division of the MOPH (Kongsin et al., 1992). The objective of the study was to determine the hospital care and external costs of AIDS related complex (ARC) and AIDS patients in Thailand by analysing cost components, including: 1) routine service cost (RSC) or labour and operating costs, 2) medical care cost (MCC) or costs for laboratory tests, procedures and medication, and 3) external cost (EC) or all expenses of the patient's family to support the admission.

The RSC (cost/in-patient day) was analysed by reviewing the data of the division of Provincial Hospitals, routinely collected from all provincial hospitals during 1988-1991. MCC (internal cost/admission) was studied by reviewing the medical records of 204 ARC/AIDS patients who were admitted in 26 provincial hospitals during 1988-1992. EC (external cost/admission) was surveyed by interviewing relatives of the 66 patients in 16 hospitals on the last day of admission during 1992. Data were adjusted for 1992 prices.

The most recent study on hospital care costs of people with AIDS in Phayao was a cost analysis of the treatment expenditure of AIDS patients in the in-patient department of Phayao hospital (Lertchayantee, 1998). The objectives were to study the size and cost components of people with AIDS (PWA) in Phayao hospital in the year 1996-1997. The sample size was 1,880 cases. The research was intended to analyse the cost components, including: 1) provider costs, including medical and non-medical costs, and 2) consumer costs, including direct and

indirect costs to HIV/AIDS patients. The study revealed the components and size of expenditure on treatment of PWA as: medicine 69%, other services 12.8%, food and room 11.9%, lab tests 3.9%, x-ray 1.5% and surgery 0.8%. The expenditure on PWA was divided into 3 categories: 1) the hospital responsible for all treatment of PWA was 57.1%, 2) PWA's out-of-pocket expenditure was 10.8%, and 3) the expenditure shared by the hospital and the PWA was 32.1% of the total expenditure. The most influential factor was the hospital responsible for treatments of PWA.

4.3 Assessment of the household impact of HIV/AIDS morbidity and its coping mechanisms

By the early to mid 1990s, much socio-economic impact work focused on the issue of household impact. The World Health Organisation, the World Bank, UNDP and UNAIDS all sponsored an array of studies designed to assess household impact. The reason for assessments of household impact becoming more common is that economists were moving away from focusing on aggregate figures designed to assess national impact, as it was believed that these tended to mask the real impact being incurred by those directly dealing with the epidemic (Forsythe, 1998).

Among households, it will be possible to distinguish between those that are directly affected and those that are indirectly affected by AIDS. Directly affected households are those in which a member is sick with or has died from AIDS. Indirectly affected households include those that help the directly affected household to cope, by taking in orphans, sending transfers to pay for funerals, helping out in the fields, and so on. However, to the extent that the epidemic of adult mortality caused by AIDS changes macroeconomic aggregates such as wages, it could be said that everyone in the nation is to some extent affected by the epidemic. Some figures predicting the impact of AIDS at the macroeconomic level are such that it could cripple the economy (Barnett, Whiteside et al. 2000).

Existing literature on the economic impact of HIV/AIDS on households generally reports on the extent of the impact on individuals, households and the community, as well as their coping abilities and strategies. The morbidity and mortality of an economically active adult has been reported to cause changes in household size and composition, and a decline in the household's socio-economic status (Menon et al., 1998).

To date, household survey has been the main research tool to collect information on the economic impact of HIV/AIDS on households. However, household surveys are not without difficulties, as they present methodological challenges. One of the foremost problems encountered is in defining the term household, which is fluid, evolving and constantly reconstituting. Having presented the various types of household coping strategies in the previous section, it is important that a household survey is clear in its definition and in measurement of economic impact.

Barnett and Blaikie collected data on changes in household structure over five years (Barnett & Blaikie, 1992). In the distribution of changes they found, ranked from most favourable to most unfavourable, although most households had progressed in the direction of

a more favourable producer/consumer ratio, for a large number of households, the majority of which were either AIDS-affected or afflicted, the direction was unfavourable. Of 36 households which were either AIDS affected or afflicted or both, only two showed a more favourable net movement in the producer/consumer ratio.

The effects of HIV/AIDS are felt on two key farm production parameters. First, household labour quality and quantity are reduced, initially in terms of productivity when the HIV-infected person is ill, and later the supply of household labour falls with the death of that person. Moreover, the probability that more than one adult per family is infected is high, given the heterosexual nature of HIV transmission. In addition, other household members will devote productive time to caring for the sick persons and traditional mourning customs, which can last as long as 40 days for some family members, and this can adversely affect labour availability (Barnett, 1994).

Second, HIV/AIDS will affect the availability of disposable cash income. During episodes of illness, household financial resources may be diverted to pay for medical treatment and eventually to meet funeral costs. Family assets (e.g. livestock) might be sold off.

If a household becomes unable to either supply agricultural labour internally or hire temporary workers, the composition of crops may be gradually altered, shifting from cash to subsistence crops in some cases (Barnett & Blaikie, 1992). Given the nature of the rural labour market, these are also times when wages or opportunity costs are highest. Another response to labour shortages may be to reduce the area under cultivation (Barnett, 1994; Barnett & Blaikie, 1992; Kongsin & Prayapvipapongse., 1992; World Bank, 1997). The shift from high labour-intensive crops to low labour-intensive crops will stop vegetable cultivation, resulting in a less varied and less nutritious diet.

To assess household impact and coping, I attempt to use a simple model of household economic decision-making. In this model, households are concerned with their welfare along many different contexts such as consumption, health status, education, and number of children, as well as welfare of extended family and unrelated community members (Gertler, 1993).

4.3.1 The impact of HIV/AIDS morbidity

Fatal illness produces a continuum of economic consequences for the individual and his/her household starting with the onset of the illness and continuing until well after the individual's death. There are four distinct periods of economic impact of a fatal illness: before the illness, during the illness, immediately after the death and the long-term impact of the death (Over et al., 1992b). Within each of these periods, there are four dimensions of economic impact on households and individuals: production and earnings, consumption and investment, household health and household composition (Ainsworth & Over, 1994). Further, the economic impact of HIV/AIDS morbidity is not limited to directly affected households; healthy households bear some of the costs. For example, healthy households may send transfer money to those suffering ill health in an implicit agreement that there will be reciprocity (Barnett, 2000a; Deaton et al., 1989).

The economic impact during the illness includes reduction in the productivity of the ill individual and in household income, additional medical expenditure, reallocation of the time of household members to care for the individual or to compensate for his or her lost labour, adjustments in savings, investments and transfers, and adjustments in consumption (Mutangadura & Webb, 1998). The loss of an adult due to chronic illness may actually trigger the dissolution or reconstitution of households, as children are fostered, orphaned or die and spouses remarry or migrate (Godfred et al., 1998; Lloyd-Sherlock & Barnett, 2000; Mutangadura & Webb, 1998).

Labour-intensive farming systems with a low level of mechanisation and agricultural input are particularly vulnerable to the impact of AIDS. Some of the effects of labour shortage in full impact communities documented in Africa include: 1) reduction in the acreage of land under cultivation; 2) delay in farming operations such as tillage, planting and weeding; 3) reduction in the ability to control crop pests and decline in crop yields; 4) loss of soil fertility; 5) shift from labour-intensive crops (e.g. banana) to less labour-intensive crops (such as cassava and sweet potatoes); 6) shift from cash-oriented production to subsistence production; 7) reduction in the range of crops per household; 8) decline in livestock production; 9) loss of agricultural knowledge and management skills (Barnett, 1994; Foster & Lucus, 1991; Gillespie, 1989).

4.3.2 Household coping mechanisms

Households may respond to HIV/AIDS in their decisions on production, expenditure, savings and investment. For example, they may re-allocate the time of remaining household members. They may spend more time on caring for AIDS patients, more time working (to compensate for the lost labour of a sick household member), and less time at school. In the longer run, the household may change its mix of productive activities. In terms of their expenditure decisions, as household members spend resources on the medical care of the AIDS patient, they may spend less on other household members. This may result in lower health status, lower educational attainment and lower consumption per capita for household members.

Barnett and Blaikie have examined a large number of African agricultural households and reported on their coping mechanisms (Barnett & Blaikie, 1992). In general they found the families to be fairly resilient to one or two deaths, but that household economic decline and collapse sets in when the number of deaths exceed this. Thailand may actually be quite different in this respect. Households in Africa are large because fertility is high; the loss of one or two workers may represent a fraction of household labour capability. High fertility may also mean large family networks that provide financial support from outside the immediate household. Thailand, on the other hand, has an average household size of only 4.1. The loss or illness of a single working individual in Thailand can then have substantial impact on a family's well being. Because of lower fertility, family or household networks in Thailand are also somewhat smaller, thus their capacity to assist a family in financial difficulty may be more limited. However, this may be offset by the fact that the earning power of an individual in Thailand is often substantially higher than that in Africa, that other employment opportunities

are often available and there are less mouths to feed in a family. This may leave the Thai family better positioned to obtain substitute income. How these factors will ultimately affect Thai households will need to be determined in future studies of affected households.

Coping responses can include spending savings, borrowing, and selling possessions including land, vehicles and livestock. It seems reasonable to assume that HIV/AIDS will intensify rural poverty, at least in northern Thailand, since the lowest income and lowest educated households are those least able to cope effectively with the demands posed by HIV/AIDS-related disease (Kongsin, 1997; Pitayanon et al., 1997). By applying basic economics, the reduction in household income will lead to a reduction in household consumption and savings (Kongsin et al., 2000b).

A household's ability to avoid reduced consumption and savings depends on its ability to maintain income (Donahue, 1998). The effectiveness of its strategies in this, in turn depends on the success of risk-reduction activities, as well as the amount of economic resources available to the household. The main economic resources are land, labour, capital (assets) and entrepreneurship. The stages of loss management indicate that households adopt a sequence of strategies, which is to use savings, sell assets, borrow community assistance and finally do nothing when verging on calamity or destitution. Such a sequence can also be observed from a simulation exercise based on the Thai study of (Kongsin et al., 2000b).

The main factors determining a household's ability to cope can be summarised as: household size and composition; age, sex and wages forgone by the deceased; access to resources; access to resources of extended families; and the ability of the community to provide support (UNAIDS, 1999; World Bank, 1997). Further to this, according to Over et al. (1992) a household's coping strategies will be dependent on the timing of the illness of the HIV/AIDS infection, which is categorised as before illness, during illness, immediately after death, and the long term effect of death. This introduces the dynamic of the epidemic, as was discussed in section (4.2.2).

This leads us to the importance of looking into household coping strategies throughout the epidemic to understand each strategy in ensuring a household's welfare and wellbeing. It also draws attention to the need to watch out for the criteria or signs that signal when a household will fall into destitution, disintegrate and dissolve – for example, how much coping, and what type, should a household employ before it disintegrates.

Thus, even without data on household responses, it is easy to see that the cost of coping can be sizeable and may even be detrimental to the survival of the household. For those already under-resourced and poor, HIV/AIDS may even be a poverty trap (World Bank, 1993). At the individual level, coping causes reduction in income and farm/domestic production. At the household and community level, those who fill in for or assist the sick may be drawn away from other productive activities (Feachem, 1992b).

Therefore, affliction by HIV/AIDS alters household time allocation considerably. This is particularly the case because of the remission-recurrent cycle of the opportunistic illness, which characterises AIDS and causes household members to organise their activities around the

gravity of the illness (Rugalema, 1998). The remission phase is the period when the infected member, and care-givers, could return to work. This phase is usually longer in the beginning of the AIDS illness and gets shorter with time until the infected person is bed-ridden.

4.4 Questions remaining

The review of five studies above (section 4.2.1) and some economic studies on HIV/AIDS in Thailand (section 4.2.2) reflect an attempt to quantify the economic and financial dimensions of HIV/AIDS at different levels. However, there is little evidence concerning the economic impact and financial impact on the household of the chronic morbidity stage of HIV/AIDS infection, despite the fact that the first and most immediate unit to illustrate the consequences of HIV/AIDS is the PWA's household. The studies by Pitayanon, Kongsin and Janjareon (1997) and Kongsin, Rerks-ngam et al. (1992) only touched on expenses, which do not fully reflect the total burden borne by household with chronically ill household members.

The Thai government has been actively involved in addressing AIDS policy on "prevention" and "care" throughout the 1990s (Kongsin et al., 1998). But there is no clear policy statement on helping the PWA's families to cope with the economic impact of HIV/AIDS. Without evidence on the extent and nature of its impact, it will be difficult for the government to design appropriate polices to help the HIV/AIDS-affected households to cope with the cost burden placed upon them. Community-based care and home-based care have been launched since 1994 in Thailand, and many projects currently in the communities are trying to support PWA's family. It would be useful to find out whether support services in the communities can help reduce the impact.

A range of interventions are needed to strengthen and support existing coping mechanisms so as to enable communities to respond more supportively to the serious illness of household members, including those to enable households to continue to support family members, those to assist families in accepting rather than denying the existence of chronic HIV morbidity, those to encourage the greater involvement of traditional healers in care and support, and those to improve access to essential drugs through community networks.

Very few studies have examined the impact of AIDS on community support structures, though there are good reasons to suggest that even where traditional community support structures have always operated as a "safety net" to preserve household welfare, these may be eroded as communities care for increasing numbers of dependants (Appsornthanasombat, 1994; Beesey, 1992; Bharat, 1998; Chandrtat na Ayuthya et al., 1998; Piyavorawong et al., 1999).

The lack of evidence and research on the socio-economic impact of HIV/AIDS morbidity means that several questions remain regarding:

- the impact of HIV/AIDS morbidity on families and community;
- the impact of chronic AIDS morbidity on household and community support structures;
- the short or long term strategies used by households and community to cope with AIDS, or how this differs within and between communities (Forsythe, 1998);
- whether support and care activities reduce the burden;

- the economic impact of AIDS on the community, and of coping with the cost of chronic HIV/AIDS morbidity;
- the percentage of Thai PWA that seek medical care and other services, the type and the amount of care sought or how much they pay for it;
- whether services in the communities are easily accessed by affected/afflicted households and can help them cope to minimise the impact.

In doing this, we need to determine how best to define and understand the socio-economic impact of HIV/AIDS on individuals, households and communities. Based on the previous research this includes: production and earning (family labour supply and family production); consumption e.g. changes in patterns of household expenditure; increased medical, psychological and economic burden of care; household structure and composition; and impact upon children in relation, for example, to nutrition and schooling.

4.5 Conclusion

Research to date on the economic impact of HIV/AIDS on households was focused primary on the economic impact of AIDS death. There are only five in-depth studies that have examined the impact of adult ***mortality*** from AIDS on surviving household members. These studies took place in the early 1990s and were set in Chiang Mai, Thailand; Abidjan, Cote d'Ivoire; Rakai, Uganda and Kagera, Tanzania (World Bank, 1997). The major findings were; 1) households use different coping strategies to deal with adult death from AIDS, 2) Households do not manage to totally preserve their well-being, 3) in destitute households, an adult death from AIDS often has a serious and long term impact (World Bank, 1997).

These studies are clearly limited because they only captured the short-term effect of an adult AIDS mortality on surviving members. Moreover, none of these studies have conducted comparison of household coping strategies within and between communities, and whether support and care activities reduce the impact of HIV/AIDS on the infected individual(s), or his/her household, and community.

The devastating impact of HIV/AIDS makes us wonder how, once illness sets in, households truly adjust, what are their responses and what can be done to help reduce a household's suffering. It is the search to answer these questions, especially the household responses to HIV/AIDS morbidity, which has led to this current study.

CHAPTER 5
STUDY DESIGN AND RESEARCH METHODOLOGY

5 Study design and research methodology

5.1 Introduction

This chapter describes the methods used to conduct the study.

Section 5.2 presents the study objectives, research questions, conceptual framework and key outcome measures. The dimensions of household impact and coping are assessed using on a variety of relevant key outcome measures. Section 5.3 presents a simple model of household economic decision-making to conceptualise the framework for the study analysis. Ideally, the information in the model could be collected using prospective, longitudinal studies. However, given the time limitations, cross-sectional household survey and retrospective studies are used. Section 5.4 presents an overview of the study design and sample, sample size, control group and operation definitions. Six phases of study implementation are described in section 5.5: 1) a formative research stage; 2) piloting and preparation for survey; 3) household interviews (a survey of households affected and not affected by HIV/AIDS morbidity, and between affected households within communities with different levels of available services in villages in the 'active' and 'less active' districts in Phayao province using semi-structured questionnaires); 4) data entry and preliminary analysis; 5) dissemination/policy implication and; 6) ten case studies (in-depth-interview). Section 5.6 discusses access and ethical approval. The methods used in the formative research are presented in section 5.7. Section 5.8 describes the community mapping and enumeration of villages. Details of the household survey are presented in section 5.9. The methods of in-depth interview for the ten case studies is presented in section 5.10. The methods for data entry and management are presented in section 5.11. This is followed by a discussion of the limitations of the methods used and practical issues associated with conducting this study in section 5.12.

5.2 Study objectives and research questions

The overall goal of the study is to inform policies to mitigate the impact of an adult illness from AIDS on household members and communities. Specifically the study aims to:

1) Explore and compare the short-term strategies used by households and communities to reduce the economic impact of chronic HIV/AIDS morbidity of an adult;

2) Document the levels and forms of utilisation of HIV/AIDS support and health-care services by households affected by chronic HIV/AIDS morbidity in Northern Thailand;

3) Explore whether the availability of services influences the economic impact of HIV/AIDS on the household, and the strategies used by households to cope with chronic HIV/AIDS morbidity;

4) Explore the implications of the findings for policies to mitigate the impact of HIV/AIDS morbidity impact at the household and community levels.

In doing this, the study sought to address the following questions:

1) What are the ways in which households/communities affected by HIV/AIDS try to minimise this impact, such as adopt strategies to mobilise existing resources (assets, income and expenditure patterns and future earning capacity). How do the short-term strategies used

differ between households within communities, between communities with different levels of available services?

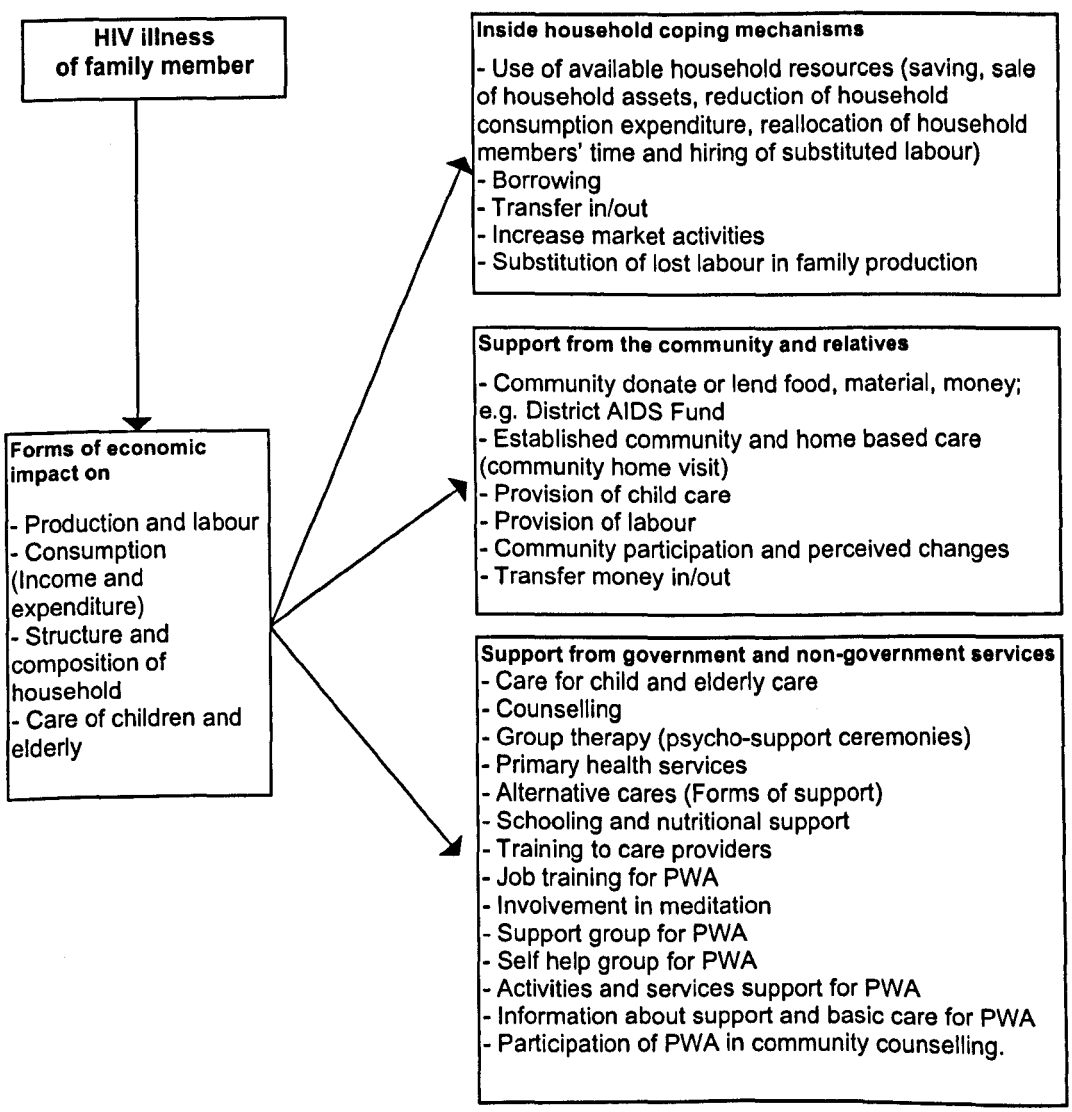
2) Are members of households in rural areas able to access and utilise support and health care services? Do the levels and patterns of utilisation differ substantially between communities with different levels of available services?

3) How, and in what ways, does the economic impact of chronic HIV morbidity differ between communities with different levels and forms of support services?

4) What are the implications of the findings for policies to mitigate the impact of HIV/AIDS in Northern Thailand?

Drawing upon the literature reviewed in chapter 3, a conceptual framework of how HIV illness impacts on households, and the different strategies used by households to reduce such impacts, was developed for the study (Figure 5.1).

Figure 5.1 Conceptual framework



HIV/AIDS chronic illness produces a continuum of economic consequences for the individual and his/her household starting with the onset of the illness and continuing until the *chronically stage* (approximately 6 months). In this study, information was collected on two

distinct periods of impact of the illness: prior to the illness and during the chronic illness. Within each of these periods, there were spheres of economic impact on households and individuals:

a) Production and earnings - including reduction in the productivity of the ill individual and in household income, reallocation of labour in the affected households.

b) Consumption and medical care cost expenditure - adjustments in savings, investments, receipt of transfers, take on loans and debts, changes in household consumption patterns

c) Household health and composition - lost production and income of the ill, re-allocate time of household members and household resources (change in allocation of time to health maintenance), issues of children being fostered and spouses remarrying or migrating. This could be reflected in household size.

The economic impact of chronic adult illness is not limited to afflicted households, as even healthy households bear some of the costs. For example, healthy households may send transfers to those households suffering with the chronically ill in implicit agreement that there will be a reciprocal arrangement. Expenditure on preventive health care is another way in which healthy households bear the costs of chronic HIV/AIDS morbidity in the community. Healthy households are also obliged to absorb orphans or widows and thus suffer an economic impact.

The framework was used to identify a range of indicators that could be used to describe household impact and the coping strategies used by households (Table 5.1).

Table 5.1 Key outcome measures

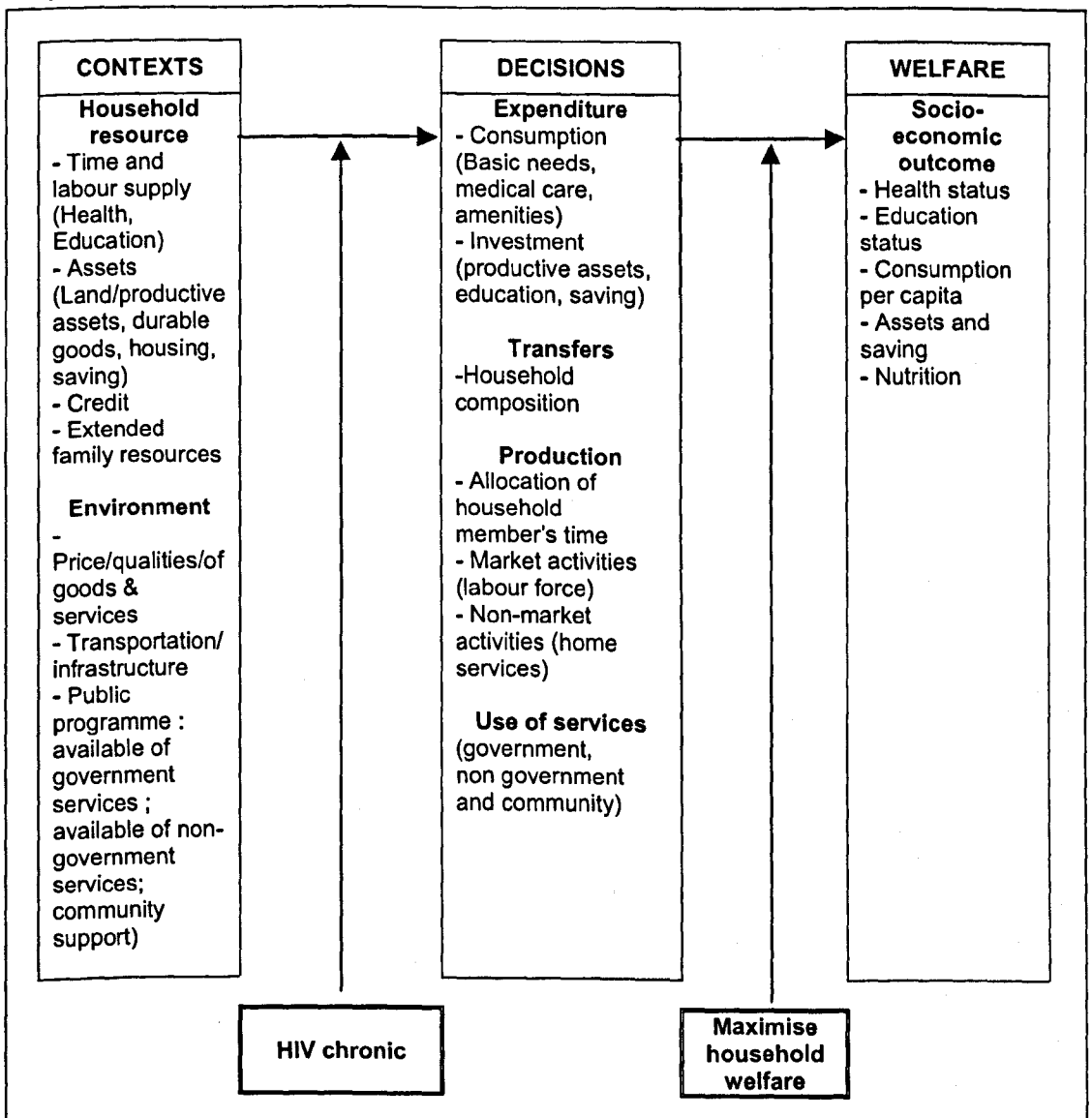
Key economic impact: type of economic impact	Indicators to measure the impact	Coping strategies inside household	Possible coping strategies by community and relatives	Possible coping strategies by services
Production and earning (family labour supply and family production)	- proportion of household stating serious impact on household production by type of household - proportion of household stating serious decrease in household income from lost production - reduced productivity of affected person 1) type of household production 2) waiting time for each treatment for PWA by type of household and sex - reallocation of labour 1) proportion of household engaging in family production, e.g. farming. 2) changes in allocation of time to health maintenance - size of household income decrease from lost production - size of impact on household production	- Adjustment of household available resources - reallocation of household members' time and hiring of substituted labour 1) No change (%) 2) % work harder to subsitude lost income 3) % need to find job 4) % assist in family work to substitute lost labour 5) % leave work to help taking care of the sick 6) % reduce previous work to help family 7) % change to new job for higher income 8) % of find supplementary job - increase market activities	- provision of labour - community donate food, material - community participation and perceived changes	- established community and home based care - health services utilisation - options on health services - support given to PLWHA ; health education, religion labour, social welfare district, approve funding for family, counselling, referal, group therapy, meditation practice, support group, self help group, job training
Consumption (Income and expenditure)	- medical cost of treatment including transportation to treatment site and the cost incurred by other household members in caring for PWA - adjustments of saving - changes in household consumption - receipt of transfers money	- Adjustment of Household available resources (saving, sale of household assets, reduction of household consumption expenditure) 1) % household reducing expenditure 2) % change in household food consumption 3) % household seriously affected 4) % household selling land, livestock, vehicle, etc. - borrowing 1) % household that borrow from the Bank, money lender, relatives - transfer money in/out - increase market activities.	- community donate or lend food, material, money; e.g. District AIDS Fund - provision of labour - community participation and perceived changes - proportion borrowing from co-operatives and revolving fund	- established community and home based care - health services utilisation - options on health services - support given to PLWHA ; health education, religion labour, social welfare district, approve funding for family, counselling, referal, group therapy, meditation practice, support group, self help group, job training

Key economic impact: type of economic impact	Indicators to measure the impact	Coping strategies inside household	Possible coping strategies by community and relatives	Possible coping strategies by services
Structure and composition of household	- change in household size - change in household composition	- Adjustment of household available resources - reallocation of household members' time and hiring of substituted labour - increase market activities	- community donate or lend food, material, money; e.g. District AIDS Fund - provision of labour	- established community and home based care - health services utilisation - options on health services - support given to PLWHA ; health education, religion labour, social welfare district, approve funding for family, counselling, referal, group therapy, meditation practice, support group, self help group, job training
Children	- change in number of affected young children in school/ out of school - change in proportion under care of a living parent - change in proportion under care of grandparent - change in proportion under care of relatives - change in proportion under care of orphan home, temple	- Adjustment of household available resources - reallocation of household members' time and hiring of substituted labour - % leave school for work	- community donate food, material, money; e.g. District AIDS Fund - established community and home based care - provision of child care	- established community and home based care - health services utilisation - options on health services - schooling and nutrition programme
Elderly	- change in proportion of household with elderly care burden on the PWA - change in number of elderly under care of the PWA - change in proportion under care of relatives - change in proportion under care of orphan home, temple - change in proportion of elderly working	- Adjustment of household available resources - reallocation of household members' time and hiring of substituted labour	- community donate food, material, money; e.g. District AIDS Fund - established community and home based care - provision of elderly care	- established community and home based care - health services utilisation - options on health services - care and support programme for the elderly

5.3 A simple model of household economic decision-making

Figure 5.2 shows the conceptual framework used to analyse the impact of chronic HIV/AIDS morbidity on the economy of the household. It was assumed that households are concerned with their welfare along different dimensions (health status, education status, consumption per capita, assets and savings, and some basic need for example nutrition and number of children). In this model households may value not just their own welfare, but also the welfare of extended family and unrelated community members (Gertler, 1993).

Figure 5.2 Framework of analysis



Source: Adapted from Family Welfare: A behavioural model (Gertler, 1993)

Economic theory describes how household welfare can be conceptualised as being achieved when basic needs, such as food, clothing and shelter, are fulfilled, as well as health and education (Gertler, 1993). Households have resources which they can use to pursue welfare. Household resources, listed on the left side of Figure 5.2, include human capital (number of household members, their education and their earnings capacity) and physical capital (savings, durable goods, productive assets and land). Both human and physical capital can be used to generate income that can be used to make purchases. The environment of the household places constraints on the use of these resources. The constraints include the prices and quality of available goods and services, such as food, housing, medical care, schooling etc; the level of community infrastructure, such as roads, and public transportation; the availability of public programmes (government, non-government and community support), including medical care, schooling; and the climate. Households pursue welfare by using their resources to generate income (production) subject to the constraints of their environment. The decisions made in this process result in welfare outcomes (e.g. consumption, health status, nutrition of children etc.).

When a household member with HIV/AIDS first becomes ill, the household is affected by an immediate reduction in its resources and welfare. When the individual falls ill, they reduce work and may seek medical care. However, households do not react passively. Economic theory suggests that they act to minimise the impact on their overall welfare. The loss of income from work reduction and increased medical expenses imply that there are fewer resources available for the rest of the household to meet their needs. Other household members may reorganise their time to minimise income loss and some may sell assets to pay for medical care. A particularly costly reallocation of time is permanently pulling children out of the school, which lowers the household's future earnings ability.

To ensure that households and communities can build up the resilience to withstand the impact of HIV/AIDS, support services are needed both from government and non-governmental organisations in the communities, but these can be a drain on community resources. In a pro-active community, the organisations may struggle to meet the increased demand for support services. Alternatively, in a less active community, households with PWA may not be provided with proper care or they may not know how to access the services. The household without support services could be hit harder by lost income and loss of labour supply. This may affect their welfare in a number of ways. Household consumption may be reduced because household resources have to be diverted to health care costs. Investment in children's education may also be affected if children are needed to help household production or to participate in market work to help increase household incomes.

While households with adults chronically ill with HIV/AIDS are directly affected, many others may be indirectly affected, such as extended families, which may transfer resources to directly affected families.

5.4 Study design

With limited time and resources for this study, a cross-sectional survey of households with chronic HIV/AIDS morbidity was decided on, rather than attempting a longitudinal study. Other healthy households where there had been no recent chronic HIV/AIDS morbidity or death were selected as the control group. To detect the economic impacts of HIV/AIDS morbidity on the households, only households with recent chronic illness from HIV/AIDS of members' aged 15-49 were included in the study. The effect of support service availability was examined by comparing households in districts with different levels of care and support services.

5.4.1 Sample size

The required sample size was calculated based on the results from the previous study in Chiengmai (Pitayanon et al., 1997). This calculation was based on an 80% power to detect the difference of proportion of households using savings due to an HIV/AIDS death and non-HIV/AIDS death. This calculation was based on Selvin S., 1991:80 (Cohen, 1977). We assumed that the proportion of households using savings due to an HIV/AIDS death was about 60% and non-HIV/AIDS death was about 50%.

$$n = \frac{\left\{Z_{\beta}\sqrt{\pi_0(1-\pi_0)+\pi_1(1-\pi_1)} + Z_{\alpha/2}\sqrt{2\pi(1-\pi)}\right\}^2}{(\pi_0-\pi_1)^2}$$

$Z_{\alpha/2}$ = Standard normal deviation (100 - α)% --> 95%

α = 5%

$Z_{\alpha/2}$ = $Z_{0.975}$ = 1.96

π_0 = proportion of HIV/AIDS household using savings during illness = 0.6

π_1 = proportion of non HIV/AIDS household using savings during illness = 0.50

π = (0.6-0.5) /2 = 0.05

β = Power of the test

Z_{β} (90%=1.282, 80% = 0.842)

Applying this equation;

$$n = \frac{\left\{1.282\sqrt{0.60(1-0.60)+0.50(1-0.50)} + 1.96\sqrt{2(0.50)(1-0.950)}\right\}^2}{(0.60-0.50)^2}$$

at power 90% the estimated sample is 225

$$n = \frac{\left\{0.842\sqrt{0.60(1-0.60)+0.50(1-0.50)} + 1.96\sqrt{2(0.50)(1-0.950)}\right\}^2}{(0.60-0.50)^2}$$

at power 80% the estimated sample is 138.62

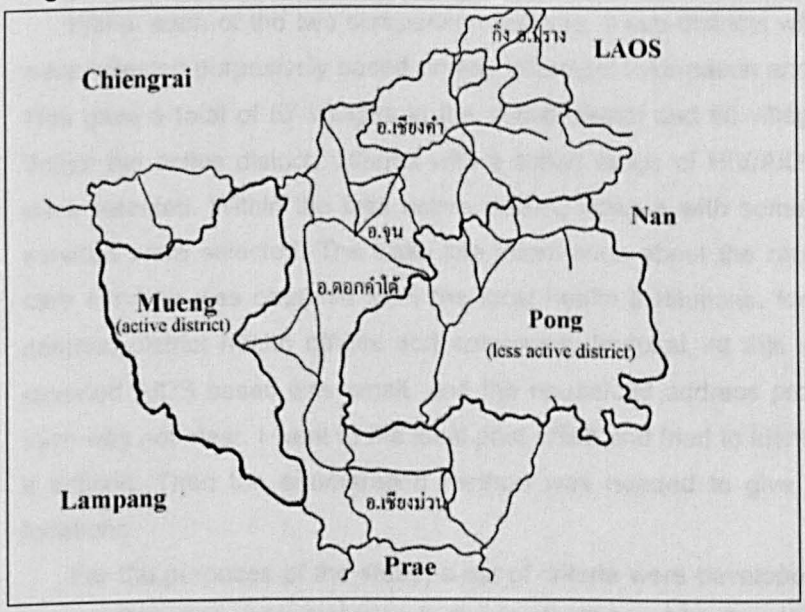
This calculation suggested that at 80% power it was necessary to sample 280 households in each of the two districts: 140 households with a recent experience of HIV/AIDS illness and another 140 households with no recent illness or death as a control group. In practice, 150 households from each location were selected (see the sample framework in Figure 5.4).

5.4.2 Sample

As discussed in the previous chapter, two districts in Phayao, "Mueng" and "Pong", were chosen as the study locations (**Figure 5.3**). Mueng district was identified by key informants as a community where there was an active response to HIV/AIDS, and Pong district as a community with a less active response to HIV/AIDS.

A preliminary selection of district, sub-district and villages in which to conduct the study was made, based upon existing information on the AIDS care and support services in Phayao, and preliminary communication with individuals working in Phayao. Information about the existing forms of activity (in addition to the main government services) within two villages in each of the two districts were given in Chapter Two. These support and care services were reviewed and finalised following further consultation with key informants during the formative stage of the study.

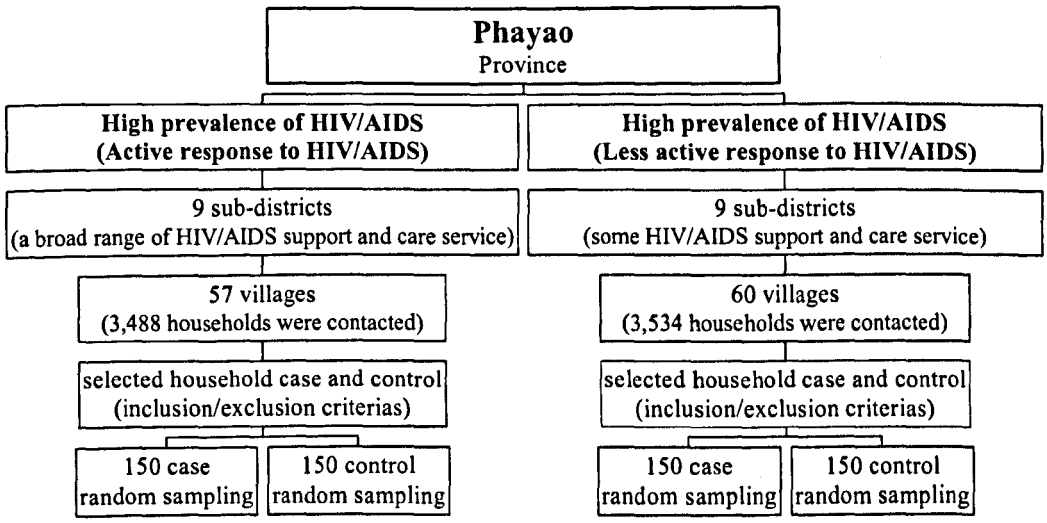
Figure 5.3 Active and less active study sites



5.4.3 Sample framework

Figure 5.4 shown the sample framework within Phayao. Two comparison districts were selected - one of which that had an active response to HIV/AIDS and another with a less active response to HIV/AIDS.

Figure 5.4 Sample framework



Within each of the two comparison districts, 9 sub-districts with high HIV/AIDS prevalence were selected purposively based on key informant information and previous review of services. This gave a total of 57 villages in the active district and 60 villages in the less active district. Within the active district, villages with a broad range of HIV/AIDS support and care services were selected. Within the less active district, villages with some HIV/AIDS support and care services were selected. The base line information about the range of HIV/AIDS support and care services was obtained from the local health institutions, for example, sub-district health centres, district health offices and community hospital. At this stage I found the number of reported AIDS cases was small, and the household address provided on the medical record form was not clear. I went to the local post-office and tried to identify the households, but found it difficult. Then the enumeration method was needed to give the full picture of the study locations.

For the purposes of the study, a set of criteria were developed to identify case and control households eligible for inclusion in the study (Table 5.2). These were developed and used in consultation with Phayao Provincial Health Office, the Health System Research Institution in Thailand, and the Clinical Epidemiological Unit, Faculty of Medicine, Chulalongkorn University. A household was eligible for inclusion as a case household in the study if: 1) it contained an HIV infected person having symptomatic HIV with a history of opportunistic infection, 2) a sick person was resident in the household for more than 6 months, 3) it was a well established household living in the village for at least one year, 4) no member of the household (aged 15-49) had died in the past 2 years, 5) no member of the household (aged 15-49) was too sick from other chronic illnesses to be able feed themselves normally. Similarly, a household was eligible for inclusion as a control household if: 1) it had no HIV symptomatic cases, 2) no chronically ill person was resident in the household for more than 6 months, 3) it had no recent chronic morbidity, 4) it was a well established household living in the village at least one year, 5) no member of household (aged 15-49) had died in the past 2 years, 6) no member of the household (aged 15-49) was too sick from other chronic illnesses to be able to feed themselves

normally. I selected control households from the same community of case households (by using key informants to help me map out healthy households, and then systematically sampling these). In practice, the general demographics were very similar to the case households.

Using the inclusion and exclusion criteria in Table 5.2, a number of case households were randomly selected. In each of the districts, a total of 150 case households were then selected by a random sampling. An initial classification of the socio-economic status of different villages was also made, in order to ensure that each study location is of a similar socio-economic status.

Table 5.2 Inclusion/exclusion criteria

Case Household	Control Household
Age of household member: 15-49 years	Age of household member: 15-49 years
Voluntary participation	Voluntary participation
Household randomly selected from the list of household identification numbers from 1) medical record and OPD Card in community hospital, 2) visiting an official in health station, 3) using community mapping to find location of household, and 4) interview with community leader.	Household randomly selected from the list of household identification numbers from 1) visiting an official in health station, 2) using community mapping to find location of household, and 3) interview with the community leader.
HIV positive, and having symptomatic HIV with OIs; According to MOPH definition, AIDS has been diagnosed for six months (from medical record) (Ministry of Public Health, 1997b)	Trace back whether used to have HIV test or not/ and the result is negative, no HIV symptomatic cases
Sick person was resident in household for more than 6 months	No sick person in household more than 6 months, no recent chronic morbidity
Well established household living in village at least one year	Well established household living in village at least one year
No member of the household (aged 15-49 years) has died from AIDS for at least 2 years	Never has a member of the household (aged 15-49) died from AIDS
No member of the household (aged 15-49 years) has been sick from chronic illnesses until they cannot feed themselves normally within 2 years	No member of the household (aged 15-49 years) has been sick from chronic illnesses until they cannot feed themselves normally within 2 years
No member of the household (aged 15-49 years) has died within the past 2 years	No member of the household (aged 15-49 years) has died within the past 2 years

5.4.4 Control group

When studying the household impact of HIV morbidity or death, it was very important to include a control group to enable comparisons to be made between affected and non-affected households. In this study, control households were households with no chronic illness or death in the prior 2 years. This would enable us to compare households with current morbidity with households with no current morbidity. The other possibility would have been to have a control group of non-HIV related chronic illness, such as cancer, diabetes melitus, or chronic renal failure, which would enable comparisons to be made between HIV related severe morbidity and other forms of illness[1]. The study used households with no chronic illness as the control, so that information related to the household impact of having a chronic illness in an adult aged 15-49 compared with a household with no chronic illness could be made. The choice of control was also influenced by my previous research experience - in conducting a household survey on the economic impact of an adult HIV/AIDS death in 5 major districts of Chiangmai Province

[1] Similarly, for studies focusing on the impact of HIV/AIDS mortality, the control group could be either death from other chronic diseases or no death.

(Pitayanon et al., 1997). This study involved conducting interviews with 116 rural households with recent experience of HIV/AIDS death, with a control group of 100 households where there had been a death from another chronic disease, and 108 households where no death had occurred. Although the study aimed to explore how a death from HIV/AIDS differs from a death from another chronic illness, in practice the control households where there had been a non-HIV/AIDS death were not comparable because the age of the person who had died differed substantially (HIV related deaths were much younger than non-HIV related deaths). Thus the findings of the study reflected the cost of treatment and third party payment, but did not reflect the extent to which there was a cost associated with loss of work.

5.4.5 Operational definitions

5.4.5.1 Household

The overwhelming majority of households in Thailand are family households, i.e. households in which at least one of the members is related by blood or marriage to the household head. Only about 4% of all households are one-person households or household consisting of unrelated individuals. Almost four out of five households are intact, i.e. the head's spouse is present, whereas almost one in five is headed by a man or a woman who is unmarried or separated from his or her spouse. Of these single heads, nearly three out of four are women (Campbell et al., 1993).

"Household" in this study was defined as a group of people linked by close kin relationship and usually sharing the same house (who live under the same 'roof' or within the same compound/homestead/stand at least 15 days out of the past year), although some relatives may migrate to other areas in search of work. Household members were taken to be all the people who usually lived in the household and who ate their meals together or contribute to food expenses (when together they share food from a common source, i.e. they cook and eat together). Members contribute to or share in, a common resource pool (i.e. they contribute to the household through wages and salaries or other cash and in-kind income or they may be benefiting from this income but not contributing to it, e.g. children and other non-economically active people in the household). Visitors were excluded from this definition.

The household definition was drawn up in order to avoid double counting of individuals who may live in more than one place. The household definition in this study was used only in the first section of the questionnaire, i.e. the Household Roster.

5.4.5.2 Chronically ill stage

The "chronically ill" definition was the stage of symptomatic HIV with the major signs (Guinn, 1994): (1) 10% weight loss more than one month, (2) Diarrhoea more than one month, (3) Fever more than one month, (4) Recurrent pneumonia (2 or more episodes in past 6 months). The affected household adult member should have at least two of these symptoms to be eligible and this was recorded in the check list paper.

5.4.5.3 Community

A community was defined as a village or a group of small villages sharing public infrastructure and services such as irrigation, means of transportation, temple, school and health centre.

5.5 Access and ethical approval

The research proposal was approved by the Ethical Review Committee, Ministry of Public Health, Thailand and the Ethics Committee at the London School of Hygiene and Tropical Medicine (see Appendix 5.1 for the completed approval form).

5.6 Study implementation

The study was divided into six phases; formative research, piloting and preparation for survey (community mapping and enumeration of villages), household survey, case studies, data entry and preliminary analysis, dissemination/ policy implications. These are described below;

5.6.1 Formative research stage

The formative research stage was the entry point to help guide the development of the survey tools and field survey methods. Within the two study districts, the formative research sought to identify the forms of support and services available for people living with HIV/AIDS in different villages and districts, as well as to explore perceptions about the ways in which HIV/AIDS impacts on the economic status of households. It could also shed some light on the ways households and communities minimise this impact, and how they may utilise different health services and other support services available in the community (see more details in Annex 5.2). The list of activities done in the formative research stage is presented in Table 5.3.

The research team and I were known by local state officials through an official introduction letter from the Ministry of Public Health and the Ethical Review Committee for Research on Human Subjects which gave the permission to do field work in Phayao province. A member of the Phayao AIDS Action Centre, the well-respected technical officer at the Phayao Provincial Health Office who has been living and working with the rural communities for almost ten years, introduced the research team and I to the local villagers and local village leaders. The Chief of Phayao Provincial Health Office facilitated our fieldwork as an external consultant to the study. The formative research began with a preliminary visit to the field sites, which included accompanying local health care workers as they collected health history information from village headmen and visiting key informants such as teachers, monks, and health workers, etc.

In January 1999, the study tools were refined, and the study protocol and questionnaires were submitted to the Thai Ethical Review Committee and the LSHTM ethical committee. The study was approved by the Thai Ethical Review Committee on February 18th, and by the LSHTM ethical committee on 16th April. In February 1999, the study started in Thailand with contact with the Phayao Provincial Health Office, presenting the letter of introduction from my institution (Dean of Faculty of Public Health) asking for their participation in the research. A

brief description of the research and related documentation, for example a topic schedule for the formative research stage, was also sent.

Table 5.3 Summary list of activities in the formative research stage

Duration/date	People met/interviewed	Issues explored
Beginning of March 1999	Discussion with local leaders (Phayao provincial medical officer and staffs)	Personal contacts with the head of Phayao provincial health office and one technical officer: disease control officer, both of them accepted to be my consultants as the Thai Ethical Committee recommended. Preliminary visit to the field sites, which included accompanying local health care workers as they collected health history information from village headmen and others.
End of March 1999	Interview with seven people living with HIV/AIDS (HIV affected persons were identified with assistance of health officers)	How could I approach the PWA families? What are the sensitive issues that I should not raise during the interview? What are his/her opinions about the topic of the study and the feasibility to find the households?
3 weeks in Bangkok and 3 weeks in Phayao (From April to June 1999)	(1) Social worker, AIDS division, Ministry of Public Health (1) Psychologist as a counsellor working with non governmental organisation (1) Epidemiologist from CDC/HIV Collaboration Centre, Nonthaburi (1) Doctor at Pong hospital, responsible to people with AIDS (1) Nurse at Pong hospital, responsible to people with AIDS (1) Kamnan[2] in less active district (1) head of household control in sub-district of less active district (2) care giver of people with AIDS in both districts (2) PWA living in active response to HIV/AIDS area (2) PWA living in less active response to HIV/AIDS area. (1) doctor at provincial hospital (1) nurse at provincial hospital (1) monk	Key informant interviews (I contacted the local people with AIDS (PWA) self-help groups instead of the health officers to arrange the visit of households; this was trying to prevent the bias of facts given by the respondents. But the others were personal contact.) (See details of issue explored in Annex 5.2)
3 weeks in Phayao (From 17th May to 4th June 1999)	Focus group discussions with community members from both districts consisted of (1) two with less poor adult women, two with less poor adult men, (2) two with poor adult women, two with poor adult men, and (3) two with young adult women, two with young adult men. In each case, one focus group held in each study location. (My colleagues at Mahidol University helped me conducted this method)	1. In your opinion how can we help and support HIV persons and AIDS patients? Who should be involved? 2. What do the people in this village think about the characteristics of household and household members in the study location (community). Are these people working and earning income? How many are still too young to work? How many are too old to work? How many are ill so cannot work? 3. What do the people in this village think about the status and well being of household at present? How does it compare with a few years ago? Why did it change? 4. How do the social/financial status and supportive services in your village compare with the other village? Do you have anything to worry about?

[2] an elected official who looks after the general welfare of the people in sub-district and is under a sheriff or "Nai Amphur"

Duration/date	People met/interviewed	Issues explored
		5. What major problems have emerged in the village? Why do the people in this village think they have emerged? How has the village has changed in the last five or ten years? 6. What do the people in this village think about the impact of illness costs and coping strategies on household assets, income, expenditure and consumption? 7. Who takes care of AIDS patients in your village (such as families, village health volunteers, village volunteers, health centre officials, relatives, neighbours, doctors and nurses at hospitals)? Have you ever taken care of these people? 8. Are there any AIDS patients in your village who have been ignored by families and relatives? How do they survive? Have you ever helped them? How? If you never help them, why? 9. What should government agencies do to support or guide communities in this matter? 10. In addition to government agencies, who else do you think should take part in resolving the AIDS problem (such as monks, community members and village volunteers)? Why? 11. What can people like you do to help solve the problem? Do people like you think the AIDS problem in your village will improve ? Why?

Seven informal interviews with people living with HIV/AIDS (PLWHA) were completed with the assistance of local health officers at the sub-district health centres. The interviews focused upon the forms of support and care services available for them, and their household coping strategies. The information collected helped inform the outline for the key informant interviews and focus group discussions. It was found that individuals (PLWHA) were more willing to participate in the study through personal communication than through introduction from local health officers, because they could express their own feeling about support services and care in the community. Therefore, the key informant interviews at the household level were arranged by the local PWA self-help groups. Households affected by HIV/AIDS, particularly in the focus group discussions, were identified with the assistance of local health officers at community hospitals and district health centres. Participants were invited two days in advance and the purpose of the discussions was also explained to village officials, especially in study areas where a group meeting might be viewed suspiciously as political activity.

Following the selection of the field site and interpreter training sessions, focus group discussions and key informant interviews were held with caregivers, village health volunteers, NGO workers, community leaders, traditional healers and health officers.

The key informant interviews and focus group discussions were recorded on a tape recorder since the respondents spoke in the local language (Northern Thai). Linguistics students from Mahidol University translated the results to middle Thai language. The

preliminary results of this formative work were used as key information to develop the semi-structured questionnaires used for the household interviews.

5.6.1.1 Key informant interviews

Key informant interviews were held with personnel in government and non-government organisations (including health centres and district hospitals, and NGO offices), counsellors and/or representatives from PLWHA groups, community leaders, monks, teachers, volunteers and villagers who have been involved with HIV and AIDS related activities at village level (see details in the Annex 5.2).

Face to face interviews with open-ended questions were held with key informants using an interview schedule to ensure that the issues on household impact of AIDS and its coping strategies were discussed, but at the same time flexibility in timing and the order of questions could be allowed. Additional questions on services available in the community were also asked to gain as much useful information as possible.

Face to face interviews were conducted with sixteen key informants who were highly knowledgeable on various aspects of HIV/AIDS (see detail in Table 5.3). The government health personnel provided information about use of government health sector facilities, reasons for it, and co-operation with the health sector programme. Private practitioners, local community leaders and counsellors provided information on the wealth of the community, cash availability, credit issued. This group of interviews also provided a valuable insight into the methods for the household survey. Representatives from people living with HIV/AIDS provided information about the definition of a household, how to ask questions around household income, who should be the respondents, and on health seeking behaviour. All the information was taken in field notes.

5.6.1.2 Focus group discussions

Focus group discussions were used to pursue further issues that came up in the key informant interviews. The issues taken up for the focus group discussion were generally based on the outcome of the key informant discussion and face to face interviews. Some of the issues discussed included coping mechanisms used by households, possible assistance from community and relatives, and the use of services.

In both districts, focus group discussions were held with community members: (1) two with less poor adult women, two with less poor adult men, (2) two with poor adult women, two with poor adult men, and (3) two with young adult women, two with young adult men. The poor status of the adults was identified by social workers at the community hospitals and local health officers from the low-income card scheme.

Participants in a group were of roughly the same socio-economic status and similar background in relation to coping with HIV/AIDS chronic morbidity. The age and sex composition of the group was designed to facilitate free discussion.

Each focus group discussion was conducted according to the recommended format and involved a moderator, an observer and an assistant for taking notes. Each was conducted in a circle in either the district health office or sub-district health centres in each district, in the local

language (Northern Thai) and lasted for about 45 minutes. An experienced moderator was invited and later I facilitated the discussion with an interpreter. All sessions were recorded, with written notes taken to supplement. This documented content of the discussion as well as the processes and interactions arising during the discussion. Important points recorded include: date, time and place, names and characteristics of participants, general description of the group dynamics (level of participation, presence of a dominant participant, level of interest), opinions of participants (recorded as much as possible in their own words especially for key statements), emotional aspects (e.g. reluctance, strong feelings attached to certain opinions) and the vocabulary used (see details in Annex 5.2).

The focus group discussions helped provide insights into how the household coping mechanisms used differed between communities with active and less active services (the outline of discussion topic is presented in Table 5.3). They were also used to help identify key indicators to measure the economic impact on the household, household income, household expenditure and health-care seeking behaviour of household members. About twelve participants were purposively selected either from workplaces, the community or from already set groups. A written list of topics was prepared for each group and formulated as a series of open-ended questions.

In addition, this preparatory time spent with the study communities was useful in other ways. Over this period, I visited households, interviewed people and observed community events. I was familiar with the communities' everyday life and knew a great number of the villagers. Every day ended with the local community chanting session. This provided me with the excellent opportunity to talk to many elderly women who would come to the gathering. These women helped to identify the location of "healthy" and "sick" households, and discussed household coping mechanisms in general.

5.6.2 Community mapping and enumeration of villages

At the start of the study I attempted to identify households with a chronic HIV infection using the national records of chronic HIV/AIDS cases for 1997-1998 from the Sentinel Seroprevalence System (report 506/1 and 507/1), linked with data on HIV-affected households recorded from medical records from the community hospital, reports from sub-district health centres in the villages, the PLWHA club at the Day Care Centre in the community hospital, village health volunteers (VHVs), community leaders, etc. However, despite the good surveillance system in Thailand, there were a number of households known to have infection that were not reported. Beside that, the HIV/AIDS morbidity and mortality statistics that could be retrieved from the local district health were also under-reported.

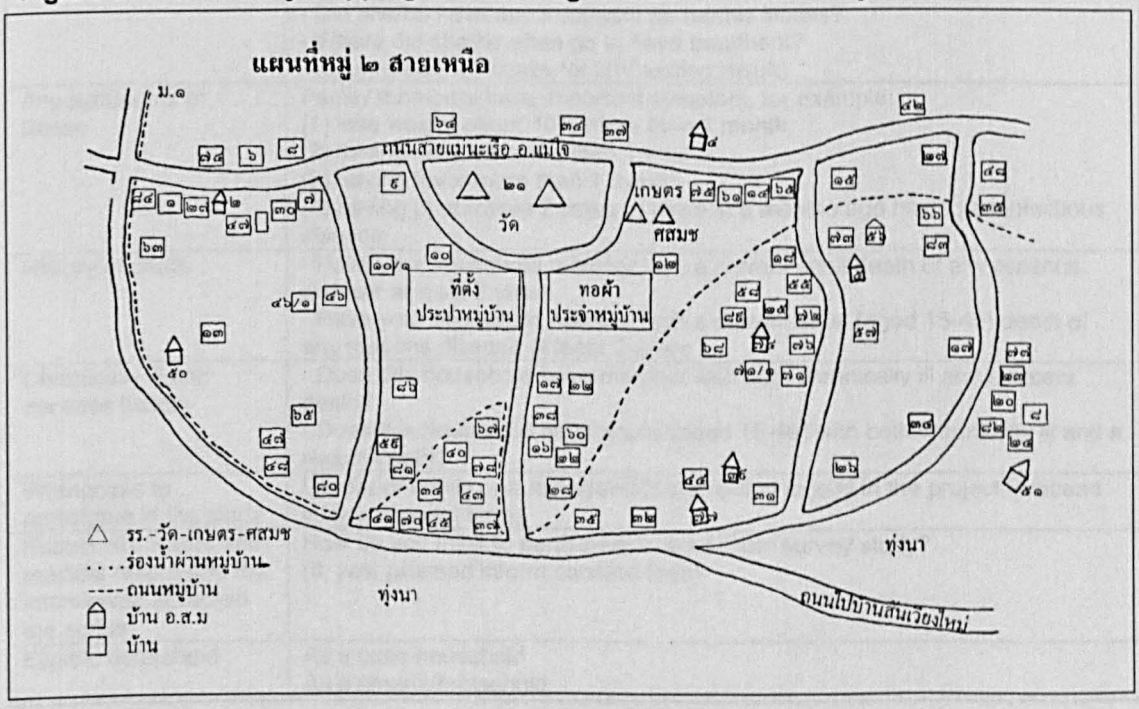
In addition, I found that the household addresses in the medical records from public health offices (both at district and sub-district levels) could not help us to access the households as planned, for a number of reasons: (1) the house could not found, (2) the house was not lived in, (3) the house was demolished or burnt, or (4) the household had moved out.

For this reason, at the start of the study it was necessary to map out each village and to identify households eligible to be included as either case or control households in the study.

A community enumeration was used to map out every household in each of the 117 selected villages. A brief screening tool was used to identify households where there were chronically ill adults (15-49 years), and to identify whether there had been an adult death due to a chronic illness in the previous two years. This was complemented by information collected from key informants. In total, between April and June 1999 about 7,000 households were contacted. This process of obtaining a complete listing of 'healthy' and 'chronically ill' households was time consuming, but an important step to ensure that the sample was not biased.

The research team worked with key informants (health personnel, community leaders, local organisations, monks, etc) to map out the study villages and identify households with and without chronic morbidity. A mapping of one of the villages is shown in **Figure 5.5**

Figure 5.5 Community mapping of one village included in the study



5.6.2.1 Enumeration survey

The purpose of enumeration survey was to identify all case and control households in the study districts, and use this as a sampling frame for the selection of the case and control households. The rapid enumeration survey started by using rapid and participatory techniques in the two districts to structure demographic and socio-economic profiles. Household respondents were asked questions on household address, household head, household member, household income, history of chronic illness, key symptoms and signs, characteristics of chronically ill adults (CIAs), history of deaths, etc. Table 5.4 (and in Annex 5.3).

Table 5.4 Details of the information collected by the enumeration survey

Topic	Questions asked
Address	House number, village number, village name, street, soi (lane), Tumbol (sub-district) , Amper (district), Phayao province, area of household location (municipal area, sanitation area, outside area)
Household head	Name of household head, Name of interviewee, Relation with the household head, How long have you been living continuously in (name of current place of residence)? (day/month/year)
Number of household members	Total number of household member
Economic status	Average monthly household income whether less than 3,000 THB or more than 3,000 THB Own house, land (asking) and other modern amenities (observation)
Chronic illness	- Having household member with chronically ill living in the household in last six months - Having household member (aged 15-49) with chronically ill in last six months - Did she/he have any treatment for her/his illness? - Where did she/he often go to have treatment? (enumerator will check for HIV testing result)
Any symptoms of illness	Family members have important symptom, for example: (1) lose weight about 10% more than 1 month (2) having diarrhea more than 1 month (3) having fever more than 1 month (4) having pneumonia 2 times or more in 6 months ago having an infectious disease
History of death	- Have your household member with a current adult death of any reasons disease at least 2 years - Have your household member with a current adult (aged 15-49) death of any reasons disease at least 2 years
Chronically ill and decease history	- Does this household have member with both chronically ill and a recent death? - Does this household have adults (aged 15-49) with both chronically ill and a recent death?
Willingness to participate in the study	Leader of family or a representative is willing to joint in the project (proceed inform consent form).
Known HIV status from medical record and the interviewee accepted the status	How do you think to participate in household survey study? (if, yes, proceed inform consent form)
Eligible household	As a case household As a control household

Using the results of the enumeration, the households in each sub-district were divided into two groups: (1) those that had had someone aged between 15–49 who was suffering for at least six months from chronic HIV morbidity and no recent death (called "household case"), (2) and households that had had no adult suffer either from a chronic illness or death in the last year (called "household control" or "healthy household"). Households to be included in the study were randomly selected from these "cases" and "controls".

The advantage of using community mapping and enumeration of villages was that it provided the complete picture of household distribution within the study communities. The sampling frame was drawn upon these area units and the rural community mapping (villages and village groups).

5.6.2.2 Selection of districts in Phayao

Purposive selection was used in selecting the active and less active districts for study, under the supervision of Phayao Provincial Health Office (PPHO) as well as the participation of field researchers in the study communities. With the purpose of covering all available forms of support offered to HIV-infected individuals and their families in the community, the locations selected for the research came from sub-districts where a great number of AIDS cases were prevalent. Moreover, they were also chosen for their high level or low level of public response to AIDS.

Figure 5.6 Enumeration survey

In the active district (on the Kawnphayao lake)	In the less active district
	

5.6.3 Household survey

Socio-economic and demographic data were collected in a cross-sectional household survey of 600 households in 117 villages in the two study districts from July to December 1999.

This data comprised of a number of variables that can be broken down into: 1) macrovariables (household contextual variables: demographic data, community structure, economic situation and pertaining to their coping mechanisms, their impact, etc), 2) mesovariables (variables concerning health care organisation and financing in the rural community, delivery of care and support services, needs and health behaviours), 3) microvariable (access, quality of care, utilisation, household economics, resource designated for health, perception of care and utilisation of care and services available in the commnuity).

5.6.3.1 Questionnaire design

The main household survey questionnaire was developed using information from the formative research stage, and consisted of both open and closed questions. The questionnaire was divided into three main parts: the information on the household (household record),

information on all household members (individual record) and the information about sick members in the case households (patient record).

These questionnaires drew upon the methods used in the household survey on the economic impact of an adult HIV/AIDS death in 5 major districts of Chiangmai Province, Thailand (Pitayanon et al., 1997), the Living Standards Measurement Study of the World Bank (Ainsworth & Munoz, 1986; Ainsworth & Van Der Gaag, 1988; Grootaert, 1986) and a study on the economic impact of tuberculosis at the household level in Thailand (Kamolratanakul et al., 1999). In addition, certain modules were developed to explore specific areas. These included a module that explicitly attempted to measure different strategies used by households to mitigate the impact of chronic HIV morbidity.

5.6.3.2 Survey questionnaires

A range of information was collected in the questionnaire (Table 5.5). There were 16 sections in the case household questionnaire and 11 sections in the control questionnaire. The case household questionnaire consisted of five different sections, such as questions on the illness of household members, history of illness and treatment cost, sources of income covering the cost of treatment, changes in time allocation of household members after someone becomes sick, and social discrimination (see the full questionnaires in Annex 5.4).

The variables explored in the household survey were as follows:

a) Household record: location area; type of household, household access to services in communities; assets wealth and housing; sources of health care cost; household production change; household consumption change; household transfer (money) in/out; household consumption expenditure; change in household consumption expenditure; household asset; household debt.

b) Individual record: household member migration; economic activities of household member; health status of household member; community participation; social support.

c) Patient record or PLWHA information (only the household case): morbidity information of the household member; morbidity impact on elderly and children; history of illness and treatment; other expenditure in last six months related to treatment and care; home-based care cost; hospital based care cost; time allocation of household members; social discrimination; the choice and role of caregivers; factors influencing care at home. (These factors included the beliefs and attitudes surrounding chronic illness in both the community and hospital settings, the pattern of health-care seeking behaviour, the context of diagnosis and its perception by caregivers, problems and difficulties experienced by caregivers, as well as the resources available to caregivers and their resource needs.)

The questionnaires were relatively long, with about 249 questions per household case and 148 questions per household control interviews. Household case interviews took about one hour and thirty minutes to complete.

Table 5.5 Outline of the household survey questionnaire content

Topic	Case/ control household	Source	Technical remark
Household Roster	Both	Pitayanon, Kongsin & Janjareon, 1997	- Register all people who usually live in this household and who eat their meal together or contribute to food expenses for more than one year - Member's name: Household head was the first member in the roster. Interviewers were particularly instructed not to miss anybody from the roster by assurance with the respondent before turning to the next sections. - Appointment and subsequent visits were necessary when household head/spouse was not present. If household head was not present for three visits, he/she was regarded as an incomplete record and was not in data processing.
Migration of household members	Both	Pitayanon, Kongsin & Janjareon, 1997	- Migration mean moving the household from one village or municipal area in the past to another village or municipal area, at present place for less than one year - If change municipal area or village because of expanding or separating by persons or households which were still in the same place, there was not migration.
Job of household members classified according to individuals	Both	Ainsworth and Munoz 1986; Grootaert 1986; Ainsworth and Van Der Gaag 1988	- Asked only those aged between 15-59 who stopped studying or finished school - Current job or main job means the job that takes most time or the occupation that gives the most income (in case of equivalent hours)
Economic status of household members	Both	Author's own	- Asked only those aged between 15-59 who stopped studying or finished school - Record of other incomes earned by members who received money from the items based on the total amount received during the previous year. - Interviewers had to be careful in assessment of individual income from net profit of self-employed when it was usually irregular throughout the year, and the household actual income in the previous year from other sources besides the main income.
Personal health of household members	Both	Author's own	- Self reported information from the respondents (mostly household head)
Utilisation of various services by household members Question on health service	Both	Author's own	The list of support services in the questionnaires was summarised from "formative research stage". The Thai Ethical Committee was concerned about the way to use any term related to "HIV/AIDS" in the tools so as not to create social discrimination in the study communities. Some respondents reported voluntarily some activities related to HIV/AIDS, e.g. AIDS supporting group, AIDS Funds in community, which would be answered under the items of other support services (please specify).
Wealth, assets and household residence Building, land, agricultural area, live-stock, household information and sanitation	Both	WHO,1998 Multi-country study on women's health and domestic violence against women	- Asked about the owner of cattle and various utensils in this household include model of the house - Direct observation by the interviewers and subjective evaluation of general hygiene of the household.
Data on illness of	Only case household	Author's own	- This information was used to understand the household characteristic and probability of adjusting oneself in other to

Topic	Case/ control household	Source	Technical remark
household member			purpose guideline to the government in offering further support. - Recall period was the previous 6 months. - Interviewers probed the stage of chronic illness by the operation definitions. - Chronic illness is defined as any symptom, which had lasted for more than six months and was still persisting.
History of illness and treatment cost	Only case household	Author's own	- Interviewers had to ask for information on who supported their costs: from individual, family or community both GO and NGO. - Recall period was the previous 6 months. - Interviewers had to carefully assess the frequency of services used and expenses incurred, due to very long recall period.
Source of income covering the cost of treatment Sources of income/ expenditure for treatment	Only case household	Kamolrata-nakul, P., H. Sawert, et al. (1999).	- Interviewers had to validate what sources of income the family used to pay for the treatment of the patient during the last 6 months.
Change in time consumption of household members		Kamolrata-nakul, P., H. Sawert, et al. (1999).	- Interviewers had to ask about changing time allocation: after a household member becomes sick it might make other household members them change their time consumption patterns.
Household money transfer Money transfer in and out	Both	Kamolrata-nakul, P., H. Sawert, et al. (1999).	- Interviewers had to ask about changes in household money transfers, which was providing information on money transfer into the household and transfer out at the time before sickness compared with now. - Household control was asked the same things but not related to sickness.
Household consumption: List of expenses	Both	Author's own	Ask only case households case about changes in household expenses. If a household member who used to work and earn some income became sick, it would have some impact on the household consumption/expenses.
Household debt	Both	Author's own	Interviewers were trained not to push or over probe the respondent to answer all of the questions. If the respondents were not ready, the interviewers were told that they should ask the respondents for a time that would be more convenient.
Social discrimination	Only case household	Pitayanon, Kongsin & Janjareon, 1997	This section was asked only of case households where the respondents had known his household member status of HIV/AIDS and was willing to answer these questions.

5.6.3.3 Interviewers: recruitment and training

The study used local public health officers who regularly visit households as interviewers. This was to avoid the problem of stigmatisation, which could be caused by using outsiders to conduct interviews. It was also felt that being involved would help local health personnel develop skills and techniques that would be relevant for their future work. It was also felt that household members would feel more comfortable giving confidential information to a local public health officer who they know and who knows about the family health problem.

The interviewers for the household survey were 21 male and female health care officers selected from both districts, who spoke the local language fluently (Northern Thai or Kam

Muang). A female translator who was a caregiver and village health volunteers (VHV) with experience in the care of PLWHA, and who spoke "Kam Muang" as a first language, assisted where necessary. All of the interviewers had a background in public health nursing, health education and community development. One of the male field researchers came from a background that included community health nursing and hospice care.

The interviewers required several training sessions to enable them to use the questionnaires. Topics included in the training were objectives, definitions, recall period, selection of respondents and criteria to identify the chronically ill. The training included a roll-play interview. Incentives were paid for each complete questionnaire.

In the training, special attention was paid to the importance of documenting in detail changes in non-monetary terms (such as selling a house, land etc. to raise medical fees, number of times attended particular health services etc.), and how to put a monetary value to this.

5.6.3.4 Pre-test of the questionnaire

A small pre-test of the questionnaire was conducted in June 1999. This highlighted that the research team had difficulties in assessing individual income, especially profit from self-employed work. Minor changes to the questionnaire were made after the first pre-test.

A larger pre-test was done one month later, after further training of the interviewers was conducted. This training clarified misunderstanding and included further practice and feedback interviews. Twenty-five households (both case and control) in the active district (Mueng) as well as 30 households in the less active district (Pong) were interviewed. There were only minor changes to the questionnaires following this.

5.6.4 Case studies

Ten case studies involving individual households were conducted. These aimed to reflect commonly found scenarios, such as male or female members being sick, death in the last year, recent migration and associated loss of employment, the possible contact with services in the community, and a supportive or non-supportive community.

Respondents were selected following consultation with existing service providers as well as information obtained from the preliminary results of the main survey. The respondents were selected from each of the study communities, and included men and women of different ages. Selection depended upon whether these case households would be ready to give me more in-depth information on their households.

The information from the case studies was used to help guide the analysis and interpretation of the data collected in the household survey after obtaining informed consent, including:

- more detailed or in-depth information (e.g. household expenditure pattern; income from all assets; borrowing, credit and debt; assistance from service programmes; household enterprise; domestic food production; use of health services; household list of participation in household tasks (such as cooking, washing, and cleaning); participation in community activities outside the household); and

- more accurate data (e.g. household income; responses to and costs of illness).

This allows comparison of what people say and what they do, and captures changing situations as new events take place or actors arrive (e.g. changing household income and assets as a result illness and coping strategies).

5.6.5 Data entry and management

All codes in the questionnaire were filled in. The codes were given in the space underneath the question to which they refer. The coding book as well as variable lists and the record form for data entry were produced. Most questions required usage of numeric codes where appropriate. SPSS release 9.0 and/or STATA 6.0 packages were used. The qualitative data were manually analysed using the technique of clustered factors or topics. Results were compared to the existing information.

5.6.5.1 Data entry and cleaning

All quantitative data were double entered by two data entry clerks. Double entry and cleaning were done with a relational database in Microsoft Access 97. The cleaning process of the two data sets at the first step started with frequency analysis, define missing variable, recode and retype of variable for analysis. The first step was descriptive methods, which aimed to categorising data as appropriate to help us to know about the characteristics or overall data of all variables.

Validation of the database was done from the double entry with Epi-Info program (2 data sets) and checked against hard copy or original information from the questionnaires if the data did not match from the data validation.

The second step of the cleaning process was done with cross-tabulation and t-test to define outcome and exposure. In this step, data were stratified by essential interested factors or variables such as factors used to compare case and control households or the intervention in each district, e.g. tabulated by sex, district, or by case/control. The result from this step was showed the relationship between two factors such as sex and district, case and control household, etc. If there was an association with statistical significance it meant the two variables had some effect on each other. It was important to know and present this before comparing both districts. After knowing the characteristics or pictures of the data set, I then moved to the question of how many differences, and how great, there were between case and control in other essential aspects, such as number of members per household or income in the last year, or any continuous data like the difference in distance to tap water pump from home. This analysis is performed using t-test. I conducted all of the analysis using SPSS and STATA.

5.6.5.2 Data analysis

Analysis of data was undertaken in accordance with the study hypothesis. Therefore, it focused on the following five majors points: (1) direct and indirect cost of illness; (2) cost of coping strategies; (3) frequency and tabulation; (4) Odd ratios and (4) multivariate analysis. The quantitative data were analysed in the light of the econometric model and estimated the parameters of factors which affected the household economic variables and use of services in

the study communities. This section describes how to manage the data and then the framework.

5.6.5.2.1 Direct and indirect costs of illness

Costs or expenditures, direct and indirect, which were incurred by the household due to chronic HIV morbidity, were calculated using the standard cost analysis (Dunlop, 1987; Fox & Thomas, 1987; Over et al., 1988). The direct costs covered out-of-pocket expenditure and travel expenses relating to the use of different services. The indirect cost was calculated from foregone earnings of the sick person. In this study, the regular job income of the sick person was used with a 5% discount rate to calculate the foregone earnings for the total number of lost work days. For a sick person who also held a supplementary job before serious illness, the supplementary income foregone was also calculated. In addition to lost income of the sick person, lost earnings of other household members who had to leave work to take care of the sick were also calculated and included in the total foregone earnings of the household.

5.6.5.2.2 Cost of coping strategies

The cost of coping begins with the onset of illness. It is a path-dependent cost of the household's adjustment to the impact, e.g. by borrowing or the sale of assets to finance medical treatment or to dissolve an estate, entailing both a transactions cost and a possible loss due to the need to sell quickly. Families have resources including human capital (the number of family members, their education and their earning capacity) and physical capital (savings, durable goods, productive assets and land), which they can use to pursue welfare. Both human and physical capital could be used to generate income that could be used to make purchases, subject to environmental constraints which include prices and quality of available goods and services, such as food, housing, medical care, schooling etc. Families also use their resources in making income generating (production) and consumption (expenditure) decisions subject to the constraints of their environment.

5.6.5.2.3 Frequency and tabulations

The first analytic outputs were tabulations based on the cross-section of households visited during six months of fieldwork. These presented a useful source of previously unavailable information on the costs of HIV/AIDS morbidity. The tabulation plan focused on three sets of issues.

(1) The economic and demographic characteristics of healthy and ill households and healthy and ill individuals in study areas. The response of households and individuals in the ill and healthy categories were compared, using such indicators as household size and composition, level of consumption, assets, time allocation, sources of income and type of employment, and remittances sent and received. These tabulations provided insights into the impact of HIV/AIDS morbidity on households in high prevalence rural areas as well as guidance on ways to identify those households most severely affected.

(2) The economic and demographic characteristics of the adult morbidity differ, due to the different short-term strategies, between households within communities, between communities with different levels of available forms of support services. The economic and

demographic characteristics of households with adult morbidity will be compared with those households free of illness.

(3) The costs and patterns of treatment of severe adult illness in active and less active services related to HIV/AIDS in communities, including both financial and time costs. This third set of tabulations is a first step toward the "cost of coping" with chronic adult illness from AIDS for households and communities. Looking only at households with severely ill adults with AIDS, it will assess the pattern of treatment for ill individuals, the direct cost of illness (including the cost of consultations, drugs, transportation to health care) and some of the indirect costs (including time of other household members spent in caring for the sick and the time spent seeking care).

5.6.5.2.4 Odds ratio

Descriptive analysis (Chi-square test and p-value) and odds ratio (95% confident interval) were used to compare households in the two districts. The categories of data are reported household health and utilisation of health care, support services in the community and access to other serives in the community.

5.6.5.2.5 Multivariate analysis

The impact of HIV/AIDS morbidity and the household response (coping with morbidity) were analysed using multivariate analysis of the costs and socio-economic impact of HIV/AIDS morbidity and the household's ways of coping with illness.

The analysis on the impact of HIV/AIDS morbidity attempted to measure the monetary costs of medical treatment and nursing care for AIDS patients and how they were financed, to estimate the lost productivity due to HIV/AIDS morbidity, to characterise and measure the costs of household coping mechanisms, and to measure the impact of adult HIV/AIDS morbidity on the health and welfare of household members and the community. The analysis on the response to adult illness due to AIDS measured the household income (from main and second job), household assets, household transfer in of money, household debt and household expenditure on health care; with determining factors being location of household, characteristic of household head, reported use of some health care financing schemes by the household head, occupation status of household head, and education in different households and the community.

The analysis would test the hypotheses that indications of economic status of households with an adult HIV/AIDS morbidity were different to those of healthy households and differ by communities with different levels of available services. Other important independent or explanatory variables included demographic and socio-economic characteristics of the household and the magnitude and timing of financial and in-kind assistance from other households. The effects of community characteristics were modelled using hierarchical statistical techniques.

5.6.6 Dissemination/policy implications

After the preliminary analysis was conducted two workshops were held. The first workshop was done in Phayao province to obtain preliminary input from the local public health officers,

and the key findings of the study were presented by the representatives of the interviewers in both districts. The second workshop was held in Bangkok to obtain the recommendations from key policy makers and planners. The workshop participants in Bangkok included multilateral collaboration: the Ministry of Public Health, organisations of People Living with HIV/AIDS, the Thai Business coalition against AIDS, concerned non-governmental organisations, the Ministry of Labour and Welfare, the Ministry of Education and provincial school and health care representatives. The initial findings were used to raise questions about the possible policy implications of the study findings. These would be not only incorporated into the final report but also used in conducting ten case studies in February and March 2000.

5.7 Limitation of methods

Economic household survey provides an estimable source of data on economic behaviour, as it collects information on one of the smallest economic units in the economy (Deaton, 1997). The survey also collects variables that are either influenced or set by policies. Such data can also be used to measure individuals' and households' living standards (Ainsworth & Van Der Gaag, 1988). In term of research design, there are some aspects that should be considered, e.g. sample size, control group selection. The first priority was to clarify what questions/issues were most important to document (research questions), and then to work out the study design from there.

However, household surveys have difficulties capturing the intricacies of the dynamics of the household including how composition changes over time, economic decisions are made, or how to respond to situations of crisis or uncertainty.

A cross-sectional survey also cannot ascertain the long term costs/impact or coping of HIV/AIDS illness on the household. These long-term costs of household responses could potentially be measured in follow-up explain the level of spent savings or debt households incurred. The long-term benefits could be household's capacity to regain or retain its assets. For children, stunting on educational achievement could be measure of long-term impact.

5.8 Conclusion

This study focused on the household impact of chronic HIV morbidity, and explored whether there are differences in impact and coping mechanisms between communities where there are very active support services, and other communities with less active services. The overall goal of the study is to inform policies to mitigate the impact of an adult illness from AIDS on household members and communities in Northern Thailand.

To explore the economic impact of HIV/AIDS morbidity on households were interviewed members from 600 rural households in Phayao province, Thailand: 300 had recently experienced HIV/AIDS chronic morbidity, and 300 that had not experienced recent chronic morbidity or mortality. Half of the households came from a district where there are very active support services; the other half from a district with less active services. The household interviews drew upon the methods used in Living Standards Measurement Study (LSMS) surveys, and a previous cross-sectional household survey on the economic impact of adult HIV/AIDS mortality conducted in Chiangmai, Thailand. Information was collected from a

household head or the caregivers, and others involved in the treatment and support of chronically ill adults. The quantitative study was complemented by information collected using a range of qualitative methods.

Methodological considerations associated with conducting such research. A key was the time and effort required to obtaining a complete listing of households with chronic HIV, from which the sample can be selected. In such studies, a control group is also essential. Depending upon the research questions, this can be either households with no recent non-HIV related chronic illness or households with no chronic illness or death in the prior year. I chose the latter to enable comparisons between households with current chronic morbidity and those with no recent chronic morbidity.

In order to get good collaboration, I had not only to respect the line of command at the Phayao Provincial Health Office, but also to visit the provincial and community hospitals. Time spent to gain trust from the health care workers at district health centres in the study location was also important. It was needed to explain and address the key issues and research questions to people involved in HIV/AIDS interventions in each institution, especially at the sub-district health centres. Since the health officers are always busy with their official routine work, they might not be interested in participating in the survey. It was not a good idea to push them with the official letter from the Ministry of Public Health. The sense of belonging was introduced to these groups of people by sharing experiences and encouraging them to help each other. I tenderly persuaded them to think by themselves, for example how to assess the HIV/AIDS situation and design responses, rather than being told what to do. Finally, I decided to work collaboratively from the first step. The Team and I mostly attended the community meetings, which were conducted in the villages every month. The community leader could introduce the research team to the community members and villagers. Since the health personnel in the sub-district health centres were our field researchers, sometimes I had to stand by at the sub-district health centres to serve the villagers who were sick. This was helpful in gaining trust from the villagers when interviewing the household head in the second stage.

Studies aiming to document the economic impact of HIV/AIDS are often predominantly quantitative. The LSMS and related tools involve the detailed documentation of savings and assets, income, and patterns of consumption and expenditure. While necessary, at times such a rigid tool focusing upon recent events seemed rather static – and to only capture one aspect of what was happening. For this reason, the quantitative data collection was complemented by qualitative research to document in more detail some case studies. These were conducted after I had stayed in the communities for some time, when people started to get to know me. These interviews were conducted using semi-structured in-depth interviews. I found that this more relaxed and less structured approach appeared to make the respondents feel more relaxed and confident to discuss their situation.

The questionnaire involved compiling detailed information about a range of economic factors. Such tools are relatively difficult to administer. For this reason, a system of quality control was implemented. This involved re-interviewing a selection of the interviews, involved

the first author conducting a number of checks on the completed questionnaires, to monitor the internal consistency of the data collected, and to check for completeness of the sections. Incomplete sections and questionnaires were returned back for further interview. In addition, a more general assessment of the interviewer's work and problems arising was done by discussion, feedback of field problems as well as a review of the interviewer's notes in the questionnaire.

Finally, it is important to recognise the sensitive nature of socio-economic studies on household impact of HIV/AIDS morbidity and/or mortality. This study was undertaken after full approval of the Thai ethical committee review board and the Ethical Clearance Committee at the London School of Hygiene and Tropical Medicine (Annex 5.1). The study followed standard procedures regarding the informed consent, voluntary participation and confidentiality. In addition, because of the sensitive nature of the topic, interviewers were trained not to push or over probe the respondents. If the respondents were not ready to be interviewed, or became distressed, the interviewers were trained to ask the respondent whether she would like to take a break, or continue at a later time. In practice, 30% of female respondents cried during the interviews, and in a number of cases the interviewers returned more than once to complete an interview. In a limited number of instances respondents were referred to specific agencies for support. This issue is an important consideration when conducting studies on the socio-economic impact of HIV/AIDS mortality, and highlights the importance of recognising and planning for such issues.

CHAPTER 6
FORMATIVE RESEARCH STAGE AND ENUMERATION STUDY

6 Formative research stage and enumeration study

6.1 Introduction

This chapter presents the results from the formative research stage and the initial enumeration survey, described in Chapter Five. The selection of study households, problem of recruitment, availability including accessibility of services and the participation in those activities will be presented. The results from this chapter are used as a basis from which more detailed information is analysed, particularly with reference to an active and less active district. The chapter presents the services (both health and non-health) availability and accessibility and the selection of study households. The chapter is divided into five sections. Section 6.2 describes the methods and section 6.3 presents the summary of key findings from the formative research and the enumeration study. Section 6.4 presents the results and section 6.5 is the conclusion for this chapter.

6.2 Methods

The details of the methods used for the formative research and enumeration study were presented in Chapter Five. Information in this chapter was compiled from various sources such as administrative division of Phayao province, Epidemiological division of the Ministry of Public Health, Phayao AIDS action centre (PAAC), and community leaders. Information included in the formative work (Annex 5.2) was from key informant interviews and focus group discussions. The main collaborators for the formative work were PAAC and Tambon Administrative Organisation (TAO).

6.3 Summary of the key findings

The results of enumeration study suggest that 12.0% and 13.2% of households enumerated in Mueng and Pong respectively had a chronically ill adult aged 15-49. Three percent and 3.4% of households enumerated in Mueng and Pong respectively had had at least one adult death in the last two years. The percentage of households that did not want to participate in the household survey in Pong (Pong=19.1%) was more than double that in Mueng (Mueng =8.4%).

The findings from the formative work suggested that there was a strong existing health infrastructure in both study districts, and that most health care/services were accessible in villages from each district. However, it also suggested that more support services were available in Mueng than in Pong. Additional finding from the formative work showed clear differences in the availability of support and counselling services for people with HIV and AIDS, their families and the community in the two study districts. These differences support the study design of using data from households in each district to explore whether the availability of services affects the socio-economic impact on the households or the coping strategies used by households.

6.4 Results

6.4.1 From formative work on differences in service availability between districts

Throughout the PAAC, at sub-district level, the village health volunteers (VHVs) carried out several community-based activities with support from government and NGOs. VHVs initiate a range of village activities regarding HIV/AIDS. These include prevention activities, care/support activities and income generation activities.

6.4.1.1 Preventive activities

The general objective of this activity was to educate the community about HIV/AIDS prevention using various means. The target groups ranged from general population of the community to specific groups such as male and female youth, married men and women, government primary health care volunteers and couples. The message promoted safe sex practices based on understanding the topics such as risk behaviour groups, risk venues etc. As mentioned, several methods were used to convey the message for safe sex or HIV prevention. These were informal group discussion, formal meetings with their community leader and community groups in their villages, educational campaigns and exhibitions, and participatory rural appraisal (PRA) sessions.

6.4.1.2 Care and support activities

One of the most important objectives of the PAAC was to care for and support affected families in the community. It aimed to provide a community of care for families, rather than just HIV infected individuals. The network of VHVs and government health officials provided the foundation for the project to support affected families. The VHVs implemented several activities to fullfill the objective such as home visits to affected families, village resource maps and information centres, and public fund raising.

Home visits to affected families: VHVs within their respective villages regularly visited willing PWA (i.e. PWA open about their HIV status) to give them and their families advice and/or support. VHVs also tried to reach out the new PWA within the community (Figure 6.1). The visits were informal and low-key to avoid unintentionally establishing a perception of being patronizing. One or two VHVs would visit PWA of their villages at home at a convenient time. Other than providing moral support, home visits by the VHVs assisted affected families with advice including (in order of urgency rated by PWA/families): financial/occupational support, educational/child support, referral to health care facilities or other government agencies, home-based care/nursing and nutrition. VHVs would normally bring along a government issued health care kit to help PWA with minor symptoms. For the families that needed financial or education/child support, VHVs usually consulted with NGOs and referred the case to the relevant agencies. This type of activity varied from village to village depending on number of PWA, community attitudes towards affected families, and the effectiveness of the VHVs.

Village resource maps and information centres: Regardless of community's potential coping with the impact of the HIV epidemic, villagers did not utilise various community resources. Some people were not aware of the availability of resources and tended to depend on external assistance in dealing with dire situation. The aim of the resource map was to create awareness

in the community of the variety of resources that were available to the community, which could be utilised to assist affected families. Out of the 57 villages in Mueng district, total 45 villages successfully established a resource map and information centre for their respective villages. Thirty-six of the sixty villages in Pong district failed to complete this activity.

Figure 6.1 Village activity: care and support activity in Mueng district

Home visits to affected families	VHVs for Mueng's villages
	

VHVs village health volunteers

6.4.1.3 Income generation activities

In order to alleviate the economic hardship of affected families, the PAAC initiated income-generating groups within villages to: 1) create opportunities for PWA and their families to become re-integrated into community; 2) provide affected families with job opportunities and/or supplementary income; 3) provide an opportunity for PWA to become involved in positive activities as equal partners to strengthen their dignity, discourage isolation and combat depression.

6.4.1.4 Health service

The information from the formative work suggested that not all of these health services are accessible in each district. Table 6.1 shows the reported percentage of accessibility of health care/services in the two study districts of Phayao.

In both districts (Mueng and Pong), most health care/services (more than 50%) are accessible in villages. These differences were not statistically significant but may be different in quality.

Table 6.1 Percent of villages with access to health care/services in Mueng district and Pong district

Percent of villages with access to	Mueng (Active) n=57 villages	Pong (Less active) n=60 villages	Chi-square (p-value)
% Provincial hospital	78	69	1.15 (0.28)
% district/community hospitals	NA*	70	NA
% District health centres	60	58	0.02 (0.89)
% Sub-district health centres	74	75	0.03 (0.87)
% Community health care centres	67	65	0.04 (0.85)

* NA: Not available

6.4.1.5 HIV/AIDS support services

Likewise, the information from the formative work illustrates that not all of these services are available in each district. From the formative research stage and enumeration study it was possible to look at the percentage of villages that had different care and support activities.

Table 6.2 shows the reported availability of services in the two study districts of Phayao and the percent of villages with different forms of HIV/AIDS services/activities in the study communities. There were significant statistically differences between the two districts in the percentage of households with access to social welfare services for HIV infected persons, a club for the elderly, liaison between district PWA groups, counselling services, treatment and group consultation, home visits by health workers, and training to PWA.

Table 6.2 Percent of villages with access to different existing HIV/AIDS services/activities in Mueng and Pong districts

Percent of villages with Forms of activity	Mueng (Active) n=57 villages	Pong (Less active) n=60 villages	Chi-Square (p-value)
PWHIV support groups			
-% Social welfare services	85	56	10.6 (0.001***)
-% Lunch support for school children	54	47	0.7 (0.40)
-% Project for community agricultural development	53	55	0.07 (0.78)
-% Project for orphans or community child care	33	29	0.34 (0.56)
-% Project for donation or food loan, working material, money e.g. village funding, district aid funding	51	48	0.08 (0.78)
-% Project for finding job in the community			
-% Vocational training and support for income of household and community	61 72	58 66	0.11 (0.73) 0.28 (0.54)
Support group meetings for PLWHA and others affected			
-% Club for elderly persons	83	62	6.24 (0.012*)
-% Group of housewives and community development	75	66	1.09 (0.30)
-% Community participation and community acceptance in target decision	70	48	5.76 (0.016*)
% Liaison between district PLWHA groups	85	57	10.58 (0.001***)
AIDS education to communities (including on support to PLWHA)			
-% Project on education and community nutrition	72	51	5.07 (0.024*)
Counselling services			
-% Consultation services	97	79	8.62 (0.003**)
-% Complementary health care services	84	71	2.66 (0.10)
-% Treatment and group consultation	80	63	4.35 (0.037*)
% Home visits by health workers, training to PLWHA	78	39	18.04(0.001***)
Training on care of PLWHA to health volunteers			
-% Project on training of nursing aid of patient in the family and community	72	53	4.31 (0.04*)

* Significant at 5% level, ** significant at 1% level, *** Significant at 0.1% level
Source: Formative work and enumeration study

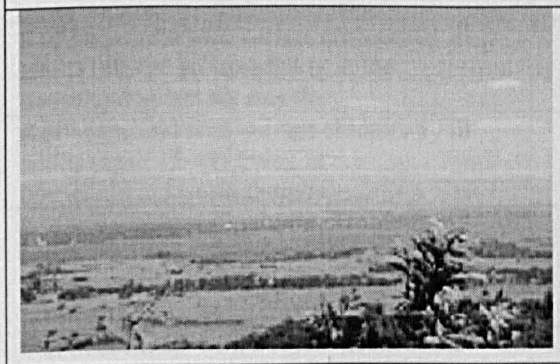
6.4.2 Results of enumeration study

6.4.2.1 Enumeration samples

In the enumeration a number of eligible case households identified included people with late stage AIDS illness. Between the enumeration survey and the household survey, some of these people died. These households then were no longer eligible for inclusion in the study. Where this arose the households were replaced by other case households that were selected randomly from the case household history. In a few instances too, it was not possible to conduct a household interview (for example the house couldn't be found, was not lived in or was demolished, the house had been visited for 3 times without the interview respondent being met, the respondent/household did not co-operate or had moved away).

These households were again replaced using randomly selected households in the same village from the enumeration listing.

Figure 6.2 General households in both districts

Kwan Phayao lake in the active district	Rice fields, the villagers and houses' view in the less active districts
	

In the active district, over 99% of both case and control households selected were interviewed. For case and control households in the less active district, only 85% and 93% of selected households were interviewed (Table 6.3). There is a significant difference between the districts. One case household and one control household in the active district were not lived in. Fourteen case households in the less active district reported PWA with late stage illness who had died; 6 had reportedly moved away and 3 households were reportedly visited for 3 times without meeting the interview responder. Eight control households in the less active district were reportedly visited for 3 times without meeting the interview responder, and 3 households had reportedly moved away.

Table 6.3 Household type of case and control households in both districts

Household type*	Active (n=150)	Less active (n=150)	Chi square	p-value
Household case			21.9203	0.000***
Selected household	149 (99.33%)	127 (84.67%)		
Resample household	1 (0.67%)	23 (15.33%)		
Household control			8.6806	0.003**
Selected household	149 (99.33%)	139 (92.67%)		
Resample household	1 (0.67%)	11 (7.33%)		

** Statistically significant at 1%, *** Statistically significant at 0.1%

note: there were 2 types of household: 1) the interviewed household selected for interviewing 2) the interviewed household that was selected from resample and replaced the selected one due to at least one of the following: the house couldn't be found, housing without residence living in, the house was demolished or burnt away, having been visited for 3 times without meeting the interview responder, didn't receive co-operation, has already moved away.

The research results in this section present the enumeration and household survey sample. A comparative analysis of the demographic and some selected socio-economic characteristics among control households, case and control households and case households between the two districts was undertaken to understand the similarities and differences among these components. I start with the enumeration results and some remarks.

Table 6.4 summarises the data collected from 285 eligible case households in the active district and 250 case households in the less active district. Methods of randomly selecting a household and criteria for categorising the appropriate control households were presented in the previous chapter.

Table 6.4 Enumeration results for case households

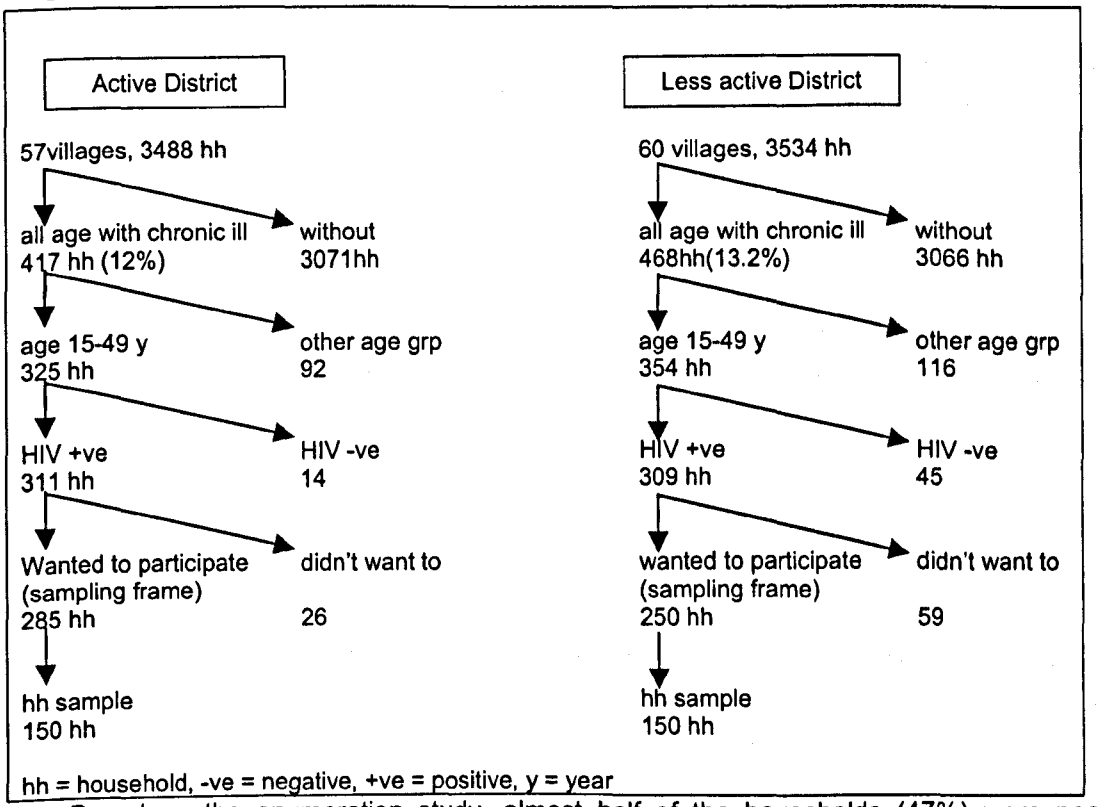
Characteristics	Villages in active district n(%)	Villages in less active district n(%)	Total n(%)
Total number of villages enumerated	57	60	117
Total households enumerated	3,488 (100.0%)	3,534 (100.0%)	7,022 (100.0%)
# of household with current chronically ill adults (all age groups) living in the household in last six months	417 (12.0%)	468 (13.2%)	885 (12.6%)
# of household with current chronically ill adults (aged 15-49) living in the household in last six months	325 (9.3%)	354 (10.0%)	679 (9.7%)
# of household with current chronically ill adults (aged 15-49) living in the household in last six months, not HIV positive.	14 (0.4%)	45 (1.3%)	59 (0.8%)
# of households with a recent death of an adult in last 2 years (all age groups)	103 (3.0%)	121 (3.4%)	224 (3.2%)
# of households with a recent death of an adult in last 2 years (aged 15-49)	55 (1.6%)	87 (2.5%)	142 (2.0%)
# of households with both chronically ill adults and a recent death	222 (6.4%)	248 (7.0%)	470 (6.7%)
# of households with current chronically ill adults (aged 15-49) living in the household in last six months (HIV infected) {a}	311 (8.9%)	309 (8.7%)	620 (8.8%)
# of households with HIV infected household member but not wanting to participate in the study (% of eligible case households) {b}	26 (8.4%)	59 (19.1%)	85 (13.7%)
# of "case" households included in sampling frame of the study {a-b}	285	250	535
# household sampled (household case)	150	150	300
# of households with neither chronically ill adults, no recent death (have at least one member aged 15-49 living in the household in last six months) ; (% of total households enumerated)	886 (25.4%)	919 (26.0%)	1,805 (25.7%)
# sampled (restriction of age group and systematic random sampling in the same villages of selected household case)	150	150	300

Table 6.4 summarises the data collected in the enumeration study. Among eligible case households, 8% of households in active villages, and 19% of households in the less active villages did not want to be interviewed in the main household survey. This difference between the locations may reflect the difference between the communities in the extent to which people feel open about discussing their illness. All of the control households were willing to participate in the study.

The findings for the initial enumeration study illustrate the extent to which villages are affected by HIV illness and death. On average 12% of the households enumerated had a chronically ill adult aged 15-49 (12% in the active district and 13% in the less active district). Eight percent of households in active villages and 9% in less active villages had at least one adult aged 15-49 with chronic HIV morbidity. In both districts 3% of households enumerated

had had at least one adult death in the last two years. Between 6% and 7% of households had both a chronically ill adult and a recent death. Only a quarter (25% and 26% in active and less active sites respectively) of households had not have a chronically ill adult (aged 15-49) in the past six months or a death in the past two years.

Figure 6.3 Enumeration of case households



Based on the enumeration study, almost half of the households (47%) were poor (household income less than THB 3,000. One third (35%) reported a good or very good economic status in the community (household income more than THB 3,000). The reported average total yearly income of households was around THB 57,000, which is in line with official estimates of average yearly income of households in Northern Thailand (NESDB, 1998). Nearly all households (90%) reported owning a house and land, although the size of the land owned may not be large. By the enumerators' observation, more than half (53%) of households also had modern amenities, such as motorcycles, refrigerator, television, gas or electric stove. A small proportion also owned a car or a truck.

6.5 Conclusion

The percentage of HIV afflicted households in both districts is similar. Health services related to HIV might be similar but support services between the two study sites differed. This means the selection of active and less active district is proper for further study.

The number of villages and households in the enumeration study were similar at the starting point, this suggests that both communities had similar size of household (57 villages/3,488 household vs. 60 villages/3,524 households). This might be fair enough when comparing both districts and this could ensure that the difference was not from the difference in

size. The service type and availability of service was dependent on size of the communities. So the difference should be reflected from the level of active roles of the communities.

Regarding actual participation in the survey, significantly more selected households in the active district than in the less active district, for both case and control households, agreed to participate in the study. The percentage of households with CIAs not willing to participate in the study was 8.4% of eligible case households in the active district and 19.1% in the less active district. As we don't have the characteristics of the households that did not want to participate, we cannot assess whether they are similar to the sample obtained. This might introduce some bias because those not wanting to participate might be too ill, or have some different characteristics from the households willing to participate. This difference between the districts, may reflect fundamental differences between the districts, may be because of difference in social stigmatisation, stress or wanting privacy.

The active district had slightly more participating households, this suggests caution when generalising the results but it might arise because these households were randomly selected and the sample could represent the study communities.

There were slightly more current chronically ill in the less active district than active district in all age and 15-49 age group but the percentage of eligible cases in both districts was similar. This similar percentage made similar type of services availability. The less active district had more cases (without HIV positive results) than in the active district. Recent deaths were also slightly more in less active district than in the active district. These data suggest that deaths in the less active districts among cases might be more from HIV because of the existing services (social welfare service, liaison between district among PWA, treatment and group consultation, and home visits) were lower than in the active district and these differences were statistically significant.

The quarter of households with neither chronically ill adults nor recent death (have at least one member aged 15-49 living in the household in last six months) was similar in both districts. Therefore, it might be applied directly to the rest of households and might be used to randomly select control households.

Therefore, this could confirm that the "Mueng district" was likely to be an active district. And this could reflect that the definition of active and less active is valid.

CHAPTER 7

ASSESSMENT OF COMPARABILITY OF SUB-SAMPLES WITHIN AND BETWEEN ACTIVE AND LESS ACTIVE DISTRICTS

7 Assessment of comparability of sub-samples within and between active and less active districts

7.1 Introduction

This chapter describes the samples obtained in the cross-sectional household survey described in Chapter Five. The chapter is divided into six sections. Section 7.2 describes the framework to assess sample comparability. Section 7.4 presents the results of the overall household characteristics in the two study locations. This includes data on comparisons of household demographic, household socio-economic status, household head and of the chronically ill adults (CIAs). It also focuses on analysing the sample obtained and the comparability of case and control households within and between the two study sites. The results from this chapter are used as a basis from which more detailed analyses are presented in subsequent chapters.

7.2 Methods

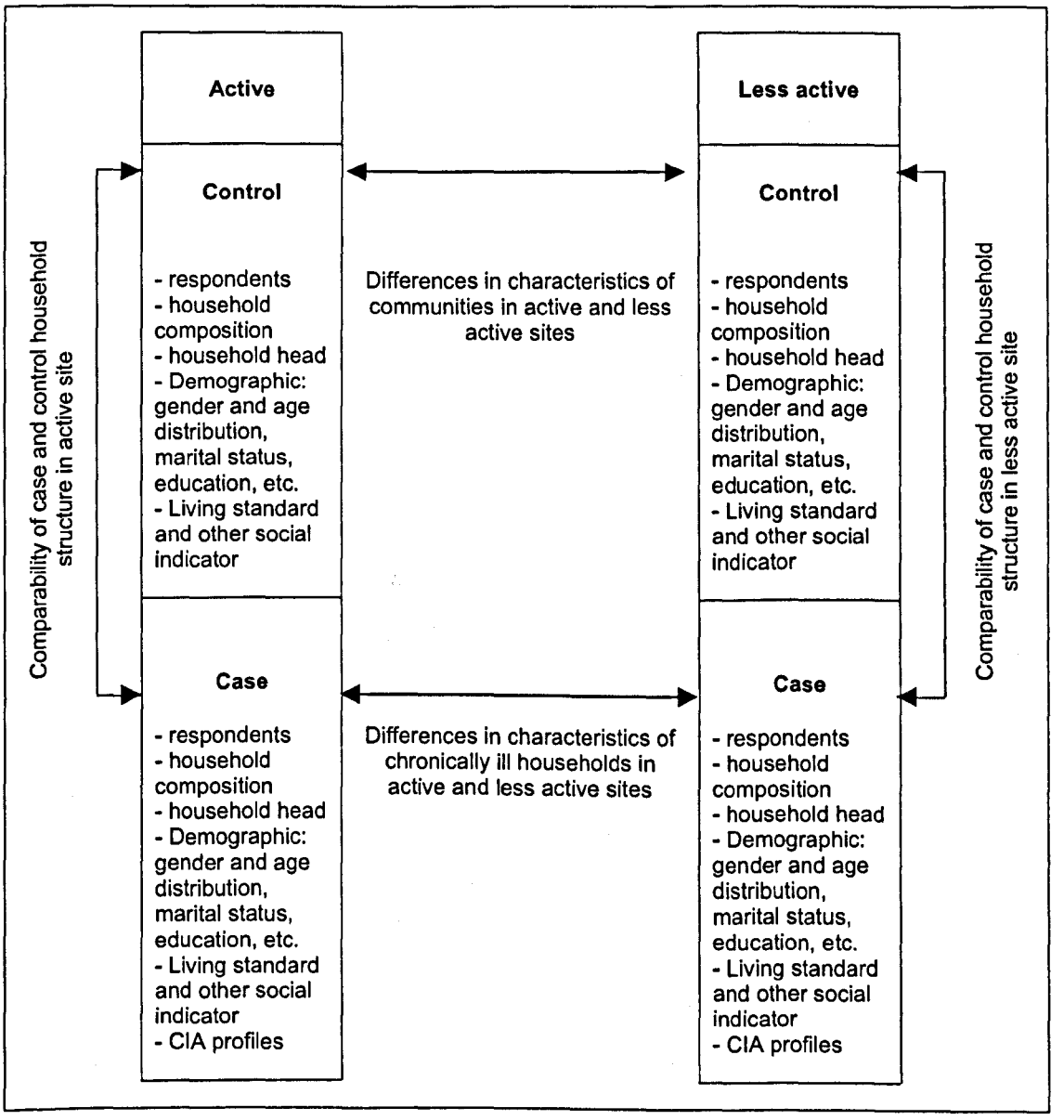
The information collected in the household survey was obtained from either a household head or the key person involved in the treatment and support of chronically ill adults. The household head was the person identified by household members themselves as the head. The respondents could be male or female.

Figure 7.1 illustrates the different forms of analysis used to assess: (1) the comparability control households in both districts; (2) the comparability between case and control households in the active district, and between case and control households in the less active district; and (3) the comparability of case households in the active and less active districts.

For the analysis, the programme SPSS for Windows was applied for descriptive explanation, such as finding the frequency and the relationship of the variables. Quantitative data were processed using Microsoft Access 97. Records and data on households were linked by household identification numbers and exported through a spreadsheet programme, Microsoft Excel 97. More in-depth statistically analysis was performed under statistical programme STATA 6.

For the categorical data, chi-square tests and p-values were used to demonstrate the relation of variables. For continuous data, comparisons were made using a two-sample t test with equal variances. Figure 7.1 shows the framework used to compare the sample obtained.

Figure 7.1 Comparison made to assess representativeness and comparability of sub-samples



7.3 Summary of the key findings

The reliability of the results presented in later chapters may be undermined if, between districts, the case samples differed substantially, or the control samples differed substantially. To assess the comparability of the sub-samples within and between Mueng and Pong, data on characteristics of the household and chronically ill adults were compared.

The marital status of household members in either case or control households was similar between both districts. The main difference found was that in Mueng, the average age of members in case households (56.2 years) was more than those in control households (49.9 years) and the difference was also found in the Pong with average age of members in case households (52.1 years) that was more than those in control households (46.2 years).

In Mueng, the average household size in case households (4.7 persons) was significantly more than those in control households (4.4 persons) and the difference was also found in the Pong with average household size in case households (4.2 persons) was more than those in control households (4.0 persons). There were no apparent differences in the broad socio-economic status of households between districts - most houses in both districts were single detached houses with a lavatory and a septic tank, and had the same source of water. The crowding index (i.e., number of household members per room) was similar between case and control households and between both districts. Overall, the dependency ratio (i.e., unemployed household members/ employed household members) in case households was higher than in control household, this ratio in case households was higher in Mueng than in Pong while this ratio in control households was similar between the two districts was similar between both districts.

Overall, one-quarter of household members were household heads. In both districts, household heads of case households, on average, were five to six years older than those in control households. Percentage of female head in case households were higher than those in control household in both districts. Most of male household heads were married but most of female household heads were widowed or divorced.

From the 300 case households, there were 324 chronically ill adults (CIAs). Fifty-eight percent of CIAs in Mueng and 50% of CIAs in Pong were female. Thirteen (8.7%) and 11 (7.3%) of 150 households in Mueng and 150 households in Pong respectively had two CIAs. Average age of CIAs was similar between the two districts.

The results suggest that the samples were relatively comparable in general, with the main differences in the samples being that Mueng households slightly greater than in Pong with a correspondingly higher dependency ratio and greater in case households than in control households with a correspondingly higher average age of members and of household heads, higher average household size, higher percentage of female head of households.

7.4 Results

The research results in this section present the comparison of the sub-sample obtained describes household demographics, household socio-economic status, household head characteristics, and CIA characteristics.

A comparative analysis of the demographic and some selected socio-economic characteristics among control households, case and control households and case households between the two districts was undertaken to understand the similarities and differences among these components.

The details of the respondents, household characteristics of cases and controls in both districts, and basic data of household members are presented in this section.

In more than 60% of households, the respondents were caregivers (Table 1, Annex 7). There is no significant difference in the proportion of respondents that were the household head between and within active and less active sites.

7.4.1 Comparability of sub-samples on demographics of household members

Table 7.1 shows the characteristics of case and control households in the active and less active districts, with means of household size and average age of household members. The number of household members in each household ranged from 1 to 9.

Table 7.1 Characteristics of case and control household members in the active and less active districts

Characteristics	Active district				Less active district			
	Case (n=618)	Control (n=597)	Combined/ Difference	t-test/ p-value	Case (n=565)	Control (n=533)	Combined/ Difference	t-test/ p-value
Household size mean	4.65	4.39	4.52/ 0.25	3.03/ 0.003**	4.16	3.91	4.04/ 0.25	3.47/ 0.0005**
Age(years) mean	34.6	32.9	33.8/ 1.7	1.42/ 0.157	33.7	30.9	32.3/ 2.8	2.39/ 0.017*
	n (%)	n (%)	Chi-square	p-value	n (%)	n (%)	Chi-square	p-value
Household members			5.35	0.148			15.86	0.001**
Number of children age <5 y	38 (6)	39 (7)			42 (7)	42 (8)		
Number of children age 5-14 y	95 (15)	90 (15)			65 (12)	87 (16)		
Number of adult	379 (61)	393 (66)			378 (67)	364 (68)		
Number of elderly	106 (17)	75 (13)			80 (14)	40 (8)		
Relationship of household members to household head			23.0	0.018*			24.8	0.010*
1 Head of household	150 (24)	150 (24)			150 (27)	150 (28)		
2 Partner of household head	84 (14)	111 (19)			85 (15)	122 (23)		
3 Son/daughter	224 (36)	211 (35)			225 (40)	196 (37)		
4 others	160 (26)	125 (21)			63 (11)	31 (6)		
Member stay regular	599 (97)	583 (98)	0.6	0.434	542 (96)	519 (97)	1.8	0.185
Member slept at the household last night	574 (93)	565 (95)	1.6	0.205	518 (92)	517 (97)	14.3	0.000***
Sex of household members			0.02	0.892			0.2	0.692
Male	304(49)	296(50)			276(49)	254(48)		
Female	314(51)	301(50)			289(51)	279(52)		
Marital status of adult members			43.65	0.000***			60.25	0.000***
1. Single	110 (23)	117 (25)			105(23)	79(20)		
2. Married	238(49)	295(63)			215(47)	281(70)		
3. Widowed/separated	113(23)	44(9)			109(24)	34(8)		

* Statistically significant (p<0.05*, p<0.01**, P<0.001***), adult member was a person who aged more than 15 years

In the active district, there was a lower percentage of males in case households than control households in age-group 0-14 and a lower percentage of females in case households than controls in age-group 15-59. In the less active district, there was a lower percentage of males and females in case households than in controls in age group 5-14, and a lower percentage of females in control households than in cases in age-group 15-59.

7.4.1.1 Composition of control households in both districts

The composition of control households in each district was found to be broadly similar (Table 3, Annex 7). The mean number of household members in control households in the active district was 4.4 persons, and 3.9 persons per household in the less active district. This difference was not substantial, but was found to be strongly statistically significant at the 0.1% level.

The mean ages of household members in control households in the active and less active districts were 33 and 31 years respectively; the difference is not statistically significant (p=1.77). Equal proportions of control household members were male and female in both districts. Forty percent of household members were single. In the active district, 49% were married and 7% were widowed. In the less active district, 53% were married and 6% were widowed.

7.4.1.2 Composition of case households in both districts

The mean number of household members in the case households was 4.6 persons in the active district and 4.2 persons in the less active district. This difference was not large but strongly statistically different at the 0.1% level. This figure is also rather low by rural Thai standards. The small number of household members can be partly explained by the number of reported previous deaths of a household member prior to two years, as shown in Table 4, Annex 7.

The average ages of household members in case households in the two districts were 35 and 34 years respectively. Case household members in the districts were about equally male and female, the same as for control households. Nearly all of the household members in case households in both districts stayed in the household regularly, and more than 90% stayed in their household on the night prior to interview. About 39% of household members in case households in the active district, and 36% in the less active district, were single. In the active district, 39% were married and 18% were widowed; in the less active district, 38% were married and 19% were widowed.

7.4.1.3 Comparison of case and control households in the active district

In many ways the case and control households in the active district were very similar. Regarding household size, the average for case households was 4.7 persons, and for control households 4.4 persons, with the difference being statistically significant at the 1% level (Table 7.1). The average age of household members in case and control households was not statistically significant (p=0.16). Equal proportions of case and control household members were male and female.

There were differences in marital status in the active district, with about 23% and 25% of adult household members in case and control households respectively being single. Among case households, 49% were married and 23% were widowed, divorced or separated. In contrast, in control households, 63% were married and only 9% were widowed, divorced or separated.

7.4.1.4 Comparison of case and control households in the less active district

Similarly, case and control households in the less active district were comparable in many ways. Similar differences were found between case and control households as in the active district. The average of household size was 4.2 persons in case households and 3.9 in the control households, with the difference being statistically significant at the 1% level ($p < 0.0005$). Both case and control household members were about equally male and female.

The mean age of household members in case households and control households was about 34 and 31 years respectively, with the difference being statistically significant ($p < 0.05$).

As might be expected there was a significant difference ($p<0.000$) between case and control household in proportion widowed. In case households, 47% were married and 24% were widowed, divorced or separated. In control households, 70% were married and only 8% were widowed, divorced or separated.

7.4.2 Comparability of sub-samples on household socio-economic status

Data were collected about four indices to reflect the socio-economic status of the households: 1) number of rooms (crowding index); 2) housing condition (type of house, material used for walls and floor of the house); 3) drinking water and sanitation (toilet); 4) number of household members and dependency ratio.

Type of housing and crowding index is important parameters for comparison. Over 90% of the houses in both districts were single detached (Figure 6.4), 4-5% was a multiple house in the same fence, 2-3% was huts and other kinds of small housing. The average number of years living in the house is related to mobility and new-built house (extended family). The difference in the average number of years living in the house was statistically significant between controls and cases at 0.1% level in both districts.

Figure 7.2 General household in both districts

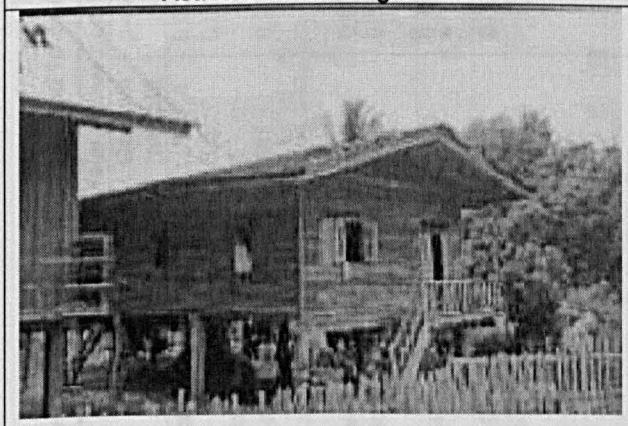
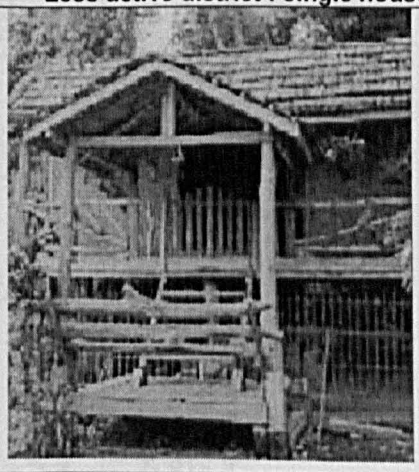
Active district : single house	Less active district : single house
	

Table 7.2 summarises the socio-economic indicators in the two districts. They are discussed below.

Table 7.2 Summary of basic indicators related to socio-economic status

Social indicator	Active/less active district			Active/less active district			Active district			Less active district		
	Control (n=150)	Control (n=150)	p-value	Case (n=150)	Case (n=150)	p-value	Case (n=150)	Control (n=150)	p-value	Case (n=150)	Control (n=150)	p-value
Household size (members)	4	3.5	0.003**	4.1	3.7	0.02*	4.1	4.0	0.462	3.7	3.5	0.225
Number of rooms	4.5	3.5	0.000***	3.6	3.3	0.04*	3.6	4.5	0.000***	3.3	3.5	0.059
Crowding index: member/room	0.9	1		1.1	1.1		1.03	1		1.2	1.2	
% Single detached house	99	98	0.26	94	97	0.26	94	99	0.04*	97	98	0.254
Type of housing:												
% Floor made from wood	67	81	0.002**	73	82	0.09	73	67	0.03*	82	81	0.531
% Wall made from wood	75	85	0.34	74	83	0.15	74	75	0.142	83	85	0.846
Average years in house	15.6	21.4	0.001***	13.9	24.4	0.000***	13.9	15.7	0.236	24.4	21.4	0.270
Main source of drinking water			0.000***			0.000***			0.000***			0.932
% Rain and open well	68	53		76	59		76	68		59	53	
%Tap outside	11	11		5	14		5	11		14	11	
%Tap in house	21	36		19	27		19	21		27	36	
Toilet availability			0.80			0.29			0.261			0.733
% Lavatory with septic tank	98	97		97	98		98	97		97	98	
% others (hold digging, flush toilet)	2	3		3	2		2	3		3	2	
Average number of												
Employed member	2.2	2.1		1.9	2.2		1.9	2.2		2.1	2.1	
Dependency ratio[a]	0.8	0.7		1.2	0.7		1.2	0.8		1.0	0.7	

Statistically significant ($p<0.05$*, $p<0.01$**, $P<0.001$***)

Dependency ratio[a] ={(household member – employed member)/ employed member}.

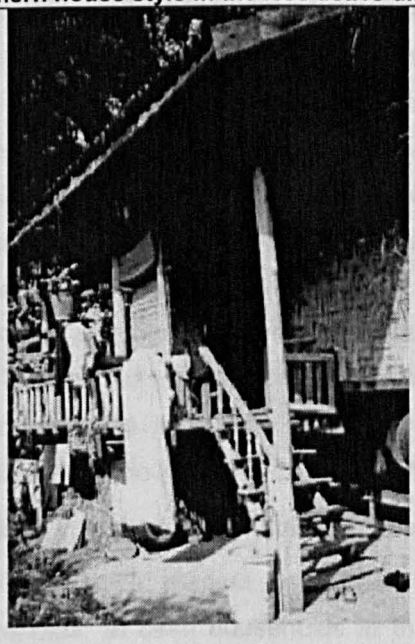
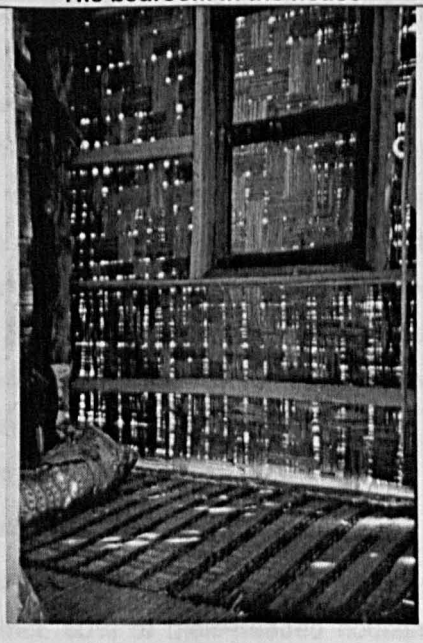
Figure 7.3 Housing in the active district

Newer house in the active district	Traditional single house in the active district
	

7.4.2.1 Number of rooms and crowding index

On average, there were three rooms per household in both districts. A crowding index was obtained by dividing household size by number of rooms (including bedroom and sitting room). The crowding index was slightly higher in the less active district than the active district (1.2 for both cases and controls in the less active district, 1.03 and 1 for cases and controls in the active district, 0.9 for controls in active district and 1 for controls in less active district, and 1.1 for cases in both districts).

Figure 7.4 General household in Northern style

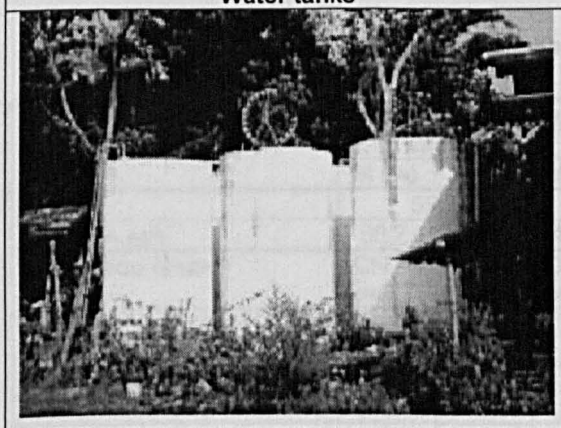
Northern house style in the less active district	The bedroom in the house
	

7.4.2.2 Water and sanitation

Almost half of the households in the active district used rainwater as their main source of water. Wells were more commonly used in the less active district. Here about 30% of households used tap water from inside the house, and about 5-6% used tap water from outside. Most households in both districts had a conventional lavatory, and all villages had

electricity supplied, but there was no organised means of rubbish disposal in the less active district.

Figure 7.5 Water and sanitation

Water tanks	Kitchen and sanitation
	

7.4.2.3 Employed household members and dependency ratio

In the questionnaire, an employed member is defined as any household member aged 15 and above who is engaged in income-generating activities. From Table 7.2, case households in the active district had, on average, 4.1 members, of whom 1.87 were earners. This 46% employment rate is low compared to control households, where it is 55%. These figures compare with rates of 56% in case households and 60% in control households in the less active district. However, the higher employment rate may not automatically yield higher income to a family because of the lower return from the cheap and unskilled labourers in most agricultural work. Moreover, there were students working in the evenings as well as housewives engaged in some income activities, usually with low pay. When comparing household size with the employed members of case households in the less active district, the average dependency ratio was 0.97. The formula for the dependency ratio is {(household member – employed member)/ employed member}. So, on average, an earning member has to take care of another 0.97 members (who are children, unemployed members, housewives who did not engage in income activities, elderly parents and grandparents, etc.). The highest dependency ratio is 1.19 in case households in the active district.

7.4.3 Comparability of sub-samples on demographics of household head

There were marked age differences between female-headed and male-headed households. In case households in the active district, 50% of male-headed households were headed by men aged over 60, compared to only 27% in control households, and 12% in control households in the less active district. There were more female household heads aged over 50 in the less active district (Table 7.3). In both case and control households in the active district about 41% of female household heads were aged over 60. This was similar to control households in the less active district. The highest percentage of male-headed control households in the less active district was those aged 30-39 (33%).

Although Table 7.3 shows most of these households were headed by a male member, in both districts a proportion of case households in both districts were headed by a female (33-36%), of these 40% were caused by the death of the former male household head from HIV/AIDS. In control households, 13-15% had female household heads.

Table 7.3 Percentage distribution of household heads by age, marital status, education and sex in both districts

Characteristics	Active district				Less active district			
	case		control		case		control	
	M (%)	F (%)	M (%)	F (%)	M (%)	F (%)	M (%)	F (%)
Mean	55.3		49.9		52.1		46.2	
Average age	56.2	53.4	48.8	55.9	50.9	54.4	45.6	49.7
Age group (years)	Chi =2.62, p=0.758		Chi =6.11, p=0.191		Chi =4.15, p=0.386		Chi =7.64, p=0.106	
19-29	3.0	4.1	2.3		7.3	9.3	3.1	10.0
30-39	17.8	20.4	26.6	18.2	22.9	16.7	33.1	25.0
40-49	13.9	20.4	33.6	18.2	16.7	7.4	30.8	15.0
50-59	15.8	14.3	10.2	22.7	19.8	24.1	20.8	20.0
Over 60	49.5	40.8	27.3	40.9	33.3	42.6	12.3	30.0
All age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total N	101	49	128	22	96	54	130	20
% of household	67	33	85	15	64	36	87	13
Marital status	Chi =72.8, p=0.000***		Chi =76.4, p=0.000***		Chi =82.4, p=0.000***		Chi =83.6, p=0.000***	
- single	4.0	4.1	0.8	8.9	3.1	3.7	0.4	1.0
- married	79.2	8.2	87.5	0.2	81.3	5.6	92.3	10.0
- widow	16.7	79.6	10.2	81.8	14.6	83.3	4.2	75.0
- divorce	0.1	8.2	1.6	9.1	1.0	7.4	3.1	14.0
Educated household head	Chi =6.92, p=0.009**		Chi =2.44, p=0.118		Chi =10.6, p=0.001***		Chi =4.52, p=0.03*	
	67.3	44.9	85.9	72.7	83.3	59.3	93.9	80.0
Highest study	Chi =7.43, p=0.06		Chi =5.39, p=0.495		Chi =10.6, p=0.031*		Chi =6.8, p=0.339	
Prathom, low	56.4	34.7	55.5	68.2	60.4	51.9	58.5	45.0
Prathom, high	8.9	14.1	19.5	9.1	18.8	9.3	26.9	35.0
Mathayom, low	3.6	2.0	6.3	2.1	3.1	1.9	3.9	1.1
Mathayom, high	0.3	0.2	2.3	0.2	2.1	0.2	2.3	0.4

* Statistically significant at 5%, ** Statistically significant at 1%, *** Statistically significant at 0.1% level.

In the active district, 44.5% of female-headed households were aged 19-49, compared to 34.7% of male-headed households. These percentages compare with those of 33.4% and 46.9% in the less active district. In the less active district, the percentage of female-headed households was higher than male-headed households in the groups 19-29 years and over 50 years. The sex of the household head in both districts was not associated with age. The average age of the household head in case households was higher than in control households, especially in households where the son or daughter of the household head was the CIA.

As would be expected, the marital status of the household head was associated with the sex of the household head in both districts ($p<0.005$), with female household heads being more likely to be widowed than male household heads (Table 7.3). Most of these household heads had low levels of education, with about three-quarters of household heads having only primary schooling (Prathom, low) or lower.

The household head's educational attainment was associated with the sex of the household head in case households of both districts as well as control households in the less active district. The higher schooling of the household head was associated with the sex of the household head in case households in the less active district.

7.4.4 Comparability of sub-sample on chronically ill adults (CIAs)

There were 324 HIV symptomatic chronically ill adults (aged 20-58 years) staying in the 300 case households included in both districts. The median age of CIAs in the less active district was less than in the active district. Table 7.4 presents a summary of CIAs characteristics by sex. The marital status of CIAs between males and females in both districts was statistically significant at the 0.1% level. 47% of all CIAs in both districts were either widowed or separated. The proportion of widow/separated female CIAs in both districts was more than 64%. In general, female CIAs who were not single had 1-3 children in both districts; male CIAs in the active district had 1 to 2 children, but 1 to 5 children in the less active district. Over 90% of CIAs in both districts were educated at least low Prathom.

Eight percent and 11% of households in the active and less active districts respectively had two CIAs. Most households (92-93%) had only one CIA. 58% and 50% of CIAs in the less active and active districts, respectively, were female.

Table 7.4 Characteristics of CIAs by districts and sex

Characteristics	Active district		Less active district	
	Male	Female	Male	Female
No. of CIAs living in the household	Chi squares = 4.19 p-value = 0.04*		Chi squares = 5.32 p-value = 0.02*	
One CIA (n,%)	79 (96)	71 (88)	67 (99)	83 (89)
Two CIA (n,%)	3 (4)	10 (12)	1 (1)	10 (11)
Age of CIAs				
Mean (SD)	33.3 (4.9)	31.5 (6.4)	32.5 (4.9)	30.8 (6.9)
Median	33	31	32	28
Min/max	22/46	20/47	21/50	20/58
n	82	81	68	93
Age group of CIAs	0.002**		0.003**	
Mean age (SE)	33.3 (0.5)	31.5(0.7)	32.5(0.6)	30.8(0.7)
20-28	11(13.0)	31(38.0)	16(24.0)	47(51.0)
29-31	22(27.0)	14(17.0)	17(25.0)	9(10.0)
32-36	30(37.0)	18(22.0)	19(28.0)	21(23.0)
37-58 [3]	19(23.0)	18(22.0)	16(24.0)	16(17.0)
Total	82(100.0)	81(100.0)	68(100.)	93(100.0)
Educated CIAs (at least Prathum, low) n (%)	80 (98)	63 (93)	77 (95)	92 (99)
No. CIAs' children				
Mean (SD)	1.3 (0.5)	1.4 (0.6)	1.4 (0.8)	1.4 (0.5)
Median	1	1	1	1
Min/max	1/2	1/3	1/5	1/3
n	41	68	33	62
Marital Status	Chi squares = 43.39 p-value = 0.000***		Chi squares = 23.33 p-value = 0.000***	
Single	26 (32)	1 (1)	18 (26)	7(8)
Married	35 (43)	25 (31)	34 (50)	26 (28)
Widow/separated	21 (26)	55 (68)	16 (24)	60 (64)

* Statistically significant at 5%, ** Statistically significant at 1% level, *** Statistically significant at 0.1%

There were slight differences in the age of male and female CIAs (Table 7.4). The average age of this group in the household survey was 32.4 years (SD 5.7) in the active district and 31.5 years (SD 6.3) in the less active district. In the active district, the highest percentage of females was 38.0% in the age group 20-28 years; the highest percentage for males was 37.0% in the 32-36 age group. The difference was statistically significant at 1%. In the less active district, 51% of female CIAs were aged 20-28, 28% of male CIAs were aged 32-36; and the difference was also statistically significant at 1%. 80% of CIAs in the active district had children to take care of, compared with 70% in the less active district; the difference was statistically significant at 5% level. 58% of CIAs in the active district and 60% in the less active district had some elderly to support (Table 5, Annex 7).

Of the 324 CIAs, 163 were living in the active district and 161 in the less active district. The proportion of CIAs living in the active and less active district who were female were 10% and 12% respectively. The differences between number of CIAs per household in the districts were statistically significant at 5% level.

7.5 Discussion

The survey results presented above indicate the degree of comparability of case and control households within and between the two study sites.

The distribution of reported household members (2,313 persons) by age and sex is shown in Table 2, Annex 7. Only 7%-11% of household members was aged under five. Most household members in both districts were aged 15-59. (After the pilot study, it was noticed that household members aged 59 were still working in the field and had their own income. Later in the main household survey, the information on household economic activities included household members aged 59.) The sex of household members in both districts was not associated with the age group of household members.

There were a greater percentage of female household members in case households than in controls. This pattern is similar in both districts (percentage of females in active district: 33% in cases, 15% in controls; percentage of females in less active district: 36% in cases, 13% in controls). When considering each district as a whole, the proportion of male-headed households to female-headed households was 76%:24% in the active district and 75%:25% in the less active district.

There were marked differences in the age of female household heads and male household. Among case households, about one half of male household heads were aged over 60 in the active district, and they were mostly widowed.

The main characteristics of CIAs are summarised as there were more female CIAs in the less active district, and this was statistically significant at the 1% level. There was the same proportion of male and female CIAs in the active district and the relationship between the age group of CIAs and the sex of CIAs was significant at the 1% level.

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[3] In some case household, if there was more than one CIA, if the first CIA aged 15-49, another CIA aged more than 45 years was included in this study.

7.6 Conclusion

This chapter has described the sample obtained, discussed its representativeness and explored the comparability of sub-samples within and between the active and less active districts. In general there were not many major differences in the sub-sample obtained.

Among case households there were significant differences in the demographic and household composition and other social indicators between the active and less active sites.

The populations of CIAs were relatively similar, apart from there being more female CIAs in the less active district than the active district.

CHAPTER 8
UTILISATION OF HEALTH AND OTHER SERVICES

8 Utilisation of health and other support services

8.1 Introduction

One of the major influences on the welfare of households of chronically ill adults (CIAs) and potentially a major drain on investment and savings is the general difficulties in meeting the direct out-of-pocket expenditures for CIAs on health care and other support services in the community. This chapter presents the results from the data collected on the reported health of the respondent and other household members (using questions on the respondent's assessment of their own health, the health of household members in comparison to others, reported stress levels and handicap) in each district, information collected on the reported availability and utilisation of services, and information collected on household levels of expenditure and means of payment for health care.

It is hypothesised in the study that there are significant differences in households' wellbeing, health, support services utilisation and household expenditure on health between affected households within communities with different levels of available services. Sections 8.5.6 and 8.5.7 look at the health expenditure in more depth. It is hypothesised that there was no difference of household health expenditure among cases and controls between both districts.

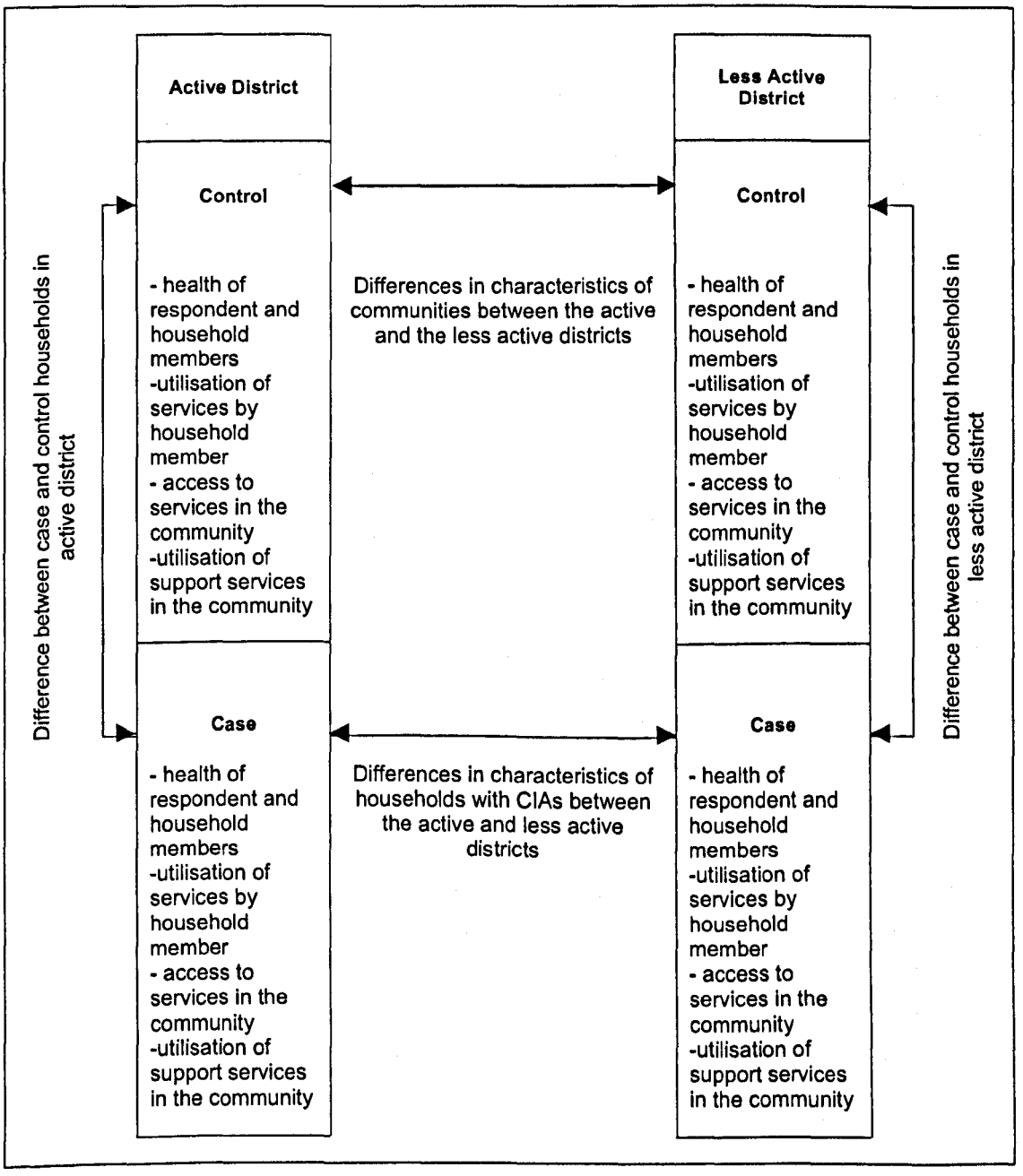
To gain insights into how HIV morbidity within a household influences household members' lives, the respondents were asked to compare their health status to others of the same age, and to compare the health of household members with others of the same age. Questions were also included on the reported disability of household members and the reported level of stress of the respondents in the household. The findings are presented in sections 8.5.1, 8.5.2, and 8.5.3.

A broad assessment of the costs to the household of accessing health care and the time taken in general to access health services are also presented. The reported information on household access to health care, health care costs of the household as well as payment for health care for household members are also presented in section 8.5.6. and 8.5.7. The direct and indirect treatment cost for CIAs in case households will be presented in chapter 10. There were a number of health and non-health support services reported in the key informant interviews and focus group discussions. Section 8.6 presents data on the relative availability and use of different services by the different sub-groups sampled.

8.2 Analytical framework

A range of comparisons between the active and less active district was carried out using STATA6 for Windows.

Figure 8.1 Analytical framework for comparison of reported health and utilisation of different services



Statistical analyses for categorical data consisted of frequency tabulation, Chi-square and Mentel-Haenzel Odds ratios; for continuous data or ordinal categorical data they included Mean, Median and t-test. These were used to find the differences in availability and use of health and support services: 1) a comparison between control households from both districts, 2) a comparison between case households from both districts, 3) a comparison between case and control households in the active district, and 4) a comparison between case and control households in the less active district (Figure 8.1).

Each form of comparison used in this chapter was to explore whether there are differences in the utilisation behaviour of household members living in the district with active support services compared with those in the district with less active support services. Firstly, the availability and use of services of control households was compared to explore the different characteristics of communities between the active and the less active sites. Services of case households were also compared to explore the difference in characteristics of chronically ill households between the active and less active sites. Differences between case and control households in the active and in less active districts were also explored to look at how chronic illness affected service use.

8.3 Methods

Seven questions were used to assess the general health status of household members and the cost of health service use (Table 8.1).

Respondents were asked about household members' use of both health and non-health services. The health services in the community were complementary health care services, training of nursing aid of patient in the family and community, treatment and group consultation, and group support for patients suffering from target disease and self help group. The non-health services in the community included primary school, secondary school, and police station. The questions about the use of health service were self-reported by the respondent, and related to the previous six months. A six months recall was used because during the piloting it was found that most control households did not report much use of health services if a recall period of less than six months was used. The reliability of self-reported questions on health and use of services may be limited, since they are subjective and related to the respondents' own assessment and so should be interpreted with caution. The amount of health care expense related to overall cost at household level, and so includes all household members not only the CIAs.

Table 8.1 Questions on health and health service use and methods of data analysis

Themes	Questions used	Method of data analysis
Personal health of household member and household respondent	Compared to other people of the same age, how do you rate your health in general? *(1) excellent (2) very good (3) good (4) fare (5)very bad* Compared to members of other households nearby of the same age, how would you rate the personal health of your household members? *(1) excellent (2) very good (3) good (4) fair (5)very bad*	Descriptive analysis *(Chi square test, p-value), (Odds ratio(95% confident interval)*
Physical handicap of household member	Do any household members suffer from any physical handicap?	Descriptive analysis *(Chi square test, p-value), (Odds ratio(95% confident interval)*
Reported level of stress of the respondent	Do you consider your life to be very stressful, stressful, stressful sometimes, no stress or having no stress at all? *(1) very stressful (2) stressful (3) sometimes stressful (4) no stress (5) having no stress at all*	Descriptive analysis *(Chi square test, p-value), Odds ratio(95% confident interval)*
Average health care expense per household	How much have you spent on treatment when any of your household member was sick, including all cost of each individual (travelling and food cost) within the past 6 months (Thai Baht)?	Two-sample t-test with equal variances
Average cost of treatment per person	Please provide information on cost of treatment of your household member per person per month?	Two-sample t-test with equal variances
Payment for health care expenditure	Who support for the cost of treatment of this person? Was it paid by the family or household, receiving free treatment from social welfare (low income card), using health card, social security, health insurance, support from cousin, refund from government and public agency, company welfare and making loan?	Descriptive analysis *(Chi square test, p-value), Odds ratio(95% confident interval)*
Reported time spent seeking for health care	How long does it take for you and your household members to go for the treatment per time (time in minute: back and forward), where they went to and mode of travelling?	Two-sample t-test with equal variances), Descriptive analysis *(Chi square test, p-value)*

8.3.1 Use of services in the community

During the formative research stage, information about the forms of support services available in the community was collected. These were used to develop questions about their availability and use. Respondents were asked about the availability of nineteen support services, as well as an open question about other support services. Respondents were also asked whether household members had utilised these services in the past six months.

The respondents of case and control households in both sites were asked about the difficulties in seeking health care. The reported availability and utilisation of different support services by household members was also explored.

Table 8.2 Questions about use of services in the community

Themes	Questions used	Method of data analysis
Reported difficulties seeking health care	Do you and your household members suffer from the following due to treatment? (1)yes (2) no *(1) cost of medication, (2) cost of travel, (3) cost of accommodation*	Descriptive analysis *(Chi square test, p-value), Odds ratio(95% confident interval)*
Available and use of support services in previous 6 months	In your community, do you have the following social services or not? Have you or your household members have been to services or not? *1. Social welfare services* *2. Community participation and community acceptance in target decision* *3. Community consultation services* *4. Presents in mind project (meditation practices to help people calm down)* *5. AIDS supporting group in communities.* *6. Lunch support for the school children* *7. Project for orphan or communities childcare* *8. Project on education and community nutrition, nutrition fund for children age under five* *9. Project of anti-drug addict in the communities run by the teenager in villages* *10. Activities of group of housewives and community development project for giving consultation on extra earning activity for community housewives* *11. The housewife agricultural groups.* *12. Club for elderly persons: this club was established for gathering the elderly in the communities to participate in environmental project and help disability-supporting project.* *13. Community agricultural development* *14. Donation or food loan, working material, money e.g. village funding, district aid funding* *15. Consultation on job seeking in the community* *16. Vocational training and support for income of household and community, co-operation in villages, saving club in villages, agriculture fund, water usage group and nutrition fund* *17. AIDS funds, community AIDS Funds* 18. CIAs in the community, complementary health care services (Home visit) *19. Project on training of nursing aid of CIA in the family and community, treatment and group consultation, group support for CIA suffering from HIV/AIDS and self health group (Self Help group)*	Descriptive analysis *(Chi square test, p-value), Odds ratio(95% confident interval)*

The Thai Ethical Committee did not allow us to use any words related to "HIV" or "AIDS" in the questionnaire and so they were not used. However, if, during the interview, some respondents voluntarily presented information about attending an AIDS support group in the community, a record of the service was made. In addition, some respondents provided information about receiving AIDS support funds from a governmental organisation. In the analysis, the AIDS support groups were included in social support in the community. The government AIDS support funds were included in the social funds, community financing.

For the analysis, the nineteen support services and other support services were grouped into six broad categories: social support, support for orphan/children, income generation for women, support for elderly, social funds including community financing and agriculture project, and treatment and care of the sick (Table 8.3).

Table 8.3 Group of support services in the community

Group of support services	Support services included
Social Support	1. Social welfare services 2. Community participation and community acceptance in target decision 3. Community consultation services 4. Presents in mind project (meditation practices to help people calm down) 5. AIDS supporting group in communities.
Support for children (some for orphan, some for children generally)	6. Lunch support for the school children 7. Project for orphan or communities childcare 8. Project on education and community nutrition, nutrition fund for children age under five 9. Project of anti-drug addict in the communities run by the teenager in villages
Income generation project for women (without social funds)	10. Activities of group of housewives and community development project for giving consultation on extra earning activity for community housewives 11. The housewife agricultural groups.
Support for the elderly	12. Club for elderly persons: this club was established for gathering the elderly in the communities to participate in environmental project and help disability-supporting project.
Social funds, community financing/funding and agricultural development funding	13. Community agricultural development 14. Donation or food loan, working material, money e.g. village funding, district aid funding 15. Consultation on job seeking in the community 16. Vocational training and support for income of household and community, co-operation in villages, saving club in villages, agriculture fund, water usage group and nutrition fund 17. AIDS funds, community AIDS Funds
Treatment and care support in the community	18. CIAs in the community, complementary health care services (Home visit) 19. Project on training of nursing aid of CIA in the family and community, treatment and group consultation, group support for CIA suffering from HIV/AIDS and self health group (Self Help group)

8.3.1.1 Categories of support services

To clarify the categories of support services in both districts, the following method was used to describe the possible categories of support services available and used (Table 8.4).

Table 8.4 Categories of service availability and use of service by households

Categories	Support service availability	Use of service	Explanation
A	Yes	Yes	There were support services available in the community and those services were utilised by household member in the past six months.
B	Yes	No	There were support services available in the community but those services were not utilised by household member in the past six months.
C	No	Yes	The support services were not available in the community but household member utilised them somewhere else. (This meant household member sought for service from outside the community.)
D	No	No	The support services were not available and household member did not utilise of those services.

Category A and category B were the most commonly occurring in this study, because the respondents reported those support services in the community. Category D meant that those support services were not available in the community according to respondent's reports. Category C – that would suggest that respondents travelled elsewhere to access services, was seldom reported.

8.3.1.2 Mantel-Haenszel Odds Ratio and Logistic Regression

The relative OR of the availability and use of six groups of services between the active and less active district was also compared. In addition, the adjusted odds ratio (adjusting for status of being case or control) was calculated using the Mantel-Haenszel method. The two Odds ratios were compared to show how much difference there is between them. Logit estimate was also calculated, then the log likelihood ratio tests had been performed using STATA6 for Windows. Further analysis to identify status of the districts is presented in section 8.6. The explanation is follows the table below.

Table 8.5 Table demonstrates details of Mantel-Haenszel Odds Ratio and Logistic Regression

Characteristics	Active district Odds ratio[a] (95%CI)	Adjusted for status of being Case MHOdds ratio[b] (95%CI)	Logit estimate		2LR[c]
			Active District Odds ratio (95%CI)	Status of being Case Odds ratio (95%CI)	
Service item (m)	(v)	(w)	(x)	(y)	(z)
-Available and use (n)					
-Available but not use (n1)					
-Not available, not use (n2)					

Each characteristic of service item (m), which includes social support, support for children, income generation project for women, support for elderly, social funds, community financing, agricultural projects and the treatment/care of ill people in the community, was analysed as follows.

Data on the availability/use of each service item was categorised into three groups (n, n1, or n2): available and used, available and not used, and not available and not used. Each of these (n, n1, or n2) was considered in two groups. For example, for the available and used group of social support, the first group is coded as "1" if that service is available and use, and the rest was coded as "0". For the variable "district", the active district was coded "1" and the less active district was coded as "0". For the variable "case", a case household was coded as "1" and the control household is coded as "0".

Firstly, conventional analysis methods such as Odds ratio between each subgroup of service and status of being active district, p-value and 95 % CI (v) were calculated from a two by two table of variable "service group" (1=yes, 0=no) and variable "district" (1=Active district, 0=Less active district).

Further analysis was performed by adjusting for variable "case", then Mantel-Haenszel (MH) Odds ratio after adjusting for status of being case or variable "case", p-value and 95% CI were calculated. This MH Odds ratio (w) will be compared to the Odds ratio from the conventional method of variables "district" and "service" (w). If the MH Odds ratio difference (v) vs. (w) varied by more than about 10 to 15 percent, the variable "case" should be considered as a factor influencing the sub-group of support services.

Logistic regression was performed using STATA6 for Windows assigning the "service available and use" variable as the dependent variable or outcome in the model, variable "district" as the main independent variable as a simple model and adding variable "case" as another independent variable to the complicated model (2LR).

The Log likelihood ratio from both models was tested and reported as 2LR (two times of the difference) and p value (z). Results from logistic regression were considered in two ways; 1) MH Odds ratio (w) and Odds ratio from logistic regression (x) are considered or cross-checked, and 2) Odds ratio of status of being case from logistic regression (y) will confirm that for that subgroup of service (n). The results of this method are presented in Table 8.12.

8.4 Summary of the key findings

Data on households utilisation of health and other support services and expenditure on health in the past six months was collected.

Overall, the most common places to seek health care for household members were health centres (51%) and government hospitals (39%), the remaining 10% were buying drug from store (5%), private clinics (3%), private hospital (1%) and traditional medicine (1%). In both districts, members of case households went to government hospitals (49% in Mueng, 49% in Pong) when they were ill more than those of control households (20% in Mueng, 37% in Pong) and went to sub-district health centres (41% in Mueng, 44% in Pong) less than controls (61% in Mueng, 56% in Pong). In both districts, average health care expense per capita per month (data from the last six months) in cases (THB 1,901 in Mueng, THB 1,793 in Pong) was significantly higher than in controls (THB 146 in Mueng, THB 113 in Pong), however, the difference was not significant among case households in the two districts.

About 16% of all households paid these expenses themselves. Among case households, 83% of households in Mueng and 73% of households in Pong were supported in their health care expenses by low income cards or health care cards, the difference was significant. Among control households, 73% of households in Mueng and 80% of households in Pong were supported in their health care expenses by low income cards or health care cards. The case households reported to have significantly more difficulties on seeking health care (cost of medication, travel and accommodation) than in the control households while households in Mueng had significantly less difficulties on seeking health care (cost of medication, travel and accommodation) than those in Pong. Members of case and control households in Mueng spent more time, on average, than in Pong seeking health care - mainly due to the geographical differences between regions.

In terms of support service availability, almost all case households in both districts were reporting that these support services were available in their communities. In terms of use of services, most of the support services were available and used by case household members in Mueng more than Pong and this was a statistically significant difference, except for the support for the elderly service. The case households had significantly more availability and use of social support, support for children, income generation project for women and treatment and care of ill people than the control household. There was no difference between the case household and

the control household in the two districts for social funds, community financing and agricultural project.

8.5 Reported health and utilisation of health services by household members

This section presents comparison between the sub-groups of responses of the respondent about: their own health and their opinion on other household members' health, the level of household disability, level of stress of respondents, overall health care cost and treatment cost for the household, the method of payment of health care expenses, transportation to the health facilities and time spent, transportation methods, difficulties of seeking health care, utilisation of health services by household members and household access to health services.

8.5.1 Reported health of respondent and household members

Table 8.6 shows the distribution of responses about respondents' assessment of their health to their neighbours in each sub-sample. The finding suggests that in control households the opinion of respondents about their health in the active district was significantly better than in the less active district (p=0.000).

The Odds ratios of the responses by status of case and control households and by active and less active districts are also presented. The "Control" column means Odds ratio compared control households in the active district with control households in the less active district. The "case" column means Odds ratio compared case households in the active district with case households in the less active district. The "Active" column means Odds ratio compared case and control households in the active district. The " Less Active" column means Odds ratio compared case and control households in the less active district.

8.5.1.1 Respondent's assessment of own health

Comparing the respondents' assessment of their health to their neighbours of the same age, in case households, the opinion of respondents about their health in case households in the less active district was significantly better than cases in the active district (p=0.000).

Comparing the respondents' assessment of their health to their neighbours of the same age, in control households, the opinion of respondents about their health in control households in the active district was better than controls in the less active district (p=0.000).

The Odds ratio for comparing respondent's health to others of the same age indicated that case households in the active district have Odds of being in bad health about 1.7 times that of case households in the less active district, and this is significant (p=0.000). In comparing their health to others of the same age, respondents in case households in the active district believed they were 3.9 times and 2.3 times more likely to have bad health than control households in the active district and in the less active district, respectively. These differences were statistically significant (p=0.000).

8.5.1.2 Opinion on household member's health

The respondents' opinion on household members' health compared to their neighbours of the same age, in control households, 80% reported that it was good or very good in the active district compared to 74% in the less active district; the difference was significant (p=0.000).

This suggests that the opinion of respondents about the health of household members living in control households in the active district is slightly better than in the less active district. However, among case households, 28% reported that their household members' health was good or very good in the active district and 46% reported that it was good or very good in the less active district; the difference was significant (p=0.000). This suggests that the opinion of respondents about the health of household members in case households in the less active district is better than in the active district.

Regarding household members' health in comparison to others of the same age, respondents reported that control households have Odds ratio of having ill health 1.1 times that of control households (the active district compared to the less active district) and 1.9 times that of case household (the active district compared to the less active district). The estimations of case households between the two districts were significant at 0.1% level (p=0.000). The Odds ratio for comparing household members' health to their neighbours of the same age, case households have odds ratio of having ill health 3.5 times of control households in active district and 2.5 times in the less active district and these differences were statistically significant at 0.1% level (p=0.000).

8.5.2 Reported disability of household members

In both districts, the same percentage of control households had a disabled member (4%). In case households in the active district, there were significantly more persons with a reported disability than in control households. The Odds ratio for comparing reported disability of household members of case households to control households indicated that case households in the active district have Odds of having disability persons about 3.2 times that of control households in the active district, and this is significant (p=0.04). This was not referred to chronically ill adults with more severe illness.

8.5.3 Reported level of stress

In the active district, in 92% of control households' respondents reported their level of stress as fairly stressful to stressful. This was less than in the less active district by only 6% and this was statistically different. In control households in the active district, 6% of respondents reported their stress level as being stressful, while in the less active district the percentage was 13%. Most of the households have some stress induced; this might be from the economic crisis occurring in Thailand nation-wide.

In 96% of case households in the active district, the respondents reported their level of stress as fairly stressful to stressful, more than in the less active district. The respondents in the active district mostly knew their household members' disease status and felt worried about them. The health care expenditure of case households in the active district was also higher than the less active district (see details in table 8.7).

About the level of stress the respondents reported that control households in the active district have odds of being stressful 1.3 times that of control household in the less active district; this difference was statistically significant (p=0.000). The respondents in case

households reported that they have Odds of being stressful 2.4 times and 2.1 times that of control household times in the active district and in the less active district respectively; these differences were statistically significant at 0.1% level (p=0.000).

Table 8.6 Respondents assessment of health status in both districts

Questions	Active district		Less active district	
	Case (n=150) (%) n	Control (n=150) (%) n	Case (n=150) (%) n	Control (n=150) (%) n
Compare respondent's health to others in the same age (respondent's opinion): how would s/he rate her/his health in general?				
-Very good	2(3)	9(13)	4(6)	21(31)
-Good	27(40)	74(111)	40(60)	49(73)
-Fair	44(66)	17(25)	43(65)	29(44)
-Very bad	27(41)	1(1)	13(19)	1(2)
Compare household members' health to other in the same age (respondent's opinion): how would s/he rate her/his members' health?				
-Very good	2(2)	8(11)	5(7)	17(25)
-Good	26(39)	72(108)	41(61)	57(85)
-Fair	40(60)	18(27)	44(66)	27(40)
-Very bad	33(49)	3(4)	11(16)	1(1)
Compare household members' health to nearby in the same age (respondent's opinion): how would s/he rate her/his members' disability? (Odds to have disability)	8(12)	3(4)	7(11)	3(4)
Reported level of stress of the respondent (Odds to have more stress)				
-Very stressful	13(20)	1(1)	0(0)	0(0)
-Stressful	17(26)	5(8)	34(50)	13(20)
-Stressful sometimes	50(75)	45(67)	34(51)	27(40)
-Having no stress at all	19(29)	49(74)	33(49)	60(90)

Characteristics	Active/ Less active district comparison		Case/ Control comparison	
	Control Odds ratio (95%CI)	Case Odds ratio (95%CI)	Active Odds ratio (95%CI)	Less active Odds ratio (95%CI)
Compare respondent's health to others in the same age (respondent's opinion) (Odds to have bad health)	0.954 (0.676-1.348)	1.678*** (1.258-2.238)	3.861*** (2.917-5.110)	2.335*** (1.758-3.100)
Compare household members' health to other in the same age (respondent's opinion) (Odds to have bad health)	1.146 (0.798-1.645)	1.915*** (1.449-2.533)	3.452*** (2.639-4.515)	2.511*** (1.851-3.407)
Compare household members' health to nearby in the same age (respondent's opinion) (Odds to have disability)	1.000 (0.245-4.084)	1.099 (0.468-2.578)	3.174* (0.990-10.180)	2.888 (0.891-9.367)
Reported level of stress of the respondent (Odds to have more stress)	1.057 (0.763-1.463)	1.302* (1.012-1.675)	2.352*** (1.823-3.036)	2.077*** (1.574-2.740)

Statistically significant at 5%*, 1%**, 0.1%***

8.5.4 Household access to health care: mode of travelling, time spent

Table 8.7 shows the utilisation of health care, mode of travelling and reported time spent travelling to seek health care (back and forward), which was statistically significant at the 0.1% level for control households and case households between the districts.

Most of cases in both districts used the public hospital but the controls used local health centres. The difference of utilisation of health care/service was statistically significantly

between case and control households in the active district. Private hospital, private clinic, self-meditation or buying drug from drug store and traditional medicine were other types of health care used by households.

There was statistically significant for the mode of travelling between case and control household in both district. Comparing control households, the time spent travelling to seek health care was significantly different between the active and the less active districts. This difference, of 71 minutes, is significant at the 0.1% level.

Table 8.7 Household access to health care of case and control household in both districts

Characteristics	Active district				Less active district			
	Case (n=150)	Control (n=150)	Difference	t-test/ p-value	Case (n=150)	Control (n=150)	Difference	t-test/ p-value
	% (n)	% (n)	Chi-square	p-value	% (n)	% (n)	Chi-square	p-value
Utilisation of health care			36.56	0.000**			8.13	0.229
-Government hospital	49 (74)	20 (30)			49 (74)	37 (55)		
-Private hospital	1 (1)	1 (1)			2 (3)	1 (1)		
-Private clinic	2 (3)	7 (10)			1 (2)	2 (3)		
-Buy drug from store	5 (7)	11 (16)			3 (4)	3 (4)		
-Traditional medicine	3 (4)	1 (1)			1 (1)	1 (1)		
-Health centre	41 (61)	61 (92)			44 (66)	56 (86)		
Mode of travelling			32.2	0.000**			17.3	0.002*
-Walking	8 (12)	7 (10)			17 (25)	12 (18)		
-Cycling (Bicycle or Motorcycle)	69 (103)	91 (137)			67 (101)	85 (127)		
-Others (car, boat)	23 (35)	2 (3)			17 (24)	3 (5)		

Characteristics	Active district			Less active district		
	Case (n=150)	Control (n=150)	Difference	Case (n=150)	Control (n=150)	Difference
Average reported time spent seeking health care (min) Mean	89	94	-5	41	23	18

Characteristics	Active/ Less active district comparison		Case/ Control comparison	
	Control Difference (95%CI)	Case Difference (95%CI)	Active Difference (95%CI)	Less active Difference (95%CI)
Average reported time spent seeking health care (min)	70.7*** (57.2-84.1)	47.6*** (31.3-63.9)	-5.0 (-23.1-13.2)	18.1** (7.3-29.0)

Statistically significant at 5%*, 1%**, 0.1%***

For the household accessing health care, the reported time spent travelling to seek health care in the active district did not differ significantly between case and control households (94 minutes in control households and 89 minutes in case households). But in the less active district, the average reported time spent seeking health care between case households (41 min) and control households (23 min) was statistically different at the 1% level (18 min).

This difference may be due to cases in both districts prefer to go to the hospital, while the controls prefer to go to the sub-district health centres near the households. The distance between the hospital and villages in the active district was longer than in the less active district. For the waiting time this was also longer since the hospital in the active district was more crowded.

8.5.5 *Difficulties of seeking health care*

To try to understand these potential barriers to accessing health care, the respondents were asked whether they or the household members faced difficulties from the cost of medication, cost of travel and cost of accommodation due to seeking health care.

Table 8.8 shows the number of respondents reporting each form of difficulty. In addition, the Odds ratios (95% confidence interval) of reported difficulties seeking health care are presented.

Table 8.8 Reported forms of difficulties in accessing health care

Characteristics	The active district		The less active district	
	Case % (n)	Control % (n)	Case % (n)	Control% (n)
Report difficulties in seeking health care				
-Cost of medication	23 (35)	9 (13)	43 (64)	26 (39)
-Travel costs	12 (18)	5 (7)	30 (45)	15 (22)
-Accommodation expense	4 (6)	2 (3)	26 (39)	11 (17)

Characteristics	Active/ Less active district comparison		Case/ Control comparison	
	Control Odds ratio (95%CI)	Case Odds ratio (95%CI)	Active Odds ratio (95%CI)	Less active Odds ratio (95%CI)
Reported difficulties seeking health care				
-cost of medication	0.270*** (0.135-0.541)	0.409*** (0.246-0.681)	3.207*** (1.595-6.449)	2.118** (1.290-3.479)
-cost of travel	0.285** (0.116-0.699)	0.318*** (0.171-0.592)	2.786* (1.117-6.949)	2.494*** (1.393-4.464)
-cost of accommodation	0.160*** (0.045-0.571)	0.119*** (0.046-0.304)	2.042 (0.499-8.359)	2.749*** (1.456-5.188)

Statistically significant at 5%*, 1%**, 0.1%***

The percentage of households reporting difficulties in accessing health care in control households in the less active district is greater than in the active district: 26% and 9% of control households reported difficulties in seeking treatment (for medication), 15% and 5% of control households reported difficulties in seeking treatment (for travel cost), and 11% and 2% of control households reported difficulties in accessing health care due to the cost of accommodation (Table 8.8). For the reported difficulty of medication costs, control households in the less active district had an OR of 3.7 times more than control households in the active district, and this difference was significant at 0.1% level. For the reported difficulty of travel costs, control households in the less active district had an OR of 3.5 times more than control households in the active district, and this difference was significant at the 1% level. And for the

reported difficulty of accommodation cost, control households in the less active district had an OR of 6.3 times more than control households in the active district, and this difference was significant at the 0.1% level. This suggests that the average cost of treatment per month of control households in the less active district is higher than in the active district.

In the active district, the percentage of households reporting difficulties in seeking treatment due to medication costs was 23% in case households (43% in the less active district) and 9% in control households (26% in the less active district), a significant difference (p=0.001). Regarding difficulties in seeking treatment due to for travel cost, the percentages were 12% in case households (30% in the less active district) and 5% in control households (15% in the less active district), again significantly differentt (p=0.022). For difficulties in seeking treatment due to accommodation costs, the percentages were 4% in case households (26% in the less active district) and 2% in control households (11% in the less active district), with the difference significant in the less active district but not in the active district. Comparing case and control households in each district, the reported difficulties of seeking health care due to cost of medication, cost of travel and cost of accommodation suggest that case households had an OR greater than control households. These differences were statistically significant except cost of accommodation in the active district. The results suggest that case households in the active district were supported by other sources for seeking health care and this was confirmed by the results in Table 8.8.

Difficulty of seeking treatment due to medication costs were 23% and 43% of case households in the two districts, with significant association between the difficulty and status of active/ less active (p=0.001). Difficulty of seeking treatment due to travel cost affected 12% and 30% of case households, with significant association between the difficulty and status of active/ less active (p=0.001). Comparing case households in each district for reported difficulty due to cost of medication, case households in the less active district had an OR of 2.4 times more than case households in the active district, and this difference was significant at the 0.1% level. For reported difficulty due to cost of travel, case households in the less active district had an OR of 3.1 times more than case households in the active district, and this difference was significant at the 0.1% level. And for reported difficulty due to cost of accommodation, case households in less active district had an OR of 8.4 times more than case households in the active district, and this difference was significant at the 0.1% level.

8.5.6 Health care cost and treatment cost

Table 8.9 shows the reported health care expenditure of case and control households in both districts. These are the reported average health care expenses per household in the last six months at the household level and average cost of treatment per capita per month.

Table 8.9 Reported health care expenditure of case and control households in both districts

Questions	Active district		Less active district	
	Case (n=150)	Control (n=150)	Case (n=150)	Control (n=150)
How much the expense of treatment when being sick, including all cost of each individual within the past 6 months (Thai Baht)?	t-test/p-value = 5.53/0.000***		t-test/p-value = 5.25/0.000***	
Means	4603	856	3212	380
Average cost of treatment of household member per capita per month (Thai Baht)?	t-test/p-value = 18.2/0.000***		t-test/p-value = 20.9/0.000***	
Means	1901	146	1793	113

Characteristics	Active/ Less active district comparison		Case/ Control comparison	
	Control Difference (95%CI)	Case Difference (95%CI)	Active Difference (95%CI)	Less active Difference (95%CI)
Average health care expense per household in the last 6 months (Baht)	475.77*** (245.01-706.52)	1391.25 (-296.12-3078.62)	3747.41*** (2415.67-5079.15)	2831.93*** (1770.37-3893.50)
Average cost of treatment per capita per month (Baht)	20.65** (5.09-36.22)	31.55 (-52.61-115.71)	151.00*** (97.26-204.74)	140.11*** (73.50-206.72)

Statistically significant at 5%*, 1%**, 0.1%***

The mean reported expenditure by any members of control households who were sick, including all costs of each individual (travel and food cost), within the past six months in the active and the less active districts were 856 Thai Baht and 380 Thai Baht per household respectively. Control households in the active district had spent 476 Thai Baht more on health care expenses than those in the less active district, and this different was significant (p=0.000). The mean reported expense for treatment cost of control households per person per month in the active district (146 Thai Baht) was significantly more than in the less active district (33 Thai Baht), and this difference was statistically significant (p=0.000). It is likely that control households in the active district had a higher average health expenditure than in the less active district in the last six months because they could access health care facilities more easily than control households in the less active district (Table 8.9).

Comparing the expenditure of case and control households in each district, in the active district, the difference of average health care expenditure per household in the past six months in the active and less active districts was 3,747 Thai Baht and 2,832 Thai Baht respectively, and these differences were significant at the 0.1% level. The difference in average health expenditure per household among the control households in the active and less active districts was 476 Thai Baht, and this difference was significant at the 0.1% level. Among case households, the difference in average health expenditure was 1,391 Thai Baht, but this difference was not statistically significant. The difference in reported average cost of treatment per person per month among control households between the two districts (21 Thai Baht) was

significant at the 1% level and among case households was 31.55. In the active district, case households had spent 151 Thai Baht more for treatment per capita per month than control households, and this difference was statistically significant at the 0.1% level. This was the same in the less active district, case households were spending 140 Thai Baht per capita per month more for treatment than control households (significant at 0.1% level).

8.5.7 Payment of health care expenses

It was important to know who paid for the household health care expenditure presented in Table 8.9. This could be by households and other sources, for example the low income card, health care card and private health insurance.

The current criteria for the low-income card are income less than 2,000 Baht per month for a single person and less than 2,800 Baht per month for a family. These are the criteria for the poor. The process of identifying who are poor or not is conducted by the community committee. In addition to the poor the Medical Welfare scheme also includes other groups: children under 12, elderly, disabled, veterans, and religious persons. Those who get the card are entitled to free care at selected facilities and at the least they can have direct access to the community hospital, they have the right to see a doctor. For use of care in facilities not covered by the card, they are responsible for their costs, except in cases of referral.

We can see from Table 8.10 the proportion of households paying out of pocket, using the low-income card, the health care card, private health insurance or support from relatives.

Table 8.10 Payment of health care expenses by case and control households and by district

Questions	Active district		Less active district	
	Case % (n)	Control % (n)	Case % (n)	Control % (n)
Who paid for household health care expense				
-Household	12 (18)	13 (19)	23 (34)	16 (24)
-Social welfare : low income card	63 (95)	48 (72)	33 (50)	34 (51)
-Health care card	20 (30)	31 (47)	40 (60)	46 (68)
-Health insurance (private)	4 (6)	5 (8)	1 (2)	2 (3)
-Relatives	1 (1)	3 (4)	2 (4)	3 (4)

Characteristics	Active/ Less active district comparison		Case/ Control comparison	
	Control Odds ratio (95%CI)	Case Odds ratio (95%CI)	Active Odds ratio (95%CI)	Less active Odds ratio (95%CI)
Health care expense was paid by household	0.761 (0.397-1.461)	0.465* (0.248-0.874)	0.940 (0.472-1.874)	1.539 (0.859-2.757)
Supported by health care cards (1)social welfare such as low income card and/or (2)health care card	0.746 (0.437-1.273)	1.818* (1.032-3.204)	1.818* (1.032-3.204)	0.746 (0.437-1.273)

Statistically significant at 5%*, 1%**, 0.1%***

In the active district, 63% of case households and 48% of control households were supported by social welfare using the low-income card. 20% of case households and 31% of control households were supported by the health care card. There were significant differences between the proportion of health care expenditure that was paid by the household itself between case and control households in the active district, 12% and 13% respectively, and case and control households in the less active district, at 23% and 16%. In the less active district, there was no significant difference in the proportion of health care expenditure that was paid by social welfare (low-income card) in case and control households (33% to 34% of household). It was found that the health care card was the main method of payment in the less active district, 40% in case households and 46% in control households, which was different to the active district where social welfare (low-income card) was more dominant (Table 8.10). 63% of case households in the active district and 33% of case households in the less active district were supported by social welfare (low-income card), and 24% of case households in the active district and 41% of case households in the less active district were supported by the health care card (Table 8.10).

The proportion of health care expenses that had been paid by case households in the active district was less than in the less active district (12% vs. 23%). Likewise, the proportion of health care expenditure that had been paid by control households in the active district was less than in the less active district (13% vs. 16%).

Comparing the health care expenditure in each district, the household in the active district had an OR of 0.8 times of the less active district. Likewise for the case households in each district, household in the active district had an OR of 0.5 time more than in the less active district, and this difference was statistically significant at 5% level. Comparing the patterns of support for control households in each district, the health care expenditure was paid by other sources in the active district an OR of 0.7 times more than in the less active district. And for case households in each district, other sources in active district an OR of 1.8 times more than in the less active district, and this difference was statistically significant at 5% level.

Comparing the health care expenditure of case and control households in each district, in the less active district, it was paid by case households an OR of 1.5 times more than for control households, and this difference was not statistically significant. Comparing the health care expenditure paid by other sources, in the active district, the case households had an OR of 1.8 times that of control households, and this difference was statistically significant at 5% level. This suggests that case households were more likely to use any insurance schemes than control households in the active district. In contrast, case households in the less active district were more likely to pay for health care expenditure by themselves, 1.5 times more than control households, but this was not significant.

8.6 Results on support services in the community

Many households used more than one method of support services when household members needed support services and care in the past six months.

Figure 8.2 summarises the relationship of support services in the communities in both districts. This is used to explore the extent to which household were able to access and utilise support services. The levels and patterns of utilisation differed substantially between communities with different levels of available services.

Figure 8.2 Summary of relative difference in support services in both districts

Control households in both districts		
Significant difference		**No significant difference**
Active>Less active	**Less active> Active**	
-Social support -Income generation project for women -Support for elderly -Social funds, community financing/funding and agricultural development		-Support for children
Case/Control households in the active district		
Significant difference		**No significant difference**
Case>Control	**Control>Case**	
-Social support -Support for children -Support for elderly -Treatment and care for ill people	-Income generation project for women	-Social funds, community financing/funding and agricultural development
Case/Control households in the less active district		
Significant difference		**No significant difference**
Case>Control	**Control>Case**	
-Social support	-Income generation project for women	-Support for children -Support for elderly -Social funds, community financing/funding and agricultural development Treatment and care for ill people
Case households in both districts		
Significant difference		**Not significant difference**
active>less active	**Less active> active**	
Social support		Support for elderly
Support for children		
Income generation project for women		
Social funds, community financing/funding and agricultural development		
Treatment and care for ill people		

As can be seen, the differences between utilisation of support services among control (healthy) households compared by district were statistically significant for social support, income generation project for women, support for elderly and social funds/community financing/agricultural development. This also occurred among case households; the differences between utilisation of support services (e.g. social support, support for children, income generation project for women, social funds/community financing/agricultural development, and treatment and care for the ill people) was statistically significant.

The most important point to consider regarding policy implications is the association between case and control households in the less active district, where it was found that a number of support services were lacking. Support for children, support for elderly, social funds, community financing and agricultural development as well as treatment and care for the ill people were all lacking, and therefore need to be considered in order to provide more to help to households.

Sections 8.6.1 presents reported availability and use of services by cases and controls.

8.6.1 Odds ratio of reported availability and use of services by case and control households

Table 8.11 presents the odds ratios of reported availability and use of services by control households in the active district and control households in the less active district (the first column), case households in the active district and case households in the less active district (second column). It also compares between case and control households in the active district (the third column), and between case and control households in the less active district (the fourth column).

Table 8.11 Odds ratio of reported availability and use of services by case households in both districts

Characteristics	Active/ Less active district comparison		Case/ Control comparison	
	Control Odds ratio (95%CI)	Case Odds ratio (95%CI)	Active Odds ratio (95%CI)	Less active Odds ratio (95%CI)
Social support				
Available and used	1.813* (1.139-2.886)	11.654*** (4.186-32.444)	25.375*** (8.479-75.936)	3.947*** (2.365-6.587)
Available and not used	0.652 (0.412-1.031)	0.113*** (0.041-0.313)	0.042*** (0.014-0.123)	0.239*** (0.141-0.406)
Not available and not used	0.240 (0.049-1.163)	N/A[a]	N/A	1.000 (0.365-2.743)
Support for children				
Available and used	0.726 (0.460-1.145)	4.104*** (2.433-6.923)	3.490*** (2.087-5.837)	0.617* (0.390-0.978)
Available and not used	1.495 (0.945-2.365)	0.257*** (0.153-0.433)	0.294*** (0.176-0.491)	1.710* (1.078-2.714)
Not available and not used	0.245 (0.027-2.241)	N/A	N/A	0.493 (0.089-2.748)
Income generation project for women				
Available and used	2.966*** (1.630-5.398)	2.490*** (1.513-4.099)	0.438** (0.239-0.801)	0.521** (0.323-0.841)
Available and not used	0.413** (0.223-0.763)	0.459** (0.280-0.755)	2.422** (1.311-4.475)	2.176** (1.325-3.575)
Not available and not used	0.119* (0.014-0.987)	N/A	N/A	0.612 (0.195-1.922)
Support for elderly				
Available and used	2.167*** (1.346-3.488)	2.918*** (1.791-4.754)	1.846** (1.151-2.962)	1.371 (0.854-2.199)
Available and not used	0.307*** (0.187-0.503)	0.362*** (0.223-0.588)	0.839 (0.522-1.350)	0.711 (0.444-1.139)
Not available and not used	17.791*** (2.208-143.335)	N/A	N/A	1.000 (0.062-16.212)

Characteristics	Active/ Less active district comparison		Case/ Control comparison	
	Control Odds ratio (95%CI)	Case Odds ratio (95%CI)	Active Odds ratio (95%CI)	Less active Odds ratio (95%CI)
Social funds, community financing, agricultural project				
Available and used	6.329*** (3.409-11.750)	9.036*** (4.318-18.908)	1.769 (0.828-3.779)	1.239 (0.786-1.955)
Available and not used	0.142*** (0.074-0.273)	0.117*** (0.056-0.244)	0.680 (0.312-1.483)	0.828 (0.524-1.307)
Not available and not used	1.000 (0.198-5.049)	N/A	N/A	0.662 (0.109-4.035)
Treatment and care of ill people				
Available and used	2.019** (1.264-3.224)	10.261*** (4.938-21.320)	8.280*** (4.051-16.925)	1.629* (1.025-2.588)
Available and not used	0.476** (0.296-0.764)	0.135*** (0.066-0.274)	0.184*** (0.092-0.370)	0.650 (0.411-1.030)
Available and not used	1.079 (0.501-2.326)	N/A	N/A	0.845 (0.376-1.895)

Statistically significant at 5%*, 1%**, 0.1%***, N/A[a] not available

The odds ratios of services availability and use of services in the study communities among case and control households were calculated in each district. The data on support service availability indicate the level of support services in the communities, which could help households with illness, case households, to cope. The data on use of support services in the communities indicate the accessibility of services for HIV symptomatic cases or other household members as well as the discrimination in the communities (proxy). The household member's health conditions could interfere with the access to service such as if they were very ill they could not either access to the service or use some of them.

Control households in the active district reported support services availability and use for social support, income generation project for women, support for the elderly, social funds/community financing/agricultural project, and treatment and care for ill people as 1.8 times, 2.96 times, 2.2 times, 6.3 times and 2 times more than control households in the less active district, respectively. These differences were statistically significant (Table 8.11). Control households in the less active district reported availability of support for children 1.4 times more than control households in the active district, but this was not statistically significant.

Comparing case households in each district, social support (11.7 times), support for children (4.1 times), income generation project for women (2.5 times), support for elderly (2.9 times), social funds and community financing (9 times) and care of the ill (10.3 times) were available and used by case household members in the active district more than case households in the less active district. These differences were significant at the 0.1% level.

Comparing case and control households in each district, social support (25.4 times), support for children (3.5 times), support for elderly (1.8 times), social funds and community financing (1.8 times) and care of the ill (8.2 times) were available and used by case household members more than control households in the active district. These differences were

statistically significant, except for social funds and community financing. In the less active district, for case households the odds of having available and using social support and care of the ill were 3.9 times and 1.6 times more than for control households, and these differences were statistically significant.

Therefore, the odds of availability and use of services in the active district compared to the less active district were greater for all services in case and control households, except for support for children where there was no difference between both districts. There were greater odds of availability and use in case households than in control households in both districts for social support, support for elderly (not significant for less active district) and treatment and care of ill people. For children's support, there were greater odds of availability and use in case households than in control households in the active district and smaller odds of availability and use in the less active district. The odds of availability and use were smaller in case households than in control households in both districts for income generation projects for women. There was no significant difference in odds of availability and use in case households compared to control households in both districts in social funds.

The conventional odds ratio from two variables or from conventional method is the basic principle to understand the characteristics between each subgroup of services and the status of being in the active district. Therefore, further analysis is performed adjusting for the variable "case" by Mantel-Haenszel (MH) Odds ratio. If the MH odds ratio is different from the odds ratio from conventional method by 10 to 15 percent, the status of being case households will be influenced by the service availability and use of services in the active district.

The results from Table 8.12 suggest that for social support, the status of being in the active district increased the odds of availability and use of this service. After adjusting for 'case' status, the odds ratio changed from 2.455 to 2.959 (or 22%). And after performing the logit estimate and log likelihood ratio test, the status of being a 'case household' was found to have a significant effect on the model.

Table 8.12 Odds ratio of reported availability and use of services

Characteristics	Active district Odds ratio[a] (95%CI)	Adjusted for status of being Case MHOdds ratio[b] (95%CI)	Logit estimate		2LR[c]
			Active District Odds ratio (95%CI)	Status of being Case Odds ratio (95%CI)	
Social support					
-Available and used	2.455*** (1.722-3.499)	2.959*** (1.985-4.411)	2.954*** (2.007-4.346)	6.884*** (4.613-10.274)	104.42***
-Available and not used	0.489*** (0.343-0.698)	0.423*** (0.285-0.629)	.424*** (.288-.624)	.1399*** (.093-.211)	103.99***
-Not available and not used	0.119*** (0.027-0.531)	0.119*** (0.027-0.531)	.119** (.027-.522)	.791 (.305-2.051)	0.23
Support for children					
-Available and used	1.650** (1.190-2.288)	1.622** (1.184-2.221)	1.656** (1.196-2.293)	1.409* (1.017-1.950)	4.28*
-Available and not used	0.647** (0.467-0.898)	0.658** (0.481-0.900)	.646** (.467-.894)	.740 (.534-1.024)	3.32
-Not available and not used	0.164 (0.019-1.381)	0.163 (0.019-1.384)	.163 (.0195-1.367)	.394 (.076-2.055)	1.35
Income generation project for women					
-Available and used	2.612*** (1.793-3.804)	2.680*** (1.827-3.929)	2.677*** (1.844-3.886)	.487*** (.337-.705)	14.97***
-Available and not used	0.452*** (0.309-0.659)	0.440*** (0.299-0.647)	.440*** (.302-.643)	2.271*** (1.555-3.316)	18.65***
-Not available and not used	0.074*** (0.009-0.579)	0.073*** (0.009-0.580)	.074* (.010-.566)	.542 (.178-1.653)	1.21
Support for elderly					
-Available and used	2.484*** (1.773-3.481)	2.511*** (1.788-3.528)	2.515*** (1.806-3.502)	1.594** (1.145-2.220)	7.67**
-Available and not used	0.335*** (0.237-0.473)	0.334*** (0.236-0.471)	.333*** (.239-.465)	.772 (.553-1.077)	2.33
-Not available and not used	8.394*** (1.884-37.404)	8.394*** (1.916-6.768)	8.742** (1.977-38.655)	.054** (.007-.408)	17.95***
Social funds, community financing, agricultural project					
-Available and used	7.328*** (4.579-11.728)	7.408*** (4.615-11.892)	7.392*** (4.797-11.390)	1.365 (.926-2.011)	2.48
-Available and not used	0.131*** (0.080-0.213)	0.130*** (0.080-0.212)	.130*** (.083-.203)	.787 (.532-1.165)	1.43
-Not available and not used	0.596 (0.141-2.521)	0.595 (0.140-2.524)	.595 (.141-2.518)	.329 (.066-1.642)	2.12
Treatment and care of ill people					
-Available and used	3.466*** (2.419-4.965)	3.710*** (2.560-5.376)	3.792*** (2.648-5.432)	3.032*** (2.119-4.339)	38.72***
-Available and not used	0.310*** (0.214-0.449)	0.297*** (0.203-0.434)	.295*** (.204-.426)	.413*** (.288-.594)	23.59***
-Available and not used	0.555 (0.287-0.072)	0.553 (0.286-1.069)	.551 .(284-1.066)	.387 ** (.193-.776)	7.82**

Odds ratio[a] calculated from 2 by 2 table of service (1=yes, 0=no); status of district (1=Active district, 0=less active)t)
MHOdds ratio[b] calculated from 2 by 2 table of service (1=yes, 0=no); status of district (1=Active district, 0=not active district) and adjusted for status of being case household (1=yes, 0=no)
2LR[c] =two times of Log likelihood ratio test, Statistically significant at 5%*, 1%**, 0.1%***

The Log likelihood ratio from both models is tested and reported as 2LR (two times of the difference between both models' log likelihood ratio) (104.42) and this difference was statistically significant at the 1% level. Results from the logistic regression suggest two aspects,

1) MH Odds ratio (2.959) from conventional methods and Odds ratio from logistic regression (2.954) are compared (values from two methods should be similar) and the Odds ratio of status of being case from logistic regression (6.884 with p value 0.001) may suggest that for this analyses status of being a case is a possible factor influencing this subgroup (support services).

There were three services - social support, support for elderly, treatment and care for ill persons – for which the results confirm that the status of households as cases in the active district was associated with higher utilisation than cases in the less active district.

8.7 Conclusion

The analysis suggests that there were a number of differences in the reported health status of household respondents and household members between sites. Among healthy (control) households, the opinion of respondents about their own and their household members' health in the active district was better than in the less active district. Likewise, among case households, the opinion of respondents about their own and their household members' health in the active district was worse than in the less active district.

There was also some variation in the reported levels of health expenditure. The health care expenditure of households in the active district was higher than in the less active district. The mean reported expenditure by any members of control households who were sick, including all costs of each individual (travel and food cost) within the past six months in the active and the less active districts, were 856 Thai Baht and 380 Thai Baht per household respectively. But for case households these were 4,603 Thai Baht in the active district and 3,212 Thai Baht in the less active district.

The proportion of health care expenses that had been paid by the household itself was nearly equal in both case and control households in the active district, being about 12 to 13% of households. Support from social welfare (using the low-income card) was greater for both case and control households in the active district than in the less active district (63% and 48% vs. 33% and 34% of households respectively). Whereas the health care card was used more in the less active district than the active district, again for both cases and controls (40% and 46% vs. 20% and 31% of households respectively).

Many support services were available in both districts. All case households and control households in the active district reported that the support services were available in their communities. In the less active district, there were statistically significant differences in the reported availability of social support and income generation projects for women. As would be expected in general, case households were more likely to report using the available social support services than control households were. However, case households were less likely to report using income generation projects for women than control households were. It may be that the differences in use of income generation projects for woman arise because household heads in case households in the less active district were more often women whose partner had died more than one year ago from HIV related illness, and it may be that these groups of women had difficulty joining these groups.

All cases in the active district knew of the availability of the support services in their communities, and they used them more than cases in the less active district. Cases in the active district had more support services available because these services were established by health personnel, NGO and community organisations. But, even when cases knew of the availability of services in the less active district, they made less use of them than cases in the active district.

It was found that a number of support services were lacking in the less active district. Support for children, support for elderly, social funds, community financing and agricultural development as well as treatment and care for the ill people were not available, and therefore need to be considered in order to provide more to help to households.

Control households in both districts reported the availability and use of support services: social support, income generation projects for women, support for the elderly, social funds/community financing and treatment/care for ill people were more well established in the active district than in the less active district, and the difference was statistically significant. Only support for children was not statistically significant. Case households in both districts had reported the same as control households but only support for the elderly was not statistically significant. This is because the reported number of elderly living in the household did not differ much in case households in both districts.

CHAPTER 9

THE IMPACT OF CHRONIC HIV/AIDS MORBIDITY ON HOUSEHOLD INCOME AND ASSETS

9 The impact of chronic HIV/AIDS morbidity on household income and assets

9.1 Introduction

This chapter presents the results on the economic impact of chronic AIDS morbidity on household income and assets. This is used to explore whether there are differences between the case and control households within and between both districts. Income is a major measure of well-being that is likely to be affected if a household is faced with an adult with chronic illness. The value of household assets is an indicator of how much a household has available to finance emergency expenditures, such as health care. The literature suggests that a large amount of money received from assets sale may be used to finance increased health care expenditure, and that part of the money may also be used to maintain other household consumption or investment, such as agricultural activities (Bechu, 1998; Bertozzi, 1996; Menon et al., 1998; Mutangadura & Webb, 1998; Pitayanon et al., 1997).

The chapter starts in section 9.2 by describing in detail the methods used to value different forms of household income and assets. The results are presented in section 9.4. After making comparisons of the findings between case and control households in both districts, multiple linear regression is used to identify key factors associated with different indicators of economic impact of HIV chronic morbidity.

Figure 9.1 A case household in the less active district was feeding cat-fishes and frogs

Recent economic models view the household as the basic analytical unit rather than the individual. In this approach, the household is considered to be the primary unit of production and consumption, which combines market inputs with time resources of the household members to produce household consumption.

The analysis of household income and assets is particularly based on the hypothesis that HIV/AIDS morbidity influences the resource availability and allocation within a household, and will have an overall impact on household welfare.

9.2 Sources of data and methods used

The data for this chapter were compiled from a series of questions documenting the economic activities (household income, production and assets) performed by adult members of households aged 15-59 years. Information was collected on the income of each individual household member, aged 15-59 years; household production regarding family farm, work on processing crops, tending livestock and processing livestock products from the previous agricultural cycle before the survey; and the range of assets owned by the household. As presented in Chapter 5, reinterviews to test the reliability of data indicated household income was the most unreliable parameter. Presumably, there should be income from a child (aged under 15) and adults aged older than 59, but this study did not take into account. The data presented throughout this chapter are in original values without any correction, therefore cautious interpretation of income data is necessary. The methods used for each element are described below.

9.2.1 Methods to document household income

The questionnaires included questions on each household member's income in the last six months. In particular, detailed data collected aimed to estimate the income of each household member in the past six months both as an employee and self-employed person since not every adult household member was employed in the formal sector (see details of questions used in questionnaires section 3 and section 4, Annex 8 Table 6).

For the main current occupation, information was collected on the form of employment and monthly salary. Similar questions were asked about any secondary form of employment. The time frame of six months for data collection was used because during pre-testing this was found to capture occasional income such as income from household members who did not have permanent jobs but worked as labourers every two or three months for cash income, and also the secondary jobs. During the questionnaires' piloting, most household members were able to give information about the six months. Whether the household income was in cash or in kind was also identified. For those who did not work during the 6 months, data were collected about whether they were looking for employment, and where appropriate, reasons for not seeking employment.

Each household was also asked about other income of household members in the past twelve months: 1) retirement fund and bonuses; 2) money sent from a cousin or other relative who used to be a household member; 3) funding from the government or other agency; 4) funding from other persons outside the household; 5) rental fee within the last 12 months; 6) interest and dividend received in the last 12 months. A twelve months recall for this question was used because this occasion did not occur very often in each household.

The results presented on household income were aggregated from all household members aged 15-59.

9.2.2 *Methods to document household assets*

A range of questions was used to assess the ownership of assets and income. Assets can be defined as the ownership of: 1) house and land; (2) farming production; (3) livestock and products including fishing; (4) housing; and (5) durable goods. The household assets present including ownership of house and land, agricultural household production, other household assets (durable) and the value of agricultural assets and other durable goods in monetary terms per household.

Table 1, Annex 9 shows the questions on ownership of assets used. This included collecting information about the number of different animals owned by household members, and the income of household members from their animal and animal products during the survey. The respondent was also asked about the ownership of cattle, durable goods and various utensils in the household. One of the main assets that households owned was a house and land (that the house was on and agricultural land).

The value of agricultural assets and durable goods was assessed by asking household members to estimate how much money they would receive if they sold them. There was no guarantee that households could sell properly their agricultural productions. Questions were asked as to whether the respondent or households members had owned any of these agricultural products in the previous agricultural cycle.

The list of the number of things and unit value of each category - vegetable, animal, dairy product, instrument for farming/fishing and other assets that were self-reported by the respondents - was documented. Since the value of household assets was self-reported by the respondents, the interviewer also validated the value of non-monetary assets by cross-checking with another household living in the same area and accessing the same open market in the community. Where there were differences between households in the same village, the average value for each item was calculated and used in the analysis. Most data collected referred to the 1998/1999 seasons (12 months from May 1998 to April 1999) or from the previous agricultural cycle before the survey was undertaken.

In the analysis, the results were then regrouped as shown in section 9.3.1.3 and detail of grouping is given in Table 2, Annex 9.

9.2.3 Data set and analysis methods

The amount of household income from main and second jobs, household income from main job only, and household income from other sources and the value of household assets was aggregated to give a total value per household.

Bivariate analysis was used to explore whether there were differences between case and control households within and between both districts on ownership status, agricultural work, household assets and household income.

Multivariate analysis or multiple linear regression was used to shed some light on which factors affect the household assets and household incomes and to explore the extent to which they are able to support household coping efforts.

Multiple linear regression was used to investigate factors affecting the levels of household well-being in terms of household income and household assets.

Logistic regression was used to investigate factors affecting the levels of household well-being in terms of household having cash income (binary outcome).

For this analysis, the relational database from the 600 households using household identification numbers was pooled in one data set. A data set of 2,313 household members (from 600 households) was pulled together. The eligible sample in this analysis was only those household members aged 15-59, which was 1,529 household members. Descriptive statistics and a comparison of compared means (t-test, or t-distribution) were widely used to compare household assets and income in case and control households.

Multivariate analysis was used to test the hypotheses that the extent to which household income and assets are affected differs substantially between communities with different levels of available support services. The estimating regressions from the sample, the analysis of "Bivariate Peasons correlation" in SPSS 9.05 are predominantly employed. Statistics for each pair (binary variables) of variables are based on all the cases with valid data for that pair, if the results were more than 0.6, those variables were chosen to put in the "regression" command in STATA 6. A result, that applies to formulas for variance-covariance matrices of regression parameters, was estimated by OLS (ordinary least square). To look at the distribution over households of various components of household income, household assets and their aggregate figures, it is rare to find variables that are normally distributed, so standard transformation such as taking logarithms was used with almost all dependent variables. To estimate the OLS regression in this chapter, the test for heteroscedasticity (basically by using the robust option for estimating heteroscedastic-consistent standard errors) is used by regressing the squared residuals on the independent variables. This method is also called "White's test" which examines whether the error is related to any regressor. To estimate the OLS regression, I first estimate the model by OLS, and then test for heteroscedasticity by regressing the squared residuals on the independent variable. This examines whether the error variance is related to any of the regressors. If a significant F-statistic is not found in the regression, the OLS estimates will be used as the results of the modelling and the value of F-

statistic and probabilities reported in the results tables. This is important to get the correct estimation, so the hypothesis testing results are then reliable. In general, it is not possible to say whether the estimates of the variances are biased upwards or downwards (Kennedy, 1992).

The data set of 600 households was pooled, and the Bivariate correlations were done to understand the characteristics between each pair of variables. This could help to identify the co-linearity between the two variables if the correlation co-efficient is more than 0.5. If there was co-linearity, one variable would be excluded from the multiple linear regression. If the variables estimated in OLS regression were not statistically significant, the variables were also excluded from the final model.

9.3 Summary of the key findings

The results on the economic impact of chronic HIV/AIDS on household income and assets are presented to explore whether there are any differences between the case and control households. Income is a major measure of well-being while household value of assets is an indicator of how much a household has available to finance emergency expenditure such as health care.

The main occupation of a half of household members aged 15 to 59 years was agriculture. As would be expected, in both districts there were a lower percentage of currently employed members in case households (72% in Mueng, 78% in Pong) than in control households (82% in Mueng, 84% in Pong). Seventy percent and 64% of unemployed members in case households respectively in Mueng and in Pong used to work before while 13% and 9% of unemployed members in control households in Mueng and in Pong respectively used to work before.

From the opinion from respondents on their household economic status, more than half of case households (71% in Mueng, 56% in Pong) reported having poor or very poor economic status compared to 21% and 38% of control households in Mueng and in Pong respectively.

The proportion of households with a cash income differed between districts, with two-thirds of household members in case and control households in Mueng reporting a cash income and one-third of members in case and control households in Pong reporting a cash income. Among households with a cash income, the main source of cash income in case households was funding from the government, whilst in control households the main sources of income were interest from saving and money transferred in from relatives. In each district case households in both districts reported significantly less cash income per capita than control households.

There were no significant differences in the percentages reporting owning land and nearly every household owned a house and had land to build on. In Mueng, case households had significantly less land for agriculture than control households had (case, 55% versus control, 77%). However, in Pong, case and control households had similar proportion of having land for agriculture (case, 67% versus control, 72%).

In both districts the average rent paid per month reported by cases in both districts was about 4 time higher than the rent paid by controls. This difference may reflect discrimination

against households with HIV infected people, as in the less active villages, the study identified people who had been thrown out of the community or work when sick.

Multiple regression analysis among household that had cash income suggests that households in Mueng had higher per capita cash income than households in the less active. Households with household heads who were male, young, had higher education, had occupation in the last six months or had savings had more income and assets whilst HIV infection status of households had negative effect on cash income without statistical significance. Households with CIAs had lower values of assets than those without CIAs but an effect of having CIAs in household on income was not found. However, logistic regression in all household suggests that chronic HIV/AIDS morbidity had a negative impact on the proportion of households whether having a cash income. The reason for the non significant negative impact of HIV status of household on income in multiple regression analysis is that it might be from the smaller sample size (n. 390) in multiple regression analysis than in logistic regression analysis (n. 600).

9.4 Research results

9.4.1 Household income

9.4.1.1 Employment status of household members

Table 9.1 summarises the employment status of household members in case and control households in each district. In total, there were 1,529 adults aged 15-59 years in the 600 households sampled (777 adults in the active district and 752 adults in the less active district).

In the active district significantly more household members aged 15-59 in the control households were employed than in the case households (82% vs. 72%, p = 0.002). In addition, substantially more case households than control households had household members who had no main job at the time of the survey, but used to work before (70% vs. 13% p = 0.000). For those household members who had been previously employed, their income ranged between 900 to 39,000 Baht per month, with an average income of 8,220 THB per person in case households, and 5,600 THB in control households.

In the less active district too, less adults aged15-59 were employed in case households than in control households (78% and 84% respectively, p<0.05). As in the active district, substantially more case households (64%) than control households (9%) had household members who had no main job at the time of the survey, but used to work before (p = 0.000). For household members who had previously worked but were not working now, their income ranged between 200 to 20,000 Baht, with an average of 6,500 THB per person in case households, and 4,250 THB in control households. These average figures for the less active district are less than in the active district.

For more than 50% of adults in households the main occupation in both districts was agricultural work. The differences of main occupation in both districts between case and control households were also statistically significant (p<0.005). For more than 50% of unemployed adult household members in the case households, respondents reported that they did not find a

job because of illness (Table 9.1). 10% of them in the active district and 1% in less active district had tried to find and apply for jobs.

Table 9.1 Employment and other income of household members aged 15 - 59 years

Characteristics	Active District		Less active District	
	Case	Control	Case	Control
Sex of household members (15-59 years)				
-Male (%, n)	51 (198)	47 (185)	48 (188)	50 (181)
-Female (%, n)	49 (186)	53 (208)	52 (195)	51 (188)
	Chi-square=1.14, p=0.285		Chi-square=0.13, p=0.721	
Household members who are currently employed (%, n)	72 (260)	82 (313)	78 (288)	84 (303)
	Chi-square=9.88, p=0.002**		Chi-square=4.38, p=0.036*	
Unemployed household members who have ever worked before (%, n)	70 (71)	13 (9)	64 (52)	9 (5)
	Chi-square=54.79, p=0.000**		Chi-square=43.15, p=0.000**	
Unemployed who previously employed, unemployed who had sought work				
(can answer more than 1) (%, n)				
(1) already apply for the job	1 (1)	1 (1)	1 (1)	0
(2) no hope for any job	10 (10)	6 (4)	1 (1)	6 (4)
(3) waiting for filling the job	1 (1)	1 (1)	NA	NA
(4) wait for proper time	1 (1)	1 (1)	2 (2)	0
(5) on house duty	8 (8)	9 (6)	18 (15)	12 (7)
(6) studying	23 (23)	77 (53)	22 (18)	86 (50)
(7) illness	52 (52)	1 (1)	51 (42)	0
(8) receiving not enough application?	2 (2)	3 (2)	NA	NA
(9) taking care of the sick	2 (2)	0	4 (3)	0
Main occupations of household members aged 15 – 59 years (%, n)				
-Agriculture	56 (146)	47 (148)	57 (164)	52 (158)
-Manufacturing	10 (26)	15 (47)	2 (6)	2 (6)
-Construction	7 (18)	3 (9)	17 (49)	12 (36)
-Trade	10 (26)	9 (28)	9 (26)	20 (61)
-Service	17 (44)	26 (81)	15 (43)	14 (42)
Total	100 (260)	100 (313)	100 (288)	100 (303)
	Chi-square=16.31, p=0.004**		Chi-square=15.82, p=0.003**	
Number of employed household members who have second jobs, % (n)	44 (139)	61 (198)	50 (157)	62 (191)
	Chi-square=18.71, p=0.000***		Chi-square=9.57, p=0.002**	
Forms of second jobs, %(n)				
-Agricultural worker	37 (51)	43 (85)	42 (66)	48 (92)
-Construction worker	21 (29)	39 (77)	20 (32)	30 (57)
-Transport worker	12 (17)	5 (10)	11 (17)	9 (17)
-Labourer	30 (42)	13 (26)	27 (42)	13 (25)
Total	100 (139)	100 (198)	100 (157	100 (191)
	Chi-square=26.29, p=0.000***		Chi-square=12.41, p=0.006**	
Type of income (main jobs), % (n)				
-Cash	65 (170)	68 (214)	37 (107)	39 (118)
-Kind	13 (33)	17 (52)	36 (104)	36 (109)
-Both	9 (23)	10 (31)	13 (37)	18 (55)
-No Payment	13 (34)	5 (16)	13 (34)	7 (20)
Total	100 (260)	100 (313)	100 (288)	100 (303)
	Chi-square=12.16, p=0.007**		Chi-square=7.13, p=0.07	
Type of income (2nd jobs), %(n)				
-Cash	37 (52)	48 (95)	54 (85)	59 (82)
-Kind	36 (50)	30 (59)	28 (44)	24 (33)
-Both	8 (11)	7 (14)	13 (20)	15 (21)
-No Payment	19 (26)	15 (30)	5 (8)	2 (3)
Total	100 (139)	100 (198)	100 (157)	100 (139)
	Chi-square = 3.75, p=0.23		Chi-square = 2.84, p=0.42	
Respondent's assessment of household economic status in each household, %(n)				
-Good	1 (1)	6 (8)	2 (3)	3 (4)
-Average	28 (37)	73 (99)	41 (58)	60 (89)
-Poor	49 (65)	15 (20)	48 (68)	33 (49)
-Very Poor	22 (29)	6 (8)	8 (14)	5 (7)
Total	100 (132)	100 (132)	100 (143)	100 (149)
	Chi-square = 71.96, p=0.000***		Chi-square = 11.98, p=0.007**	

* Statistically significant at 5%, ** Statistically significant 1%, *** Statistically different at 0.1% , NA not available

In the active district, less case households (44%) than control households (61%) reported having at least one household member with a second job, with the difference being statistically significant (p=0.000). The same pattern was seen in the less active district, with 50% of case households and 62% of control households reporting having a household member with a second form of employment, (p<0.05). In most instances, the second form of employment was agricultural work (37% and 42% of case households in the active and less active districts respectively; and 43% and 48% of control households in the active and less active districts respectively).

In the active district, the difference of type of household income from the main occupation from adults (aged 15-59) between case and control households was statistically significant at 5% level (p<0.05).

9.4.1.2 Average monthly household cash income per capita

The total monthly income per capita was estimated using aggregated household income. The definition of monthly income per capita used in this section was defined to be the average sum of cash income of household members individually including the other monetary income (other incomes in Table 2 Annex 9). The household assets described in the previous section were not included in the figures in Table 9.3 and Table 9.4. These household income figures were aggregated numbers as the unit of analysis is household level. The total number of household members (household size) in each household is used to calculate the total monthly household income per capita. The proportion of employed members can give the certain monthly household income because that will exclude the household members who were studying or unemployed.

Table 9.2 presents data on the main other sources of monthly household cash income for the household. 63% of case households in the active district received funding from government but only 29% in the less active district did.

Table 9.2 Distribution of other household cash income per capita

Categories	Active district		Less active district	
	Case n. 150 %(n)	Control n. 150 %(n)	Case n. 150 %(n)	Control n. 150 %(n)
1) Retirement fund and bonuses receive	1 (1)	1 (2)	1 (1)	0
2) Transfer money in from relatives who used to be household member	15 (23)	13 (19)	21 (31)	16 (24)
3) Funding received from the government or various agency	63 (94)	0	29 (44)	3 (5)
4) Transfer money in from other person outside household	7 (10)	1 (2)	5 (8)	3 (4)
5) Rental fee	3 (5)	1 (1)	0	1 (2)
6) Interest from saving	24 (36)	45 (68)	10 (15)	11 (17)
Total	95 (143)	55 (82)	56 (84)	33 (49)

Table 9.3 presents the average monthly household case income per capita in case and control households in the active district. The results for the less active district are presented in Table 9.4.

In both cases the data are presented in their original values without any modification, and so careful validation of household income data is important. The value of agricultural production is not included, and these figures are cash household income only. The value of household assets is also not included, and is described in section 9.4.2.

In both Table 9.3 and Table 9.4, the fifth to tenth rows present the monthly household per capita income from other sources (retirement funds, transfer-in money from relatives, government or other agency funds, etc). Details about the income of the chronically ill are also presented again in the next chapter.

There were significant differences between control and case households in the active district ($p<0.05$) in the average monthly income from the main form of employment, average monthly income from other employment and the average monthly funding received from the government or various agencies. The average total monthly household cash income per capita in case households was THB 1,259, and in control households was THB 1,679. The total household monthly cash income by employed members in the active district was slightly lower than the standard household monthly income per capita of the overall North region (Socio-Economic Survey data produced by the National Statistical Office of Thailand), which was THB 3,221 THB (1998 which was the same year of conducting this study). This pattern between case and control household was not the same in the less active district (Table 9.4), where case households had a slightly higher income than control households (by 52 THB).

Table 9.3 Average monthly household cash income per capita in active district

Some of income (monthly)	Case mean (n) Thai Baht (THB)	Control mean (n) Thai Baht (THB)	Difference/ Combined (case-control)	t (p)
1) % household with a cash income	44.67	71.33	*chi-square = 21.89, p=0.000***	
2) Average income from main jobs (in last 6 months)	2,860 (226)	3,902 (297)	-1,042(3,452)	-1.54 (0.12)
min/max	*300/45,000*	*300/150,000*	*chi-square = 122.8, p=0.000****	
3) Average income from second jobs (in last 6 months)	617 (104)	1,319 (169)	-7.01(1,052)	-7.05(0.000**)
min/max	*80/2,400*	*100/5,000*	*chi-square = 126.5, p=0.000****	
4) Average total income from main and second form of employment per capita :item 2)+3)	717 (236)	1,147 (296)	-430 (960)	-3.01(0.002**)
5) Average retirement fund and bonuses receive	32,000 (1)	9,000 (2)	23,000/16,667	NA
min/max	*32,000*	*6,000/12,000*	*chi-square = 3.00, p=0.22*	
6) Average transfer money in from relatives who used to be household member	12,578 (23)	19,895 (19)	-7,316/15,888	-0.7(0.50)
min/max	*1,000/180,000*	*1,000/120,000*	*chi-square = 21.93, p=0.34*	
7) Average funding received from the government or various agency	3,732 (94)	NA	625(85)	7.13(0.000***)
min/max	*500/20,000*		*N/A*	
8) Average transfer money in from other person outside household	2,530 (10)	24,000 (2)	-21,470/6,108	-8.8(0.000***)
min/max	*200/10,000*	*24,000*	*chi-square = 12.0, p=0.21*	
9) Average rental fee	4,340 (5)	7,000 (1)	-2,660/4,783	NA
min/max	*2,800/7,000*	*7,000*	*chi-square = 2.4, p=0.49*	
10) Average interest from saving	353 (36)	1,109 (68)	-756/848	-1.93(0.05*)
min/max	*6/1,500*	*20/14,000*	*chi-square = 35.6, p=0.39*	
11) Average all other incomes :item 5)-10) (in last 6 months)	5,341 (143)	6,639 (82)	-1,298/5,814	-0.55(0.58)
min/max	*6/182,000*	*20/120,000*	*chi-square = 117.9, p=0.001***	
12) Average income from main and other jobs (in last 6 months) : item 2)+11)	3,010 (236)	4,515 (296)	-1,504(3,860)	-2.04(0.04*)
min/max	*80/45,000*	*300/150,000*	*chi-square = 135.6, p=0.09*	
13) Average other total income :item 11) per capita	1,441 (143)	2,234 (82)	-793 (1,730)	-1.06(0.29)
14) Average total income :item 4) + 13) per capita	1,259 (288)	1,679 (298)	-421 (1,476)	-1.40(0.16)

* Statistically significant at 5%, ** Statistically significant at 1%, *** Statistically significant at 0.1%, NA not available

In the active district, there were significant differences between case and control households in the average for all other monthly incomes (or item 10 in Table 9.3) at 1% level (p=0.001), which included average monthly funding by government or various agencies (p=0.000), average monthly transfer money from other persons outside the household (p=0.000), and the average monthly interest from savings (p<0.05). Average monthly income from main job and second jobs (item 3) was also significantly different between case and control households in the active district at 5% level.

In the less active district, the average total monthly household cash income of case households was 1,191 THB per capita, 52 THB per capita greater than the average per-capita income for control households (1,139 THB). The household cash monthly income by employed members in the less active district was also lower than standard household monthly income per capita of the overall North region.

There were also significant differences between case and control households in the less active district in average 'all other monthly incomes' ($p<0.05$). This included differences in the average monthly funding received from government or other agencies ($p<0.05$), the average monthly transfer money from other persons outside the household ($p<0.005$), and average monthly interest from savings ($p<0.05$). The average monthly income from the main job and second jobs was also significantly different between case and control households in the less active district.

Table 9.4 Average monthly household cash income per capita in less active district

Some of income (monthly)	Case mean (n)	Control mean (n)	Difference/ Combined (case-control)	t (p)
1) % household with a cash income	63.33	88.00	*chi-square = 24.78, p=0.000***	
2) Average income from main jobs (in last six months 6 months)	1,622 (270)	1,851 (288)	-229 (1740)	-1.41 (0.16)
min/max	*300/45,000*	*300/150,000*	Chi-square = 122.8, p=0.000***	
3) Average income from second jobs (in last six months 6 months)	667 (143)	707 (177)	-40(689)	-0.49 (0.61)
min/max	*80/2,400*	*100/5,000*	Chi-square = 126.5, p=0.000***	
4) Average total income from main and second jobs per capita	520 (275)	644 (289)	-124 (584)	-2.59 (0.009**)
5) Average retirement fund and bonuses receive	15,000 (1)	NA	NA	NA
min/max	*NA*	*NA*	*NA*	
6) Average transfer money in from relatives who used to be household member	14,661 (31)	21,879 (24)	-7,217/17,818	-0.9(0.37)
min/max	*1,000/72,000*	*200/180,000*	Chi-square = 26.26, p=0.24	
7) Average funding received from the government or various agency	4,903 (44)	612 (5)	4,291 (4,465)	3.57 (0.008**)
min/max	*130/10,500*	*130/1,200*	Chi-square = 43.53, p=0.002**	
8) Average transfer money in from other person outside household	6,000 (8)	7,000 (4)	-1,000/6,333	-20 (0.84)
min/max	*1,000/20,000*	*1,000/24,000*	Chi-square = 9, p=0.17	
9) Average rental fee	NA	3,100 (2)	NA	NA
min/max	*NA*	*3,000/3,200*	*NA*	
10) Average interest from saving	1,613 (15)	896 (17)	716/1,232	2.02 (0.05*)
min/max	*200/5,000*	*100/2,000*	Chi-square = 9.78, p=0.64	
11) Average all other incomes :item 5)-10)	9,196 (84)	11,737 (49)	-2,592/10,151	-0.69 (0.49)
min/max	*130/72,000*	*100/180,000*	Chi-square = 68.65, p=0.02*	
12) Average income from main and other jobs (in last 6 months) : item 2)+11	1,939 (275)	2,277 (289)	-337(2,113)	2.04(0.04*)
min/max	*80/45,000*	*300/150,000*	Chi-square = 135.6, p=0.09	
13) Average total other income :item 11) per capita	2,609 (84)	3,198 (49)	-588 (2,826)	-0.62 (0.54)
14) Average total income :item 4) + 13) per capita	1,191 (294)	1,139 (291)	52 (1,165)	0.29 (0.81)

* Statistically significant at 5%, ** Statistically significant at 1%, *** Statistically significant at 0.1%, NA not available

9.4.2 *Ownership of and value of household assets*

Household assets in this section were based on agro-pastoral activities including house, land, and agricultural assets from raising crops and animal, livestock animal products, hand tools and farm equipment inventory as well as some durable goods.

9.4.2.1 Ownership of house and land

This section presents information on all houses owned by household members or used by households for living and sleeping, and information about their value and on the household expenditure to maintain them. Table 9.5 shows the proportion of household's that owned the house that they were living in, and whether their houses were built on their own land. Nearly all of these households (more than 95%) owned the land that their houses were on, although the size of land may not be very large. However, 9% of case households and 3% of control households in the active district, and 5% of case and control households in the less active district reported that they did not own land to live on.

More than 50% of households also owned agricultural land. 55% of case households in the active district owned agricultural land, as did 77% of control households. The difference between case and control households in the proportion of owning land to build the house and to grow their crops was statistically significant ($p<0.025$ and $p=0.000$) (see Table 9.5).

In both case and control households in both districts, most of the respondents originated from the study location, and 70%-80% of respondents built their houses by themselves. Some respondents had recently migrated to the district, with between 1% and 2% of respondents having bought their houses to live and had it under mortgage, which they were paying every month. Once they paid the full fees to the bank or the previous owner of the house, they could be the owners of the house. For those renting houses, the respondent reported that they paid a monthly fee but did not intend to buy the house.

In the active district, the respondents were joint-owner of the house in 20% of case households, but 10% of control households. In the less active district, in 9% of case households and 5% of control households, the respondents were joint-owners of the house. Regarding length of residence, in the active district both case and control households had lived in the house for under 15 years, while in the less active district case and control households had lived in the house more than 20 years. This implies that the households in the active district were newer formulated households.

Table 9.5 House and land ownership and their average values in both districts

Household assets	Active District		Less active District	
	Case N=150	Control N=150	Case N=150	Control N=150
Household members own: House (%)	99	99	97	97
Land to build a house (%)	91	97	95	95
Agricultural land (%)	55	77	67	72
	Land to build the house on, p=0.025* Agricultural land, p=0.000**			
Respondent's ownership Owner: house (%)	76.66	88.67	83.29	89.25
Joint-owner : house (%)	20.67	10.67	8.67	4.67
Renting : house (%)	1.34	0.67	6.04	5.41
Average monthly payment for renting in Baht (n)	2,500 (2)	583 (1)	2,075 (4)	559 (5)
Under leasing : house (%)	1.33	0.67	2.00	0.67
Average area of landholding that the house is on (Rai)	2.23 SD=2.25	3.64 SD=2.43	2.42 SD=2.53	2.52 SD=1.29
	Chi-square=31.24, p=0.005*		Chi-square=10.78, p=0.548	
Average area of landholding for agricultural activities (Rai)	8.63 SD= 13.5	14.18 SD= 14.6	14.85 SD= 17.01	20.36 SD=20.01
	Chi-square=37.67, p=0.037*		Chi-square=30.45, p=0.392	
Average value of house by respondents' self reported (THB)	56,689	75,330	91,903	96,987
Average value of land that the house is on by respondents' self reported (THB)	183,580	470,740	135,050	161,853
Average value of agricultural land by respondents' self reported (THB)	1,530,900	3,960,100	1,979,995	20,200,000

* Statistically different at 5%, ** Statistically different at 0.1%

In both active and less active districts the proportion of control households that owned land was slightly higher than case households. In addition, the amount of land owned on average was smaller for the case households than for control households, with the differences being statistically significant in the active district ($p<0.05$). Control households in both districts reported average value of their house and land to be higher than case households. Table 9.5 also shows the proportion of respondents who owned either singly or jointly the house that they were living in. The findings demonstrate how some households were living with their extended family if they are joint owners. In the less active district, 6% of case households reported that they were renting a house to live on. They were paying on average THB 2,075 per month.

Among household respondents that owned their houses, mostly were legally owned by the head or spouse. In the active district 11%-17% of households and in the less active district 13%-18% of households were owned by the household head's parents (inheritance). In 85% of control households but 78-80% of case households in both districts, the owners of the house

built the house by him/herself. Only 1-2% of households in both districts had to buy the house from other people.

9.4.2.2 Agricultural household production

Most household members in both districts reported that they were either farmers or farm workers. Activities ranged from being farm managers and supervisors, rice farmers, nurserymen and gardeners, rice farm workers, field crop and vegetable farm workers, livestock workers, and poultry farm workers.

Annex 9, Table 3 gives details of the farming products and values of crop production reported by respondents (adjusting for variations between respondents valuations). More than half of households in both districts grew rice as their main plant (60-90%). There was some difference in crop production between districts. Baby corn, corn, cotton and tobacco were grown more in the less active district than in the active district. This reflects the difference in the geography of the two districts, with the less active district being high and mountainous. In contrast the active district is a flat area, which is good for rice, tree crops and growing big plants.

The agricultural land of each households was planted with several crops, and all the crops contributed to the field production. Other fields or gardens had only one crop, such as cotton, mango, orange, etc. A range of crops were produced. These included rice, some vegetables and small plants (baby corn, soya beans, green beans, long green beans, tobacco, green cabbage, pumpkin, cauliflower), fruits (including mango, rambutan, papaya, longan, lichee, jack fruit, banana, guava, orange, coconut) and herbs (chilli, garlic, ginger, other Thai herbs).

Nearly the same proportion of all households in both districts were growing vegetables (bean, soil bean, green bean, green cabbage, pumpkin, cauliflower, long green bean).

The households in the active district grew big plants (mango, coconut, rambutan, papaya, bamboo, jack fruit, longan, lichee, banana, teak tree, orange etc.) and some herbs (Takrai, garlic, kae, ginger, kraprao, Kha, Cha-om, etc.), whilst households in the less active district grew tobacco and raw materials to produce cotton.

All crops that household members have tended on the land (agricultural land) belonging to the household and those crops that household members have tended on land that the household has rented or borrowed from someone else are presented in Table 4 in Annex 8. Crops that were grown by household members on farms they worked on but did not own were excluded from this table. Fewer case households reported owning crop production than control households in both districts, but there were no significant differences between case and control households in each district.

Each household reported raising animals either for sale or for household consumption (Table 5 in Annex 9). Animals are also economically important because they provide milk, eggs, honey or other products. Regarding livestock, 70-80% of households owned bipeds. Pigs were particularly popular in the less active district.

Some of the households also reported fishing and hunting activities. There were some tools and instruments owned for fishing especially among households located in the active district

living around the lake, and the difference was statistically significant ($p<0.05$). The difference in type of dairy product in the active district between case and control household was statistically significant ($p<0.05$).

9.4.2.3 Other household assets

Household wealth may be reflected in the possession of household durables that make life more pleasant. Table 9.6 presents data on the ownership of such household assets reported by respondents.

Table 9.6 Ownership of other assets reported by respondents

Type of other assets	Active District		Less active District	
	Case	Control	Case	Control
Entertainment (TV, Video, Radio) (%, n)	39 (241)	40 (284)	39 (234)	37 (253)
Refrigerator (%, n)	16 (98)	18 (127)	18 (109)	19 (126)
Vehicle (car, motorcycle, bicycle, truck) (%, n)	25 (156)	30 (210)	26 (158)	31 (207)
Electric fan (%, n)	4 (26)	3 (21)	5 (28)	2 (15)
Kitchen ware (%, n)	12 (75)	7 (50)	9 (54)	8 (56)
Precious furniture (Antique) (%, n)	2 (15)	1 (5)	2 (9)	2 (11)
Washing machine, iron (%, n)	2 (5)	1 (6)	1 (9)	1 (7)
Total	100 (616)	100 (703)	100 (601)	100 (675)
	Chi-square=20.20, p=0.003*		**Chi-square=8.7, p=0.19**	

* Statistically significant at 1%

More than half of the households reported having modern amenities, such as a television, and a refrigerator. A greater percentage of control households owned entertainment equipment, refrigerator and vehicles than case households in each district.

Self reported ownership of other household assets in the active district between case and control households was statistically significant ($p=0.003$). Self reported ownership of other assets in the less active district between case and control households was not statistically significant.

There was some difference in other household assets recorded by the respondent and those seen by the interviewers. Table 9.7 presents the proportion of other assets owned among household members in both districts recorded from the interviewer's observation. In the active district there were significant differences between case and control in the proportion of households owning radio, television, video, refrigerator, bicycle, motorcycle, car, gas stove, and washing machine ($p<0.05$ – $p<0.001$). In the less active district there were also significant differences in the level of ownership of refrigerator, bicycle, gas stove and motorcycle between case and control households ($p<0.05$ – $p<0.001$).

Table 9.7 Ownership of other assets by interviewer's observation

Proportion of having	Active District		Less active District	
	Case N=150	Control N=150	Case N=150	Control N=150
Radio (%, n)	67 (101)	81 (122)	62 (98)	72 (108)
	Chi-square=7.07, p=0.006**		Chi-square=3.39, p=0.066	
Television (%, n)	88 (132)	98 (147)	86 (129)	92 (138)
	Chi-square=11.52, p=0.001**		Chi-square=2.76, p=0.097	
Video (%, n)	11 (16)	24 (36)	11 (17)	10 (15)
	Chi-square=9.31, p=0.002**		Chi-square=0.14, p=0.708	
Refrigerator (%, n)	69 (103)	88 (130)	77 (115)	86 (129)
	Chi-square=14.01, p=0.000***		Chi-square=4.30, p=0.038*	
Bicycle (%, n)	53 (80)	73 (110)	48 (72)	61 (91)
	Chi-square=12.92, p=0.000***		Chi-square=4.85, p=0.028*	
Motorcycle (%, n)	63 (95)	85 (127)	71 (107)	87 (131)
	Chi-square=17.74, p=0.000***		Chi-square=11.71, p=0.001**	
Car (%, n)	7 (10)	21 (32)	7 (10)	9 (13)
	Chi-square=13.39, p=0.000**		Chi-square=0.423, p=0.515	
Gas stove (%, n)	77 (115)	90 (135)	58 (87)	71 (107)
	Chi-square=9.60, p=0.002**		Chi-square=5.84, p=0.016*	
Washing machine (%, n)	9 (12)	23 (35)	9 (13)	11 (17)
	Chi-square=13.35, p=0.000***		Chi-square=0.59, p=0.441	
Sewing machine (%)	17 (25)	24 (36)	12 (18)	14 (21)
	Chi-square=2.49, p=0.115		Chi-square=0.27, p=0.607	

Statistically different at 5%, **Statistically different at 1%, *** Statistically different at 0.1%

By observation of the interviewers (Table 9.7), it was found that in the less active district there was no significant difference in levels of ownership of radio, television, video, washing machine and sewing machine, these items being widely used by both case and control households as mentioned previously.

9.4.2.4 Value of agricultural assets and other durable goods in monetary terms per household

A large proportion of assets by value were plant or crop production, which were easier for households to tell because they have been planted for sale not for consumption (71% of case households, 49% of control households in the active district, and 97% of case households, 90% of control households in the less active district). Table 9.8 shows the value of plants and animal products. Plants and animals that the household would eat were not included in the Table. The unit of analysis of value of agricultural assets in Table 9.8 was accounted in Thai Baht per household (per HH) and per capita during the period season 1998/1999 (May 1998 – April 1999). This figure will be used in multivariate analysis later in section 9.4.4.4 .

Table 9.8 Value of agricultural assets and other durable among households in both districts

Value of agricultural assets (Thai Baht)	Active district				Less active district			
	Case		Control		Case		Control	
	Per HH***	Per capita	Per HH***	Per capita	Per HH***	Per capita	Per HH***	Per capita
Plant	8,573,375 (71%)	1,663,755 (71%)	14,200,000 (49%)	4,044,743 (55%)	2,044,425 (97%)	433,404 (96%)	6,797,373 (90%)	1,984,410 (98%)
	t (p-value) =0.05*				t (p-value) =0.05*			
Animal	3,402,704 (28%)	660,578 (28%)	9,883,845 (34%)	2,116,422 (0.29%)	15,942 (1%)	4,236 (1%)	116,385 (9%)	31,990 (2%)
	t (p-value) =0.39				Per HH ; t (p-value) =0.03*, Per capita ; t (p-value) =0.03*			
Product from animal	4,800 (0.04%)	53 (0.02%)	4,740,264 (16%)	1,181,729 (16%)	4,528 (0.2%)	949 (0.2%)	3,187 (0.04%)	864 (0.04%)
	t (p-value) =0.32				t (p-value) =0.87			
Instruments	2,760 (0.02%)	557 (0.02%)	10,399 (0.36%)	1,967 (0.03%)	10,327 (0.5%)	2,701 (0.6%)	12,773 (0.17%)	3,256 (0.2%)
	t (p-value) =0.04*				t (p-value) =0.57			
Other assets	18,733 (0.16%)	4,657 (0.19%)	38,003 (0.13%)	10,484 (0.14%)	29,044 (1%)	8,428 (2%)	36,145 (0.48%)	10,711 (0.5%)
	t (p-value) =0.000**				t (p-value) =0.10			
Total per year	12,002,372 (100%)	2,329,600 (100%)	28,872,511 (100%)	7,355,345 (100%)	2,104,266 (100%)	449,718 (100%)	7,498,863 (100%)	2,031,231 (100%)
Total/month	1,000,197	194,133	2,406,042	612,945	175,356	37,477	624,905	169,269

* Statistically different ($p<0.05$*, $p<0.005$**), ***per HH = per household

The value of agricultural assets including tools for agricultural activities and other durable assets in Table 9.8 demonstrates how households in the less active district generally owned fewer agricultural assets than households in the active district. This is because plants grown in the active district could generate more cash than the plants in the less active. In addition, it was found that in both districts the total agricultural assets per capita per month in case households were lower than control households. In the active district the difference was statistically significant on plants, instruments and other durable assets, but in the less active district it was significant only for plant and animal products.

9.4.3 Monthly cash income by sex of household head

Table 9.9 presents the average monthly income per capita by sex of household head. Household head is represented as a unit of household because each household had only one household head. The monthly cash income was presented in section 9.4.1; this section presents monthly cash income per household (head). Table 9.9 presents the data on the cash income by the sex of the household head. This includes cash income from main and second jobs and from other sources.

Table 9.9 Monthly cash income by sex of household head

Characteristics (Thai Baht)	Active district			Less active district		
	Case mean (n)	Control mean (n)	t (p)	Case mean (n)	Control mean (n)	t (p)
Earning income from main and second jobs per capita	1,978 (67)	2,922 (107)	0.004*	1,236 (95)	1,620 (132)	0.02*
Male household head	2,039 (43)	3,011 (100)		1,300 (73)	1,669 (118)	
Female household head	1,882 (24)	2,080 (7)		1,054 (22)	1,300 (14)	
Household income from other sources per capita	3,165 (55)	3,011 (44)	0.91	6,124 (51)	2,807 (32)	0.04*
Male household head	3,197 (32)	2,540 (37)		5,943 (30)	2,864 (25)	
Female household head	3,103 (23)	7,555 (7)		6,311 (21)	2,592 (7)	

In the active district, female-headed households in the case and control households had an earning income that was less than for male-headed households. The same was found in the less active district, with male-headed households earning more cash income than female headed households among both case and control households. The difference in household income per capita from both districts between case and control households was statistically significant ($p<0.05$). The differences of household income per capita from other sources between case and control households in the less active district was statistically significant ($p<0.05$). This was different in the active district, where household income per head from other sources (pension, relatives, other persons, rent fee, interest rate and support from government or other organisations) was higher with female-headed case households.

The difference between case and control households in both districts was that households in the less active district had lower monthly incomes than in the active district. Therefore, households in the less active district would get more support from outsiders in monetary terms. Case households in the less active district that requested official support needed to identify themselves as having HIV/AIDS to the organisations.

9.4.4 Multiple linear regression

There are many factors affecting household welfare, including household resources (household assets, household incomes), educational status, age, sex, occupation and health status of household head (Pitayanon et al., 1997).

The published literature indicates that the main economic impact of HIV is on the resource base of the household, forcing the household to reallocate labour (discussed in Chapter 10) and income in a way which may not yield the original level of welfare (Barnett & Blaikie, 1992; Mutangadura, 2000b; Pitayanon et al., 1997). This can also affect the future vulnerability and sustainability of the household.

This section demonstrates household income, household assets, household consumption and household production related to the household heads of both case and control households in both districts. Table 6 in Annex 9 presents the characteristics of household heads. Household heads in 64%-67% of case households were male, in control households 85-87% were male; and the differences were statistically significant between case and control households in both districts. The majority of household heads in case households were widowed, divorced or separated, more so than control households in both districts. More than 80% of household heads were employed and more than 50% had second jobs in the last six months. Household heads in case households had their own saving less than household heads in control households, and this was statistically significant.

Table 9.10 presents the variables used in regression analysis and their definitions. The summary statistics for the data variables are presented in Table 9.11.

Table 9.10 Variable definitions

Dependent variables		
Variable name	**Variable definition**	
LNINCEMP	Log of per capita earning of household income *from main and second jobs*	
LNM6MN	Log of per capita earning of household income *from main job only*	
LNOTHIN	Log of per capita earning of household income *from other sources*	
LNASSTOT	Log of per capita household assets	
Independent variables		
Variable name	**Variable definition**	**Code**
DISTR1	District:	1 = active district 0 = less active district
CASE1	Status of household	1 = case household 0 = control household
AGE	Age of household head	
SEX1	Sex of household head:	1 = male 0 = female
MENTAL	Stress level of household head (ordinal number)	1 = very stressful 2 = stressful 3 = fairy stressful 4 = no stress 5 = having no stress at all
HISTUDY	Highest education level of household head	0 = never been in school 1 = primary school or lower 2 = secondary school 3 = Junior high school 4 = high school 5 = Vocational school 6 = equivalent to university certificate 7 = bachelor degree 8 = upper than bachelor degree
M6OCC1	Occupation of household head in the last six months:	1 = employed, 0 = unemployed
SUBOCC1	Household head has second job:	1 = has 0 = does not have
SAVING1	Household head has saving:	1 = has 0 = does not have
HLTPYER2	Household head used social security card	1 = used, 0 = did not use
HLTPYER3	Household head used health care card	1 = used, 0 = did not use
FDDRKM	Food and drink consumption per capita per month (continuous variables)	
LNNONFD	Non-food and drink consumption per capita per month (continuous variables)	
HLTYOU	Opinion on health status of household head comparing to other person of the same aged (ordinal number)	1 = excellent health status 2 = very good health status 3 = good health status 4 = fair health status 5 = very bad health status

9.4.4.1 Results for per capita earning of household income from main and second jobs

LNINCEMP = a+M6OCC1+DISTR1+SAVING1+SEX1+SUBOCC1+HISTUDY +FDDRKM –CASE1-AGE-HLTPYER2-HLTPYER3

where M6OCC1 is the status of employment of household head in the last 6 months, DISTR1 is household location (district), SAVING1 is the saving of household head, SEX1 is sex of household head, SUBOCC1 is the status of having second job of household head, HISTUDY is highest education level of household head, FDDRKM is food and drink consumption per capita per month, AGE is household head age, HLTPYER2 is use of social security card by household head and HLTPYER3 is use of health care card by household head.

Table 9.3 and Table 9.4 demonstrate that not every adult household member was employed and received cash income from main or other form of employment. Table 8.9 presents monthly cash income per household. The number of households reporting their income earned per household from main and second jobs was 401 (67 case households, 107 control households in the active district; 95 case households, 132 control households in the less active district). Therefore, among 600 households, 390 from 401 households were taken into the regression analysis.

Table 9.11 Descriptive statistics for model of per capita earning of household income from main and second jobs

Variables	Observed number	Mean	Median	Max	Min	Std. Dev.
lnincemp	401	7.54	7.60	11.19	5.30	.90
distr1	600	.44	0	1	0	.50
case1	600	.41	0	1	0	.49
age	600	45.12	44	75	19	11.40
sex1	600	.84	1	1	0	.37
histudy	600	1.34	1	7	0	.99
m6occ1	600	.99	1	1	0	.11
subocc1	446	.65	1	1	0	.48
saving1	580	.24	0	1	0	.43
hltpyer2	600	.38	0	1	0	.49
hltpyer3	600	.38	0	1	0	.49
fddrkm	600	2304.36	2100	8000	300	1144.46

Number in model=390

Table 9.12 Model for per capita earning of household income from main and second jobs

Dependent variable: LNINCEMP Method: Ordinary Least Square Sample: N=390						
Variables	**Coef.**	**Std. Err.**	**t**	**p**	**lower 95CI**	**upper 95CI**
distr1	.5254236	.0827915	6.346	0.000***	.3626341	.6882131
case1	-.0973088	.0873633	-1.114	0.266	-.2690877	.0744701
age	-.0146652	.0043222	-3.393	0.001***	-.0231637	-.0061667
sex1	.2071098	.1068516	1.938	0.053	-.0029883	.4172078
histudy	.1429711	.0595452	2.401	0.017*	.0258898	.2600523
m6occ1	1.110406	.303014	3.665	0.000***	.5146013	1.70621
subocc1	.1849676	.0908731	2.035	0.043*	.0062875	.3636477
saving1	.3628714	.0987417	3.675	0.000***	.1687195	.5570233
hltpyer2	-.217443	.1170549	-1.858	0.064	-.4476034	.0127173
hltpyer3	-.2716605	.1107266	-2.453	0.015*	-.4893778	-.0539432
fddrkm	.0001534	.000039	3.931	0.000***	.0000767	.0002301
_cons	6.180352	.4252324	14.534	0.000***	5.344234	7.016469
R-squared	0.3086			**F(statistics)**		17.83
Root MSE	.75919			**Prob(F-statistics)**		.0000

Note: standard errors are heteroscedastic-consistent.
*significant at 5%, **significant at 1%, ***significant at 0.1%

Table 9.12 presents OLS estimates of the per capita earning of household income from main and second jobs. The socio-economic factors included in the regression model as determining factors of per capita earning of household income from main and second jobs in the last 6 months were: employment status of household head in the last 6 months, household location (whether in active or less active district), status of household (case or control household), savings of household head, sex of household head, second job of household head in the last 6 months, highest education of household head, level of stress of household head, Food and drink consumption per capita per month, age of household head, reported use of social security card of household head, and reported use of health care card of household head.

A log value of per capita earning of household income from main and second jobs was then regressed with these determining factors, most of which were dummy variables. Due to limitations of missing data, as mentioned in the earlier section of this chapter and above, only 390 was put in the regression.

The regression test indicates that household with household head having employment for main and second job, household location in active district, household head having savings, male household head, higher education of household head, and household food and drink consumption per capita per month were positively associated with household income from the main and second jobs.

Main job employment status of household head, household in active district, household head having savings and household with higher food and drink consumption per capita per month are likely to determine the difference in household income, strong significance at 0.1% level. This implies that the occupation (main job) of the household head in the last six months were positively associated with cash household income. Households where the household head had savings, a second job, and a high level of education had more household income

than other households. Male-headed households had the potential to earn more income from main and second jobs than female-headed households. Households with high food and drink consumption had more income.

Age of household head, household head with reported use of social security card and health care card were negatively associated with household income. This implies that household heads who were older had lower income than the younger and this is likely to determine the difference in household income with strong significance at the 0.1% level. Household heads who reported use of social security for health care expenditure had lower income. Household heads who reported use of health care card for health care expenditure had borderline lower income (p=0.064).

Surprisingly, the status of household (being case or control household) was also showed to have a negative effect in the regression but did not significantly correlate with household income from the main and second job (p=0.226).

9.4.4.2 Results for per capita earning of household income from main job only

LNM6MN = a+DISTR1+SEX1+SAVING1+HISTUDY-CASE1+FDDRKM-AGE -SUBOCC1

where DISTR1 is household location (district), SEX1 is sex of household head, SAVING1 is saving of household head, HISTUDY is education of household head, CASE1= status of household (case or control household), FDDRKM is food consumption, AGE is household head age, SUBOCC1 is second job of household head

Table 9.13 Descriptive statistics for model of per capita earning of household income from main job only

Variable	Observed number	Mean	Median	Max	Min	Std. Dev.
lnm6mn	390	7.28	7.24	11.19	3.69	.95
distr1	600	.42	0	1	0	.49
case1	600	.41	0	1	0	.49
age	600	44.87	43	73	19	11.22
sex1	600	.84	1	1	0	.37
saving1	580	.24	0	1	0	.43
histudy	600	1.34	1	7	0	1.00
fddrkm	600	2314.47	2100	8000	300	1150.41
subocc1	446	.64	1	1	0	.48

N=380

Table 9.14 Model for per capita earning of household income from main job only

Dependent variable: LNM6MN Method: Ordinary Least Square Sample: N=380						
Variables	**Coef.**	**Std. Err.**	**t**	**p**	**lower 95CI**	**upper 95CI**
distr1	.6294165	.0842336	7.472	0.000***	.4637813	.7950518
case1	-.0213612	.0927085	-0.230	0.818	-.2036613	.1609388
age	-.0111089	.0044329	-2.506	0.013*	-.0198257	-.0023922
sex1	.2864843	.1180835	2.426	0.016*	.0542875	.5186811
saving1	.3340464	.0994075	3.360	0.001***	.1385736	.5295193
histudy	.1817	.0623227	2.915	0.004**	.05915	.3042501
fddrkm	.000144	.000039	3.691	0.000***	.0000673	.0002207
subocc1	-.2731289	.0948216	-2.880	0.004**	-.4595841	-.0866738
_cons	6.793598	.2926224	23.216	0.000***	6.218192	7.369005
R-squared	0.2758			**F(statistics)**		20.28
Root MSE	0.81443			**Prob(F-statistics)**		.0000

Note: standard errors are heteroscedastic-consistent.
*significant at 5%, **significant at 1%, ***significant at 0.1%

The above regression presents 380 households that respond in most of the key variables used in the multiple regression.

Table 9.14 presents OLS estimates of the per capita earning of household income from main jobs(only) in the last six months. The socio-economic factors included in the regression model as determining factors of per capita earning of household income from main jobs were: household location (district), sex of household head, savings of household head, education of household head, status of household (case or control household), household food consumption per capita per month, age of household, and second job of household head in the last 6 months.

A log value of per capita earning of household income from the main jobs was then regressed with these determining factors, most of which were dummy variables.

The regression test indicates that household location in active district, male household head, household head with savings, household head with higher education and household with higher food consumption per capita per month was associated positively with household income from only the main jobs. However, location of households in the active district causes a greater positive impact on household income from the main job only, and this difference was statistically significant at 0.1%.

The household head having savings is likely to determine a difference in household income with strong significance at 0.1% level. It should also be noticed that for households in the active district or male-headed households, income from main job in the last 6 months was higher than that of households in the less active district or those, which were female-headed. Households where the household head had savings and a high level of education had more household income than households that had not. Households with high food consumption (food and drink) had more income.

Age of household head was associated negatively with household income from the main job. It suggested that household heads that were older had lower income and this is likely to determine a difference in household income with statistical significance at the 1% level.

Households where the household head had a second job in the last 6 months also had less household income than households that had not and this difference was statistically significant at 1% level. The status of household (being case or control household) also showed negative effect in the regression but this was not statistically significant (p=0.818).

9.4.4.3 Results for per capita household income from other sources

LNOTHIN = a+HLTYOU+MENTAL+HISTUDY+AGE+FDDRKM-DISTR1-CASE1-SEX1-SAVING1

where HLTYOU is health status of household head, MENTAL is level of stress of household head, , HISTUDY is education of household head, AGE is household head age, FDDRKM is household food consumption per month, DISTR1 is household location (district), CASE1 is status of household (case or control household), SEX1= gender of household head, SAVING1 is saving of household head.

Table 9.9 presents monthly income from other sources per household. The number of households that reported their income from other sources per household was 182 (55 case households, 44 control households in the active district; 51 case households, 32 control households in the less active district). Therefore, among 600 households, 181 households were taken into the regression analysis.

Table 9.15 Descriptive statistics for model of per capita household income from other sources

Variables	Observed number	Mean	Median	Max	Min	Std. Dev.
lnothin	182	8.21	8.34	11.70	1.79	1.78
distr1	600	.54	1	1	0	.50
case1	600	.59		1	0	.49
age	600	51.75	51	86	25	14.43
sex1	600	.69	1	1	0	.47
mental	600	3.15	3	5	1	.89
histudy	600	1.21	1	7	0	.99
saving1	580	.36	0	1	0	.48
fddrkm	600	2324.30	2400	7500	600	1150.93
hltyou	600	3.47	3	5	1	.85

Number in model=181

Table 9.16 Model for per capita household income from other sources

Dependent variable: lnothin Method: Ordinary Least Square Sample: N=181						
Variables	**Coef.**	**Std. Err.**	**t**	**p**	**lower 95CI**	**upper 95CI**
distr1	-.4373104	.2410613	-1.814	0.071	-.9131495	.0385287
case1	-.0430324	.3056886	-0.141	0.888	-.6464414	.5603766
age	.0253821	.008679	2.925	0.004**	.0082503	.0425139
sex1	-.2695508	.269082	-1.002	0.318	-.8007008	.2615992
Mental	.4447123	.1477321	3.010	0.003**	.1530989	.7363257
histudy	.3260467	.1516184	2.150	0.033*	.026762	.6253314
saving1	-1.398439	.2868633	-4.875	0.000***	-1.964688	-.8321897
fddrkm	.0003281	.0001084	3.026	0.003**	.000114	.0005421
hltyou	.4633921	.1755967	2.639	0.009**	.1167757	.8100084
_cons	3.680154	1.106128	3.327	0.001***	1.496729	5.863578
R-squared	0.2590			**F(statistics)**		6.62
Root MSE	1.575			**Prob(F-statistic)**		0.0000

Note: standard errors are heteroscedastic-consistent.
*significant at 5%, **significant at 1%, ***significant at 0.1%

The above exercise was not very successful due to the limitations of the data already mentioned in earlier sections. The number of households with reporting data related to per capita household income from other sources that could be used for multiple regression was relatively small (181 households from 600 households), but the important results are presented here.

Table 9.16 presents OLS estimates of the per capita household income from other sources. The socio-economic factors included in the regression model as determining factors of per capita household income from other sources were: health status of household head, level of stress of household head, education of household head, age of household head, household food consumption per month, household location (district), status of household (case or control household), gender of household head and savings of household head.

A log value of per capita household income from other sources was then regressed with these determining factors, most of which were dummy variables.

The regression test indicates that health status of household head, level of stress of household head, highest education of household head and educational level of household head were positively associated with household income from other sources. In this model heath status of head households became important because if they are not well enough, there will be some transfer of money in from relatives, with significance at the 1% level. Level of stress of household head also caused a positive effect on household income from other sources, with significance at the 1% level. In other words, the household head who thought him/herself to be worse in health status compared to others and reported having lower level of stress had more income (rather than main and second jobs) than ones who thought they had better health and had high stress. If household heads had higher education, they could be employed by governmental sector and were most likely to receive retirement funds.

Age of household head and household food consumption per month also had a positive effect on household income from other sources, with statistical significance at 1% level. This result also suggests that the older household head is likely to determine a difference in household income from other jobs, with statistical significance at the 1% level. The older age they were, the more they could receive income from other sources, and this can explain straightly why households had not much problem of living expenses.

The key finding from this model indicates that households in the less active district had higher income from other sources than households located in the active district but this was borderline ($p=0.71$). Nevertheless, the gender and HIV status of the households has negative effect on household income from other sources but they had not been found to significant ($p=0.318$ and $p=0.888$ respectively). The status of household (being cases or controls) was not associated with this kind of income.

9.4.4.4 Result for household having cash income

logit(CASHINYN)= CONSTANT -CASE1-DISTR1-AGE +SEX1 +M6OCC1 +SUBOCC1 +SAVING1

where CASE1 is status of household (case or control household). DISTR1 is household location (district). AGE is age of household head. SEX1 is sex of household head. M6OCC1 is occupation of household head in last six months. SUBOCC1 is second occupation of household head in the last six months. SAVING1 is household head had saving.

Table 9.17 Model of household having case income

	Logit CASHINYN (Household having cash Income)	
	β	Wald
CASE1	-.9765722	-2.172*
DISTR1	-.9011099	-2.145*
AGE	-.0747345	-4.803***
SEX1	.1667079	0.340
M6OCC1	5.63621	7.133***
SUBOCC1	6.146103	4.338***
SAVING1	1.011467	1.650
Constant	.4958886	0.421
N	600	
Mean	.668	
-2 log likelihood	158.000	
LR chi2	604.42***	

*p<.05, ***p<.001

When CASHINYN (household having cash income) was put in logit estimate as the dependent variable, there were 600 households in this model with 7 independent variables. Overall, this model was significant at .1% with –2 log likelihood equal to 158.000. Case households as well as households in active district were less likely to have cash income at 5% significant level. Households with older household head had lower cash income. Household with household head having main job and second job in the last 6 months was more likely to have cash income. Household with male head as well as household head have saving had no significant result for household having cash income.

9.4.4.5 Results for per capita household assets (non-cash)

LNASSTOT = a+DISTR1+AGE1+SEX1+SUBOCC1+HHSAV1-CASE1

where DISTR1 is household location (district), AGE1 is age of household head, SEX1 is gender of household head, SUBOCC1 is second job of household head, HHSAV1 is household had saving and CASE1 is status of household (case or control household).

Table 9.18 Descriptive statistics for model of per capita household assets

Variables	Observed number	Mean	Median	Max	Min	Std. Dev.
lnasstot	599	14.15	14.05	21.61	6.91	2.28
distr1	600	.45	0	1	0	.50
case1	600	.44	0	1	0	.50
age	600	46.38	45	99	19	12.49
sex1	600	.82	1	1	0	.39
subocc1	446	.57	1	1	0	.50
hhsav1	600	.34	0	1	0	.47

Number in model=445

Table 9.19 Model for per capita household assets (non-cash)

Dependent variable: lnasstot
Method: Ordinary Least Square
Sample: N=445

Variables	Coef.	Std. Err.	t	p	lower 95CI	upper 95CI
distr1	.4251876	.1971434	2.157	0.032*	.0377231	.8126522
case1	-.9906931	.2077114	-4.770	0.000***	-1.398928	-.5824583
age	.054561	.0080983	6.737	0.000***	.0386446	.0704774
sex1	.5926713	.2531676	2.341	0.020*	.0950971	1.090246
subocc1	1.167761	.2027444	5.760	0.000***	.7692884	1.566234
hhsav1	.4110175	.2084981	1.971	0.049*	.0012365	.8207986
_cons	10.57334	.4566683	23.153	0.000***	9.675805	11.47087
R-squared	0.2395			**F(statistics)**		24.31
Root MSE	2.0035			**Prob(F-statistics)**		.0000

Note: standard errors are heteroscedastic-consistent.
*significant at 5%, **significant at 1%, ***significant at 0.1%

Among 600 households, 445 households which reported household assets were used in the regression analysis.

When the household assets per capita were put as the dependent variable in the regression and estimated with heteroscedastic-consistent, there were 6 independent variables in the final model of 445 eligible households with F=24.31, p=0.0000 and R-squared=0.2395.

The results suggest that location of household, age and gender of household head, household head having a second job and household having saving had a positive effect on household assets. Status of being case or control household had a negative affect on household assets.

The regression test indicates that households located in the active district had more household assets per capita than households located in the less active district, this difference was statistically significant at 5% level. Male-headed households had more total household assets than female-headed households, and this difference was statistically significant at 5% level. The older household heads reported more household assets per capita than the young household heads with strong significance at the 0.1% level. Households with household heads who had a second job indicated that they had more household assets per capita, and this difference was statistically significant at the 0.1% level. Reported having saving of household had a positive impact on household assets per capita with significance at the 5% level. Status of case household had a negative impact on household assets per capita, with significance at the 0.1% level. Controls had more household assets than cases.

9.5 Conclusion

This chapter has presented data on the impact of chronic HIV/AIDS morbidity on household income (cash), assets (non cash) and wealth.

Case households in both study districts of rural Phayao mainly had the lowest income and the lowest education group engaging in agricultural and labouring works in the community. The average monthly household income per capita from main and second jobs of case households was significantly less than control households (Table 9.3 and Table 9.4). More than half of case households in both districts had income lower than the average level (THB 4,662), the level already considered very low by the national standard. (Average annual income per household for the whole kingdom in 1992 adjusted by the consumer price index for March 1998 equals 93,955 THB and for rural area 63,380 THB.) If the 1998 World Bank poverty line of $275 per person per year for rural areas in Thailand was adjusted by rural price index for March 1998 and for 3 persons average household members, about one third of case households would be below poverty line. This proportion was greater than 20% of control households in the community.

For those renting property, case households in both districts paid a higher rate (on average 4 times greater) for renting the house than control households in the same district. This may be because people in the community do not want the chronically ill adults to stay in their houses, and so landlords are able to increase the rented price. In the less active villages, some people were thrown out of the village, out of their partners family and out of work when sick. Consequently, this ill person was isolated, found it difficult to make money, and may have had to build his/her house as he/she could no longer live with relatives.

Some of the chronically ill were allowed to stay in another place near the family free of charge, but this tended to be in poorer status accommodation (described in chapter 7).

63% of case households in the active district and 44% in the less active district were receiving remittances from government or other agencies. Considering household heads, female-headed households had more support from other sources than male-headed households in the less active district. This was different in the active district (Table 9.9). For both case and control households in the active district, the male-headed households had higher average wage earning incomes, household food consumption and household non-food consumption than female-headed households. This was almost the same in the less active district. Because of this the potential impact of chronic illness on changing income is greater in male-headed households, reflecting the relatively large impact of the key male earner falling sick and being replaced as household head by a lower income female.

Figure 9.2 A chronically ill was not allowed to stay in the family, his place near his family was demonstrated

In terms of household assets, more than 50% of the households had agricultural land. 9% of case households and 3% of control households in the active district, and 5% of case and control households in the less active district reported that they did not own land to live on. In both active and less active districts, the proportion of control households that owned land was slightly higher than case households, and the amount of land owned on average was smaller for case households compared to control households. In the both districts, more case household respondents were joint-owners of their house compared to control households.

Every household had crop production. Case households tended to report a lower ownership of crop production than control households in both districts. The total values of agriculture assets indicate that control households had more potential assets from agricultural activities than case households in both districts.

The economic welfare of the household can be assessed by its levels of per capita household income and per capita household assets. The regression results suggest that households located in the active district tend to have more household income and household assets than households located in the less active district, except for household income from other sources, and these differences were statistically significant. During the fieldwork it was noticed that in some cases the chronically ill were not allowed to stay near their family (see Figure 9.2). This may be why households located in the less active district received more household income from other sources than households in the active district.

Among case households, the reported ownership of assets, household production, and household income from households located in the active district were greater than for households located in the less active district, although the margin is not so wide, and the median is quite similar. Control households in the less active district were on average less well off than they were in the active district but better off than the case households in the active district.

The finding from both the univariate analysis, and the multiple regression suggest that the HIV status of the households has impact on household income and assets.

However, the multiple regression does highlight the need to strengthen the capacity of rural households with chronic HIV/AIDS morbidity by improving their access to limited resources, the need to improve access to support services in the community especially in the less active district. The equations of per capita household income from main and second jobs, or from the main job only and household assets indicated that head of household was a positive co-efficient in the active district for wage earning income and assets. The level of reported stress of household head and household members are also important for earning income from other sources and should be considered by the local organisation. In the active district, case households had easy access to meditation activities located in Ban-Tom sub-district. In the less active district, to strengthen existing community initiation, it is needed to formulate a self-help group as in the active district. Figure 9.3 shows an example of health officers in the less active district who were trying to initiate housewife activities, for example, flower making.

Figure 9.3 Self help group initiation in the less active district

Two ladies on the right hand side are health officers (nurses) in the less active district

The next chapter presents more detailed information regarding the economic impact of HIV/AIDS morbidity on 300 households with at least one CIA.

10 The economic impact of chronic HIV/AIDS morbidity on households

10.1 Introduction

The economic impact of HIV/AIDS on households differs at different phases of HIV infection (Over, 1992). Once a household member becomes chronically ill there may be substantial health care costs, and the infected person may no longer be able to work or perform their usual activities. In addition, household members may have to take time off work to help the sick person access health care, for example; or may have to cease work to provide full time care for the ill person.

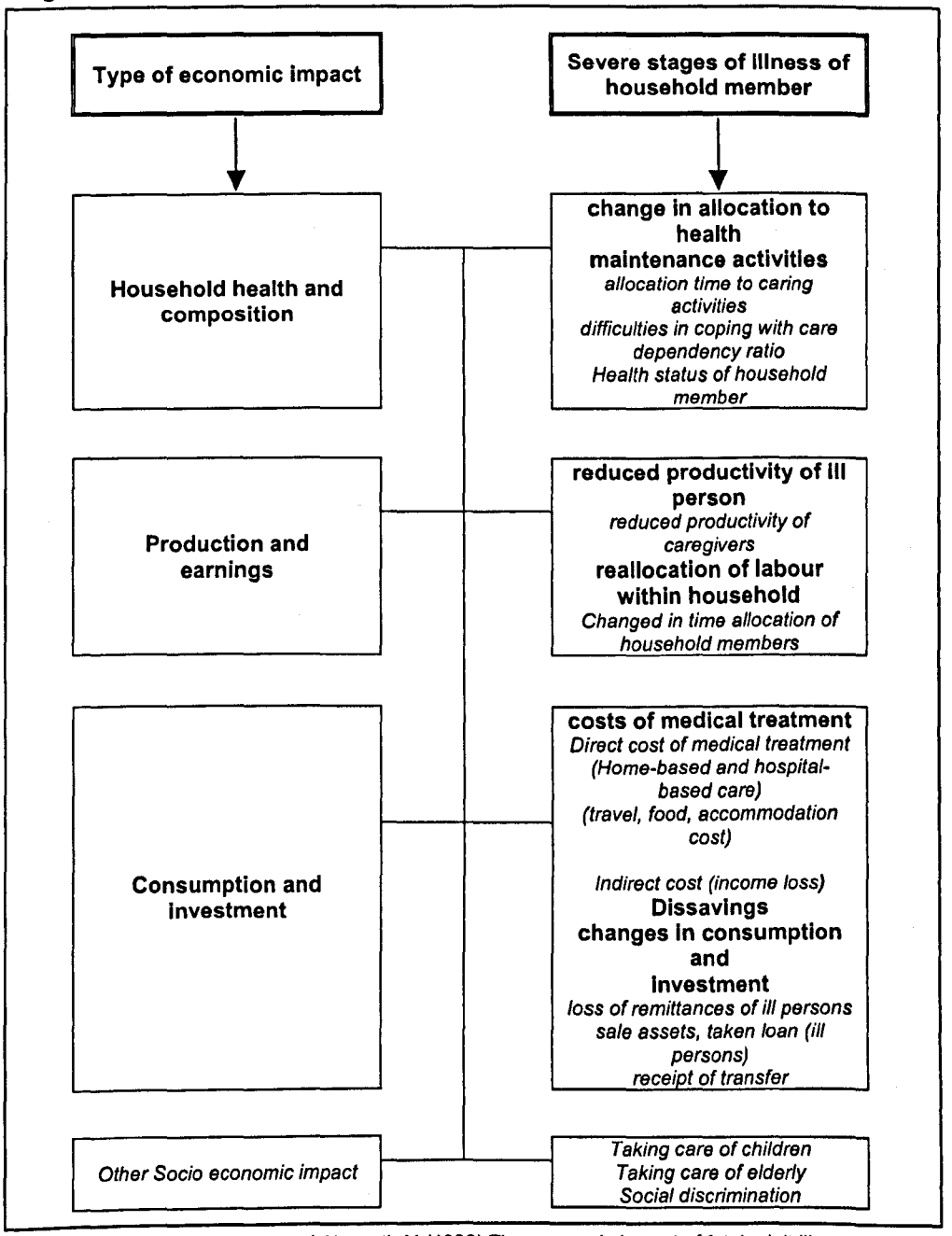
This chapter presents the direct and indirect costs associated with a household member having chronic HIV/AIDS morbidity in each district. Other dimensions of economic impact, including how the care of children and the elderly is affected by chronic illness in the household, are also presented. It is hypothesised that, due to differences in the availability of services, there will be significant differences between the two districts in the magnitude and/or forms of economic impact on households. This is explored by comparing the findings from chronic households in each district. Section 10.2 presents the analytical framework used to conceptualise the different ways in which chronic HIV/AIDS illness impacts economically on households. Section 10.3 describes the data sources and methods used to collect this data. Section 10.4 describes the forms of data analysis conducted. Section 10.6 presents demographic information about the CIAs, the direct costs of receiving medical treatment, and the travel costs associated with obtaining medical care in each district.

Data on a number of different indirect costs associated with chronic illness are presented: income foregone by other household members who have left their regular work to take care of CIAs; income foregone of the CIA themselves; income foregone from loss of household production caused by lost labour supply in the family, and changes in patterns of time allocation of household members. Finally, the data on the ways in which under five and elderly care are affected by chronic illness are presented. In each case comparisons between the two districts are made to assess the extent to which impact differs.

10.2 Analytical framework

Building on the literature review presented in Chapter 4, and the findings of the formative research, Figure 10.1 outlines the ways in which chronic HIV infection impacts economically on households.

Figure 10.1 Economic impact of chronic HIV infection



Source adapted from Over M and Ainworth M (1989) The economic impact of fatal adult illness from AIDS and other causes in Sub-Saharan Africa:a research proposal. World Bank Washington DC, (unpublished). (Key findings in this study in Italics)

The main impact of chronic HIV infection on household health and composition is the loss of a productive person and a consequent increase in the dependency ratio. In order to estimate the household composition, the household dependency ratio was used, which is the number of household consumption units divided by the household productive units (see Chapter 7).

CHAPTER 10
THE ECONOMIC IMPACT OF CHRONIC HIV/AIDS MORBIDITY ON HOUSEHOLDS

Chronic HIV/AIDS morbidity may affect a household's investment and savings in several ways. First, the costs of seeking care and providing support during the lengthy period of illness may place a heavy burden on households already under stress due to the loss of earnings or productivity caused by the diversion of labour of both the CIAs and their caregivers. Secondly the stress may lead households to dispose of assets, including productive assets. Finally, the loss of a person in young middle age (the average age of CIAs in the sample was 32-33) implies a major disinvestment especially in terms of education and work experience. The available data on these aspects of the impact on savings and investment is discussed in health care seeking behaviour and expenditures.

10.3 Data source and methods

Data were collected using the "case questionnaire" from the 300 case households in the two districts. The questionnaire included questions about: the demographic information of CIAs, illness of household members, history of illness and health related cost, method of paying for the cost of treatment, and changes in the time allocation of household members after someone becomes ill (the full questionnaire is in Annex 5.4). The respondent was either the household head or caregiver.

Table 10.1 Issues explored, questions used and comments

Issue	Questions/Data collected	Comments
Demographic information about chronically ill adult(s)	□ Age □ sex □ highest education □ Relation with the household head □ Marital Status □ Have any children □ If yes, how many? □ Number of children within different age groups □ Before being sick who took care of the children □ After being sick who took care of the children (The same questions about elderly care)	Respondents were asked the details of CIAs after the household was identified using criteria for CIAs. Timeframe: During the last 6 months, any household member who was older than 15 years and used to earn income became sick. The respondent: caregiver or household head
History of illnesses and treatment cost s of each CIA in the past six months	□ Other illnesses of the CIA besides present illnesses □ Duration of illnesses starting from having the symptom (record monthly) □ Was the CIA being treated by the any means? □ Have the CIA been admitted in the hospital during the past 6 month? □ If yes how many times □ How many days was the CIA admitted longest in the hospital?	If there was more than one CIA in the household the data were collected for each one A six-month time-period was used according to the inclusion criteria. The respondent: caregiver or household head
Other expenses related to CIA treatment during the past 6 months	□ The average cost of transpiration each time (including every one) for bringing the CIA to the treatment center back and forward □ How many time (times)? □ In what way are most of those who bring the CIA for the treatment related to the CIA? □ Do the people who bring the patient each time have to stop working in order to do errand? □ If the person who brings the CIA have to stop working, do they have to quit their job the whole day or not? □ By stop working each time do they have to loose their income from their employment □ If losing income, how much?	The respondent : caregiver or household head

Issue	Questions/Data collected	Comments
	□ How many minutes would it take to bring the CIA for the treatment (record in minute)? starting from living the house until finished the treatment and return back home □ Food cost of each time when come for the treatment? □ Accommodation cost of each time when you come for the treatment?	
Provision of home-based care in past six months?	□ During the CIA treatment time, do you usually have household members to take care the CIA? □ If yes, who is taking the CIA most of the time? □ Did the person who takes care of the CIA have to stop working? □ If the people who take care of the CIA are school children do they have to stop go to school? □ Do they have to loose their income each time they stop working? □ In case of income loss the estimated amounted money lost □ How much money was lost in the last 6 month (answer in month)?	The timeframe used in questionnaire referred to the past six months. The respondent: caregiver or household head
Accessing hospital-based care in past six months	□ Do the people who bring the CIA each time have to stop working? □ If the person who brings the CIA have to stop working, do they have to quit their job the whole day or not? □ By stop working each time do they have to loose their income from their job □ If losing income please specified the amount of income loss each time after stop working □ In case of income loss the estimated amounted money lost (THB) □ How much money was lost in the last 6 month (answer in month)	The timeframe used in questionnaire referred to the past six months. The respondent: caregiver or household head
Expenses related to costs of treatment and sources of finance for of healthcare	□ Buying drug for the drug store (number of time, estimated expenses per each time, who is payer?) □ Cost of treatment in private clinic / polyclinic (number of time, estimated expenses per each time, who is payer ?) □ Cost of herb (number of time, estimated expenses per each time, who is payer?) □ Expenses of health center (number of time, estimated expenses per each time, who is payer?) □ Expenses of government hospital (number of time, estimated expenses per each time, who is payer ?) □ Expenses of government hospital (number of time, estimated expenses per each time, who is payer ?)	Payer could be... *(01) pay by oneself (02) free from social welfare (03) free from health card (04) free from social security (05) health insurance (06) being paid by the cousin(07) reimburse from the government) (08)reimburse from the company social welfare(09) other specified* The respondent : caregiver or household head

The respondent was asked about the history of illness of each CIA who had been sick for six months and so defined as "chronically ill" using the inclusion criteria for the study. In the questionnaires more than one column of responses could be recorded, so that if the household had more than one CIA the data could be collected for each person.

For each CIA, demographic information, background information on illness, histories of illness and treatment costs were gathered from the respondent. The respondents were asked about out-of-pocket expenditure, and their travel expenses associated with obtaining medical

care for the CIAs within the past six months. The estimated income forgone from the CIAs was obtained by asking respondents to describe the foregone earning income of the CIAs. A 5%-discounted rate was used to calculate the forgone earnings for the total period of lost work due to ill health up to the time of the survey. In a similar way the reported lost earnings of other household members who had to leave work to take care of the CIAs was also calculated. The total was used to estimate total foregone earnings of the household.

10.4 Data analysis

Using the programme SPSS and STATA from database in Microsoft Access 97 descriptive analysis was employed. This aimed to see the overall frequency and relationship of the variables.

For the categorical data, chi-square tests and p-values were used to demonstrate the relation of variables. For the continuous data, comparisons were made using a two-sample t-test with equal variances.

Multivariate analysis was used to identify key factors affecting the reported health care expenditure in the past six months for CIAs in each district. For the analysis, a relational database of 300 case households was created using Microsoft Access. For the CIAs in each district, the expense of treatment when being sick, including all of the costs to each individual within the past 6 months, were combined to obtain the average per capita value (from 324 CIAs from both districts). Multiple linear regression was used to investigate the key variables affecting the per capita health expenditure of chronically ill adults in the active and less active districts. Using the same methods as in Chapter 9, it was identified that the ordinary least square (OLS) and standard errors are heteroscedastic-consistent. The socio-economic factors included in the regression models as the determining factors of the per capita health expenditure of chronically ill adults. The bivariate correlation analysis was performed using SPSS for windows. The regression analysis was conducted using STATA.

10.5 Summary of the key findings

This chapter presents characteristics of CIAs, and the direct and indirect costs associated with a household member having chronic HIV/AIDS morbidity in each district. Other dimensions of economic impact, including how the care of children and the elderly is affected by chronic illness in the household, are also presented.

Characteristics of CIAs in the both district were similar regarding to age, level of education, marital status, relationship to household head and number of children and elderly to take care of.

Almost all CIAs (99%) from both districts had main jobs before getting sick and two-thirds still continued their work after getting sick. The most common type of illness reported among CIAs was diarrhoea and asthma. During the previous six months, 44% and 52% of CIAs in Mueng and Pong were admitted to the hospitals on average 2.2 and 2.3 times respectively. Over a half of CIAs (54% in Mueng, 60% in Pong) reported having attended a government hospital over six months time, whilst approximately a third of CIAs (31% in Mueng, 22% in

Pong) reported using public health centres. Half of CIAs (44% in Mueng, 52% in Pong) had been admitted to hospital in the previous six months, with an average duration of 20 days hospitalisation. Among people accompanying CIAs to the treatment centre, 72% and 63% of them in Mueng and in Pong had to stop working. The average income loss of those that took care of CIAs at hospital was about THB 2,080 (equal to 1.3 months income earning) in Mueng and THB 2,079 THB (equal to 1.3 months income earning) in Pong.

During the previous six months, 56% of CIAs in Mueng had household members to take care of them at home, compared to 65% in Pong. Most (78%) caregivers at home were parents and spouse, with 28% of all caregivers had stopped working to care for CIAs. Three percent and 10% of caregivers at home in Mueng and Pong were children. Among caregivers who were children, all three children in Mueng and 7 of 10 (70%) in Pong had stopped going to school to care for CIAs. The average income lost during the last six months of home caregivers was THB 3,229 in both districts (equal to 1.7 month in Mueng and 2.2 months in Pong).

CIAs reported out of pocket expenditure (not including support from relatives and others) to many different providers, including to drugstores (90%, n=70), private clinic (90%, n=46), traditional healers (83%, n=43), sub-district health center (7%, n=9), government hospitals both OPD and IPD (9%, n=13) and private hospital (79%, n=15). Average HIV/AIDS-related health care expenditure paid on drugs, government hospital, health care centre, traditional medicine and private clinic and hospital among case households in the previous six months in Mueng was lower than those in Pong (THB 9,109 versus THB 13,606). In addition, multiple regression suggests that case households in Mueng had a lower per capita health expenditure of CIAs than those in Pong. This reflects the case households in Mueng was more likely to be supported for health care expense from other sources than in Pong. This was supported by the proportion of health care card usage. The proportion of health care card usage in the case households in Mueng was significantly higher than in Pong (Odds ratio 1.8).

Average number of children in each household was about 1.3-1.4 in Mueng and Pong. Sixty-six to sixty-seven percent of CIAs' children were taken care by parents before severe illness stage, 16% were taken care by grandparents, and this was not different between the two districts. However, after reaching chronic stage, 47-55% of the children were taken care by their own parent, but 27% were taken care of by their grandparent, it's about 10% increasing of before severe illness. This is slightly different as before being very ill.

About 80% of elderly were the CIA's parents and 15% were the CIA's grandparents, and this was not different between the two districts. Before severe illness stage, 44% and 47% of HIV/AIDS affected members (CIAs) in Mueng and Pong were responsible for taking care of the elderly. After severe illness stage, the percentage of HIV/AIDS affected members were similar to before severe illness stage.

10.6 Results

10.6.1 Demographic information of CIAs

Information was collected among 324 chronically ill adults (CIAs): 163 CIAs in the active district and 161 CIAs in the less active district. 92% and 93% respectively of case households

in the active and the less active district had only one CIA living in the household. 8% (13 households) and 7% (11 households) respectively of case households in the active and less active districts had two CIAs living in the household during the survey period. 50% of CIAs in the active district and 42% of CIAs in the less active district were male. Table 10.2 summarises the profile of all chronically ill adults (CIAs) in the two districts.

Table 10.2 Profile of chronically ill adults (CIAs) in both districts

Characteristics	Active District N=163	Less active District N=161
Number of households	150	150
Number of CIAs per household		
-Number of CIAs = 1, %(n)	92 (150)	93 (150)
-Number of CIAs = 2, %(n)	8 (13)	7 (11)
Sex of CIAs		
-male CIAs, %(n)	50 (82)	42 (68)
-female CIAs, %(n)	50 (81)	58 (93)
Age of CIAs, years		
150 males(Mean/SD/median/n) *(min/max = 21/50)*	33/4.9/33/82	33/4.9/32/68
174 females(Mean/SD/median/n) *(min/max = 20/58)*	32/6.4/31/81	31/6.9/28/93
Level of education of of CIAs		
-Never educated in school, %(n)	4 (6)	4 (6)
-Prathom, low, %(n)	83 (135)	88 (141)
-Prathom, high, %(n)	13 (21)	7 (12)
-Higher education, %(n)	1 (1)	1 (2)
Relationship to household head		
-Household head, %(n)	20 (33)	25 (40)
-Spouse, %(n)	8 (13)	8 (14)
-Son/daughter, %(n)	55 (90)	50 (81)
-Others, %(n)	17 (27)	16 (26)
Marital status of CIAs		
-Single, %(n)	17 (27)	16 (25)
-Married, %(n)	37 (60)	37 (60)
-Divorced, %(n)	7 (12)	12 (19)
-Widowed, %(n)	39 (64)	35 (57)
CIAs that had child, %(n)	80 (109)*	70 (95)*
Number of Children (Mean/SD/median/n)	1.3/0.6/1/109	1.4/0.6/1/95
Children being taken care of by living parent *before* being CIAs, %(n)	67 (73)	66 (63)
Children being taken care of by living parent *after* being CIAs, %(n)	55 (60)	47 (45)
CIAs that have elderly to care for, %(n)	58 (94)*	60 (97)*
Number of elderly(Mean/SD/median/n)	1.6/0.5/2/94	1.5/0.5/1/97
Elderly being taken care of by CIAs *before* being sick, %(n)	76 (71)	78 (76)
Elderly being taken care of by CIAs *after* being CIAs, %(n)	75 (70)	78 (76)

* Significant at 5%

The average age of female CIAs is slightly lower than that of the male CIAs in both districts, reflecting current morbidity patterns associated with HIV/AIDS. 4% of CIAs in both districts had not been educated in school. More than 80% of CIAs had highest education as Prathom low (or primary school), only 1% of CIAs had higher education. About half of CIAs in both districts were sons and daughters of the household head, and about one-fifth in the active district and one-fourth in the less active district were themselves the household head. 20% of CIAs in the active district and 30% of CIAs in the less active district didn't have any child.

10.6.2 Household composition

Table 10.3 summarises the characteristics of case households in the active and less active districts, including dependency ratio. 51% of household members in case households in both districts were female. In the active district, people aged 60+ constituted 17% of the case households, compared with 14% in the less active district. Mean age of people in case households aged 15-59 in the active district was 34.8 (median=33) and was 68.8 of those who aged 60 or more. In the less active district, mean age of people in case households aged 15-59 was 32 (median=32). The dependency ratio in the active district was slightly higher than in the less active district.

Table 10.3 Summary of case household composition by districts

Variables	Active district	Less active district
Age of CIAs		
-Male (Median/n)	33 (82)	32 (68)
-Female (Median/n)	31 (81)	28 (93)
Sex of CIAs		
-Male %(n)	50 (82)	42 (68)
-Female %(n)	50 (81)	58 (93)
Household size	4.1	3.7
Household age (mean)	34.6	33.7
Under 5	2.7	2.3
5-14	8.4	9.1
15-59	34.8	68.8
60+	34.1	68.3
Household dependency ratio*	1.2	1.0

dependency ratio* = {(household member – employed member)/employed member}.

10.6.3 Reported illness and care of CIAs

The most common reported illness among CIAs, about one-fourth of CIAs, during the past six months were symptoms related to gastrointestinal diseases, particularly diarrhoea. About 13% reported respiratory problems, especially asthma. It was noticed that pulmonary tuberculosis was not reported by CIAs.

The average time reported between now and having the first symptom was 18.8 months in the active district and 16.2 months in the less active district, the difference was not significant.

Table 10.4 Profile of illness and use of health care of CIAs

Categories	Active District N=163	Less Active District N=161
Main other three diseases reported - Gastrointestinal diseases, %(n) - Asthma, %(n) - Heart diseases, %(n)	 30.7 (50) 11.7 (19) 3.7 (6)	 24.8 (40) 14.9 (24) 2.5 (4)
	Pearson chi-square=25.58, p=0.004*	
Length of illness (months) - Overall (Mean/SD/median/n) *(min/max = 6/84)* - Male (Mean/SD/median/n) *(min/max = 6/84)* - Female (Mean/SD/median/n) *(min/max = 6/72)*	 18.8/14.7/14/163 15.7/13.6/12/82 21.9/15.3/16/81	 16.2/13.4/12/161 14.1/12.4/12/68 17.8/13.9/13/93
Utilisation of health service, %(n) - Government hospital (OPD/IPD) - Private hospital (OPD/IPD) - Private clinic (OPD) - Buy drug from drug store - Traditional medicine - Public health centre (OPD)	 54 (88) 2 (3) 3 (5) 7 (11) 3 (5) 31 (51)	 60 (97) 5 (8) 1 (2) 9 (14) 3 (5) 22 (35)
Hospital Admission of CIAs during the past 6 months, %(n) - Number of admissions (Mean/SD/median/n) - male (Mean/SD/median/n) - female (Mean/SD/median/n) Days of admission(Mean/SD/median/n) - Male (Mean/SD/median/n) - female (Mean/SD/median/n)	44 (72) 2.2/1.4/2/72 *(min/max = 1/8)* 2.2/1.5/2/45 *(min/max = 1/8)* 2.2/1.4/2/27 *(min/max = 1/5)* 21.3/34.4/15/72 *(min/max = 1/279)* 22.2/40.6/15/45 *(min/max = 1/279)* 19.9/21.1/15/27 *(min/max = 1/101)*	52 (84) 2.3/2.5/1.5/84 *(min/max = 1/15)* 2.1/1.7/1/42 *(min/max = 1/10)* 2.5/3.2/2/42 *(min/max = 1/15)* 19.1/24.3/12/84 *(min/max = 1/120)* 17.7/18.7/12/42 *(min/max = 1/100)* 20.4/28.9/10/42 *(min/max = 1/120)*

* Statistically significant at 1%

In general CIAs used more than one form of health services. Government hospitals were used by most case households in both districts (54-60%). Public health centre (local at sub-district level), buying drug from drug store, private hospital, private clinic and traditional medicine were other types of services and care used by several households. Only 3% of CIAs also reported utilisation of services of traditional healer or traditional medicine.

During the previous six months, 44% and 52% of CIAs in the active and the less active districts were admitted to the hospitals on average 2.2 times and 2.3 times. Over this period, the average length of stay was 21.3 days (n=72 cases) in the active district and 19.1 days (n=84 cases) in the less active district. This is 2.2 days more than in less active district but this was not statistically different.

10.6.4 Home based care and hospital based care of CIAs

This section presents the information of CIAs who were staying at home during the previous six months.

56% of CIAs in the active district and 65% of CIAs in the less active district had someone to take regular care of them at home. 10% of CIAs didn't have anyone to take care of them at home, although they needed help. For 33% of CIAs in the active district and 25% in the less active district the respondent reported that they didn't need to be taken care of because they could take care of themselves. The difference between the districts was not statistically significant.

In the active district 55% of CIAs were being taken care of by parents, 22% were taken care of by the spouse and 18% by relatives. In the less active district, 48% of CIAs were taken care of by parents, 30% were taken care of by spouse and 13% by relatives. In the active district, 3% of CIAs were being taken care by children, compared with 10% in the less active district. These differences were not significant.

Table 10.5 Characteristic of home based care of CIAs

Characteristic	Home based care	
	Active	Less active
Household members had to take care of CIAs		
-care required, and provided, %(n)	56 (92)	64 (104)
-care required, not provided, %(n)	10 (17)	10 (16)
-did not need care, %(n)	33 (54)	26 (41)
Main caregiver (for those requiring care)		
-spouse % (n)	22 (21)	30 (31)
-Children % (n)	3 (3)	10 (10)
-Parents % (n)	55 (51)	48 (50)
-Other relatives % (n)	18 (17)	13 (13)
Caregivers had to stop working *		
-Yes % (n)	28 (26)	28 (29)
-No % (n)	1 (1)	13 (13)
-Stop some days % (n)	21 (19)	30 (31)
-Stop half days % (n)	8 (7)	7 (7)
-currently unemployed % (n)	42 (39)	23 (24)
Children (caregiver) had to stop going to school % (n)	100 (3)	70 (7)
% caregiver lost income if stop working to take care of CIAs	75 (40)	68 (45)
Income lost (cost in 1999) :Baht - Amount money lost (mean/SD/Median/n) - equal to how many month of income lost (mean/SD/median/n)	3229/2.14/2836/40 1.7/1.3/1/40 (min/max: 1/6)	3229/2.29/2980/45 2.2/2.6/45/45 (min/max: 1/16)

* Statistically significant at 1%

Of these caregivers, 42% in the active district and 23% in the less active district were currently unemployed. In each district 28% of caregivers had had to stop their regular work, whilst 1% and 13% of caregivers in the active and the less active district respectively didn't need to stop their work. 21% of caregivers in the active and 30% in the less active district had

to stop working on some days. 8% in the active and 7% the in less active district had to stop working for half a day – e.g. missing half the day's work and going back later for the rest of the day. The difference in caregivers having to stop working was statistically significant among the two districts (p=0.003).

13 CIAs (3 in active and 10 in less active district) were being taken care of by children. All of these children in the active district and 70% of children in the less active district had to stop going to school in order to provide care.

Table 10.6 Characteristics of hospital based care of CIAs

Characteristic	Hospital based care	
	Active	Less active
Caregiver had to stop usual work while looking after CIAs at hospitals *		
- Stop working % (n)	54 (63)	38 (56)
- Currently unemployed %, n	32 (37)	15 (22)
- School children, did not go to school	8 (9)	3 (5)
- Children had to stop works - related to household production %, n	7 (8)	44 (66)
Caregivers had to stop working		
Whole day % (n)	76 (48)	77 (43)
Stop half days % (n)	15 (10)	16 (10)
Stop less than half day %,n	8 (5)	7 (4)
% lost income if stop working to bring CIAs for treatment	82 (55)	80 (48)
Income lost (cost in 1999) : Baht		
- Amount money lost (per each time of caring CIAs at hospital (mean/SD/Median/n)	90/1.5/99/55 (min/max:40/255)	87/1.39/90/49 (min/max:40/198)
- Amount money lost (per month) (mean/SD/median/n)	2080/1.6/1900/55 (min/max : 1002/7187)	2079/1.5/1988/49 (min/max:1002/5943)
- equal to how many month of income lost (mean/SD/median/n)	1.25/0.64/1/55 (min/max:1/4)	1.29/0.65/1/49 (min/max:1/4)

* Statistically significant at 5%

Table 10.6 shows the patterns of hospitalisation of CIAs in the past six months. Of the 324 CIAs, 266 CIAs had been hospitalised in the past six months (117 CIAs in the active district and 149 CIAs in the less active district). Of these in-patient cases, who had been taken care of, those caregivers had to stop their regular work (54% in the active and 38% in less the active districts). 76% of caregivers in the active district and 77% in the less active district had stopped working full days. Respectively 32% and 15% of caregivers in the active and less active districts were currently unemployed. These differences were statistically significant at 5% level.

14 CIAs (9 in the active and 5 in the less active district) were taken care of by children. 8% (n=9) and 3% (n=5) of those children in the active and in the less active district had to stop going to school. 7% in the active and 44% in the less active district had to stop some work related to household production in the fields. The difference was statistically significant between the two districts at 5% level.

10.6.5 Direct cost of medical treatment for HIV/AIDS

This section presents the direct expenses to CIAs of receiving treatment during the six months prior to the survey. The costs valued are the costs of medical treatment, including drug costs, travel costs, food costs and accommodation costs.

In addition, the estimates of amount of time lost from work due to home based care and hospital based care for the caregivers are presented in section 9.6.4 and were used to estimate the costs to other household members of the CIAs illness.

On average, each household had spent about 9,109 THB in the active district and 13,606 THB in the less active district on health care treatment for each CIA for the six months prior to the survey (table 10.7). This is an average of six months (1,518 THB per month per household in the active district and 2,268 THB in the less active district); this is approximately equivalent to the average total monthly household income per household (see chapter 8).

Of all the reported expenses related to the costs of treatment per visit, the largest amount was payment for out-patient and in-patient care at the private hospital: 7,111 THB (n=19) and 5,563 THB (n=20) on average in the active and the less active district. But the number of CIAs who attended private hospital was very small. The second largest amount was on traditional medicine visits: 1,538 THB in the active district (n=52) and 1,748 THB in the less active district (n=40).

Reported expenses per visit, i.e. payment for out-patient and in-patient care at the government hospital, were 492 THB (n=147) and 631 THB (n=137) on average in the active and less active district, follow by drug purchases from drug store, private clinic visit and local health care centre treatment.

It is interesting to note that each traditional medicine visit cost much more than a private clinic visit. Moreover the cost of each drug purchase at the drug store was quite high: 375 THB (n=78) and 480 THB (n=86) on average in the active and less active district, indicating that chronic HIV/AIDS treatment is very costly to an ordinary household in rural Thailand. For example buying drugs from a drug store should be in the range between 50-100 THB (Personal communication).

Comparing the HIV/AIDS related health care expenditure in the two districts, it should be noted that it was more costly for the households in the less active district than in the active district. The total average expenses paid on drugs, traditional medicine, government hospital and health care centre visits all indicated HIV/AIDS illness in the less active district is more expensive for households to treat than in active the district.

Table 10.7 Reported expenses related to the costs of treatment at different health facilities in the last six months

Reporting mode of treatment and Payer of health care cost	Active District	Less active District
Buy drug from drug store		
Average number of visit (p<0.05)*	5 (n=78)	10 (n=86)
Average cost per visit (THB)	357 (n=78)	480 (n=86)
Payer for buying drug (p<0.05)*		
- paid by CIAs	90% (70)	98% (84)
- support by relatives	10% (8)	2% (2)
Private clinic		
Average number of visit	4 (n=51)	4 (n=34)
Average cost per visit (THB)	281 (n=51)	276 (n=34)
Payer for visiting private clinic		
- paid by CIAs	90% (46)	100% (34)
- support by relatives	10% (5)	0
Traditional doctor		
Average number of visit (p<0.05)*	3 (n=52)	4 (n=34)
Average cost per visit (THB)	1,538 (n=52)	1,748 (n=40)
Payer for traditional doctor		
- paid by CIAs	83% (43)	95% (38)
- support by relatives	17% (9)	5% (2)
Sub-district health centre		
Average number of visit (p<0.05)*	4 (n=127)	6 (n=95)
Average cost per visit (THB)	92 (n=127)	95 (n=95)
Payer for visit health centre (p<0.05)*		
- paid by CIAs	7% (9)	9% (9)
- government subsidy (low income card, health card, etc)	91% (116)	89% (84)
- support by relatives	2% (2)	2% (2)
Government hospital (OPD/IPD)		
Average number of visit (p<0.05)*	5 (n=147)	9 (n=137)
Average cost per visit (THB)	492 (n=147)	631 (n=137)
Payer for visit government hospital (p=0.000)**		
- paid by CIAs	9% (13)	20% (27)
- government subsidy (low income card, health card, CSMBS, etc)	87% (128)	77% (106)
- support by relatives	4% (6)	3% (4)
Private hospital (OPD/IPD)		
Average number of visit (p<0.05)*	2 (n=19)	2 (n=20)
Average cost per visit (THB)	7,111 (n=19)	5,563 (n=20)
Payer for visit private hospital		
- paid by themselves	79% (15)	90% (18)
- government subsidy (reimburse from the government)	5% (1)	0
- support by relatives	16% (3)	10% (2)
Average total health care expenditure in last six months (THB)	9,109 (n=150)	13,606 (n=150)

* Statistically significant at 5%, ** Statistically significant at 0.1%.

Looking at the patterns of payment and the payer of different forms of health care there are some potential differences according to the services used. If the CIAs visited government institutions such as health centres or government hospital, the costs could potentially be subsidised by government funds. However, if they visited other facilities - drug store, private clinic, traditional doctor, private hospital - they could not obtain government subsidies. Some could receive treatment from private hospital and the cost could be reimbursed from government, e.g. CSMBS. The out-of-pocket expenditure of CIAs was higher than the reported expense support by the relatives.

10.6.5.1 Travel cost for taking CIAs to treatment centre

It is customary in Thailand for someone or a caregiver to accompany the CIAs to the treatment centre. In the survey it was reported that some CIAs went there without any person accompanying them, other CIAs were taken by other caregivers (see Table 10.8). In the active district 36% of the CIAs went to the treatment centre for medical care by him/herself. 21%, 21%, 16%, 4%, and 2% went with sibling, parents, spouse, cousin and children respectively (n=163). In the less active district 37% of the CIAs went to the treatment centre by themselves. 21%, 18%, 10%, 9%, and 5% went with sibling, spouse, cousin, parent and children respectively (n=161). There was a statistically significant difference ($p<0.05$) in who brought the CIA for treatment between the two districts.

Taking CIAs for treatment also incurred costs to households. On average, the total travel expenses incurred by households for each trip including everyone to take each case to and from the treatment centre were on average 70 THB in the active district and 80 THB in the less active district. The frequency of trips to any treatment centres for medical treatment was approximately 10 times per person in the last six months in both districts.

Table 10.8 People accompanying to the treatment centre

Categories of caregiver	Active District % (n) N=163	Less active District % (n) N=161
No one accompanying	36 (59)	37 (60)
Parent	21 (34)	9 (14)
Spouse	16 (26)	18 (29)
Children	1 (1)	2 (4)
Grandchildren	2 (3)	2 (4)
Sibling	21 (34)	21 (34)
cousin	4 (6)	10 (16)
	Chi-square = 14.98, P=0.020*	

* Statistically significant at 5%

Some people accompanying CIAs to the treatment centre had to stop working. 72% (n=74) in the active district and 63% (n=62) in the less active district had to stop working. 24% (n=25) in the active and 29% (n=28) in the less active district were currently unemployed. 4% (n=4) in the active district and 8% (n=8) in the less active district were school children, who just simply did not go to school at each time. These differences were not statistically significant.

By stopping working to bring CIAs to the treatment centres, 87% (n=67) in the active district 70% (n=55) had to lose their income. On average these people lost 97 THB and 117 THB from their jobs respectively. Two other groups had not lost any income. The first group was government officers, receiving monthly payment of 5% in both districts. The second group was those working with the family without regular income, but there might be no assistant for the household work (8% in the active and 25% in the less active district). These differences were statistically significant ($p=0.013$). It also took time to bring the CIAs to the treatment centre; on average door to door took 142 minutes in the active district and 98 minutes in the less active district and this was statistically significant at 0.1% ($p=0.000$).

10.6.5.2 Food cost

Beside medical care and transport cost, there were other expenditures since arrival at treatment centres such as food and accommodation. From 195 CIAs, 120 in the active district and 75 in the less active district, everyone who took the CIAs to the hospital or treatment centre had to pay for food during the last six months. It was 88 THB per visit in the active district and 126 THB per visit in the less active district. This difference was significant ($p<0.05$).

10.6.5.3 Accommodation cost

From 60 CIAs, 25 in the active district and 35 in the less active district, caregivers who took the CIAs to the hospital or treatment centre had to pay for accommodation in the six months prior to the survey. This averaged 338 THB per visit (THB 100 to THB 2,000) in the active district and 422 THB per visit (THB 100 to THB 2,000) in the less active district. The different cost of accommodation per visit in the active district was 84 THB less than in the less active district and this difference was not significant.

10.6.6 Indirect cost

The indirect cost includes the costs to the CIA's caregivers. Caregivers made significant expenditures on behalf of CIAs. The sections below provide data on the characteristics of and expenditures made by caregivers of both money and time, to enable the opportunity cost of their time and effort to be estimated. The indirect costs of caregivers were also presented in Table 10.5 and Table 10.6.

Table 10.9 provides details of the characteristics of CIA caregivers by district. The data show that CIAs' caregivers are primarily middle-aged women. The difference between the active and less active districts that approached statistical significance was the usual occupation of the caregivers. The relation to CIAs of the caregivers indicate that parents and spouse were the majority in both districts but this difference was not significant.

Table 10.9 Characteristics of CIAs' caregivers, by districts

Characteristics	Active district	less active district	p-value
Sex of caregiver			0.35
-Male % (N)	25 (40)	29 (40)	
-Female % (N)	75 (123)	71 (114)	
Age of caregiver (mean)			0.69
-Male	30.4	35.1	
-Female	42.1	43.2	
Usual occupation			0.000***
-Growing rice	18% (30)	39% (63)	
-Growing plant	2% (4)	21% (34)	
-Gardener	4% (6)	2% (3)	
-Government officer	1% (2)	1% (2)	
-Employee	67% (109)	30% (48)	
-Merchant	7% (11)	5% (8)	
-Unemployed	1% (1)	2% (3)	
Relation to CIAs			0.71
-Parent	26 (42)	33 (53)	
-Spouse	28 (46)	28 (45)	
-Children	1 (2)	2 (3)	
-Grandchildren	2 (3)	2 (3)	
-Sibling	23 (37)	20 (32)	
-Cousin	20 (33)	15 (25)	

*** Statistically significant at 0.1%

10.6.6.1 Income loss for taking care of HIV/AIDS by caregivers

For some of the household members, taking regular care of the CIAs both at home and in hospital as well as taking them for treatment at various health care institutions resulted in time loss and income loss from work. Many of them gave up their normal responsibilities in order to care of the CIAs both at home and in hospital.

10.6.6.1.1 Income lost of caregivers taking care of CIAs at home

For caregivers looking after CIAs at home, of the 196 CIAs receiving home-based care, the caregivers reported their income lost as presented in section 10.6.4, table 10.5. 85 caregivers were not able to work and lost income while looking after CIAs at home; of these 40 were in the active district and 45 in the less active district. The average income lost during the last six months of home caregivers was THB 3,229 in both districts (equal to 1.7 month in the active district and 2.2 months in the less active district).

10.6.6.1.2 Income lost of caregivers taking care of CIAs at hospital

Of the 266 cases, information was given on 132 chronically ill persons (71 in active and 61 in less active) who have someone take care of them at hospital (see more information in section 10.6.4, table 10.6). 103 CIA caregivers had to stop their usual work and lost income while looking after CIAs at hospital; of these, 55 were in the active district and 48 in the less active district. The average income lost of those that took care of CIAs at hospital was about THB 2,080 (equal to 1.3 months income earning) in the active district and THB 2,079 THB (equal to 1.3 months income earning) in the less active district. This difference was not statistically significant. For the caregiver who had been paid wages per day, the income lost was about THB 90 per day in the active district and THB 87 in the less active district. This difference was not statistically significant.

10.6.6.1.3 Income lost of caregivers taking the CIAs to the treatment centres

139 CIAs, 74 in the active and 65 in the less active district, had someone taking them to the treatment centre who had had to stop their usual work (see some information in section 10.6.4). 87% in the active and 75% in the less active district reported that they had to stop working the whole day. 11% in the active and 22% in the less active district stopped working for two hours each time and only 3% in both districts stopped working for less than two hours. There was no significant difference between the two districts.

Of the 122 caregivers reporting stopped working, 87% in the active and 70% in the less active district reported a loss to their income. Only 5% of caregivers in the active and less active district had not lost any income from stopping work to take the CIAs for treatment, as presented in section 10.6.4.

10.6.6.2 Income loss from illness of CIAs

This section presents the income loss of CIAs as another kind of indirect cost. During the period of the chronic illness (more than 6 months) households lost the regular income earned by the CIAs. However, after the chronic illness stage, health care expenses of household are generally increased while income loss still prevails.

Regarding the CIA him/herself before becoming sick, the main occupation is presented in Table 10.10. The main occupation was construction-related worker or labourer for 73% in the active district, but for about half of CIAs in the less active district it was agriculture-related worker. The main occupation between the two districts was also statistically significant at 0.1%. Only 4 CIAs did not have any occupation before becoming sick.

Table 10.10 Main occupation of chronically ill adults before severe illness

Main Occupation	Active	Less active	Total
Employee in restaurant	5% (8)	3% (5)	4% (13)
Private employee	2% (3)	3% (4)	2% (7)
Construction related worker	73% (119)	42% (66)	58% (185)
Beauty related employee	1% (2)	2% (3)	2% (5)
Agriculture related worker	13% (21)	48% (77)	30% (98)
Merchant	6% (9)	2% (3)	4% (12)
Total	100% (162)	100% (158)	100% (320)
	Pearson chi2(6) = 60.4615 Pr = 0.000***		

*** Statistically significant at 0.1%

On average, the main occupation income of CIAs before falling ill was THB 3,077 per month in the active district and THB 3,374 per month in the less active district. Beside the main occupation, some CIAs also had supplementary income at 32% in the active district (52 persons) and 36% in the less active district (59 persons). For the supplementary income, it was THB 636 per month in the active district and THB 682 per month in the less active district, raising the total income loss for their family. Therefore, the average total monthly income before illness of CIAs was THB 3,713 in the active district and THB 4,056 in the less active district, which is not a small amount by rural standards of the North.

Table 10.11 Working and income of the CIAs before severe illness

Characteristics	Active district	less active district	p-value
Having main job, %(n)	99 (162)	99 (159)	
Having second job, %(n)	32 (52)	37 (59)	
Monthly income from the main job mean/Median/n (min/max)	3,007/3,000/162 (1,000/12,000)	3,374/3,000/159 (1,000/20,000)	0.09
Monthly income from the second job mean/Median/n (min/max)	636/500/52 (100/3,000)	682/500/59 (100/3,000)	
CIAs continued with their works after having treatment, %(n)			0.71
- Only main job	65 (57)	66 (58)	
- Only second job	5 (4)	2 (2)	
- Both jobs	30 (27)	32 (28)	
Total	100 (88)	100 (88)	
Reason for not continue with their works, %(n)			0.43
-Not strong enough to continue working because being sick very often	84 (63)	78 (57)	
-The employer dismisses from the job because being discriminated by the co-worker	3 (2)	7 (5)	
-Lost of will power to work, stop doing every thing, feeling, hopeless	13 (10)	15 (11)	
If CIAs continued with their works, %(n)			0.29
- work with the same jobs	97 (85)	93 (80)	
- changing job	3 (3)	7 (7)	
Reason for changing jobs, %(n)			Not valid
-Being discriminated by co-worker	0	14 (1)	
-Resign for rehabilitation at home, after getting better then t looking for a new job	0		
-The type of previous job is not suitable for the current health status	100 (3)	71 (5)	
CIAs' works after severe illness, %(n)			0.75
- Generating income job	76 (86)	78 (81)	
- Not generating Income job	24 (27)	22 (23)	

Despite their illness, 54% (n=88) of CIAs in the active district and 55% (n=88) in the less active district continued with their work. 65% of these continued with their main jobs, 5% of them continued with their supplementary jobs and 31% of them continued to work with their both main and supplementary jobs in the active district. In the less active district, 66% continued with their main jobs, 2% continued to work with their supplementary jobs and 32% continued with both their jobs. 97% in the active and 93% in the less active district still worked with their previous job before becoming sick.

The main reason given for why the others did not continue to work was because they were not strong enough, often very sick (84% in the active and 78% in the less active district). The common reason given by 12% in the active district and 15% in the less active district was loss of willpower to work, stop doing everything, feeling hopeless. The third reason given by 3% in the active district and 7% in the less active district was that the person was dismissed from their jobs because of being discriminated against by the employers.

After being sick, 76% of CIAs in the active district and 78% in the less active district kept on working to generate income for the household. Only 23% of CIAs in the active district and 20% of CIAs in the less active district had changed their work to do housework without payment.

On average, the income of CIAs in the active district and less active district was reduced by 3,727 THB and 3,985 THB per month respectively. This amount is equivalent to one month's work at a minimum wage (26 days) at that time. The total income loss of CIAs in the less active district was somewhat bigger than in the active district. The average monthly income loss from regular work was slightly lower in the less active district but the supplementary job income loss was higher than in the active district.

10.6.7 Time lost

Apart from the income loss resulting from some household members having to take leave from work to take care of the chronically ill adults, there were some other household members who may also spend time taking care of the CIAs, including children who had to take leave from school for half a day or for the whole day, and household members who took time from unpaid family work, causing less labour for the family production (section 10.6.4). The amount of time lost in the less active district was on average 2 hours 15 minutes waiting for each treatment at a treatment centre, not including travelling time to and from the health care institution. In the active district the average amount of waiting time for each treatment appears much shorter at 1 hour, 30 minutes, although the workload in the active district was more than the less active district. It is possible that discrimination against HIV/AIDS victims even among medical treatment providers caused the HIV/AIDS cases in the less active district to wait much longer compared to others.

10.6.8 Impact on family labour supply and family production

The proportion of case households in the active district engaging in income generating activities for the family was about 29% of total households. Agriculture was the predominant activity followed by services, manufacturing trade and construction.

A serious impact on household production due to lost labour supply from illness of household members was reported by one third of these households in the active district. The size of such impact on production was reportedly almost 52%, causing a serious illness in household income by almost half (48%). In the less active district, although there was a slightly greater proportion of households (44%) where illness of household members had had a serious impact on family labour supply and production level, the size of such impact was almost the same as in the active district.

Table 10.12 Proportion of changed in time allocation of household member (relationship to CIAs) after household member getting sick

Characteristic	District	n	Father n(%)	Mother n(%)	Husband n(%)	Wife n(%)	Son n(%)	Daughter n(%)	Nephew n(%)	Niece n(%)	Brother n(%)	Sister n(%)	Other relatives n(%)
Work harder in order to compensate for the income deficit	Active	68	19(28)	14(21)	6(9)	10(15)	6(9)	5(7)	0(0)	NA[a]	4(6)	1(1)	3(4)
	Less[b]	100	37(37)	15(15)	8(8)	14(14)	5(5)	7(7)	1(1)	NA	5(5)	5(5)	3(3)
Go outside to work instead of staying at home as before	Active	122	56(46)	26(21)	6(5)	13(11)	7(6)	6(5)	2(2)	NA	2(2)	1(1)	2(2)
	Less	106	39(37)	25(24)	7(7)	8(8)	7(7)	8(8)	3(3)	NA	1(1)	3(3)	4(4)
Help the household business in order to compensate for the income deficit	Active	127	58(46)	27(21)	4(3)	13(10)	8(6)	8(6)	3(2)	NA	3(2)	1(1)	3(2)
	Less	108	41(38)	15(14)	8(7)	12(11)	8(7)	11(10)	1(1)	NA	4(4)	5(5)	3(3)
Find a new job in order to earn more income	Active	121	53(44)	25(21)	5(4)	15(12)	7(6)	6(5)	2(2)	NA	2(2)	2(2)	2(2)
	Less	99	36(36)	17(17)	8(8)	9(9)	8(8)	9(9)	3(3)	NA	2(2)	4(4)	3(3)
Look for extra job in addition to the previous one	Active	127	53(42)	30(24)	7(6)	13(10)	7(6)	7(6)	3(2)	NA	4(3)	1(1)	3(2)
	Less	106	34(32)	17(16)	8(8)	14(13)	6(6)	10(9)	5(5)	NA	4(4)	6(6)	2(2)
Resign in order to take care of the house and children or CIAs in the household	Active	117	53(45)	25(21)	5(4)	12(10)	7(6)	7(6)	2(2)	NA	5(4)	1(1)	1(1)
	Less	98	34(35)	22(22)	6(6)	10(10)	7(7)	10(10)	4(4)	NA	2(2)	1(1)	2(2)
Decrease the work load in order to look after the house	Active	119	53(45)	24(20)	5(4)	12(10)	7(6)	7(6)	2(2)	NA	5(4)	2(2)	2(2)
	Less	98	34(35)	22(22)	6(6)	10(10)	7(7)	10(10)	4(4)	NA	2(2)	1(1)	2(2)
Leave school in order to look for a job	Active	90	NA	NA	NA	NA	5(6)	74(82)	3(3)	0(0)	4(4)	2(2)	2(2)
	Less	64	NA	NA	NA	NA	9(14)	46(72)	5(8)	1(2)	1(2)	1(2)	1(2)
Leave school in order to take care of the house/ look after children and the CIAs	Active	22	NA	NA	NA	NA	8(36)	7(32)	2(9)	0(0)	2(9)	1(5)	2(9)
	Less	23	NA	NA	NA	NA	6(26)	9(39)	5(22)	1(4)	0(0)	1(4)	1(4)

NA[a]: not available, Less[b]: Less active district

It is important to identify the household members who were diverted from their usual activities to care for the CIAs or others. 70% of caregivers were females. There was a variety of relationships with the CIAs, with the largest group being parents and spouse (particularly the wife). The other largest group of caregivers was the mothers (see Table 10.8). In Table 10.11, each column shows the proportion of household members who were related to the CIAs changing their time consumption compared with their previous activities. The father of the CIAs was the key person in time allocation from each case household. From the data it is possible to see that household production relied on the male members. Housework and care giving for the CIAs was reported to be principally the responsibility of the female members of the households. These households were under labour constraints, and were struggling to fulfill the former labour role of the CIAs, take care of the CIAs and at the same time undertake other economic activities to supplement lost income.

Time spent taking care of the CIAs and looking after the children was reported among the son and daughter of CIAs indicating that they had to quit school, while most of the daughters of CIAs (82% in the active district and 72% in the less active district) left school in order to look for a job.

10.6.9 Other socio-economic impact

Adult ill-health may place a substantial burden on other family members, reducing their ability to perform their normal functions of taking care of their children and the elderly.

10.6.9.1 Taking care of children

In the active district, the most common marital status of CIAs was widow (39%) followed by married (37%). In the less active district there was a slight difference with most CIAs married (37%), followed by widows (35%).

Of the CIAs who were not single, 20% of them in the active district and 30% of them in the less active district did not have any children. The percentage of CIAs that had children or did not have children was associated with district and this was moderately significant ($p<0.05$). The number of children in each household aged 0-5, 6-11, 12-15, or more than 15 was not associated with district. On the other hand, by parametric test, average (means) number of children in each household was about 1.3-1.4 in the active and less active districts, and this was not different between the both districts. 66-67% of CIAs' children were taken care by parents before severe illness stage, 16% were taken care by grandparents, and this was not different between the two districts.

After reaching chronic stage, 47-55% of the children were taken care by their own parent, but 27% were taken care of by their grandparent, it's about 10% increasing of before severe illness. This is slightly different as before being very ill.

There were also some orphans, defined as young children (aged 0-5 years) whose father or mother had died from a disease. In the case households in the active district, there were altogether 52 such orphans, 87% of whose father had died. In the less active district, there were 38 such orphans, 77% of whose father had died. In the active district living parents took care of 60% of orphans and the remaining 40% were looked after by other extended family

members. The larger number of orphans in the active district is due to a larger proportion of this group being married men or women or widows. In the less active district living parents took care of 30% of orphans and the remaining 70% were supported by extended family members. These proportions were different between the two districts ($p<0.05$).

If we assume that there is one child in each household, this number represents approximately 40% of the total households. More than half of these children were under the care of a still living parent, one third by other extended family members - grandparent(s) and relatives - and 1% by an orphan home and child centre.

10.6.9.2 Taking care of the elderly

In Thailand, a public social security programme to support individuals in their old age is currently non-existent. Public and private pension accumulation is limited to public officials and workers in large private enterprises. Care for elderly parents is largely provided by adult children in the form of monetary transfers for living.

In 60% of household with illness, the CIAs had to take care of some elderly members. The rest of the case households (40%) had the elderly looking after themselves. In the active district, 53% of them had to take care of two elderly persons and 45% of them had to take care of only one. In the less active district, CIAs in half of case households had to take care of 1-2 elderly. The number of elderly that a household had to take care of and the district was not associated.

About 80% of elderly were the CIA's parents and 15% were the CIA's grandparents, and this was not different between the two districts.

Before severe illness stage 44% and 47% of HIV/AIDS affected members (CIAs) in the active and the less active districts were responsible for taking care of the elderly, mostly one or two parents in their household. The majority of these elderly were over 60 years old.

After severe illness stage 42% and 47% of HIV/AIDS affected members in the active and less active district were still responsible for taking care of the elderly. In Thailand a non-married son/daughter is usually given the responsibility to take care of the elderly parents.

10.6.9.3 Social stigmatisation and discrimination against people with HIV/AIDS and their family

In Thailand HIV/AIDS is still much feared by the general public. Other socio-economic strains cause by HIV/AIDS illness in case households were reported in association with social discrimination. Several of the discriminating practices also had an adverse effect on the household economy. This survey shows that despite an attempt to keep the cause of illness of family members secret, almost half of households in the less active district felt the impact of this social discrimination which continued even after the death of the infected member of other households in the same community, although with a less degree of severity.

Table 10.13 Form of social discrimination reported between the two districts

Behaviour characteristics	Active	Less active
Knowledge of illness from social discriminated disease, %(n)		
-Have knowledge	58 (87)	60 (90)
-Have no knowledge	31 (47)	29 (44)
-Unknown	4 (6)	5 (8)
-No response	7 (10)	6 (8)
Knowledge of neighbour of the infected disease, %(n)		
-No one knew	12 (18)	20 (30)
-Most knew	67 (100)	64 (96)
-Only relatives knew	11 (17)	4 (6)
-No response	10 (15)	12 (18)
Discrimination from neighbour knowing of the disease, %(n) *		
-Discriminate	10 (15)	32 (48)
-Not discriminate	65 (98)	37 (56)
-Some did, some did not	14 (21)	20 (30)
-No response	11 (16)	11 (16)
Type of Social discrimination, %(n)		
-Household members force to leave job	14 (5)	8 (5)
-No buyer at family store	8 (3)	5 (3)
-Employees left job	11 (4)	5 (3)
-No order from previous customer	8 (3)	8 (5)
-No association	28 (10)	32 (18)
-Force to leave community	6 (2)	8 (5)
-Children forced to leave school	17 (6)	5 (3)
-Children being prohibited to play with	8 (3)	29 (16)

* Statistically significant at 5%

The discriminating practices which had an adverse impact on the household's economy include social pressure to leave the previously held job and no orders for goods from affected households that had their own business. The small percentage of households being affected by these practices was because most attempted to keep the infection a secret from the employer and only a small number of households are engaged in their own business. However, at the village level where most people know each other, an attempt to keep infection a secret from neighbours may be more difficult.

Coinciding with the above(Table 10.13), a similar proportion of case households in the active and less active district (67% and 64% respectively) indicated that most of their neighbours knew the actual cause of illness in their household by observation, while 12% and 20% of case households in the active and less active districts tried to keep this a secret from their neighbours. 11% of case households in the active district and 4% of case household in the less active district were known only among relatives.

About 10% and 32% of case households in the active and less active districts reported having suffered from social discrimination which was directed towards the infected person. But the experience of social discrimination in the active district was less than in the less active district: 65% of case households in the active district felt no social discrimination compared with

37% in the less active district. Moreover, 14% of households in the active district and 20% in the less active district felt some people took offence and some people did not. The difference in most people taking offence or creating social discrimination between the two districts was statistically significant ($p<0.05$).

The most common discriminating practice reportedly experienced was people avoiding having any association with the CIA and his/her family. This was very strong in the less active district, and included forbidding children to play with children of the affected households. Community discrimination was also extended to their children being forced to leave school and households forced to move out of the community. Employment discrimination ranged from being forced to leave a job to no buyers at the family store (Table 10.13). Social pressure for the infected households to leave the community or their children to leave the school, though quite small, reflects a serious misunderstanding of the public about the ways HIV is spread.

10.6.10 Health care expenditure per capita model

Table 10.7 in section 10.6.5 shows the health care seeking behaviour of CIAs in both districts. The average total health expenditure per capita from out-of-pocket expenditure of CIAs is determined to be the dependent variable in multiple linear regression. The definition of variables is presented in Table 10.14, the descriptive statistic of variable using in this model is presented in Table 10.15 and the regression result is presented in Table 10.16.

The number of households reporting their out-of-pocket health care expenditure was 288 households from 300 case households. The data set used to determine factors affecting health care expenditure was derived by pulling all data from case questionnaires together with data from the household level. This was done in Microsoft Access (Queries command). The technique to estimate the model is mentioned in chapter 8.

A log value of health care expenditure per capita was then regressed with independent variables as presented in Table 10.14. These independent variables were selected from Bivariare Correlation; this was done in SPSS programme. Further experimentation was with the "robustness" of other socio-economic factors related to health care expenditure per capita.

Table 10.14 Variable definitions

Dependent variables		
Variable name	**Variable definition**	
lptoexa	log of per capita health expenditure of chronically ill adult (CIA)	
ptotexav	per capita health expenditure of chronically ill adult (CIA)	
Independent variables		
Variable name	**Variable definition**	**Code**
savpt1	CIA has saving	0 = no, 1= yes
trca11	Use of treatment and care	1 = available and use 0 = "available and not use" or "not available and not use" or "not available but use elsewhere"
bwrx1	Taking money loan for treatment cost	0 = no, 1= yes
distr1	District	0 = less active district 1 = active district
stress	Stress level of household head (ordinal number)	1 = very stressful 2 = stressful 3 = fairy stressful 4 = no stress 5 = having no stress at all
afskw123	When learning about HIV symptomatic and know that it has to be treated, whether or not continue working ;	0 = not working 1 = 1 (primary job) or 2 (secondary job),or (doing all job),
pyfrm2	The expenses for health service was paid by health care card	0 = else 1 = health care card,
m6hltpy	The expense of treatment when being sick, including all cost of each individual within the past 6 months	
selass1	Selling household assets for treatment cost	0 = no, 1 = yes
meditut1	Utilisation of meditation practice	0 = no, 1 = yes

Table 10.15 Descriptive statistics for per capita health expenditure of chronically ill adult (CIAs) model

Variable	Observed number	Mean	Median	Max	Min	Std. Dev.
Dependent lptoexa	288	8.20	8.04	12.13699	4.60517	1.429031
Independent afskw123	300	0.54	1	1	0	0.4994068
bwrx1	300	0.35	0	1	0	0.4790925
distr1	300	0.510	1	1	0	0.5007616
m6hltpy	300	3990.44	1200	50000	0	7562.818
meditut1	300	0.15	0	1	0	0.3570098
stress	300	2.86	3	5	1	0.9038139
pyfrm2	300	0.66	1	1	0	0.4757856
savpt1	300	0.20	0	1	0	0.401736
selass1	300	0.22	0	1	0	0.4164634
trca11	300	0.73	1	1	0	0.4469403

number in model=288

Table 10.16 Model for per capita health expenditure of chronically ill adult (CIAs)

Dependent variable: LPTOEXA Method: Ordinary Least Square Sample: N=288						
Variables	**Coef.**	**Std. Err.**	**t**	**p**	**lower 95CI**	**upper 95CI**
trca11	.5283678	.1992268	2.652	0.008**	.1361769	.9205586
meditut1	.4082673	.1987793	2.054	0.041*	.0169574	.7995772
savpt1	.390467	.1957327	1.995	0.047*	.0051544	.7757795
bwrx1	.3539703	.1528172	2.316	0.021*	.0531396	.6548009
selass1	.3500634	.1907358	1.835	0.068	-.0254124	.7255391
m6hltpy	.0000356	.0000131	2.716	0.007**	9.78e-06	.0000613
stress	-.2818765	.0848999	-3.320	0.001***	-.4490075	-.1147456
distr1	-.4757111	.170189	-2.795	0.006**	-.8107393	-.1406829
afskw123	-.5227391	.1531096	-3.414	0.001***	-.8241454	-.2213328
pyfrm2	-.5701527	.1841616	-3.096	0.002**	-.9326868	-.2076186
_cons	9.040178	.3149097	28.707	0.000***	8.420258	9.660098
R-squared	0.2694			**F(statistics)**		11.17
Root MSE	1.2433			**Prob(F-statistics)**		.0000

Note: standard errors are heteroscedastic-consistent.
*significant at 5%, **significant at 1%, ***significant at 0.1%

$$LPTOEXA = a+TRCA11+MEDITUT1+SAVPT1+ BWRX1+ SELASS1+ M6HLTPY -STRESS - DISTR1- AFSKW123- PYFRM2$$

where TRCA11 is use of treatment and care, MEDITUT1 is utilisation of meditation practice, SAVPT1 is CIAs has savings, BWRX1 is taking money loan for treatment cost, SELASS1 is selling household assets for treatment cost, M6HLTPY is the expense of treatment when being sick, including all cost of each individual within the past 6 months, STRESS is reported stress level of household head, DISTR1 is district, AFSKW123 is referring when learning about HIV symptomatic and know that it has to be treated, whether or not continue working and PYFRM2 is the expenses for health service was paid by health care card.

Among 300 households with CIAs, 288 households were used in the regression analysis. When per capita health expenditure of CIAs was put as the dependent variable in the regression and estimated with heteroscedastic-consistent, 10 independent variables were identified (with F=11.17, p=0.000 and R-squared = 0.2694).

Table 10.16 presents OLS estimates of the per capita health care expenditure. The socio-economic factors included in the regression model as determining factors of per capita health care expenditure were: use of treatment and care, utilisation of meditation practice, CIAs has savings, taking loan for treatment cost, selling household assets for treatment cost, the expense of treatment when being sick, including all costs of each individual within the past 6 months, level of reported stress, location of case household, referring when learning about HIV symptomatic and know that it has to be treated, whether or not continue working, and expenses for health service was paid by health care card.

Use of treatment and care, utilisation of meditation practice, CIA has savings, taking loan for treatment cost, selling household assets for treatment cost, the expense of treatment when being sick, and including all costs of each individual within the past 6 months are associated with a positive impact on health care expenditure.

Level of reported stress, location of case household, referring when learning about HIV symptomatic and know that it has to be treated, whether or not continue working and expenses for health service was paid by health care card are associated with negative impact on health care expenditure.

The results suggest that utilisation of treatment and care as available in the community affected household health expenditure. Utilisation of meditation practice also had a positive effect: the more that CIAs go for meditation, the more health expenditure increased. CIAs who used their own savings as the first source for treatment had higher health care expenditure per capita than the CIAs with no savings. CIAs who sold their assets or took a loan also had more health care expenditure per capita. Household heads (or respondents) who reported higher level of stress had higher health expenditure than those who had lower stress. Case households in the less active district spent more on health care expenditure. When learning about HIV symptoms and knowing that treatment was needed, if the CIAs did not continue with their work, their household would have less health care expenditure. If CIAs used a health care card, their health care expenditure would not be so high.

10.7 Conclusion

This chapter presents the direct costs or out-of-pocket expenses associated with a household member having chronic HIV/AIDS morbidity. The findings are limited by reliance on reported data over six months, and the economic impact of HIV/AIDS on households is likely to change and may differ at different phases of HIV infection. Emphasis will be placed on case households' adjustment of available resources in order to cope and support received from their extended family as well as the role of other support. Two groups of data were collected, caregivers' involvement characteristics and the CIA's behaviour and expenses on health care.

The main impact on case households' health and composition is the loss of a productive person and a consequent increase in the dependency ratio. Chronic HIV/AIDS morbidity affects household's investment and savings through the costs of seeking care, disposal of assets and a disinvestment in terms of education and work experience of the ill.

The key findings are as follows;

1) The most commonly reported types of illness among CIAs during the past six months were symptoms related to gastrointestinal disease, particularly diarrhoea. In general CIAs used more than one form of health service from government hospitals, local public health centres, private hospitals, private clinic, traditional medicine and purchasing drugs from drug stores.

2) CIAs' caregivers in both districts are primarily middle-aged women, and are generally the parents or spouse of the CIA.

3) Regarding home-based care for CIAs, there was a significant difference ($p=0.003$) among the two districts in caregivers having to stop work to take care of the CIA. While in both districts 28% of caregivers had to stop their regular work, only 1% in the active district compared to 13% in the the less active district didn't need to stop working. And 21% in the active and 30% in the less active district had to stop working on some days. More caregivers in the active district than in the less active district were currently unemployed (19% difference). All

of the child caregivers in the active district and 70% in the less active district had to stop going to school in order to provide care.

4) For hospital-based care, of the CIAs who had been hospitalised in the past six months, more caregivers had to stop their regular work in the active district than in the less the active district (difference of 16%). Thus more caregivers in the active than in the less active district were currently unemployed. These differences were statistically significant at 5% level. Again where children were caregivers (9 CIAs in the active and 5 in the less active district), they had to stop going to school.

5) An estimate of amount of time lost from work due to home based care and hospital based care for the caregivers was made and its impact on the household's productive capacity assessed. On average, for health care treatment for each CIA for the last six months, each household had spent an amount approximately equivalent to household income. The expenses related to the costs of treatment per visit ranged in order of highest to lowest were payments to private hospital, traditional medicine, government hospital, drug store, private clinic and local health care centre. However, very few CIAs attended private hospital.

6) It is interesting to note that each traditional medicine visit cost much more than a private clinic visit. Moreover, the cost of each drug purchased at the drug store was quite high (375 THB (n=78) and 480 THB (n=86) on average in the active and less active district), indicating that treatment for chronic HIV/AIDS illness is very costly to an ordinary household in rural Thailand.

7) The person accompanying the CIA to the treatment centre was significantly different between the two districts. However, most CIAs attended the centre by themselves in both districts, followed by attendance with a sibling. The main difference between the districts was that in the active district, more CIAs were accompanied by parents than spouses, whereas in the less active district this was reversed. More of the people accompanying the CIAs for treatment had to stop work in the active than in the less active district, but the difference was not statistically significant. This, of course, resulted in a loss of income.

8) Two groups who didn't incur a loss of income were government officers and those without regular income – but in the case of the latter, the loss would be in the form of family labour for household work rather than income.

9) Other expenditures incurred through accompanying CIAs to treatment centres were on food and accommodation. The expense for food was significantly more (40 THB) in the less active than the active district. Accommodation cost was also higher in the less active district.

10) The average income lost during the last six months of home-based caregivers was THB 3,229 in both districts (equal to 1.7 months' income in the active district and 2.2 months in the less active district). For hospital-based caregivers, average income lost was about THB 2,080 (equal to 1.3 months' income) in the active district and THB 2,079 THB (equal to 1.3 months' income) in the less active district, a difference which was not statistically significant.

11) The average total monthly income of CIAs was THB 3,713 in the active district and THB 4,056 in the less active district, which is not a small amount by rural standards of the North, and represents a substantial loss to the households when the CIAs have to stop work.

12) Despite their illness, over half of CIAs in both districts continued with their work. Most continued with their main jobs, a few with their supplementary jobs and some continued their work in both. The main reason given for not continuing to work was because they were not strong enough (often being very sick), followed by loss of willpower to work, (stop doing everything, feeling hopeless), and being dismissed from their jobs by their employers. Where CIAs stopped their paid work, most did housework in the household without payment.

13) The households faced labour constraints, and were struggling to fulfill the former labour role of the CIAs, take care of the CIAs and at the same time undertake other economic activities to supplement lost income.

14) Most of the CIAs' children in both districts were taken care of by their CIA parents before the severe illness stage. And in most households, the CIAs had to take care of some elderly members.

15) In Thailand HIV/AIDS is still much feared by the general public and this causes discrimination. Social discrimination due to HIV/AIDS illness was reported in case households. Several of the discriminating practices also had an adverse effect on the household economy. Prevalent forms of social discrimination were avoiding association with infected households and forbidding children to play with the children of infected households. Social pressure for the infected households to leave the community or their children to leave the school, though quite small, also occurred and reflects a serious misunderstanding among the public about the ways through which HIV is spread.

16) Looking at the economic impact of chronic HIV/AIDS morbidity on the household, the study results suggest that utilisation of treatment and care available in the community affected household health expenditure. CIAs who used their own savings as the first source for treatment spent more on health care per capita than CIAs with no savings. Likewise for CIAs who sold their assets or took a loan to pay for health care. A higher level of stress of the household head (or respondent) was also associated with higher health care expenditure than was lower stress levels. Case households in the less active district spent more on health care expenditure.

If CIAs did not continue with their work, the household would spend less on health care (there would be less money available for health care). Likewise, if CIAs used a health care card, their health care expenditure would not be high, as out-of-pocket payments would be reduced.

CHAPTER 11
HOUSEHOLD COPING MECHANISMS AND ABILITY TO COPE WITH CHRONIC ILLNESS

11 Household coping mechanisms and household ability to cope with chronic illness

11.1 Introduction

The results from Chapter 9 and 10 on the economic impact of chronic HIV/AIDS morbidity indicates that the direct and indirect cost burden placed upon affected households was substantial – and included health care expenditure, reduced income, and lost labour supply. This chapter explores the household strategies used to cope with this health shock situation. Section 11.2 outlines the analytic framework used to conceptualise coping – outlining the range of strategies that households may adopt to cope with the economic stresses associated with chronic HIV morbidity (also discussed in Chapter 4 and details in Chapter 5). Section 11.3 describes the main questions used to compile the data used in the analysis. Section 11.5 describes the research results. Issues explored include the extent to which households use savings, sell household assets, reallocate household member's time, borrow money from different sources, or receive money in from relatives. The extent to which these strategies are used to cope with the impact of chronic illness is assessed both by comparing case and control households in each district. It is hypothesised that households with certain socio-economic characteristics are able to cope better with CIA than others, and that households with more access to support services are better able to cope than households with less sources of support. For the analysis the socio-economic characteristics of households considered are household income, household education attainment and household employment status. The main findings are discussed in Section 11.5.

11.2 Analytical framework

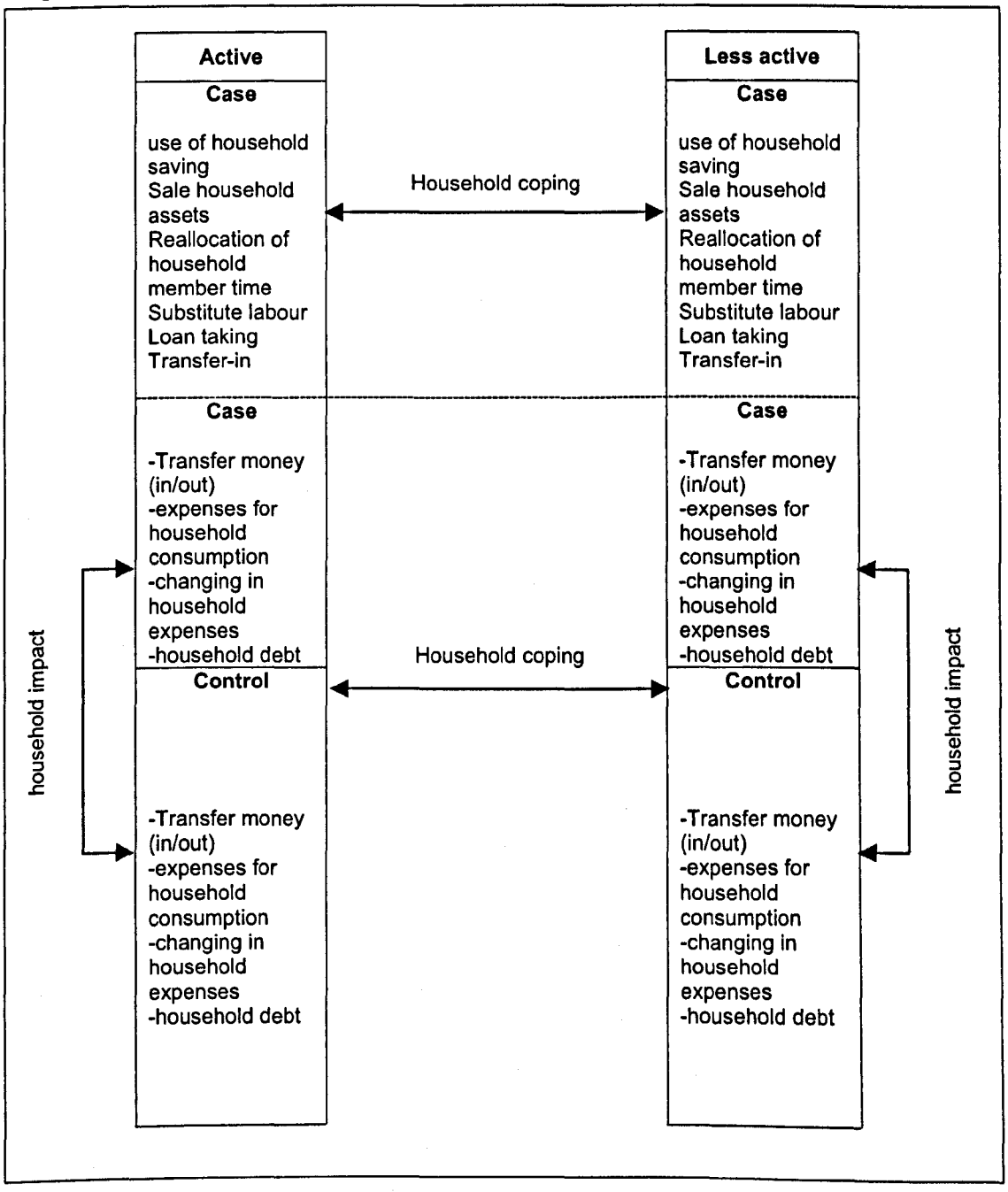
Household coping strategies were explored using a simple model of household economic decision making. In this model (presented in Chapter 5) it is assumed that families are concerned with their many different dimensions of their welfare, including consumption, health status, education, and the wellbeing of their children, as well as the welfare of extended family and unrelated community members.

The medical care costs presented in chapter 10 were likely to cause economic stress in many households. In such instances households may draw upon savings, and begin to sell off assets once their savings have finished to raise cash to meet urgent expenditures. Household members may use a range of coping strategies to try to cushion the adverse effect caused by large medical care costs for the CIAs, potential declining household income from lost earnings, lost labour supply for the family production as well as the potential economic impact of social discrimination. Strategies explored included the use of household savings, sale of household assets, reallocation of household member's time, substitution of lost labour for family production, borrowing, and the transfer of money in from relatives. The extent to which households are able to use such strategies to reduce the impact of illness on the current and future welfare of household members will depend largely on the household's socio-economic

characteristic. For instance households that have more economic resources should experience smaller adverse impact than households that have less resources.

Figure 11.1 outlines the forms of comparison made to assess the strategies used by case household's to reduce the impact of chronic illness on household welfare. Comparisons of case and control households in both study sites are made to understand household responses to chronic illness. Comparisons between case households in each district are used to identify differences in the responses in the active and less active district.

Figure 11.1 Comparisons made to assess household coping strategies



In Thailand, particularly in the rural areas, the extended family system plays an important role in supporting its extended members in time of troubles and need. In this study, the support

from extended family members may take three different forms: monetary support, care of children and care of the elderly. Key issues explored included the extent to which affected households received transfers of money from outside the household to help finance increasing burden caused by household member illness or other things. People who transfer in the money are often adult children of the household head who are working away from home, or the head's brother/sister or other relatives.

The formative research had also highlighted that case households got into debt by borrowing money to help cope with the increased expenditure burden. Common sources of credit are relatives, the local money lender, co-operatives or local revolving funds. It was reported that formal credit institution like a bank were less likely to be used by many households. These issues were explored in a section exploring household debt.

11.3 Source of data and methods

The survey questionnaire included questions on the use of household savings, sale of household assets, reallocation of household member's time, substitution of lost labour family production, borrowing and transfer-in form relatives. For the purposes of this study, the main coping strategies explored related to activities occuring within the past six months period of time. A longer timeframe was not adopted, as it may have limited the respondent's ability to recall.

Respondents in case households were asked about sources of income covering the cost of treatment (Annex 5.4, pages 35-36) and information on working and income before suffering from the chronic illness (Annex 5.4, pages 37-38).

Table 11.1 Issues explored and comments

Issue explored	comments
Changes in time consumption - After a household member becomes sick, it may affect other household member, making them change their time compared with their previous activity before someone becomes sick.	- The interviewer made a cross in the space in questionnaires (Annex 5.4, page 39) - This section was asked only the case households
Household transfer money, transfer money-in/out - It's about information on money transfers into household and transfer out at the time being before being sick compared with the period of interview	Case households (section 13, Annex 5.4, pages 41-42) Control households (section 9, Annex 5.4, pages 75-76), the respondent was asked to imagine if member was sick.
Household consumption - It's about information on household expenses on food/drink, clothes, entertainment, education of children, treatment, etc. And reported changes in those expenses were asked.	Case households (section 14, Annex 5.4, pages 43) Control households (section 10, Annex 5.4, pages 77) Reported changes in those expense, for the control households, the respondent was asked supposing if member was sick. This information can provide how differed on household consumption between case and control households.
Household debt	Case households (section 15, Annex 5.4, pages 44-45) Control households (section 11, Annex 5.4, pages 78-79) This information can provide how differed on household debt between case and control households.

Some of the economic questions were found to be very sensitive. For example, when the respondents of case households were asked about household debt, some, especially the female headed households cried.

11.4 Summary of key findings

The household coping mechanisms and household ability to cope with chronic illness are presented.

About one-third of all households reported having saving. Seventy-six percent of case households in Mueng and 56% of case households in Pong reported using savings to finance health care costs in the last 6 months. Case households in Mueng used average savings for health care of CIAs in the last six months less than in Pong (Mueng, THB 4,727 versus Pong, THB 12,158).

Cases in both districts had a lower value of assets per capita than controls and this was confirmed by multiple regression. One-fifth of households in Mueng and Pong reported having sold assets such as land, vehicles, jewelry and livestock. Many case households especially in Pong indicated that they had cut back on spending on entertainment when facing a shortage in the household income.

About half of all households had reported debt. Seventeen percent of case households in Meung and 20% of case households in Pong reported having borrowed money in the previous six months, with approximately one-third of households reporting borrowing money to meet their medical care costs. Credit was mainly from informal sources such as relatives (50% in Mueng, 26% in Pong) and local moneylenders (15% in Mueng, 22% in Pong). A formal credit institute was used by one-fifth of households.

Persons who reallocated their time to obtain substitutes for lost income of CIAs were fathers of CIAs (28% of CIAs' fathers in Mueng versus 37% of CIAs' fathers in Pong). Other methods to obtain substitutes for lost income were to assist family work, to reduce previous work to help the family and to find a job. An important impact documented was that one-third of children from case households in both districts had to leave school to find work to contribute to the family income (boy 5% in Mueng, 9% in Pong; girl 74% in Mueng, 46% in Pong).

Twenty-two percent of households in Mueng and 25% of households in Pong reported receiving transfers-in from outside. The people who transferred the money to households were mainly adult children of the household head working away from home, the head's brother/sister, or other relatives. In Mueng, cases received money from outside, on average, 6 times per year (36 households) with an average total amount of THB 12,713 while controls received money from outside, on average, 7 times per year (35 households) with an average total amount THB 23,128. In Pong, on average cases received money from outside 8 times per year (48 households) with an average total amount of THB 19,177 while controls received money 7 times per year (33 households) with an average total amount of THB 24,272.Cases received these amounts of money in order to pay for the cost of treatment of members who were sick but controls used this money for other purposes.

For coping inside households, cases used family resources, firstly their savings, then selling their assets and finally obtaining transfer-in from relatives. To maintain family productivity during the period of HIV/AIDS illness they used various strategies including hiring to substitute the lost labour, increasing the workload of other family members, and withdrawal the young from school (especially girls) to help out at home. For the cases in both districts, the support from extended family members was in three key areas: monetary support, care of children and care of the elderly. Depending on the level and forms of support services available in the communities these strategies included using up their savings, the sale of household assets, borrowing and withdrawing children from school.

From the opinion respondents, 24% of case households in Mueng and 52% of case households in Pong reported having social discrimination against HIV/AIDS infected persons and their families. The most type of discrimination was no social relationship with CIAs and their relatives (28% in Mueng versus 32% in Pong).

11.5 Research results

11.5.1 Case household coping strategies during chronic illness

11.5.1.1 Use of households savings

76% of case households in the active district and 56% of households in the less active district reported using savings to finance the increased health care cost caused by this particular chronic illness. On average, THB 4,727 THB and THB 12,158 savings were spent by each household on care and treatment of chronically ill persons in active and less active district respectively in the last six months. This average savings amount that had been used was associated with district ($p<0.05$). These amounts used were 52% and 89% of average direct medical care cost reported in Chapter 10 since falling ill for previous six months of household in active and less active district.

11.5.1.2 Sale of household assets

For households that have assets, assets sale was another way out to ease the burden of increased household expenditure. 4% of households in the active district and 5% of households in the less active district had no household assets. 22% of households in the active district and 21% of households in the less active district reported having sold some assets. In the last six months, the items sold ranged from land, vehicles, and jewellery to livestock. The largest amount received from assets sales was from land, THB 26,200 THB on average in the active district, THB 26,375 on average in the less active district. There was followed by reported jewelry sale THB 8,571 in the active district and THB 4,560 in the less active district and this was significantly different ($p<0.05$). The reported sale of vehicles averaged THB 7,300 and THB 15,667 in the active and less active district respectively, followed by reported motor cycle sale THB 2,756 and THB 6,152. The reported sale of livestock averaged THB 1,706 – THB 2,968. Other assets reported being sold averaged THB 3,656 and THB 4,177 in the two districts.

11.5.1.3 Reallocation of household member's time

In order to maintain household income and household production, as well as assist in taking care of the sick during the previous six months, a large number of households tried to reallocate the time of their members in various ways.

Most of the reallocation involved allocating more work to other members. A number of households reallocated time to try to obtain substitute for lost income of the CIAs (28% of ill's father in the active district and 37% of ill's father in the less active district. This is followed by assistance in family work to substitute lost labour, reduced previous work to help the family, had to get a job. There were also 121 household members in active district and 99 household members in less active district who had to find a new job to obtain a higher income, or find supplementary work. In addition some members had to resign from work to help family with family chores and to take care of the sick.

Among the children of the CIAs, 82 children from case households in the active district and 61 children from case households in the less active district had to leave school to find work to contribute to the family income.

11.5.1.4 Substitution of lost labour for family production

The strategies used by households to maintain levels of family production after illness of a working household member ranged from replacing the lost labour by a previously non working member, increasing the workload of other household members, or withdrawing young members from school to help in family work. 17 children from case households in the active district and 21 children from case households in the less active district had to quit school in order to take care of the house, look after the other children and the sick (refer to Table 10.12). There was a greater proportion of girls that had to quit from the school for these purposes in the active district than in the less active district (39% in less active district compared to 32% in active district). In contrast, the proportion of boys who had to quit from the school in order to take care of family was higher in the active district than in the less active district. (36% in the active district compare to 26% in the less active district).

Among these strategies, the withdrawal of school children was the most prevalent method followed by the working harder in order to compensate the lost labour from the ill persons.

11.5.1.5 Borrowing

Despite the use and adjustment of existing household resources to cope with the situation, there were still a number of affected households who had to turn to outside borrowing as a way to meet their needs. 17% of case household in the active district and 20% of case household in the less active district reported having borrowed money in the previous six months.

The majority of the borrowers used informal credit sources, such as relatives and local moneylenders. 50% of household in the active district and 26% of household in the less active district took loans from their relatives. 15% of household in the active district and 22% of household in the less active district prefer to take loans from local moneylender. Co-operatives or local revolving fund was another credit source commonly used (18% of household in the active district and 33% of household in the less active district). A formal credit institution like the

Bank was used by 17% of households in the active district and 20% of households in the less active district. 40% of household in the active district and 29% of household in the less active district reported using the borrowed money to meet medical care cost.

11.5.1.6 Transfer in from relatives

Monetary support was sent as transfer-in to the affected households to help finance health care and medical treatment for the CIAs in the last six months. Twenty two percent of case households in the active district and 25% of affected households in the less active district reported receiving transfers-in from outside. This proportion may seem rather small but if it is considered that rural households in Thailand are generally quite poor and their earning is quite small, their ability to assist other extended family members in terms of money may be rather limited. People who transferred money to households were mainly adult children of the household head working away from home (52% of household in active and 55% of household in less active district) and the head's brother/sister (27% of household in active and 24% of household in less active district) as well as relatives (15% of household in active district and 11% in less active district).

In addition to the money from relatives and others, 14% of case households in the active district and 22% of case households in the less active district received some support from the government. 3% of household in active district and 8% of household in less active district some support from health insurance schemes., 5% of households in the active district and 11% of households from the less active district received some support from social welfare in the community.

19% of household in active district and 39% of household in the less active district bought and used the health care card for treatment. 2% of households in the active district and 4% of households in the less active district bought but did not use the card. 6% of household in the active district and 36% of household in less active district had not heard about the health care card. 30% of households in the active district and 36% of households in the less active district had not bought the card but had the right to use the card. 13% of households in active district and 15% of household in less active district had not bought or used the card. Buying and using the health care card was associated with district (p=0.000).

For the social security card, 7% of households in active district and 1% of households in the less active district used the card for treatment. 9% of households in the active district and 1% of households in the less active district had a social security card but did not use for treatment. Utilisation of the social security card for treatment was associated with district (p=0.000).

11.5.2 Household money transfer

11.5.2.1 Money transfer after being sick

In the active district, 24% of case households (n=36) and 23% of control households (n=35) received transfers of money in from an outside relative. In the less active district, 32% of case household (n=48) and 22% of control household (n=33) received transfer money in from outside and this difference was significant at 5% level.

On average, in the active district case household received money from outside 6 times per year (36 households) with average total amount of THB 12,713 but control household received money from outside 7 times per year (35 households) with average total amount THB 23,128. In the less active district, on average case household received money from outside 8 times per year (48 households) with average total amount of THB 19,177 while control household received 7 times per year (33 households) with average total amount of THB 24,272.

Table 11.2 Money transfer after being sick of case household compared with control household

Variables	Active district		Less active district	
	Case	Control	Case	Control
Received money transfer for the cost of treatment, %(n)	24 (36)	23 (35)	32 (48)	22 (33)
No. of transfer–in money per year				
Mean (SD)	6 (5.2) *	7 (4.7)	8 (5.6) *	7 (5.5)
Median	3	8	6	5
min/max	1/22	1/12	1/24	1/24
n	36	35	48	33
Total amount of money transfer per year				
Mean	12,713	23,128	19,177	24,272
Median	9,000	8,400	12,000	12,000
min/max	600/88,000	600/120,000	1,000/72,000	1,000/180,000
n	36	35	48	33
who transfer money in with relation to household head, %(n)	Chi square =13.31, p=0.038*			
-Spouse	3 (1)	6 (2)	8 (4)	12 (4)
-Parent	3 (1)	0	4 (2)	0
-Son	19 (7)	26 (9)	21 (10)	45 (15)
-Daughter	28 (10)	37 (13)	29 (14)	30 (10)
-Grandchild	0	6 (2)	0	3 (1)
-Sibling	22 (8)	14 (5)	17 (8)	6 (2)
-Other relatives	25 (9)	11 (4)	21 (10)	3 (1)

* Statistically significant at 5%

The rank of who transfers money to the household is presented in Table 11.2. The patterns of transfer-in of money can be explained by understanding the forms of extended family support. The level of family support to control households was similar to case households, but the extent of support was slightly different. 23% of control household from both sites received transfers-in of money from relatives (28% for case household) but the amount received per year was higher than in the case households (see Table 11.2). In addition, Table 11.3 describes how the money received was utilised. There were a number of differences between the districts. For case household in the active district most of the transfer money received was used to meet the costs of treatment. For case households in the less active district the money was most commonly used to pay debt.

Table 11.3 Utilisation of transfer-in money in both districts

Most of money transfer was spent for	Active district		Less active district	
	case % (n)	control % (n)	case % (n)	control % (n)
General household expenses	28 (10)	71 (25)	27 (13)	12 (4)
Building house	0	9 (3)	2 (1)	12 (4)
Paying debt	3 (1)	6 (2)	71 (34)	45 (15)
Cost of treatment	69 (25)	0	0	3 (1)
Sending children to school	0	9 (3)	0	3 (1)
Buying land	0	6 (2)	0	0
Job investment	0	0	21 (10)	3 (1)
Total	100 (36)	100 (35)	100 (48)	100 (33)

11.5.2.2 Transfer-out money

Most of household transfer-out money was spent sending the children to attend school. There was one case household in the active district transferred money out for cost of treatment, paying for the debt and for general household expenses.

Table 11.4 Utilisation of money transfer-out in both districts

Most of transfer-out money was spent for	Active district		Less active district	
	case % (n)	control % (n)	case % (n)	control % (n)
General household expenses	20 (1)	18 (2)	0	18 (2)
Building house	NA	NA	NA	NA
Paying debt	20 (1)	0	NA	NA
Cost of treatment	20 (1)	0	NA	NA
Sending children to school	40 (2)	64 (7)	83 (5)	64 (7)
Buying land	NA	NA	NA	NA
Job investment	0	18 (2)	17 (1)	18 (2)
Total	100 (5)	100 (11)	100 (6)	100 (11)

11.5.3 Household consumption expenditure

There were a number of differences between case and control households in the patterns of household expenditure for household consumption in the active district. There were significant differences in the average amount spent on clothing, education, treatment/medication, travel, public utilities and total expenses (Table 11.5).

Food and beverage consumption between case and control households in both districts was almost the same. Many case households indicated that they had cut back on consumption of entertainment (play, music, and movie) when faced with shortage of the household income, especially in the active district. Public utilities expenditure such as water, electricity, and gas were not different between case and control households in the less active district.

There were no significant differences in the less active district between case and control household expenditure on education, travel and public utilities.

Comparing case and control households, non-food consumption reduction, although proportion of households using this strategy and seriously affected by this cut was less than case households, the size of impact in term of total household expenditure and food and beverages expenditure cut was slightly lower for the control households.

Table 11.5 Expenses for household consumption in both districts

List of expenses	Active district		Less active district	
	case	control	case	control
Food and beverages (per day) Median (THB) Min/Max (THB) N	 70 20/250 150	 90 20/200 150	 60 20/200 150	 60 10/250 150
Food and beverages (per month) Median (THB) Min/Max (THB) N	 2,100 600/7,500 150	 2,700 600/6,000 150	 1,800 600/6,000 150	 1,800 300/7,500 150
Clothing (per year) Median (THB) Min/Max (THB) N	p=0.04* 1,000 200/10,000 137	 1,000 100/10,000 147	p=0.04* 1,000 90/5,000 142	 1,000 100/36,000 150
Entertainment (per year) Median (THB) Min/Max (THB) N	 200 60/2,000 64	 200 80/30,000 107	 325 30/20,000 68	 500 40/2,000 67
Education (per year) Median (THB) Min/Max (THB) N	p=0.004** 1,500 160/40,000 96	 3,000 100/120,000 113	p=0.06 2,000 30/30,000 68	 2,000 200/108,000 103
Treatment and medication (per month) Median (THB) Min/Max (THB) N	p=0.000*** 1,325 1,000/6,500 150	 100 20/600 149	p=0.000*** 1,250 1,000/5,750 150	 100 30/700 109
Cigarette, alcoholic drink (per month) Median (THB) Min/Max (THB) N	 200 18/1,500 63	 250 30/2,000 93	 110 20/3,000 80	 200 20/1,500 109
Donation/charity (per year) Median (THB) Min/Max (THB) N	 1,400 100/10,000 148	 1,500 100/7,200 150	 1,000 50/10,000 150	 1,000 50/5,200 150
Travel (per month) Median (THB) Min/Max (THB) N	p=0.000*** 300 8/1,200 146	 400 20/8,000 148	p=0.44 200 20/3,000 143	 200 20/5,000 143
Public Utilities (per month) Median Min/Max N	p=0.011* 200 20/1,500 149	 250 40/1,600 149	p=0.94 150 20/3,300 150	 120 30/3,600 150
Total household expenses (per month) Median Min/Max N	p=0.03* 5,013 1,713/14,233 150	 4,273 1,255/16,417 150	p=0.000*** 4,775 1,972/28,192 150	 3,380 661/22,337 150

* Statistically significant at 5%, ** Statistically significant at 1%, *** Statistically significant at 0.1%,

11.5.4 Household debt

56% of the 600 households in both districts reported being in debt (333 households). Among these 54% (81 households) were households in the active district and 53% (80 households) were in the less active district.

In active district, 54% (81 households) that had reported debt was case household and 58% (87 households) that had reported debt was control households. It was also the same situation in the less active district, with more control households reporting debt than case households (53% or 80 case households, 57% or 85 control households).

It was found that a larger proportion of control households turned to borrowing than case households and the amount borrowed by control household was much higher than that of case

households on average. It is also noted that case households borrowed from non-bank sources while more control household had credit (see detail in table 11.6).

Table 11.6 Reported household debt of case household compared with control household

Variables	Active	Less Active	Active district		Less active district		Active	Less Active
	Control	Control	Case	Control	Case	Control	Case	Case
Reported household debt % (n)	58 (87)	57 (85)	54 (81)	58 (87)	53 (80)	57 (85)	54 (81)	53 (80)
Total amount of debt at this time Mean Median min/max n	49,054 29,000 400/ 700,000 87	50,247 30,000 500/ 400,000 85			p value=0.01* Combined mean =40,285 Different mean = -20,547		36,620 20,000 1,000/ 300,000 81	29,700 20,000 1,000/ 250,000 80
Above debt borrowed from; %(n)			Chi-square = 19.44 p-value = 0.002**		Chi-square = 21.08 p-value = 0.001**			
Relatives	16 (14)	7 (6)	44 (36)	16 (14)	25 (20)	7 (6)	44 (36)	25 (20)
Neighbour	6 (5)	1 (1)	9 (7)	6 (5)	8 (6)	1 (1)	9 (7)	8 (6)
Loaner	3 (3)	1 (1)	1 (1)	3 (3)	3 (2)	1 (1)	1 (1)	3 (2)
Bank	41 (36)	58 (49)	25 (20)	41 (36)	33 (26)	58 (49)	25 (20)	33 (26)
Cooperative	21 (18)	25 (21)	10 (8)	21 (18)	18 (14)	25 (21)	10 (8)	18 (14)
Recycle funding	13 (11)	8 (7)	11 (9)	13 (11)	15 (12)	8 (7)	11 (9)	15 (12)
Who is loaned the most money; %(n)	Chi-square = 10.20 p-value = 0.116		Chi-square = 21.82 p-value = 0.001**		Chi-square = 29.27 p-value = 0.000***		Chi-square = 12.07 p-value = 0.06	
Relatives	13 (11)	4 (3)	39 (31)	13 (11)	21 (17)	4 (3)	39 (31)	21 (17)
Neighbour	6 (5)	1 (1)	10 (8)	6 (5)	6 (5)	1 (1)	10 (8)	6 (5)
Loaner	1 (1)	1 (1)	1 (1)	1 (1)	9 (7)	1 (1)	1 (1)	9 (7)
Bank	47 (41)	55 (47)	24 (19)	47 (41)	33 (26)	55 (47)	24 (19)	33 (26)
Cooperative	22 (19)	27 (23)	13 (10)	22 (19)	18 (14)	27 (23)	13 (10)	18 (14)
Recycle funding	11 (10)	12 (10)	14 (11)	11 (10)	14 (11)	12 (10)	14 (11)	14 (11)
Purposes to take loaned; %(n)	Chi-square = 6.87 p-value = 0.143		Chi-square = 52.36 p-value = 0.000***		Chi-square = 31.73 p-value = 0.000***		Chi-square = 18.21 p-value = 0.001**	
Normally expenses	21 (18)	18 (15)	43 (35)	21 (18)	30 (24)	18 (15)	43 (35)	30 (24)
Tuition fee	17 (15)	6 (5)	6 (5)	17 (15)	1 (1)	6 (5)	6 (5)	1 (1)
Treatment	1 (1)	1 (1)	25 (20)	1 (1)	19 (15)	1 (1)	25 (20)	19 (15)
Business investment	56 (49)	71 (60)	22 (18)	56 (49)	47 (38)	71 (60)	22 (18)	47 (38)
Fund to work aboard	1 (1)	2 (2)	1 (1)	1 (1)	1 (1)	2 (2)	1 (1)	1 (1)
Fund to work outside locally	3 (3)	2 (2)	3 (2)	3 (3)	1 (1)	2 (2)	3 (2)	1 (1)

* Statistically significant at 5%, ** Statistically significant at 1%, *** Statistically significant at 0.1%,

31% of 600 households (102 households in the active district and 84 households in the less active district) reported that they had some savings, be they in a bank or elsewhre. In the active district, 24% of case households and 44% of control households reported household savings, with the difference being statistically significant at 0.1% level (p=0.000). In the less active

district, similar proportions of case and control households (27% and 29% respectively) reported household savings.

11.5.5 Multivariate regression results

11.5.5.1 Result of household transfer-in money model

As mentioned in section 11.5.2, household transfer-in money was related to extended families helping households to cope with their situation. In addition, some households had external support for health care expenses. Multivariate analysis was used to identify factors associated with household transfer-in money. The variable definitions present in Table 11.7

Table 11.7 Variable definitions

Dependent variables		
Variable name	**Variable definition**	
LTX	log of household transfer-in money	
Independent variables		
Variable name	**Variable definition**	**Code**
DISTR1	District:	1 = active district 0 = less active district
CASE1	Status of household	1=case household 0=control household
LNINCEMP	Log of per capita household income from main job and second job	
SAVING1	Household head has saving:	1 = has, 0 = does not have
HHSAV	Household has saving:	1 = has, 0 = does not have
STAYYEAR	Number of years of household head stays in this village	
LFDDRKM	Log of food and drink consumption per capita per month	
SUBOCC1	Household head has second job	1 = has, 0 = does not have
HLTPYER3	Household head used health care card	1 = used, 0 = did not use

Table 11.8 Descriptive statistics for LTX (Household transfer-in money)

Variables	Observed number	Mean	Median	Max	Min	Std. Dev.
ltx	152	9.05	8.99	12.10	6.40	1.26
distr1	600	0.45	0	1	0	0.50
case1	600	0.47	0	1	0	0.50
lnincemp	401	7.35	7.17	10.82	5.30	1.07
saving1	580	0.28	0	1	0	0.45
hhsav	600	1.60	2	2	1	0.49
stayyear	600	37.48	42	71	1	20.42
lfddrkm	600	7.60	7.65	8.92	5.70	0.54
subocc1	446	0.61	1	1	0	0.49
hltpyer3	600	0.40	0	1	0	0.49

Number in model=87

Table 11.9 Model for LTX (Household transfer-in money)

Dependent variable: LTX (Household transfer-in money) Method: Ordinary Least Square Sample: N=87						
Variables	**Coef.**	**Std. Err.**	**t**	**p**	**lower 95CI**	**upper 95CI**
distr1	-1.067473	.2384367	-4.477	0.000***	-1.542261	-.5926849
case1	-.2483474	.2239094	-1.109	0.271	-.694208	.1975133
lnincemp	.3205402	.1245016	2.575	0.012*	.0726258	.5684546
saving1	-1.84548	.4134391	-4.464	0.000***	-2.668743	-1.022218
hhsav	-1.431463	.3484606	-4.108	0.000***	-2.125337	-.7375891
stayyear	.0141	.0056339	2.503	0.014*	.0028814	.0253187
lfddrkm	.6961947	.2198578	3.167	0.002**	.2584019	1.133987
subocc1	-.5214226	.2363054	-2.207	0.030*	-.9919667	-.0508785
hltpyer3	.5968608	.2228675	2.678	0.009**	.1530749	1.040647
cons	4.350237	1.640111	2.652	0.010**	1.08436	7.616115
R-squared	0.4322			**F(statistics)**		9.86
Root MSE	1.0035			**Prob(F-statistics)**		.0000

Note: standard errors are heteroscedastic-consistent.
*significant at 5%, **significant at 1%, ***significant at 0.1%

The socio-economic factors included in regression models, as the determining factors of household transfer money-in, result would be the following equation

LTX = a-DISTR1-CASE1+ LNINCEMP-SAVING1-HHSAV+STAYYEAR+LFDDRKM-SUBOCC1+HLTPYER3

where DISTR1 is household location (district), CASE1 is status of being case or control household, LNINCEMP is log of per capita household income from main job and second job, SAVING1 is saving of household head, HHSAV is household saving, STAYYEAR is number of years of household head stays in this village, LFDDRKM is log of food consumption per month, SUBOCC1 is second job of household head, HLTPYER3 is use of health care card.

Among 600 households, 87 households where reported transfer-in money were taken into the regression analysis. When the household transfer money-in (log TX) was put as the dependent variable in the regression and estimated with heteroscedastic-consistent, there were 9 independent variables in the final model of 87 eligible households with F=9.86, p=0.000 and R-squared=0.4322. From the result, it was implied that households in the active district and case household had less number of transfer money in than the less active district and this difference was statistically significant at 0.1% level. Cases also had less number of transfer money in than controls but this difference was not statistically significant. Per capita household income from main job and second job affected household transfer-in money in which the households with higher income would be possible to get transfer-in money more than households with lower income would. Households with no saving of household head and overall household saving tended to have less transfer-in money. The more number of years of household head stays in this village, the more transfer-in money households would get from outsiders. Households with high food and beverage consumption had predisposition of high transfer-in money as well. If household head had employed the second job, it meant that household may not need financial support from outsiders. In terms of external support, as for

government subsidised under the health card programme, this was less used by the control households as compared to case households. Households with health care card seemed to have transfer-in money more than household without the health care card.

11.5.5.2 Result of household debt

The proportion of case and control households in both districts that incurred debt was almost the same: about 50% (see table 11.6) but the average amount of debt incurred by the control household in the active district was greater than the case household was. A deeper investigation on uses of debt by these households indicated that a large proportion of control households borrowed money for business investment and for financing migration for work. The largest amount of borrowing for these households were from a bank where collateral is required. The factors affected household debt is presented in model below:

Table 11.10 Variable definitions

Dependent variables		
Variable name	**Variable definition**	
LTLDEBT	Log of total debt of household (baht)	
Independent variables		
Variable name	**Variable definition**	**Code**
NOMEMBER	Number of household members	
CASE1	Case/Control household:	1=case household, 0=control household
STRESS	Stress level of household head (ordinal number)	1 = very stressful, 2 = stressful 3 = fairy stressful, 4 = no stress 5 = having no stress at all
LINCEMP	Log of total income from main job and second job in cash (baht)	
LNASSTOT	Log of total assets of household (baht). Total assets = value of land, house and value of production of household	
LNRXMTH	Log of health consumption of household (baht) per month	
DISTR1	District:	1 = active district, 0 = less active district
LNNONFD	Log of non-food and drink consumption (baht) per capita per month (continuous variables)	

Table 11.11 Descriptive statistics for LTLDEBT (Household total debt)

Variables	Observed number	Mean	Median	Max	Min	Std. Dev.
ltldebt	333	9.85	10.00	13.04	6.00	1.25
nomember	600	3.86	4	9	1	1.27
case1	600	0.41	0	1	0	0.49
stress	600	3.27	3	5	1	0.79
lincemp	401	7.63	7.72	10.82	3.91	.89
lnasstot	599	14.31	14.20	20.91	8.01	2.20
lnrxmth	558	5.87	5.52	8.70	3.40	1.47
distr1	600	0.50	0	1	0	0.50
lnnonfd	600	7.27	7.24	10.05	4.46	0.92

number in model=217

Table 11.12 Model for LTLDEBT (Household total debt)

Dependent variable: LTLDEBT
Method: Ordinary Least Square
Sample: N=217

Variables	Coef.	Std. Err.	t	p	lower 95CI	upper95CI
nomember	0.1695819	0.0602769	2.813	0.005**	0.05075	0.2884138
case1	-0.8209583	0.3440553	-2.386	0.018*	-1.499241	-0.1426758
stress	-0.3015098	0.0953936	-3.161	0.002**	-0.489572	-0.1134475
lincemp	0.2534159	0.1057963	2.395	0.017*	0.0448455	0.4619863
lnasstot	0.107271	0.0324932	3.301	0.001***	0.0432127	0.1713293
lnrxmth	0.2723118	0.1142924	2.383	0.018*	0.0469918	0.4976319
distr1	-0.5899901	0.1704009	-3.462	0.001***	-0.9259244	-0.2540559
lnnonfd	0.229887	0.0890611	2.581	0.011*	0.0543089	0.4054652
_cons	4.070059	1.132235	3.595	0.000***	1.837932	6.302186
R-squared	0.2499			**F(statistics)**		7.62
Root MSE	1.0992			**Prob(F-statistics)**		.0000

Note: standard errors are heteroscedastic-consistent.
*significant at 5%, **significant at 1%, ***significant at 0.1%

LTLDEBT = a+NOMEMBER-CASE1-STRESS+LINCEMP+LNASSTOL+ LNRXMTH-DISTR1+LNNONFD

where NOMEMBER is number of household members, CASE1 is status of household whether case or control, MENTAL is stress level of household head, LNINCEMP is log of per capita household income from main job and second job, LNASSTOL is log of total assets of household (Thai Baht) ;Total assets = value of land, house and value of production of household, LNRXMTH is log of health consumption of household per month, DISTR1 is household location (district), LNNONFD is log of non-food and drink consumption per capita per month

Among 600 households, 217 households with reported debt were taken into the regression analysis. When the household total debt (log TLDEBT) was put as the dependent variable in the regression and estimated with heteroscedastic-consistent, there were 8 independent variables in the final model of 217 eligible households with F=7.62, p=0.000 and R-squared=0.2499. Number of members living in the household was related positively to household debt. Control households had tendency to have debt more than case household, this was referred to the credit of households. The reported less level stress of household head made household debt lower than others did. These figures and relations were different from the previous study in Chieng-Mai 5 years ago (Pitayanon et al., 1997). The households where household heads had both main and second jobs were likely to have debt, same as household with total assets (land, house and production). Households had spent on health care consumption and on other non-food consumption also had debt more. Households in the less active district had debt more than households in the active district did. The pattern of household debt is likely reflected credit to have worthiness of households rather than financial need.

11.5.6 Factors associated with household coping

The previous Thai study identified that a household's ability to cope with a recent HIV/AIDS death was influenced by household income, household education attainment and the levels of external support (Pitayanon et al., 1997). Below we assess the extent to which household income in cases and controls is affected by household income, household educational attainment, and household size.

11.5.6.1 Household income and ability to cope

The first aspect to be examined is the impact of chronic HIV/AIDS morbidity on consumption of household of different income level. Results from chapter 8 indicated that on average lower income households experiencing chronic HIV/AIDS morbidity (case households) had a higher proportion who felt their consumption level was seriously affected by illness of working member.

This pattern was quite similar to control households whereby the lower income families had greater proportion among the suffering seriously from household consumption reduction. This proportion among the control households was slightly higher than case household was.

Secondly, among the lower income households, it appears that their sources of finance to cope with this health shock situation were rather limited. Apart from those who were entitled to get subsidies from the employers in public and private sector, the majority of these case households relied mainly on their savings, transfers from relatives and borrowing. Among the high-income households; on the other, their sources of finance were more varied. These households initially had a number of assets and were able to sell them in time of need.

Although a number of households in this higher income group also turned to borrowing; ability to borrow also depends on collateral and ability to pay back, in which poorer household did not have. A very limited data shown in Table 11.6 also indicated that case households in the less active district had tendency to borrow or take loans for business investment purpose more than other purposes.

This pattern was also quite similar to the control households whereby control households in the less active district had limited resources to fall back on particularly in terms of household's assets. The majority of this lower income group thus relied on their previous savings and borrowing as resources to cope with economically situation. This situation was explained clearly with multivariate regression in section 10.5.5.

Thirdly, external support in terms of government subsidies on health care cost and did not seem to reach the poorest section of households, the main target of government assistance programme in rural areas. Chapter 10 demonstrated that some of case households in the less active district did not receive the benefit of the Free Medical Services for the poor (FMP) or low income card schemme in rural areas of the Ministry of Public Health or the health card programme. Those who received benefit from these two programmes were concentrating among the middle and higher income group. Moreover, a number of the middle and higher income households also got subsidies from their employers both in the public and private

sector while the majority of the lowest income households were agricultural workers and common labourers who did not enjoy this benefit.

Among the control households, government assistance in terms of free medical treatment under the FMP for the poor and the health card programme appears to reach the very poor group. It is also noted that the high-income household also enjoyed this highly subsidised medical cost. Similarly other external subsidies from public and private employers, health insurance, social security were mostly received by the higher income groups.

To analyse household ability to cope, what one needs to measure is economic welfare of each household in the community. The most commonly used indicator of welfare is income. But income concept must include all the components, which affect household member's welfare. The economic welfare of households is determined not only by their income but also by their needs. The different needs of household members living in the households are adequately taken into account, which can refer to household debt.

11.5.6.2 Household education attainment and ability to cope

Household education attainment in this analysis refers to education attainment of household members. Generally, education is considered an important factor enhancing a person's earning ability. Thus household with a highly educated household members are generally viewed as having more resources to turn to in time of need. Furthermore, well-educated households are believed to have more information to assist them to adjust to this health shock situation with lesser degree of hardship members.

Despite limitation of data, and very small variation in term of household education attainment (this is not surprising since in rural areas of Thailand, most people receive only primary education). Information from the ten case studies appeared to suggest that household with very low education suffered more from consumption cut than household with more education. This is shown more clearly among the control households in the less active district. Children and elderly were who were left without extended family supports were mainly from the lowest educated households. Limited data from household survey cannot analyse sources of finance for household's health care, household debt and uses of debt by household's education level. However, it may be noted that in regard to time allocation of household members particularly the withdrawal of youth from school to work or to help with family chores, chapter 10 indicated that this behaviour occurred mainly in poorly educated households of both case and control household category.

11.5.6.3 Household size and ability to cope of households

The household size is an important demographic variable that has affected on ability to cope of households.

Why the cash household income is much lower among large households is a difficult question to answer in this study, but from the policy point of view, this is an important question to explore. According to the case studies, it was found that the large households were likely to have large number of children of different ages. It seems that children in Phayao were suffering

from a greater degree of impact than adults were. The government can devise some policies, which help children in the households directly.

Moreover, the results from section 10.5.5.2 on household debt model it was clearly shown that household size and household cash income had positive relationship with household debt. The higher income the household had, the more credit household had, this was implied to debt later on.

In the rural Thai community, the problem is, how poor are poor? Some households had cash incomes that approximate the poverty line or they might have incomes of almost zero. But most of household had assets and production such as rice, vegetable, fishes, and eggs, they did not need cash to buy any food or beverage. However, household might need cash for sending the children to school or for health care expenses if they did not under any health care financing scheme such as health care card. Therefore, more consumption per capita of non-food and beverage household had, the more household debt was incurred.

11.6 Conclusion

The findings highlight the range of strategies used by households affected by chronic illness. The key findings are;

1) About 76% of households in the active district and 56% of households in the less active district used previous saving as their resource to finance increased health care cost caused by this particular chronic illness.

2) For households that have assets, assets sale was another way out to ease the burden of increased household expenditure from chronic illness.

3) In order to maintain household income, household production as well as assistance in taking care of the sick during the previous six months, a large number of households tried to reallocate time of their members in various activities.

4) The strategies used by households to maintain the level of family production after illness of a working member from HIV/AIDS ranged from substituting lost labour by previous non working member, increase workload of other household members to withdrawal of the young members from school to help in family work.

5) In Thailand, particularly in the rural areas, the extended family system plays an important role in supporting its extended members in time of troubles and needs. For example, many case households received transfers in from outside to help finance the increasing burden caused by household member illness. Those outsiders who transferred in the money were normally adult children of the household head who were working away from home, or the head's brother/sister as well as other relatives.

6) Despite the use and adjustment of existing household resources to cope with the situation, there were still a number of affected households who had to turn to outside borrowing as a way out. The majority of the borrowers used informal credit sources: relatives and local moneylender. Co-operatives or local revolving fund was another credit source commonly used. A formal credit institution like the Bank was less used by households.

7) Besides the money from relatives and others, for case household there was some support from the government, some support from health insurance company, and some support from social welfare in the community.

8) 56% (333 households), of the 600 households in both districts had reported debt. Among these 54% (81 households) were households in the active district and 53% (80 households) were households in the less active district. It was found that a larger proportion of control households turned to borrowing than case households and the amount borrowed by control household was much higher than that in case households on average. It is also noted that case households borrowed from non-bank sources while the proportion of the control household had more credit.

9) 31% of 600 households reported having savings in general. In the active district, 24% of case households and 44% of control households reported household savings, this difference was statistically significant at 0.1% level (p=0.000). In the less active district, 27% of case households and 29% of control households reported household savings.

10) Between both districts, the difference of case and control household debt was also statistically significant. 38% and 33% respectively of case households in both districts reported current household debt . The proportion of case and control households in both districts that incurred debt was almost the same which was about 50% but the average amount of debt incurred by the control households in the active district was greater than the case household. A deeper investigation on uses of debt by these households indicated that a large proportion of control households borrowed money for business investment and for financing migration for work. The largest amount of borrowing for these households were from a bank where collateral is required.

11) Some households had external support especially for health care services from institutional subsidiaries such as use of government health centres and hospitals.

12) Multivariate analysis suggests that household debt is associated with the number of members living in the household. Control households had a greater tendency to have debt than case households, which is likely to be related to the credit ability of households. The reported less level of stress of household head was also found to be associated with household debt lower than others did.

13) On average, lower-income case households reported more effects on consumption ability of losing income from the ill household members than in high-income ones. High-income group had assets that can be turned to cash in the form of selling or borrowing and used asset as collateral. This suggests that government policies designed to help the poor have not had sufficient impact.

14) Most of the households had assets and production such as rice, vegetable, fishes, and eggs, that they did not need cash to buy any food or beverage. However, household might need cash for sending the children to school or for health care if they were not under any health care financing scheme such as health care card. Therefore, the more the consumption per capita of non-food and beverage household had, the more the household debt.

15) For case households in the active district, the differences of time allocation of children and the age group of household head were statistically significant at 5% level and 0.1% level respectively. Proportion of household having saving among case household in the active district was associated with age group of household head at 5% level. The proportion of control households in the active district having saving was associated with age group of household head at 5% level.

CHAPTER 12
DISCUSSION AND CONCLUSIONS

12 Discussion and conclusion

12.1 Introduction

This study aimed to identify and assess the economic impact of chronic HIV/AIDS morbidity on affected households in rural Thailand, and to examine how households cope with the situation (since the welfare of the surviving members depends on how well they cope). Specifically the study aimed to: 1) study the coping strategies used by households to reduce the impact of caring for an adult with chronic HIV/AIDS, 2) explore the levels and forms of utilisation of HIV/AIDS - health care and support services by households affected by chronic HIV/AIDS morbidity between the study sites, 3) assess whether the availability of services influences the economic impact of HIV/AIDS on households, and 4) discuss the policy implications of the finding.

This chapter draws out the broader conclusions, the policy implications and the future research priorities that emerge from the research findings of this study. Section 12.2 presents the principal findings. Section 12.3 then moves on to discuss the strengths and weaknesses of the study. Section 12.4 compares the findings with previous studies and systematic reviews. The lessons for researchers and implications for policy makers are discussed in sections 12.5 and 12.6. Finally, in Section 12.7 unexplored questions and future research priorities are highlighted.

12.2 Statement of the principal findings

12.2.1 Comparability of samples and availability of services within and between districts

In general, overall characteristics and demographics of the cases and controls in each district were quite similar. There were some demographic differences between case and control households, with the average household size in case households being slightly larger than in control households (the active district: case 4.7 versus control 4.4; the less active district: case 4.2 versus control 4.0), and the average age of household members in case households being greater than control households (Mueng: case 56.2 years versus control 49.9 years; Pong: case 52.1 years versus control 46.2 years). The dependency ratio in case households was slightly higher than in control households in the active district (case, 1.2 versus control, 0.8) but was similar in the less active district (case, 0.7 versus control, 0.7). Another finding on household composition is that in both districts, there were significantly fewer household head partners in case households than in control households. This may be because of death or divorce. In both districts, there were more female household heads in the case than in the control households.

Half of household members had agricultural work as their main occupation. The active district had better availability of support services and there was a greater number of NGOs and international agencies (e.g. JICA) involved in HIV/AIDS services/activities in the active district than in the less active district. This may be partly due to it being at a later stage of the HIV epidemic (measured from the reported morbidity rate in 1997) than in the less active district. In

the active district, the response of primary health care facilities had been to expand the coverage of the health services.

There was evidence that support services were more available in Mueng than in Pong among either case or control households, with support services being more likely to be reported to be available and used by case households than control households in Mueng. In terms of availability of six groups of service, almost all case households in both active and less active districts were reporting that these support services were available in their communities. In terms of use of services, most of the support services were available and used by case household members in the active district more than the less active district and this was a statistically significant difference, except for the support for the elderly service. Regression results suggested that having an HIV/AIDS chronically ill adult significantly reduced the reported use of all services.

12.2.2 The economic impact of chronic HIV morbidity on households

For the proportion of households stating serious impact on household production by type of household, more than half of case households reported having poor or very poor economic status compared to about one-quarter of control households.

The economic impacts of HIV/AIDS chronic illness on the affected households of rural Phayao province measured in term of direct and indirect cost per capita were quite substantial. These financial costs per household with a CIA in the active district were significantly lower than for households with CIAs in the less active district during the past six months (Mueng, THB 9,109 versus Pong, THB 13,606). This may be due to the difference in the availability of the support services in the two districts, as support services in all 6 categories in the active district were significantly more available in the active district than in the less active district. The difference may also relate to the differences in the stage of HIV epidemic in the two districts.

Chronic HIV/AIDS morbidity impacts substantially on household labour supply and family production. A significantly lower percentage of household members aged 15-59 years were employed in case households than in control household in both districts (Mueng: case 72% versus control 82%; Pong: case 78% versus control 84%). In both districts, members of case households had a lower percentage of main and second jobs than those of control households. In both districts, dependency ratios in case households were higher than in control households. In addition, there were more elderly and more people who used to work in case households than in control households. Regression results suggest that chronic HIV/AIDS morbidity had an impact on the proportion of households having a cash income. Among households that had cash income, case households reported significantly lower total cash income per capita than control households in Mueng (case 1,259 THB versus control 1,679 THB) but this was similar in Pong (case 1,191 THB versus control 1,139 THB). Among households with a cash income, results from the regression analysis suggest that HIV/AIDS morbidity did not impact on the per capita household cash income. It is likely that this is because many (58%) CIAs were construction workers before illness and that, following illness, they received a pension from the Welfare Department of the Ministry of Labour from the government.

About one-third of all households reported that they had savings. Two-thirds of case households in Mueng and half of case households in Pong reported using their savings to finance the increased health care cost.

There were no significant differences in the percentages reporting owning land and nearly every household owned a house and had land to build on. In Mueng, case households had significantly less land for agriculture than control households (55% versus 77%). However, in Pong, a similar proportion of case and control households had land for agriculture (67% versus 72%). Cases in both districts had a lower value of assets per capita than controls and this was confirmed by multiple regression.

About half of all households had reported debt. Case households reported being in debt less than control households (p=0.001) and this was confirmed by multiple regression. However, it can be noted that case households borrowed for daily consumption and health care reasons (Mueng: case 68% versus control 21%; Pong: case 49% versus control 19%) while control households tended to borrow for business investment reasons (Mueng: case 22% versus control 56%; Pong: case 47% versus control 71%). Among households that reported having debt, proportion of case households borrowed money from banking institutions was lower than that of control households (Mueng: case 25% versus control 41%; Pong: case 33% versus control 58%). The interest rate of banking institutions was much lower than informal credit sources such as relatives and local moneylenders though collateral was required. Loans from banks were used least by case households due to the fact that the majority of them were low income households and the lack of collateral is likely to limit their ability to borrow from a formal credit institution. Case households in both districts reported recent borrowing to cope with the situation (with 17% in the active district and 20% in the less active district having borrowed money in the previous six months).

No clear picture could be discerned about the effect of income on household borrowing patterns since borrowing occurred across all income groups.

12.2.3 The short term strategies used by households and communities to reduce the economic impact of chronic adult HIV/AIDS morbidity

Case households used a range of strategies to cope with HIV illness. For coping inside households, cases used family resources such as their savings, selling their assets and finally obtaining transfer-in from relatives. To maintain family productivity during the period of HIV/AIDS illness they used various strategies including hiring to substitute the lost labour, increasing the workload of other family members, and withdrawal of the young (especially girls) from school to help out at home. One-third of children (of school-going age) from case households in both districts had to leave school to find work to contribute to the family income and girls were the about three-thirds of them (Mueng: daughter of CIA 82%, son of CIA 6% and other relatives 14%, Pong: daughter of CIA 72%, son of CIA 14% and other relatives 14%). Young children and some young relatives, especially females, were withdrawn from school to help with family production, carry out household chores and care for the sick family member. A greater proportion were withdrawn in the less active district than in the active district. Twenty

percent of children over compulsory school age (i.e. 12-15 years old) were taken out of the school to enter market work to help restoring family income. Furthermore, some young relatives were also withdrawn from school to help with family production as well as to take care of household cores and the sick member. Seventeen children from case households in the active district and 21 children from case household in the less active district had to quit school in order to take care of the house, look after the other children and the sick.

Thirteen CIAs (Mueng, 3 versus Pong, 10) were being taken care of at home by children and 3 of 3 children in Mueng and 7 of 10 children in Pong had to stop going to school in order to provide care. Fourteen CIAs (Mueng, 9 versus Pong, 5) were being taken care of at the hospital by children and all of these children had to stop going to school in order to provide care. Proportion of children who had to stop working related to household production to take care of CIAs in Mueng was lower than in Pong (Mueng 7% versus Pong 44%).

The number and proportion of young children in case households in the less active district that were taken out of school were significantly greater than in case households in the active district. This difference can be explained by the fact that case households in the less active district were of lower economic status than case households in the active district, and hence this affected their ability to afford schooling beyond compulsory level for their children.

Among the case households in the less active district, the withdrawal of children from schooling was more prevalent in the lower educated households and households engaged in agricultural work, labouring and construction. In terms of income effect, the withdrawal of children from schooling also occurred in higher income households but for a different reason. Lower income households needed their young children to enter the job market to help restore household income while higher income households needed these children to help with family chores, to take care of younger children and to look after the sick. Thus the risk of young children entering child labour or socially stigmatised occupations was greater in the lower income HIV/AIDS afflicted households.

In addition, over a quarter of caregivers, who usually were parents and spouses, stopped working to take care of CIAs. Seventy five percent of care-givers in Mueng and 68% of care-givers in Pong lost income when they stopped working to take care of CIAs.

The case households in both districts were also supported from extended family members mainly in three key areas: care of children, care of the elderly and monetary support. Most of the support was in taking care of young children as well as the elderly. Monetary support was less prevalent owing to the fact that rural households in Thailand were mainly low-income households and their ability to assist financially is likely to be rather limited. Furthermore, extended family supports for the lowest income households affected by HIV/AIDS appear to be rather limited and the burden of child and elderly care was mostly passed on to the community. In active district and less active district living parents took care of 60% and 30% of orphans respectively and the remaining were taken care of by extended family members.

Overall, 22% of households in the active district and 25% of households in the less active district reported receiving transfers-in from outside. In the active district, 24% of cases and 23% of controls had experiences of transfers of money from the outside relatives. In the active district, cases received money from outside, on average, 6 times per year (36 households) with an average total amount of THB 12,713 while controls received money from outside, on average, 7 times per year (35 households) with an average total amount THB 23,128. In the less active district, on average cases received money from outside 8 times per year (48 households) with an average total amount of THB 19,177 while controls received money 7 times per year (33 households) with an average total amount of THB 24,272. The people who transferred the money to households were mainly adult children of the household head working away from home, the head's brother/sister, or other relatives (15% of households in the active district and 11% in the less active district). In both districts, cases had significantly less average income from transferred money from people outside the households and interest from savings than controls. Cases received these amounts of money in order to pay for the cost of treatment of some household members who was sick but controls used this money for other purposes. It was noticed that the number of households transferring money out was small compared to transfers into the household and money was spent for sending the children to attend the school.

The impact on household consumption levels of HIV/AIDS illness in the less active district was substantial, with more than a half of the households reporting a cut in consumption and one third being seriously affected. Case households in the active district appeared to be less affected by consumption reduction than case households in the less active district. This was probably because the size of these cuts was smaller. This difference can partly be explained by the fact that medical care cost and income loss of these case households in the active district was lower than those of case households in the less active district. Furthermore, the case households in the active district had, on average, higher incomes and more assets than case households in the less active district, hence the negative impact of the cut in consumption was thus likely to be smaller than for case households in the less active district. Among the case households in the less active district, it appeared that those that suffered more from this consumption cut were the lower income households with very low education and working in agricultural occupations. Our study therefore confirms that the poor families with chronic HIV/AIDS morbidity suffer more consumption reduction.

12.2.4 Impact of chronic HIV/AIDS households on utilise support and health services

Households in the active district had significantly more availability and use of six groups of service than households in the less active district. The exception was support for children, which was not different between the active and the less active district among the control households but among the case households there was significant more availability and use in the active district than in the less active district. The case households had significantly more availability and use of social support, support for children, income generation project for women and treatment and care of ill people than the control household. For support for elderly, only the

case households in active district had significantly more availability and use of this service than in the control households but there was no difference in the less active district between the case and the control households. There was no difference between the case household and the control household in the two districts for social funds, community financing and agricultural project.

The study documented 324 CIAs from 300 case households. The average age of CIAs in Mueng and in Pong was similar, but there was a greater proportion of female CIAs in Mueng (58%) than in Pong (50%). The most common reported illness during the previous six months among CIAs (31% in Mueng versus 25% in Pong) were gastrointestinal diseases, particularly diarrhoea. Over a half of CIAs reported using government hospitals for health services in the past 6 months and less than a third used public health centres. Most CIAs (72% in Mueng and 84% in Pong) had been admitted to hospital in the past six months, for an average duration of 20 days. Whilst receiving treatment at home 56% of CIAs in Mueng reported that household members had taken care of them, compared to 64% in Pong. Caregivers who took care of CIAs at home were usually parents, spouses or children of the CIA, with over a quarter of the adult care-givers stopping working and almost three quarters of child caregivers stopping going to school. Seventy five percent of care-givers in Mueng and 68% of care-givers in Pong lost income when they stopped working to take care of CIAs.

In both districts, members of case households went to government hospitals when they were ill more than those of control households and went to sub-district health centres less than controls. The explanation is that the case households had chronically ill adults (CIAs) who were sick and needed high level of health care for their illness, so they needed to go to hospitals rather than to local health centres. Fifty-four percent and 60% of the CIA patients in Mueng and Pong respectively attended government hospitals for their care and 44% and 52% of them had been admitted for an average of 2 times (average day of admission: Mueng, 21 days versus Pong, 19 days) during the six-month period of interview. These findings indicate a substantial demand for government resources for hospital care such as the issues of health manpower, hospital beds, medical supplies and other requirements for hospital management.

The case households reported having significantly more difficulties on seeking health care (cost of medication, travel and accommodation) than the control households while households in the active district had significantly less difficulties seeking health care (cost of medication, travel and accommodation) than those in the less active district.

HIV/AIDS illness of a family member generally caused the person and their family enormous strains from social stigma and social discrimination. The strains from social made them tried to cope with the negative reaction and discrimination from their neighbours, community, employers, employees and business clients ranged from an attempt to keep secret the cause of the infection and illness of the family member. Overall, 24% and 39% of case household in Mueng and in Pong reported having faced various kinds of discrimination, while those who were not discriminated against were households that tried to keep secret the real cause of the illness. Among those renting property, case households in both districts paid about

4 times higher house rent than controls in the same district. This might be the evidence that some case households were being discriminated against. In addition, there was supported evidence that the levels of stigma were greater in the less active district than in the active district, with three times more case households reported having suffered from discrimination from neighbour knowing of the disease in less active district than in active district (Mueng, 10% versus Pong, 32%). This suggests that HIV/AIDS related activity may help contribute to the reduction of HIV/AIDS related stigma and its effects.

12.2.5 The costs of using health services and sources of funding

The average health care expense in the last 6 months in case households was significantly higher than in controls in both districts. Case households in Mueng reported significantly lower average expenditure associated with accessing and receiving medical treatment in the past six months than in Pong (Mueng, THB 9,109 versus Pong, THB 13,606).

About one-sixth of households paid expenses on health care by themselves. Comparing health care expenditure paid by case households in the past 6 months in the two districts, the percentage of case households in Mueng that paid health care expenditure by households was half of that in Pong; with odds ratio (OR) (Mueng/Pong) of 0.5 (p=0.05). Among those who paid by themselves, case households had a higher health expenditure than controls in both districts (Mueng: case THB 4,603 versus control THB 856; Pong: case THB 3,212 versus control THB 380).

Government financing is an important source of support for medical care and treatment in rural communities. At least three quarters of case and control households were supported in their health care expenses by low income cards or health care cards (63% of cases in Mueng and 33% of cases in Pong were supported by low-income card, and 24% of cases in Mueng and 41% of cases in Pong supported by the health care card). Also, multiple regression suggests that case households in the active district had a lower per capita health expenditure of CIAs than those in the less active district. This means the case households in active district were more likely to be supported for health care expense from other sources than in the less active district. This was supported by the proportion of health care card usage. The proportion of health care card usage in the case households in the active district was significantly higher (1.8 times) than in the less active district. The proportion of using health care cards in case households was significantly higher (1.8 times) than in the control household in the active district but there was no difference between the case and the control households in the less active district.

The findings suggest that the Free Medical Program for the poor under the Ministry of Public Health did not reach the poorest section of the case households in the less active district. Those who received this free medical treatment tended to fall among the middle and higher income groups in the community. The health card program, a voluntary government health insurance program for the poor, which is heavily subsidised, was not as popular and widely used as expected among the lower income households. Other external subsidies such as private health insurance, government service health benefits, employers' health benefits

were mainly received in control households, while case households did not enjoy these benefits due to their employment status as well as the limited coverage of social security, health insurance and employers' health benefits. It is important that methods to increase coverage to these vulnerable groups are identified.

Our study found that expensive traditional medicines (herbal remedies) and traditional healers were used by HIV/AIDS affected households. The study highlights that people with HIV use traditional healers and medicines (Mueng, 35% of case households made average of 3 visits to traditional healers in the last six months versus Pong, 23% of case households made average of 4 visits), and that the cost of each traditional treatment is not cheap (average cost per visit for traditional medicines in Mueng, THB 1,538 versus Pong, THB 1,748) compared to average cost per visit to government hospital (Mueng, THB 492 versus Pong, THB 631) or to private clinic (Mueng, THB 281 versus Pong, THB 276). Most (Mueng, 83% versus Pong, 95%) of CIAs paid the cost on visit traditional doctor by themselves. The quality of traditional medicine in healing HIV/AIDS is often over emphasised and over advertised openly in the media, leading to fraud and deceit among the already poor households, so the expense on this put more burden on economics of households with unreliable benefits of treatment.

12.2.6 Influence of the availability and use of services on the household economic impact of chronic HIV/AIDS morbidity, and/or the coping strategies used by households

It was found that for the HIV/AIDS services, the proportion of case households using these services were higher in the active district than the less active district. For non-HIV/AIDS services the case households in the active district were more likely to use these services. Under-utilisation, non-utilisation and even non-acceptance of rural public health services affected case households in the less active district, so they sought health care and other support services from outside their community. It was observed that in some situations, although services were available, some people living with HIV/AIDS did not want their illness to become known and so did not seek help. Such factors may reduce the potential beneficial impact of the available services. It was also noted that in the less active district, there appeared to be a greater incidence of discrimination and stigmatisation of people identified as being HIV infected. In the study examples of people who had been thrown out of their village, women who had been thrown out of their husbands' families, those who had lost their work when they became sick and were isolated from other community members were found. Several respondents also reported that they, found it difficult to make money due to the stigma associated with their illness. Fewer examples of such incidence were reported in the villages with active support services, and it may be that the availability of services helps to reduce the stigma and fear associated with HIV infection, or counter the effects of stigma and discrimination.

The availability of service without use might indicate that people didn't know about that service or people know about that service but they cannot access that service. Our study showed that in the less active district, the case households had less opportunities to use the

service (although that service was available) than the control household in support for children and income generation project for women service. While in the active district, the case households had less opportunities to use the service (although that service was available) than the control household in service on income generation project for women. The case households located in the less active district had significantly less possibility of use the service than case households in the active district even that service was available in all six groups of service. Regression results confirmed that having an HIV/AIDS chronically ill adult significantly affected and reduced use of all services.

12.3 Strengths and weaknesses of the study

This study has a number of strengths and weaknesses, that are discussed below.

12.3.1 Strengths of the study

The study was the first economic survey to focus on how chronic HIV morbidity affects households. Methodologically the study had several strengths.

This study was a cross-sectional household survey involved both quantitative and qualitative data collection with intensive qualitative work before and after the household survey, which was very useful in helping to generate hypotheses.

Another strength is the method of mapping out the households and used as a sampling frame to identify household. Nine villages were randomly selected for inclusion in the study from each districts. In each selected village, a mapping survey of all households was conducted to identify case households and control household.

The questionnaires, that were built based on the World Bank's Living Standards Measurement Study literature, included several economic variables at household level as well as at the individual level about all household members. The questionnaires were written in the local language (Thai) and piloted to ensure content and construct validity. All of the interviewers were trained by the principal researcher to ensure the inter-rater reliability and minimise interpersonal difference.

In studies of the impact of HIVAIDS it is important that comparable data are collected from a comparable group or "control group". The study was carefully designed to ensure that there was a "control group". This is critically important in assessing the impact – many surveys have followed only households with AIDS patients without comparison groups. The sample size was also sufficient to have enough power to identify differences between case and control households. A new issue included in our study is the exploration of the impact of HIV/AIDS on households compared between the active and less active district.

The different stages of the work and the long formative phase including enumeration and community mapping showing households and main services ensured that the study built trust in the study communities. The study primarily used quantitative methods to gain a better understanding into the impact of chronic illness, factors affecting use of services, and the impact of these services on household services. However, in addition, it was found during the fieldwork by the researcher living and working in the study community that the ongoing

dialogue with households enabled deeper or sensitive questions to be asked in a more informal and interactive style.

It is standard practice in economic research to assess the validity of the responses on income and expenditure. To achieve this, in this study, we have checked by collecting data in both non-monetary and monetary terms and found that most of them were agreed as it is important to document in detail changes in non-monetary issues (such as selling a house, land etc. to raise medical fees, number of times attended particular health services, etc.).

Data was input twice into two identical databases, after record forms were visually checked for obvious errors, and then the two data-sets were compared using "validate program" in EpiInfo version6. Then data-sets were checked against the record forms in case of difference and corrected.

The focus of the work was exploring the economic impact of chronic HIV/AIDS morbidity in the Upper North Province, where HIV prevalence is greatest. Hence this study was undertaken in Phayao, which has the highest HIV prevalence in the country. Although this may not be representative of all of the provinces, or upper North Thailand, the findings are likely to be relevant and generalised for much of whole Upper-North Province, particularly as, by selecting a high prevalence area, we can gain insights into the future issues that may affect less high prevalence areas.

12.3.2 Weaknesses of the study

Research on the household impact of HIV/AIDS is inherently difficult – with the sensitivities associated with possible biases associated with data collection, the sensitivities associated with collecting data on income and debt, and the cross-sectional nature of the study. Each of these are discussed below, along with the methods used to address them are outlined and the possible ways in which this may have influenced the study findings.

12.3.2.1 Possible bias

A number of biases may have occurred in this study: in particular selection, information and recall bias, may have occurred in this study. The effects of these biases have been reduced during the design phase of the study. For selection bias, firstly, I selected the Phayao province by choosing the greatest prevalence of reported HIV cases in Thailand. I then selected two districts with differing levels of support services under the guidance of the Phayao Provincial Health Office. Then after enumeration of households, the households were randomly selected to ensure that they had equal chance of being selected into the study. To reduce information bias, firstly, the questionnaire was prepared in Thai to be sure that the interviewers and interviewees could understand its content clearly, then the questionnaire was piloted, fed back, amended and standardised. I also trained all the interviewers to make them understand the theme of this study and reduce any differences in presentation among them. For recall bias, following the initial pilot phase, I limited the recall time to only 6 months into the past to reduce any difficulties associated with a long recall period.

The study aimed to identify the short-term strategies rather than long term strategies because a long time-frame such as a year or more is limited by the recall of respondents. The

longer the reference period the greater the recall bias. Too short a period may not be suitable because of not possible to capture fully effects or events to key measures.

12.3.2.2 Difficulties associated with compiling data on financial status

One methodological weakness of this study is the possible inaccuracy of income estimation especially data on reported financial status. Fear of reporting their income to the government or tax reissuing might lead to the underestimate of income. We tried to reduce this underestimate by recording the expense and consumption of households that might reflect indirectly to their income. However, our study did not investigate household consumption before the illness stage of case households because of potential recall problems. The measure income per capita is also used rather than attempting to use the ideal "adult equivalent scales" because this study aimed at comparing these results and there was no raw data to calculate income per capita in both districts.

12.3.2.3 Measures of impact and coping

The study focused on exploring the impact of chronic HIV morbidity on specific indicators of impact. Likewise, the study explored specific dimensions of how households may cope with chronic HIV infection. In practise there may be other important dimensions of impact that were not explored. For example, the households selected may have children that have HIV/AIDS, and the contribution of this was not identified.

12.3.2.4 Cross-sectional study design

There is much debate in the economic literature about the relative advantages of longitudinal compared to retrospective studies of HIV. The literature suggests that although longitudinal surveys take more time, they are much better at getting empirical measures of effect. For example, in a survey, the ideal would be to interview the households at least twice with the same set of income/expenditure questions, if possible before and after a chronic illness (Mikkelsen, 1995). But to interview households that are at risk before happening of that particular chronic illness needs more resources to cover households at risk. Because of this is that it is difficult to establish a cause and effect relationship from this type of study. For example, "Was a lower socio-economic status in a household a result of HIV morbidity?", or "Was it a factor influencing the household members susceptibility to HIV infection?" The cross-sectional household survey design arose from time and budget constraints and inherently limits the extent to which causal statements can be made.

12.3.2.5 Sensitivity of key issues, including debt

One of the major sensitive topics identified during the survey was collecting data on 'debt'. Some respondents were distressed by this question, and there may have been under reporting bias if the head or spouse felt embarrassed about their debt status and about revealing the sources and amounts of loans. Despite these difficulties, collecting data on debt burden in addition to income is an important element to the study that enables a more precise measure of socio-economic status and levels of stress among households to be documented.

Due to the numbers of households were not allowed for subgroup analysis, I could not examine either the impact on households by type of industry or by any other household socio-economic characteristics.

12.4 Comparison with previous studies and systematic reviews

We first compare the findings with previous research in Thailand, and then with the broader literature on the household impact of HIV infection.

12.4.1 Comparison with other Thai findings

In a number of ways the findings of the study in this thesis were similar to the previous Thai study (Pitayanon et al., 1997) on the impact of an AIDS death. The study, also conducted in Northern Thailand, found that 19% of the households surveyed sold assets and 60% spent all their savings in response to the epidemic. Sixteen percent of the households with AIDS-death left orphans. Of this, 17% of these children were sent to orphanages (Pitayanon et al., 1997). In this study, CIAs tended to have fewer children than controls -- most likely due to their generally younger age and lower likelihood of being currently in a partnership.

Pitayanon also documented the loss in earnings, increased medical expenses and withdrawing children from much needed education as a result of an AIDS death. The authors discuss how the latter caused potential losses in human capital acquisition and significantly reduced future earnings. Not only did the burden of medical and treatment costs fall mainly on the households, the death of HIV-infected parent(s) also left their children as orphans, who were often too young with insufficient skills to fend for themselves. Children will be affected primarily by the occupation of their parents and the loss of entitlement to housing and access to schooling. Another issue is the loss of funds to pay school fees. Households spent some saving on health care expenses. Some children will in general not be affected by the loss of entitlement to housing but may be subject to food insecurity as well as to loss of schooling opportunities.

The study in this thesis focused on chronic illness. In terms of household health and composition, previous studies in Chiang Mai (Pitayanon et al., 1997) presented change in allocation to health maintenance activities. The study in this thesis presents more about proportion of changes in time allocation of household members (relationship to CIAs) after household member getting sick. The main impact of HIV disease on households will be the loss of a productive person and a consequent deterioration in the dependency ratio, with many dependent children becoming one-parent and two-parent orphans. In this study, the main difference from the other previous studies presented is household composition of cases compared to controls within and between districts.

Comparing the similarities, the findings from this thesis highlight how HIV starts to have a large impact on households during chronic illness, and the findings from Pitayanon illustrate how these impacts continue and may be further exacerbated following death.

12.4.2 Comparison with studies from other locations

Most literature normally presents three types of impact of HIV/AIDS - on household composition, production and earnings, and consumption and investment - as it applies to the different stages of the illness. These impacts on households in both urban and rural areas are assessed, and the expected number of orphans and the impact of HIV on their lives are also presented. These studies highlight how the impact of HIV on a household will change as the disease progresses and after the household member with HIV dies, and illustrate how these different impacts occur during the four phases of the disease, namely prior to the illness; during the illness; immediately following the death; and the longer term (Over and Ainsworth 1989).

One of the main studies that explored the impact of HIV on households was from Kagera study conducted by the World Bank in 1992 (Ainsworth and Koda, 1993a). An issue highlighted in from this study, and also found in our study is how transfers from public and private sources are a very important mechanism for smoothing household consumption over time in the face of a shock (or impact). A factor identified in the "Kagera Health and Development Survey" was that another key mechanism -- namely, changes in household composition - when one person gets sick or dies, some members leave and some join. This smoothes consumption and helps adjust the family production unit. So they found that after someone dies, household size does not necessarily go down by one, and the dependency ratio is not necessarily affected. Most studies of poverty neglect the point that household size and composition adjust to shocks. The result from the study in this thesis showed that household size was higher in case households than in control household especially in the active district and the dependency ratio was also slightly higher in case households in the active district but was similar in the less active district. The difference of results in this study in this thesis from other studies reflects household adjust to shocks in Thailand may not be the same as in others. However, there are limitations when comparing results from our study with other studies because the sampling frame of my study excluded the households with members having AIDS mortality in the last 2 years.

Previous studies focusing on adult illness discuss the reduced productivity of the ill persons and reallocation of labour within households. My study also illustrates that there is substantially more reduced productivity of the CIAs and the caregivers, with the impact of HIV on households' production and earnings being be primarily through the loss of the labour of caregiver(s) during the period of illness, as well as of the CIAs.

For the impact on consumption and investment, previous studies focus on the cost of medical treatment, dissaving, and changes in consumption and investment. In my study, I illustrate how chronic HIV morbidity affects household investment and savings in several ways. Firstly, the costs of seeking care during the lengthy period of HIV chronic illness may place a heavy burden on households already under stress due to the loss of earnings or productivity caused by the diversion of labour of both the CIAs and his/her caregiver(s). Secondly I illustrate how this may lead households to dispose of assets, including productive assets.

In our study, an estimate of the amount of time lost from work due to HIV for both CIAs and their principal caregivers was made and its impact on the household's productive capacity assessed. Another of the major influences on the welfare of the case household and potentially a major drain on investment and savings, was the direct out-of-pocket expenditures by patients on health care. CIAs were asked about the sequence of actions they took when they felt ill and how much they spent on each attempt to get care, for as many different care-seeking actions as possible. This study also presents the factors related to per capita health expenditure of the CIAs.

The effect of HIV/AIDS has on household's income, consumption and savings level, which indicate the high possibility of leaving households in severe poverty, is such that malnutrition among household members, especially young children have been reported in the study of Topouzis et al. (Topouzis, 1998) however, our study did not examine this.

There are specific limitations when comparing results from our study with other studies. Some studies were not careful to ensure that there was a "control group". Moreover, none of these studies have conducted the comparisons of household short-term coping strategies on chronic HIV morbidity within and between communities with different forms of support, which can be crucial to help the infected individual(s), its household, community and the society.

12.5 Lessons for future research

There are several lessons that can be learned from this research that could help inform future research on the household impact of HIV and coping strategies.

A key issue identified was that, in selecting case households, in general if the sample is to be representative, it is important to develop a sampling frame of all households where adults are symptomatic with HIV (or recently died of an illness) and to then sample the households for interview from this list. In some cases it may be possible to identify households using key informants, but there may be omissions. In others, it may be possible to use a screening tool. It is not necessary to explicitly identify all HIV affected households as this can raise many problems in the field. Instead, if the researcher focuses on chronic illness, and limits the sample to adults within a specific age range (such as 15 - 49), for an area with high prevalence of HIV most of the chronic illness will be HIV related.

Referring to household surveys in relation to the dynamics of the epidemic, the few large household surveys for HIV/AIDS studies to date, the Kagera study for instance were longitudinal (Ainsworth and Koda, 1993a). However, as they were conducted for 24 months with a six-month period between interviews in the Kagera study, this meant that each household was interviewed on an average of four times, which limits its ability to capture the effects of the dual dynamics of the impact of HIV on the household and the household's ability to cope.

A related key question for the researchers is "Should household surveys stop after the death of one AIDS-infected household member?", or "Should it continue when other members are identified as being HIV/AIDS infected?". In light of HIV/AIDS's infectious nature, it is not surprising to find other household members to be infected with the disease. When it does

happen, how do households really cope, having exhausted most of their resources the first time round, and does it take one other HIV/AIDS-infected member to dissolve or disintegrate the household?

Hence longitudinal surveys (relative to the epidemic) can rectify this problem by following the AIDS-afflicted and AIDS-affects households over long periods of time. Furthermore, longitudinal surveys could allow researchers to identify the key elements that cause households to dissolve or disintegrate. For this reason, it is important to recognise that greater insights into the short and long term household impact of HIV can be obtained from longitudinal studies. By following a cohort of HIV-infected and HIV-noninfected households over time, researchers can truly learn how households respond and adjust to the epidemic over-time. Clearly though, the challenges of maintaining and following this cohort are immense, and such studies will be resource intensive to conduct.

An important research gap is also related to how different communities cope with HIV. Cross-sectional survey with samples chosen from different geographical regions that differ socially and culturally could help inform this. Identifying unique coping strategies for each community may also take into account the availability of the community's local resources to ensure the sustainability of household responses.

12.6 Implications for policy makers

This section discusses the policy implications arising from my study. The overall implications for the two districts of Phayao province and, by extension, other rural communities are discussed. These include the possibility that gives the loss of remittances, the increasing difficulties facing smallholder agriculture and the opportunities in rural areas that HIV/AIDS will increase the rate of poverty. This requires the consideration of policies to support households in rural areas to ensure that they will improve their ability to feed themselves. In relation to the major findings and conclusions, the following policy implications are offered for consideration.

The availability and use of various support services from our study showed that the quality of life of people with AIDS could be enhanced with support and care from the community itself. The most important thing to consider in terms of policy implications is the association between case and control households in the less active district, where they reportedly lacked support services, for instance, the support for children, support for the elderly, social funds, community financing and agricultural development as well as treatment and care for ill people. Knowledge on this association is needed to consider whether to provide more of these services to help households cope with the situation.

12.6.1 Poverty reduction policies

The analysis and discussion in previous sections indicates that households with HIV/AIDS chronically were seriously affected by consumption reduction caused by their attempt to adjust to the rising household expenses on health care and the loss of income from illness of one of the family members. Many of them also suffered from community discrimination causing them to lose their jobs, their business clients and some even being forced to move out of the community e.g. households located in the less active district.

Currently, the Ministry of Labour and Social Welfare has a cash assistance program for low wage enterprise workers who are infected by HIV/AIDS and can no longer work. This program is carried out in co-operation with counsellors for HIV/AIDS patients in government hospitals. A few NGOs also offer similar assistance in specific localities known to have widespread HIV/AIDS. However, the study also identified many people who were not accessing such support. Government assistance programs for the poor through the Welfare Department of the Ministry of Labour as well as other related government agencies that are already working in some rural communities should be extended to cover this needy group of households. Registration or records of such households with the assistance of an HIV/AIDS counsellor in hospitals or NGO should be kept to identify the needy households so that appropriate assistance can be given. Such assistance can range from food subsidies, free clothing, temporary sheltering to emergency cash transfer to households when badly needed.

12.6.2 Education policy

Increased health care expenses and lowered households income can cause households to withdraw their children from school. The study found that almost three quarters of child caregivers in both districts had to stop going to school and one-third of children from cases in both districts had to leave school to find work to contribute to the family income. Children may be needed to help with family work, to enter the job market to help raise family income, or they may be withdrawn from school because their family can no longer afford the cost of schooling.

In Thailand, compulsory 6 years schooling is provided free of charge. Yet there are other costs related to schooling that is incurred e.g. clothing, books, stationery, travel etc. The most impoverished households can find these costs a heavy burden on household expenditure and hence decide not to send their children to school. Also, this burden is also applies to households considering sending their children to secondary schooling, which is widely promoted and encouraged by current government policy. Thus, providing education subsidies in terms of scholarships to young children in the most needy households particularly those affected by HIV/AIDS is an important policies and measures that should be considered by the Education Ministry.

12.6.3 Credit policy

Poor households generally lack collateral to borrow money from formal credit sources. This study found that the pattern of household debt reflected credit worthiness of household rather than financial need. More than half of households in both districts had reported debt and one-fifth of case households from both districts reported having borrowed money in the previous six months. The majority of the borrowers used informal credit sources, such as relatives and local moneylenders, Co-operatives or local revolving fund. A formal credit institute like the Bank was used by only one-fifth of households. Thus informal credit sources with high interest rates were generally used by these households. With serious hardship from HIV/AIDS treatment expenses and lost income, their hardship is intensified by borrowings with a high interest charge.

The HIV/AIDS medical treatment fund should set up a credit resource with very low or even no interest charge for these needy households. Current government policy on AIDS has incorporated a plan to set up this kind of fund in the community where HIV/AIDS is widely spread but the process of setting the fund is moving slowly.

The suggested strategies to help households cope identified in this section and from literature on experiences from other countries which can be recommended for future programme development under a credit policy is improved access to "micro-credit" or " micro-finance". Furthermore, in case households, the availability and use, in both districts, of income generation projects (for women) is less than for control households. There is a need to intensify and expand the existing projects by working through currently operating community-based organisations and NGOs in Phayao who are more experienced in income generation and link them with individuals who wish to start an enterprise.

12.6.4 Orphans and elderly care policy

Orphans infected with HIV from their mothers have raised wide concern among policy makers in recent years and various attempts are being made by government and non-governmental organisations to take care of these children. Under the new government policy for "Universal Coverage: UC" in Thailand, the government currently provides Anti-retroviral drugs to inhibit HIV transmission from mother to child. Support for children in household should be highlighted and given to household to stop them being removed from school by having adequately fed and supported.

The results of this study indicate a very strong role for the extended family system in rural areas in supporting the HIVAIDS affected households by taking care of their young children and ensuring that they remain in school. Government assistance programs to strengthen the role of extended family members to care for young orphans should be considered in place of establishing more orphan-homes, which are more costly. Government food subsidies as well as other expenses related to child care should be considered and given to these extended families to support them especially when they are also low income households. Given that some children in households affected by HIV will be infected, home care methods for infected children with no or few symptoms should be taught to these extended family members in addition to free medical supplies to these households. It may also be necessary that a community care centre should be set up and used only when these children are in a serious condition and their extended family members can no longer cope.

Similar strategy should also be used with regard to elderly care. The extended family role should be strengthened and supported by the government in place of setting up old age homes, which are also very costly. Subsidies to households as well as the supporting programs for taking care of the elderly at home should be considered by government agencies. The result from my study showed that there were more percentage of availability and use of support service for elderly in the active district than in the less active districts. In both districts, about three-quarters of elderly was taken care by CIAs. Adult ill-health may place a substantial burden on other family members, reducing their ability to perform their normal functions of

taking care of the elderly. In Thailand, a public social security programme to support individuals in their old age is currently non-existent. Public and private pension accumulation is limited to public officials and workers in large private enterprises.

However, the issue of the elderly being left alone to look after themselves or live with the external family of their adult children has not been much discussed by policy makers. Since the age structure of Thailand's population is gradually changing with less children being born and more adults living longer, care of the elderly will need to be considered seriously especially as the family size is getting smaller and HIV/AIDS is speeding up the deaths of working age adults.

A recent move by the Ministry of Public Health to issue a free medical care card to all persons aged 60 and above in rural areas and in low income urban communities is one way to cope with the rising problem. Apart from free medical care, other assistance programs to aid the elderly in their everyday living are also needed e.g. shopping, cooking, and house cleaning. Elderly home visits by a volunteer social workers program could also be developed in addition to community nursing homes for the aged.

12.6.5 Job protection and human rights policy

The study came across several severe cases of discrimination. In the less active district, poor resources and the problems of stigma have been noted; household members felt ashamed of having a family member with AIDS and sufferers are more likely to be set apart from their relatives. The implications of this discrimination had a negative impact on PWAs personal, family and working lives. The PWA group established in the community hospital has highlighted this problem and tried to develop programmes which have called for the attention from some organisations to help communities deal with the AIDS epidemic. More active response of community should be aroused or built through various mechanisms from inside and outside the community and this needs support from policy makers. Government has a key role to play in relation to ensuring the protection of PWAs human rights by safeguarding confidentiality of their health records, protecting their rights to continue working while their health still allows them to do so, and policies that reduce discrimination against their families. This policy should be supplemented by government public relations campaign to educate the public that HIV positive persons can continue their daily life as a normal person in a normal situation and hence that they should not be discriminated against. Also reflect on how services help reduce discrimination – important aspect of service provision is the raising of more general awareness of HIV.

12.6.6 Protection from fraud

Fear of death has led many CIAs to turn to traditional healers and various kinds of herbal cures. News on magical drugs and magical healers has been widespread among the CIAs and the charges for these so-called drugs and healers are generally very high. The study found that about a quarter of CIAs reported that they had visited traditional medicine, which was about one sixth and the second largest amount on health care expenditure. (Table 10.7) This

expense was approximately equivalent to the average total monthly household income per household. Correct information should be given to these CIAs by way of counselling to protect them from being deceived and losing more of their household money.

12.6.7 Meditation practice programme

Attitudes of the community towards people living with AIDS have changed to being more supportive and active in response to HIV/AIDS. Community organisations together with NGOs and private organisations are working together to help people living with AIDS in terms of generating income, providing care and support to the sick people and their families including the orphans affected by HIV/AIDS. Preaching and counselling services provided by the Buddhist monks helps in comforting people living with AIDS. The study found that, in the regression model of which the per capita health expenditure of CIAs was the dependent variable, the more that CIAs go for meditation, the more health expenditure increased. This might be explained that those who went for meditation might be sicker, so they needed to have spiritual support.

There is a need to publicise the range of available services and ensure that HIV affected households make better and fuller use of the current services.

12.6.8 Health financing policy

12.6.8.1 Voluntary health insurance

At the household level, voluntary health insurance in the form of the government health card should be widely promoted among rural poor households. With a small amount of insurance premium, an individual as well as their household members are entitled to free medical care. This could help reducing out of pocket household's expenses on health care. Currently this programme is not widely received by rural poor households. Thus factors leading to the promotion of this programme should be investigated under the new Universal Coverage programme.

12.6.8.2 Co-ordination and funding issues

The HIV epidemic has given rise to a worldwide mobilisation of funds and this poses problems for the district's health services. The NGOs, researchers, donor agencies and international agencies place a heavy burden of co-ordination and diplomacy on the district level health staff- the district medical officers spend about one day a week on such activities. NGOs and donor agencies have their own priorities, which may not accord with those of the health authorities, and they tend to work in isolation from and in competition with, the government and from each other. Many compete for the best staff and offer them attractive salaries; other staff are taken away from their work by workshops, report writing, etc. Jealousies and problems may arise with regard to the allocation of per diems and travel opportunities and to the international exposure that work on HIV/AIDS may bring to lower level staff. In some cases, the effort required to comply with donor accounting and reporting procedures may exceed the value of the funds to the recipient country.

12.6.9 Health services policy

In order to lessen the demand for hospital care services from the CIAs, which are costly to both the service provider and the consumer, the development of a home-based care system or a community-based care system should be considered as an alternative. Currently, in Thailand, this alternative system is under experiment and its cost-benefit analysis in comparison to hospital-based care needs to be conducted.

In contrast to the overburdening of the district hospital, the impact of HIV on the health centres of the sub-district was virtually insubstantial – about 10% of health centre patients had signs of HIV disease. At primary health care level, health staff have had training in the counselling of patients with HIV -- but not in the basic clinical care of CIAs. Some believe that the care of CIAs is the responsibility of the hospital, and they tend to refer patients upward at the first suspicion of HIV infection.

One sub-district health centre in the active district had built a traditional-style house for the CIAs and their families so that they could be near the health centre, and offered the care of a clinical officer equipped with basic drugs and a reliable water supply, but also the chance to stay in more comfortable and familiar surroundings. This might be an appropriate model for increasing the use of the health centres and decongesting the hospitals.

In response to the growing number of CIAs and the need to use hospital beds effectively, the Phayao Provincial Health Office had developed a programme of home based care (HBC) for people with HIV disease. Home-based care must have dear objectives, and be based on an assessment of what families and patients actually need, and then be organised efficiently so that those needs are met as well as possible.

Better use could be made of the existing health facilities of the district by decentralising much of the care to health centres and by either eliminating the HBC programme entirely and reallocating the resources, or by reorganising the way in which home based care is provided. This ought to be possible because the health centres are not working at full capacity, as is the community hospital. Given the main reasons for admission to the hospital, much of the care of CIAs can be delegated to health centres. A second reason is that the sero-prevalence figures of patients attending sub-district health centres indicate that HIV disease has become a major problem in rural as well as urban areas. For most people in the rural areas, the sub-district health centres are the only readily accessible health services. Third, by virtue of the proximity to their population health centres are better placed to organise home based care for patients with HIV disease than are hospitals.

12.7 Unanswered questions and future research ideas

12.7.1 Unanswered questions

There are many remaining questions about the household impact of HIV/AIDS. How does impact change over time? In light of HIV/AIDS's infectious nature, it is not surprising to find other household members infected with the disease. When this happens, how do households cope having exhausted most of their resources from the first illness, and does it take only one

other HIV/AIDS-infected member to dissolve or disintegrate the household? Insights into such questions can be obtained from longitudinal studies, to ensure that the dynamic effects of the epidemic can be captured. However, for longitudinal survey on HIV/AIDS to be effective, they must begin relatively early – in order to capture the impact of HIV/AIDS morbidity of households. Furthermore, surveys should not stop at the death of the AIDS victim, but continue for a length of time, so that the impact of HIV/AIDS mortality on surviving household members and any further deaths can be captured.

Despite this ideal, such a research initiative would be expensive, and will be prone to difficulties associated with maintaining a cohort of the population.

Thus, combining the longitudinal and cross-sectional elements into future HIV/AIDS studies is likely to enhance the quality of data collected.

Finally, this study has not explored the deep and symbolic meanings that individuals and groups attach to having HIV/AIDS, to being in a family with a PWA or to being in a community with a high prevalence of HIV/AIDS. How people cope with disease is linked to how they see themselves, the world around them and what meanings they attach to having a disease e.g. fate, a punishment from God, bad luck, bad blood, etc.

12.7.2 Future areas of research

Several ideas for applied research emerge. Further research arising from this study and analysis are as follows:

1. Repeat the household survey in the same study location, using the same methods to investigate the changes after two years and to better understand the impact and coping strategies. In addition, it would be interesting to conduct an anthropological study to learn more about households coping strategies, which can be used to supplement the quantitative survey presented here.

The concept of the proposed study is a classical cohort study design: a cohort study is purely an observational study, no manipulation or intervention is applied to the study cohort. At the beginning (in this study or two years ago), various exposures are identified in the cohort and some outcomes of interests were measured as baseline information. After a period of time or at the time of launching the proposed study, these outcomes of interests will be measured again. The analyses will be aimed to characterise picture of the cohort at time of follow-up and to compare information at time of follow-up to data recorded at baseline. The follow-up can be more than one time depended on study design and budget.

A group of sample is defined, sample size will be recalculated and to be confirmed that the existing data have enough power for all analyses of outcomes.

Define and identify interesting exposures in all households, for example mortality in all households (data of death, cause of death), mortality can be factors/exposures or outcomes, and morbidity of illness (date of sickness, causes and expenses) in all households.

Various outcomes will be measured using questionnaire for follow-up study comprise socio-demographic data (in households and in household members), socio-economic data (assets, money transfer, debt and saving), data related to morbidity/mortality from HIV infection were

recorded in 324 cases in 300 households and social response to illness or HIV-infection (discrimination, etc.).

Data at follow-up period will be analysed including descriptive and in-depth analyses such as change in socio-demographic and socio-economic data in case and control households will be analysed comparing at baseline and comparing between groups. Time will be taken into account and rate of changing will be reported.

From this follow-up study, the incidence of new HIV infection in control and case households, survival analysis of death or illness compare between members with HIV-infection and control, change in availability and utilisation of service will be employed. All analyses in the aspect of active and less active districts will be performed for demonstration of long-term effect. Also, changing of economic impact and coping mechanisms will be summarised form all data and results.

2. Undertaking a similar study in urban areas of Phayao province should be studied for comparison. In order for generalisation to be made about the economic impacts of HIV/AIDS related illness and death on households in Thailand a similar study covering both rural and urban areas of all provinces in the upper North region where incidence of HIV/AIDS is very high should be carried out. The study can also be extended to cover other regions for comparison.

3. The study has shown that in order to help households cope better with the impacts, it is necessary to look not only at household level, but to encourage community-based strategies which foster support to affected households, such as home-based, community-based cared and other special programmes. A cost-benefit analysis of various special programmes to assist HIV/AIDS infected households should be conducted e.g. cash transfer programme, food assistance programme, community nursing home and community orphanage.

4. A cost-benefit analysis of various special programs to assist HIV/AIDS infected households should be conducted e.g. cash transfer program, food assistance program, community nursing home, and community orphanage.

5. An assessment of how care could be decentralised effectively to health centre level. What are the resource implications, the training requirements, the drug needs? How could health centre care be made acceptable to patients and their families? What are the implications for staffing in moving to a 24-hour service?

6. With regard to the impact of HIV/AIDS on the district's agriculture-based society and economy, several issues require further research. What measures can be taken to support the agricultural workforce and its productivity? What is the respective role of the HIV/AIDS epidemic and other factors (e.g. structural adjustment, drought, cattle disease, etc.) in the difficulties experienced by subsistence and commercial farmers? Which farming systems in Thailand are most vulnerable, and therefore perhaps in need of special support?

7. What is the best way to support orphans and prevent them from being completely disadvantaged by the loss of their parents? What is the best way to keep them in school?

12.8 Conclusion

HIV/AIDS is a complex and changing condition and hence its impact and the coping strategies used by rural households are also complex and changing. This study therefore is at the beginning of what should be an ongoing series of studies to better understand how individuals, households and communities cope with living with HIV/AIDS.

As with all societies, Thai society and culture are changing both in response to internal factors like a changing demography and also from external factors like the global economy and the incorporation of 'Western' or developed country values and ideas. This study has not looked at how these wider changes have had an affect on how household view HIV/AIDS and how they affect the coping strategies used by households.

The study has used a cross-sectional survey to document the economic impact of HIV/AIDS morbidity in the Upper-Northern Province, and to explore the impact of care and support services. Substantial insights can be gained using this comparative approach in a cross-sectional survey.

Further insights could be obtained from the implementation of comparable, cross-sectional surveys with samples chosen from different geographical regions that differ socially and culturally. This way, household coping strategies in different communities can be captured and the coping strategies for each community could be identified and compared.

Household surveys should also begin to involve more active participation from the local community and households sampled (Narotzky, 1997). As a start, pilot enquiries could be conducted to allow the locals themselves to identify the key problems and issues in the community, such as high morbidity and mortality rate in recent years.

Such enquiries could help in planning and designing household surveys as well as to identify the AIDS-afflicted and AIDS-affected households. Better relationships between the participants and the enumerators could also be established, which will be especially useful when dealing with sensitive questions (Mikkelsen, 1995). As a result, the data collected would be better indicators of a household's coping strategies.

The effects of HIV/AIDS impact on the choices and outcomes of household coping strategies depend crucially on gender and power relations, co-operation and conflict, allocation of time and money and the theory of comparative advantage.

Gender analysis is important because females in rural villages often face a variety of social restrictions on their movements, and they are often constrained in their ability to acquire capital, loans, and information (Dasgupta, 1993). By observing and collecting information on gender differences, policies could be designed to assist disadvantaged females to obtain the necessary help either to purchase a plot of land or to set up a business.

By capturing these elements, researchers would be able to observe how individuals and households redistribute wage-earnings and domestic labour to cope with the impact of the epidemic. These underlying household decision-making processes can assist households and the community to make well informed and educated choices.

It can be concluded that community hospital and health centres are the main bodies in initiating and promoting care of CIAs in the community. Capacity building of the community should be promoted in order that the people in the community understand the problems, accept CIAs and work together to reduce the impact of HIV/AIDS on households and communities. Religious leaders are also playing a major role in providing support and bringing about the social changes towards acceptance of CIAs.

It is hoped that this thesis will make a small contribution to the understanding of some of these issues and of some possible ways forward.

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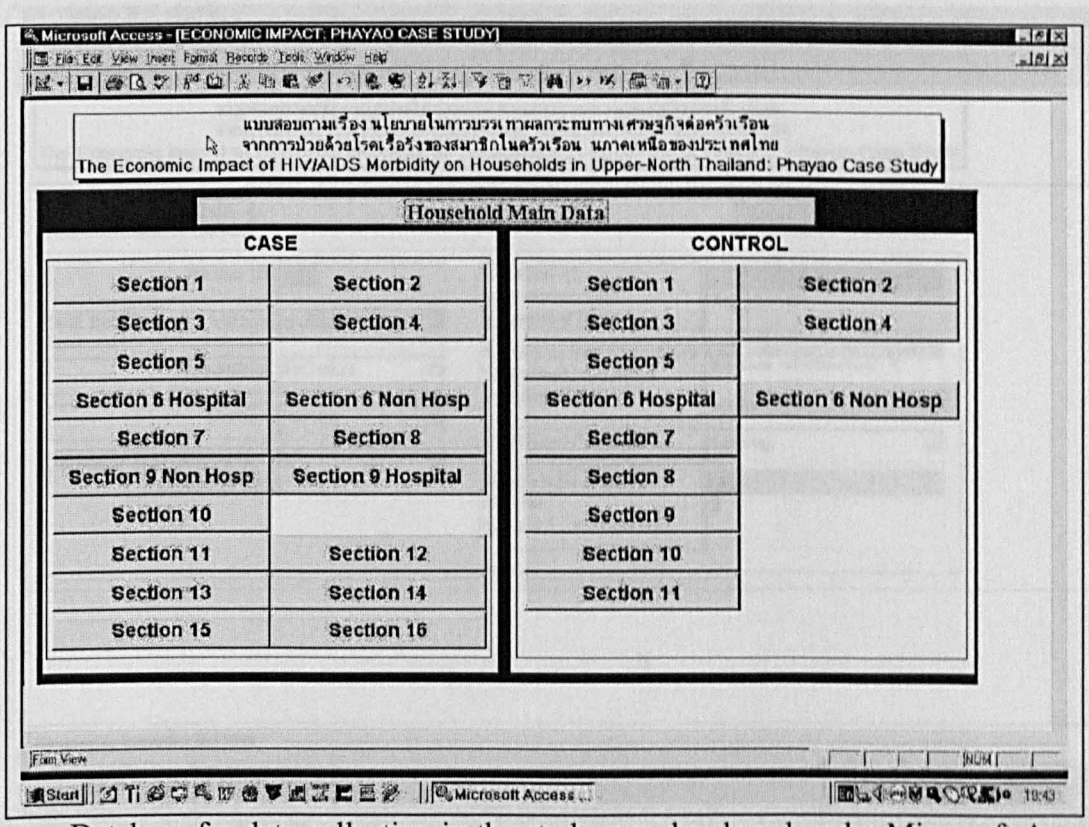
Annex 1.1

Database and Recordform

Used in The Study

Figure 1 Main menu of the study in Microsoft Access 97



Database for data collection in the study was developed under Microsoft Access 97 for Windows. This database package could handle complex database structure such as relational database, it is easy to develop through visual programming concepts and have good user interface which make it easy to use. After keying in, the programme could export data in spreadsheet or in Excel format that could be opened in many statistical programmes such as SPSS, STATA (via StatTransfer for Windows), or even EpiInfo version 6 for Windows (for validation).

The next page is the page will be opened up when we click at "Household Main Data" tab.

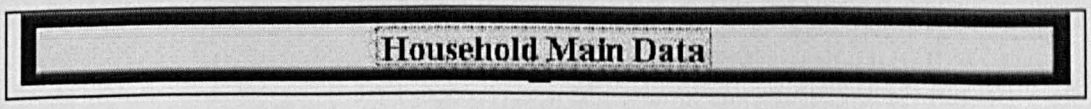
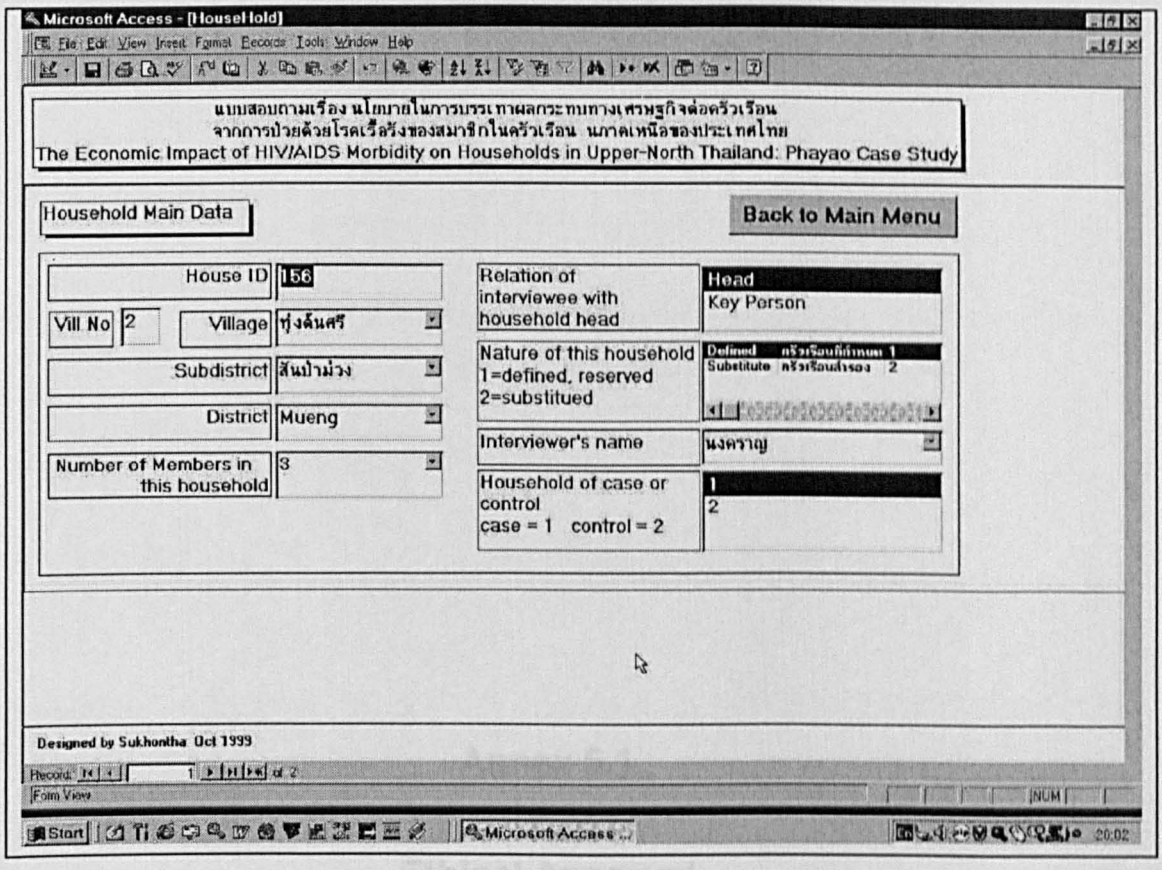


Figure 2 "Household Main Data" page of the database



The above figure showed the "Household Main Data" page of the database. This page had share data for case and control household. The officer keyed in data to the correspond record field such as "House ID", "Village Number" or District".

For record field with symbol,  there is a dropdown list for selection or key in.

Annex 5.1

Ethical Approval

Ethical Review Committee

of

Research Committee, Ministry of Public Health

TITLE OF PROJECT	:	Policies to Mitigate the Economic Impact of Chronic HIV Morbidity on Households in Northern Thailand
INVESTIGATOR	:	Mrs. Sukhontha Kongsin
PLACE OF PROPOSED STUDY	:	Faculty of Public Health, Mahidol University

APPROVED BY ETHICAL REVIEW OF RESEARCH COMMITTEE, MINISTRY OF PUBLIC HEALTH.

..... Chairman

(Director-General Department of Medical Services)

..... member

(Mr. Pakdee Pothisiri)

..... member

(Mr. Somsong Rugpoa)

..... member

(Mr. Somposh Montian-arsana)

..... member

(Mr. Chatri Banchuin)

..... member

(Mr. Luecha Wanaratna)

..... member

(Mr. Pinan Daengharn)

..... member

(Mr. Chakradhiarn Dharmasakti)

..... member

(Mr. Suprecha Wongbuddha)

..... member

(Mr. Banpot Thontiravong)

..... member

(Mr. Supachai Kunaratanapruk)

..... member

(Miss. Porpimol Chaiwatanasaransuk)

..... member

(Mr. Songyot Chaichana)

..... member and secretary

(Mr. Vichai Chokevivat)

..... member and assistant

(Mr. Wiwat Rojanapithayakorn) secretary

..... member and assistant

(Mrs. Orasa Naraynakamin) secretary

DATE OF APPROVAL 18 FEBRUARY 1999

LONDON SCHOOL OF HYGIENE
& TROPICAL MEDICINE

Application number 546

FORM B

ETHICS COMMITTEE APPROVAL FORM

Name of Principal Investigator **Dr Charlotte Watts**

Department **Department of Public Health & Policy**

Head of Department **Professor Nick Black**

Title **Policies to mitigate the economic impact of chronic HIV morbidity on households in northern Thailand**

Approval of this study is granted by the Committee.

Chair .....

Date 16 April 95

Comments from the Committee:

Any subsequent changes to the consent form must be re-submitted to the Committee.

Annex 5.2

Report on Formative Research Stage

Report on Formative Research Stage

10 June 1999

Thesis entitled: "The economic impact of HIV/AIDS morbidity on households in upper-north thailand: phayao case study" This report reflects the work I have done from April 1999 through June 1999.

1 Formative research

The formative research stage has been used to help guide the development of the survey tools and field survey methods. Within the two study districts, the formative research will seek to:

Identify the forms of support and care services available for people with HIV/AIDS in different villages and districts within Phayao;

1. Explore perceptions about the ways in which HIV/AIDS impacts on the socio-economic status of households;

2. Document perceptions about the ways in households and communities minimise this impact, and how they may utilise different health services to do this;

3. Document the experiences of adults who are either chronically ill, or providing care to adults who are chronically ill.

The formative stage consists of *two data collection techniques*; key informant interviews (from the 19th April to the 10th May 1999, 2nd June - 14th June) for 3 weeks to obtain as much general information as possible about the study areas both in Bangkok and in Phayao province and organising focus group discussion (the 17th May - the 4th June 1999) of three groups of people for 3 weeks in Phayao.

Key informant interviews and focus group discussion in Phayao used type recorder since the respondents have spoken in local language (Northern Thai). The results of the both techniques were translated to middle language by linguistics students from Mahidol University. The researcher then can summaries those outcome in English to submit for PhD supervisor and PhD thesis advisory committee before finalising the survey tools to conduct the household survey in July 1999.

1.1 Key informant interviews

Face to face interview with open-ended questions was held with key informants by using an interview schedule to ensure that the issues on household impact of AIDS and its coping strategies were discussed, but at the same time flexibility in timing and the order in which the questions could be allowed. The additional questions on services available in the community was also be asked to gain as much useful information as possible. This key informant interview was used for interviewing individuals especially with people living with HIV/AIDS (PLWHA).

The face to face interview started with a number of key informants who are highly knowledgeable on various aspects of research questions. The government health sector staff provided information about use of government health sector facilities, reason for it, co-operation

with the health sector programme. Private practitioners including local community leaders, counsellors provided about affordability of the community, cash availability, credit issued, this group could also provide valuable insight into the elicitation method to be used in stage of household survey. Representatives from PLWHA provided about the definition of a household, how to ask questions around household income, who should be the respondents, health seeking behaviour. The field notes and the result of the observation was needed further probing and other issues that arise out of key informants interviews subjected to focus group discussion later on.

Key informant interviews with twelve people from the following groups:

1. General practitioners in government and non-government organisations (including health centres and district hospitals, and NGO offices).

2. Counsellors and/or representatives from PLWHA groups

3. Community leaders, monks, teachers, volunteers, and villagers, who have been involved with HIV and AIDS related activities at village level.

Since this study focuses on chronic morbidity and coping strategies with HIV/AIDS on the households and communities. Thus, the main issues for interviewing includes the idea from PLWHA, community leaders, village volunteers, village health volunteers and NGO workers, directors, officials, doctors and nurses at hospitals in the villages and province.

1.1.1 Main issues and results of interviewing

Key informant persons	Main issues
Social worker, Epidemiologist	• Background of the interviewee • How long has she/he been working with PLWHA? • What is detail his/her job description such as family planning, basic health care, tasks related to PLWHA? • What is the AIDS and its impact on the community? • How the community faces AIDS problems? • What is the suggestion for problem resolution and remission?
Village health volunteer and one head of control households	• Background of the interviewee • How long has she/he been in this village? • What is his/her occupation? • What is detail his/her job description such as family planning, basic health care, tasks related to PLWHA? • What is the AIDS and its impact on the community? • How the community faces AIDS problems? • What is the suggestion for problem resolution and remission?
NGO workers, (Psychologist)	• Background of the interviewee Background of the interviewee • Which organisation she/he works for? • In which location does she/he work? • How many villages she/he is responsible for? • Does he/she stay in the village or visit it from time to time? • Does he/she had any training regarding taking care of PLWHA ? • What is the AIDS and its impact on the community? • How the community faces AIDS problems? • What is the suggestions for problem resolution and remission?
Doctors and nurses working with PLWHA	• Background of the interviewee and situation • The hospital's AIDS related services • Views of AIDS in the community • AIDS and other public health care services • Policy and implementation of services related to AIDS In the future. How well

Key informant persons	Main issues
	have hospital services related to AIDS responded to the AIDS problem? What matters that still need to be improved?
PLWHA / caregivers	• Background of the interviewee • Life in general and daily life of interviewees • The physical and mental impact of infection. Help and support from family and others. • Health and illness: Experience in recent months? Overcomes of illness? • Recalling life before infection and illness • Changes in life after infection and illness • Stress, worry, and problems encountered since the learning of infection. • Medical treatment, medical expenses and problems encountered from self care after infection. • Support from family, relatives, community members and temples, and other services • Knowledge about AIDS, infection, symptoms after infection, illness, and self care. • The HIV persons' club (for interviewees who attend the club)
Community leaders (Kamnan, monk)	• Background of interviewee • General characteristics and changes of the community: Ask about biggest health problem faced by community and why? • AIDS and its impact on community How the community faces AIDS Problems? • Suggestions for problem resolution and remission

1.2 Focus group discussion

The purpose of focus group discussion (FGD) in this study is to provide possibility to pursue issues that come up in key informants interviews and to learn about different perspectives on issues discussing with the key informants. To a large extent, issues taken up for the FGD were generally based on the outcome of the key informant discussion and face to face interview. Some of the possible issues that probed were coping mechanism inside household, possible coping from community and relatives, and possible coping from services.

The three weeks of focus group discussion (17th May-4th June 1999) of three groups of people will help towards achieving, particularly how the strategies used differ between community with active services and less active services. Focus group discussion was used as a supplementary tool in the study. This activity was undertaken with aim of providing the idea to identify the key indicators to measure the substantial impact and questions relating to household income, household expenditure and health care seeking behaviour. About 12 participants were purposively selected either from work place, community or from already set groups.

1.2.1 Recruitment of Participants

Participants were roughly of same socio-economic group and having a similar background in relation to coping of chronic morbidity. The age and sex composition of the group would facilitate free discussion. Therefore, focus group discussions with community members from both districts consist of (1) two with less poor adult women, two with less poor adult men, (2) two with poor adult women, two with poor adult men, and (3) two with young adult women, two with young adult men. In each case, one focus group will be held in each study location. Participants were invited at two days in advance, and the general of FGD would be explained. The purpose of the FGD was also explained to village officials, especially in study areas where group meeting may be viewed suspiciously as political activities.

1.2.2 Physical Arrangement

Arrange the chairs in a circle in the district health office (Health Centre) in each districts, The FGD was conducted according to the recommended format involving a moderator, observer and an assistant for taking notes. The FGD was held in the local language (Northern Thai) and lasted for about 45 minutes. As special skills are necessary for the successful outcome of FGD, an experienced moderator was invited and later the researcher facilitated the discussion with an interpreter. All sessions was recorded by tape recorder and have written notes taken to supplement. The recorder documented the content of the discussion as well as the processes and interactions during the FGD, important points were recorded include; date, time and place, names and characteristics (sex, age, occupation) of participants, general description of the group dynamics (level of participation, presence of a dominant participant, level of interest), opinions of participants, recorded as much as possible in their own words especially for key statement, emotional aspects (e.g. reluctance, strong feelings attached to certain opinions) and vocabulary used, particularly was intended to assist in developing questionnaires.

2 Findings from Formative Research Stages

As the first step, every effort has been made to address the concerns about feasibility and access to the Phayao Provincial Health Office (PHO) and communities in order to understand the study location and implementation processes. I have found that I have been able to acquire a vast amount of documents (official external documents as well as internal documents). Where documents have not been available such as personal data of PLWHA e.g. address of PLWHA (household list), these documents are classified as 'restricted' documents, so that I have to wait for the Provincial AIDS Committee Approval.

I found that the database I have received from the Epidemiological Division, Ministry of Public Health as national official database is underestimate. This is because if the patients did not go to seek for treatment from hospitals under Ministry of Public Health (MOPH). I then has to identify the household case by :

1. AIDS surveillance system which reported full blown AIDS and symptomatic HIV infection and HIV/AIDS deaths (Report #506/1) by Division of Epidemiology, MOPH is known to be under report.

2. Mortality statistics of the Ministry of Interior which I can retrieve from the district office or Phayao Provincial office (This one also need to prepare the official letter to get the data, since its not under MOPH).

3. Prevalence survey will indirectly provide me some idea of what will be burden from AIDS in the future by making some projection. There is programme that can be used for this purpose, e.g. Epi Model.

4. At the village level, known traditional healer, e.g. monk, quack can be another source that I can look for number of cases.

For the household control, I could identify by getting the information from the village head man and village volunteers. The first stage when I arrive the villages, I went directly to "kamnan" (an elected official who looks after the generalwelfare of the people in subdistrict and is under a sheriff or "Nai Amphur"). Since the respondents answered the questions in local language, village head man helped me to find some village volunteers (not related to "health") to help me in this formative research stage. I did my key informant interview with one household control in Jun district.

3 PLWHA Interview

I have found that Individuals (PLWHA) have been more than willing to participate in the research through personal communication. I have completed 7 informal interviews with PLWHA living in the North Thailand about forms of support and care services available for them at the time being, their household coping strategies and expect to use these information as input to formulate the qualitative outline for my formative research stage.

The list of interviewees is always expanding as those I consult suggest that I meet other people who were involved in the policy process for HIV/AIDS.

In order to get good collaboration at the Phayao Provincial Health Office (PHO),I had been in Phayao for days in the beginning of April 1999, visited Phayao PHO, Provincial Hospital, one Community Hospital, and two district Health Centres, which I need to explain and address key issues in my research to people involving in HIV/AIDS intervention in each institution.

4 FIELDNOTE SUMMARY : Identify the forms of support and care services available for people with HIV/AIDS in different villages and districts within Phayao;

4.1 HEALTH SERVICES

District health centres are responsible for managing state health service establishments at lower levels - subdistrict health centres. Subdistrict health centres are responsible at subdistrict level. In some remote villages there are also community health care centres providing health services. The subdistrict health centre is the base of the structure of the health system. Each subdistrict health centre has "village health volunteers" who are members of the communities. The village health volunteers provide primary health care to their communities without cash payment. Instead, they and their families, including spouses, children and parents, receive medical treatment from government hospitals free of charge. Generally, a village health volunteer is responsible for 10 households.

4.1.1 The state health service system in relation to AIDS in Phayao

The state health service related to AIDS is integrated into the existing health service system. Co-ordination with other state agencies began recently after national AIDS policy makers realised that AIDS doesn't only impact on health, but also the economy, education, and other social issues and that to cope with AIDS effectively more agencies had to be involved.

4.1.2 Subdistrict health centre service

Subdistrict health centres are the closest government agencies to the community. The subdistrict health centres provide basic health care such as contraception, pregnancy care, vaccination and treatment of basic illnesses. With the advent of AIDS the subdistrict health centres also provided pregnant women counselling explaining the benefits of an HIV testing. If a woman agreed to the blood test, she would be sent to the community or district hospital. Almost none of pregnant women refused the test. If the result is positive, the subdistrict health centre would ask the woman to obtain the result of the test at a hospital where she would be

identified as a number to ensure her confidence and anonymity. They also provide a counselling service after the test result.

Some subdistrict health centres provide blood tests for all-comers. The blood samples are sent to be tested in hospital labs, the results returned to the health centre. Usually the health centres suggests the tests be taken at hospitals so that counselling will be provided by well-trained counsellors in the hospital. Counselling services at subdistrict health centres are generally, for people who suspect that they might have AIDS. After seeing a friend, he has visited sex workers with in the past, fall ill from AIDS, he would come to the subdistrict health centre to ask for information about AIDS. Some suspect they are developing symptoms related to AIDS so come to seek advice at the subdistrict health centre. However the number of people with enough courage to walk into a health centre and ask about AIDS is still small. For PLWHA the subdistrict health centre also acts as co-ordinator to process applications for welfare from the government.

In addition, active subdistrict health centres will follow up the state of health and provide health care to PLWHA whom are referred from hospitals or Centre for Operational Action on AIDS, or "AIDS centre" in short. Mostly, the follow up and health care are general advice or bringing milk, soap, or detergent to visit PLWHA. In terms of medical treatment, the subdistrict health centre itself still lacks of knowledge and skill to cope with AIDS illness. They can only provide some medicine by symptoms like itch, diarrhoea, headache, and fever.

Under the state health system, if a patient comes for treatment but the subdistrict health centre cannot serve him/her properly, it will issue a referral document to pass the people with AIDS (PWA) on to the district hospital or community hospital. Since PWA already know the limits of subdistrict health centre service, they may proceed to the hospital initially. PWA feel that going to a subdistrict health centre and waiting for a referral document is a waste of time. District hospitals tend to turn down patients without referral documents but some will admit the patients before asking the relatives to get the referral document from the subdistrict health centre. The requirement of a referral document was less strict after the introduction of health insurance cards or health care cards. The card is provided by the government. Applicants have to pay 500 baht for a health insurance card to covering care from government's health care establishments of five members of the family for one year. The person who has a health insurance card receives health treatment free of charge. Those who are on a low income (currently less than 2,300 baht per month), can obtain free care by buying a welfare card. Holders of these cards are expected to attend the nearest village health centre first, and be referred if necessary to the district hospital. Possessing the card means PWA do not have to hold a referral document to go to community or district hospitals.

Another major task of active subdistrict health centres coping with AIDS is co-ordinating and guiding village heath volunteers to visit PWA encouraging them to have conversations with neighbours to show concern for PLWHA. The subdistrict health officials found it hard to convince village health volunteers to do it. Some village health volunteers could not accept close interaction with PLWHA and resigned. To alleviate the problem, subdistrict health centres asked one or two volunteers from perhaps ten of village health volunteers who were willing to take responsibility for AIDS tasks. These village health volunteers were then sent to attend a training course run by district or provincial bodies. As a result, each village has one or two village health volunteers who work on AIDS related problems. Subdistrict health centres need to be improved in terms of skills, basic health care equipment and available medicine to raise the centre's capacity to serve people. PLWHA tended to seek for advice and basic treatment from subdistrict health centres because they feel familiar and accessible to the centre though it has the limited capacity to help them.

Although subdistrict health centres have a limited role in AIDS treatment, the centres are crucial in providing information and understanding to the community on AIDS prevention, patient care and life with PLWHA. The subdistrict health officials attend village meetings once a month and provide AIDS information. In addition, the subdistrict health officials are invited to

talk about health care, sex education, and AIDS in schools. A subdistrict health of6cial talked about the issue:

In each monthly meeting, after the headman call the villagers I go right away. I consider myself as one of the community's members. Most of the time the village headman would ask me, 'do you have anything to say, doctor? ; and I talk about marry things, not only AIDS. For example, during rainy season I talk about how to prevent hemorrhage fever, or about parasite campaigns. If an AIDS patient told me he was discriminated against, I would talk about it.

4.1.3 Community hospital service

The community hospital in this study consists of 30-bed and provides AIDS-related services on counselling and treatment. There is also an anonymous clinic to give counselling for the people living with HIV (PLWH) suspects or the infected who are afraid of being disclosed in their communities if directing to a health center. Here the patients can reserve their names or addresses. Anonymous clinic workers also give advice to PWA who come for treatment in other diseases than AIDS but doubted to have HIV contracted. At this stage, pre-counselling services will be administered and the PLWH will make their own decision for further blood test. If agreeable, the test will be done. If they are HIV infected, the post counselling will be proceeded. In the case that the infected prefer to disclose it, the hospital will inform a district public-health office, which will forward the case to a health centre for further follow-up and cure.

In addition to COUNSELLING, the hospital also provides treatment to the PWA. If they are seriously ill and need an intensive care at the hospital, they can stay approximately for seven days and return home for the recuperation. During the intensive care, some advises are also given to the PWAs' relatives. The infected patient section is separated from the general-patient by glass wall but accessible to one another by a connecting door. Nurses are those in the same group who take care of both general and infected patients. From the total of 30 beds, there are approximately 3-4 PWA who receive intensive care. This small number of AIDS in-patients is caused by the limitation of the community hospital facing the shortage of advance technological medical supplies to cure any complex diseases. Usually, a serious patient is need to be forwarded to the provincial hospital.

There are very few external services in which a team of doctors and nurses travel to give advice to communities. Generally, the frequency of external activities depends on the decision of the high-ranking officials particularly the director of the hospital since such services cost more budget for transportation and medical supplies.

4.1.4 District general hospital service

Most of the district hospitals are at the same level of community hospitals except in a large district that a general hospital might be available. In this study, one selected district has the general hospital located. The district general hospital provides quite the same services as those in a provincial general hospital. In its anonymous clinic service, there are about **3-4 counsellors** while only one can be found in a community hospital. These counsellors could foster an effective counselling job with their close co-ordination and co-operation with District Centres for Operational Action on AIDS (to be discussed in detail later).

Under the co-operation with these district centres, anonymous clinics could set up the HIV-infected clubs. Workers from both organisations arrange weekly activities and meetings among the PLWHA, for example, meditation training, group-counselling, advice and training for any individual activities and meetings, encouragement as well as information exchange like herbals medicine, individual treatment and luring medicine sales. From an interview with some of the infected, this get together provides many advantages, especially for those early infected who can not adjust themselves and unconfident to talk with other people.

One PLWHA told his story.

PLWHA: The HIV infected would get together and meet together. We are quite relaxing. A real good day is Wednesday.

INTERVIEWER: What comes up on that day?

PLWHA: The day of health checking for the infected So fun with a lot of friends.

INTERVIEWER: Can you tell me what are they doing?

A: The Doctors (actually they are counsellors) call for checking and we have a get-together there, chatting. Some activities are also arranged in the hospital; for example, making artificial flowers. But I did not attend the course.

INTERVIEWER: What else are they doing?

A: Doctor and nurses greeted us sympathetically. When seeing my baby, they gave us some money to buy milk. And then we the infected had an exchange. Some talked about their cure by herbal medicine and we would discuss what are good and what are bad.

However, only a handful of the infected were able to participate in the gatherings. Many had their works at home or had no money for the travelling cost. Some were not happy with the group discussion. Some expected for supportive money or bonus and then left their presence after finding nothing. According to the anonymous clinic workers, this participation is tending to be either rising and falling. It is a common practice since this is a voluntary participation. But no incentives should be provided otherwise it will lead to unsustainable assembly and go against the main objectives. Workers in both of the AIDS Centres and Anonymous Clinics have made an attempt to promote for self regulatory meetings among those infected living in the same or neighbouring villages, But after a few meetings, nobody came. Lack of strong leaders is the major reason since most of them come from the same infected group. They can not arrange challenging activities or draw up a lot of attention, incomparable to those activities at the hospital which are supervised by counselling workers. The hospitals also provide treatment services. Since these district hospitals are of acceptably high standard, an intensive care can also been provided for the serious patients without the further manoeuvre to provincial general hospitals.

4.1.5 Provincial general hospital service

It is a large hospital with similar services to the district general hospitals. However, since the provincial general hospital is a recipient of the seriously-ill patients forwarded from the community hospitals as well as taking care of its own direct PWA, a large number of both out and in patients visit every day. In this result, lack of doctors happens to round the patients. Even the hospital's directors whose job description are not committed to do this duty also need to come down in the ward.

According to the hospital's record, in 19% there were 2,266 visits from the . symptomatic HIV-infected and AIDS outpatients, approximately 8.8 visits a day. For the in-patients, the rate of bed occupation in Male Medicine Building rose to 34.5% and 11.8% in Female Medicine Building. On the average 20 PWA stayed at the hospital a day. The hospital spent about 3.9 million baht for the service or 4,079 baht per one AIDS patient. (AIDS Information Centre, Phayao Hospital, 1996).

Due to the fact that the provincial general hospital is the destination of all governmental services in each province, no further manoeuvre of patients can be done. As a result, the provincial general hospital needs to manage the resources at their best whatever in human power, medical supplies or budget to be more balance with the increasing number of patients. In each year, the hospitals need to take balance between the quality and the existing resources so that they can further their action with no deficit. Like other hospitals, the provincial general hospital also provides an anonymous clinic for both the out and in patients

whom are suspected to be HIV infected. The counsellors give advice to the symptomatic HIV-infected or the early full-blown AIDS people who want to stay at the hospital but denied by the doctors due to insufficient beds and more seriously-ill patients. If the patients insist on their determination; they will be sent to talk with counsellors. Also these counsellors welcome the general public who can direct to them without the registration process. This is more convenient than going to the general disease section. However only the counselling advice is given here. If the patients show some signs of symptom, they need to go to the ordinary process and registered as outpatient.

4.2 NON HEALTH SERVICES IN COMMUNITY

Although the structure and implementation of services related to AIDS is expanded beyond the Ministry of Public Health, public health agencies at provincial, district and subdistrict levels are the main body in coping with AIDS. As mentioned, **most of the governmental AIDS-related work at the district and provincial levels emphasise on counselling and treatment services, which are much more public-health concerned.** Very few focus the social and economic impact on people and their families, both in the policymaking and budget management. In resolution of social problems, such as unemployment, poverty, parentless children, elderly, people originally sought government's support but now rely on immediate families and relatives, or else try to deal with the problems themselves. State agencies such as the Welfare Department, Rural Development Department and Agricultural Development Department are marginally involved in coping with AIDS problems. However, some initiatives have been set up co-operation network among the government, NGO, and community.

4.2.1 Care for children, welfare of children

It is unfortunate that in times of economic crisis when cutbacks in spending are made that more creative of HIV/AIDS activities and those things which concern thoughts, reflection and emotional and spiritual well-being are seen as most easily expendable. However a focus solely on material needs at neglect of the other dimensions of individuals and communities can create future problems for society. This is specially true in case of children, in particular those of parents with HIV/AIDS : if we view children's needs simply in terms of food, housing and schooling and ignore their need for care, security, love and creativity then there is a danger that they will respond with behaviour which ultimately leads them back to the risk of infection with HIV.

In active response areas, there is a "Community Care Project and Life to Life Group". A means of help has developed using existing resources to help the AIDS affected families by encouraging the community and the families to take part in reciprocal help systems. The establishment of a day-care centre that accepts both normal children and those from families living with AIDS. This means to give the latter an opportunity to get attention and to be accepted in the community and society, and release the burdens of raising children from AIDS widows. The day care is developing and needs support from all directions to pay teaching assistance, the development of buildings, toys, teaching materials and equipment, lunch, bedding and etc.

For the widows, there is occupational assistance, finding markets for the products and co-ordinating with government and non-government organisations to find further directions for helping. Groups have formed to visit and provide morale support to each other. Visiting means to give life form one to another continually. The community hospital provides treatment. And this is how the Life to Life Group came to exist.

4.2.2 Prevention, Alleviation and Standards in Giving Assistance

In active response community, assistance and prevention projects are not only run by the government (Ministry of Education, Ministry of social welfare and labour protection, MOPH), but also by NGOs. There are many organisations run in Phayao. Role and activities of NGOs working on children affected by AIDS can be summarised as follows :

- ◊ to provide educational support
- ◊ to provide counselling service to both children and family
- ◊ set activities for alternative learning such as sport, libraries
- ◊ set activities on morals
- ◊ community organisation capacity building to solve the AIDS problem
- ◊ build up community awareness of child problems
- ◊ set extra curricula for family
- ◊ camp for parents and children
- ◊ provide formula milk for new born babies- 2 years old
- ◊ provide housing and find foster parents
- ◊ vocational training
- ◊ etc.

4.2.3 Improving agriculture production association

Most of rural households are dependent on agriculture production for their income and food. This association can help them cope by improving their access to labour, land, capital, labour force, management skills for marketing and increasing products, promoting use of existing labour, and techniques of using limited resources in the community.

4.2.4 Community-based care initiative programme in Active District

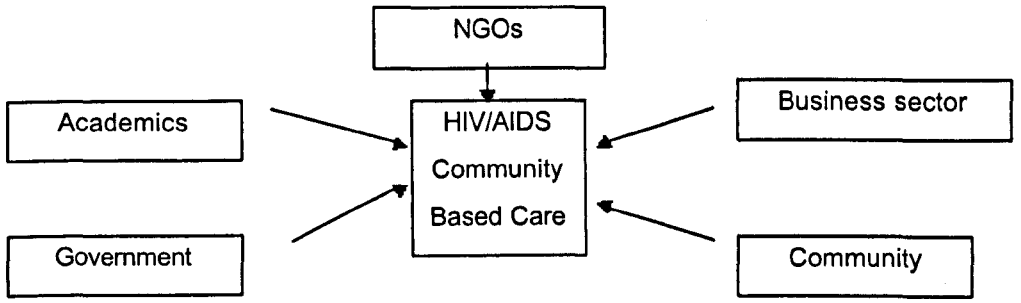
The definition of care in the community is to provide a range of services - nursing, counselling, emotional, psychological support and networking in order to help person to cope with illness and live as healthy life as possible : Therefore the components of community care as follows :

- ◊ Psycho-social support
- ◊ Direct service - DIC, De-addiction, Harm reduction
- ◊ Education and IEC (Health)
- ◊ Counselling (individual and family)
- ◊ Medical support - TB, Antibiotics, etc.
- ◊ Referral and networking

Definition for community : Community is diverse groupings of people with different beliefs and practices. There are common plights, interest, and understandings that bring people together and unite them around a common purpose. They may also be a group of people who are connected by the same health concerns related to HIV/AIDS. Community members which are becoming awareness of a problem, sharing concern and deciding together to take action towards a common solution to derived share benefit. This would promote increased involvement and participation of people within community to make the decisions that will impact on themselves and their environment. In term of responding to HIV/AIDS, this is an effective way to change attitudes and behaviour within communities, to provide care and

treatment to community members. It can design and implement prevention programmes that have a lasting impact. This can occur where groups or communities have shared specific concerns and come together to take action. Participation can increase the likelihood of action through community members becoming involved in activities. Within communities there are already existing resources that can be used to design and develop programmes. The involvement of people most affected by HIV/AIDS can signify the changes as the community rallies to provide support.

4.3 Partnership in HIV/AIDS Community Base Care



- ◊ Government (GO) provides primarily medical, secondary psychological and social supports,
- ◊ NGOs primarily provide psychological and social supports, i.e. shelter, occupation skill making, referral, home visit,
- ◊ Community Based Organisation (CBO) provides support similar to NGOs with various level of activities, depending on local demand.

Active Community Response to HIV/AIDS	Less Active Community Response to HIV/AIDS
Adequate support	Community refuse
Community acceptance	Lack of resources
Dedicated health workers	Inactive health workers
Adequate resources especially budget, supplies, manpower	Bad relationship between health workers and PLWHA
Team working	Lack of co-operation
Clear policy	Lack of principal worker
Co-operation of PLWHA	Non-co-operative PLWHA

5 Life beyond choosing

" I am a mother whose child has AIDS. In 1993,my husband was so sick that he had to be admitted to hospital. The doctor had his blood tested which revealed that he had the AIDS virus. It was hard for me to believe that my husband had AIDS. To confirm that my husband had really contracted the virus, I decided to have a blood test together with my daughter. The next day the doctor came to the bed side and told me that both myself and my daughter were infected with the AIDS virus. It really shocked me. I was so upset. Tears poured down my cheeks. I hugged my daughter tightly. Despair came upon my life. Thinking about my

daughter, would her life end up the same as us? Was this all that we had lift in life? Was my daughter going to put up with the same suffering that her father was going through?....."

" I thought so much that my head began to spin. I did not know what to do. I felt sorry for my daughter and myself. I had never thought that my husband could be unfaithful...."

"Discharged from hospital, my husband's illness got worse and worse. He became so thin that he couldn't walk. He lost the ability to hear and speak. However, he still wanted to communicate with others. He jotted down everything he wanted to say on a notepad. He told me that he had written a message for our daughter to read when she grew up. I never knew whether my daughter would have a chance to read it...Two months after being discharged from the hospital, he left me and our daughter, never to return again..."

"... I decided to take my daughter back to my home village to stay with my parents. I couldn't stand staying alone in house we had built together. It's once filled with happiness, the warmth of love and a pride in life. I could no longer stand seeing a monument of sadness, shame and suffering..."

"... A year later, my husband's parents sold the house. The gave me and my daughter nothing even though the house was built by us, with our own hands. They did not count me as their son's wife and that we'd had a daughter together...."

"... Legally, I was entitled to something but in this rural society I could do nothing. Power and influence carry more weight. To survive on daily basis was difficult enough for me..."

There is no answer to questions as basic as : what happens when a father of families dies : what are the implications to his wife and his children as far as basic needs are concerned ; whether the children have enough food, can continue their schooling or have access to medical assistance if they also fall ill.

The main questionnaires for household survey will focus on some of following questions:

- ◊ What are the existing household and community responses to the impacts of HIV in rural area of two districts of Phayao?
- ◊ How frequent is the response adopted by different households in different localities (active vs less active support for HIV/AIDS interventions)?
- ◊ What is the potential impacts of AIDS on households; family, children, community stresses?
- ◊ What are the household coping strategies; strategies aimed at improving food security, strategies aimed at raising and supplementing income so as to maintain household expenditure patterns, strategies aimed at alleviating the loss of labour?
- ◊ Household abilities to cope?

Annex 5.3

Enumeration: Quick health survey

Annex 5.3: Quick health survey

Topic	Questions	remark
Address	House number..... village number.....Village name .....street.....soi..... Tumbol..... .....Amper ..... Province..... [ ] municipal area [ ] sanitation area [ ] outside area	
Household head	Name of household head..... Name of interviewee ..... Relation with the household head..... How long have you been living continuously in (name of current place of residence)? ..... (day/month/year)	
# Household member	The total number of household member .....persons	
Household income	Average monthly household income [ ] less than 3,000 THB [ ] more than 3,000 THB Own house land (asking), and other modern amenities (observation)	
Chronically ill history	- Having household member with chronic ill living in the household in last six months - Having household member (aged 15-49) with chronic ill in last six months - Did she/he have any treatment for her/his illness? - Where did she/he often go to have treatment? ..... (enumerator will check for HIV testing result)	[ ] Yes [ ] No [ ] Yes [ ] No [ ] Yes [ ] No
Any symptoms	Family members have important symptom, for example: (1) lose weight about 10% more than 1 month (2) having diarrhea more than 1 month (3) having fever more than 1 month (4) having pneumonia 2 times or more in 6 months ago having an infectious disease	 [ ] Yes [ ] No [ ] Yes [ ] No [ ] Yes [ ] No [ ] Yes [ ] No
Decease history	- Have your household member with a current adult death of any reasons disease at least 2 years - Have your household member with a current adult (aged 15-49) death of any reasons disease at least 2 years	[ ] Yes [ ] No [ ] Yes [ ] No
Chronically ill and decease history	- Does this household have member with both chronically ill and a recent death? - Does this household have adults (aged 15-49) with both chronically ill and a recent death?	[ ] Yes [ ] No [ ] Yes [ ] No
Willingness to participate in the study	Leader of family or a representative is willing to joint in the project (proceed inform consent form).	[ ] Yes [ ] No
Known HIV status from medical record and the interviewee accepted the status	How do you think to participate in household survey study? (if, yes, proceed inform consent form)	[ ] Yes [ ] No
Eligible household	As a case household As a control household	[ ] Yes [ ] No [ ] Yes [ ] No

Annex 5.4

Questionnaire for case households

Annex 5.4 Questionnaire for case household

The questionnaires for this study are for use in the household survey as part of research to provide information for policy on relief measures for the economic impact of chronic illness of family members on households in the north of Thailand. There are two types of questionnaires - one for interviewing case households and one for control households.

This questionnaire forms part of a survey from the research project entitled "The economic impact of HIV/AIDS morbidity in upper-north Thailand: Phayao case study", which reports on the socio-economic impact on households resulting from chronic HIV morbidity, and the policy and measures for government to help the households and community in this situation. This survey will provide information for determining the policy required to alleviate the economic and social impact at the household and community level. Especially in the rural areas, the research results depend on the answers to this questionnaire.

1.1 Questionnaire for case household

For case households, the questionnaire consisted of sixteen parts:

1. Household form – presentation to interviewed households, data recording procedures
2. Immigration of household members classified according to individuals
3. Jobs of household members classified according to individuals
4. Economic status of household members classified according to individuals
5. Personal health of household members classified according to individuals
6. Utilization of various services by household members
7. Assets and household residences
8. Data on illnesses of household members classified according to individuals
9. History of illness and treatments received classified according to individuals – Various expenses related to costs of patient treatments within the past 6 months - in cases of home-based care and in cases of hospital-based care – and expenses related to costs of patient treatments and supporters of healthcare burden within the past 6 months

10. Sources of income used for paying for treatments classified according to individuals
11. Changes in time consumption of household members after a member becomes sick
12. Changes in levels of household productivity
13. Household money transfers
14. Expenditures for household consumption
15. Household debts
16. Social discrimination

QUESTIONNAIRES ON THE ECONOMIC IMPACT OF HIV/AIDS MORBIDITY IN UPPER-NORTH THAILAND: PHAYAO CASE STUDY

QUESTIONNAIRE FOR CASE HOUSEHOLD

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QUESTIONNAIRES ON THE ECONOMIC IMPACT OF HIV/AIDS MORBIDITY IN UPPER-NORTH THAILAND: PHAYAO CASE STUDY

This questionnaire is used in the data recording for the research project entitled "The economic impact of HIV/AIDS morbidity in upper-north Thailand: Phayao case study", which is a Doctoral thesis from a lecturer in the public health faculty, Mahidol University, with the support and cooperation from the ministry of public health. The project reports on policy and measures for government to help the economic and social impact on households resulting from HIV/AIDS illness of family members.

This data recording will give the best results for determining government policy of alleviating the economic and social impact on households and community. Especially in the rural areas, the results from the research depend on the answers to this questionnaire. The researcher faculty would like your cooperation for giving your time to answer the questions completely and accurately. Your answers will not have any negative impact for you. The data recording will be kept strictly confidential, and no personal details will be disclosed.

Number of Questionnaires.....
Classified interview household is a family having a member with the target disease (age 15-49) live in household more than 6 months, no patient from chronic illnesses live in household more than 6 months, and no dead people in 2 years.
Address; House number..... Moo number.....Village number.....Street.....Soi.....
Tumbol (Sub-district).....Amper (District).....
Province (Town).....
( ) municipal area ( ) sanitation area ( ) outside area
Name of household head.....
The total number of household members .....persons
Name of interviewer.....
Relation with the household head.....

The nature of this household
the household selected for interviewing (including reserves)
the household interview instead of the selected one due to
(2.1) the house can't be found
(2.2) housing without residence living in
(2.3) the house was demolished or burnt away
(2.4) having been visited for 3 times without meeting the interview responder
(2.5) didn't receive cooperation
(2.6) has already moved away
(2.7) other specified ....

Nameofinterviewer.....date.....Month.....1999
Timeofinterviewing.....date.....Month.....1999
Check the by .....date .....Month.....1999

Signature of recorder .....date.....month.....year.....

Measures to select households for survey participation by random method

Household Case	Household Control
Quantity of 300 household	Quantity of 300 household
The random selected come from medical record and OPD Card in community hospital and visiting an official in health station By using community map from health station and public health to find location of household or interview from the leader of community	The random selected come from household survey by considering the data from the location of household from district and community map from health station or public health to find location of household or interview from the leader of community
Economic and social status (income less than 3,000 baht/month/household)	Economic and social status (income less than 3,000 baht/month/household)
Leader of family or a representative is willing to joint in the project	Leader of family or representative is willing to joint in the project
Having family members at least 1 person which is sick from the target disease and still in the level to show a symptom is male and female aged 15-49 year Family members have important symptom, for example: lose weight about 10% more than 1 month having diarrhea more than 1 month having fever more than 1 month having pneumonia 2 times or more in 6 months ago having an infectious disease.....	No patient from the target disease
Having patient which is the member of household and live in for 6 months (at least 1 person) and live in the house at least 1 year)	No patient from the target disease is the member of household that live in more than 6 months and live in the house at least 1 year
Never have the member of household (aged 15-49 years) died from the target disease at least 2 years	Never have the member of household(aged 15-49) died from the target disease
Never have the member of household (aged 15-49 years) sicken from chronic illnesses until cannot feed yourself normally and continue to include more than 6 months within 2 years	Never have the member of household(aged 15-49 years)sicken from chronic illnesses until cannot feed yourself normally and continue to include more than 6 months within 2 years
Never have the member of household(aged 15-49 years) died within 2 years	Never have the member of household (aged 15-49 years) died within 2 years

Case Section 1 The survey of household form

Presentation to interviewed households

Hello!, my name is .....I would like to know the information about the person that lives in this house. We are surveying several villages in Phayao province to study their characteristics and ability to adjust themselves. Then suggesting the ways in which government can help. I would like to talk with you as the leader of your family.

Data recording

Start data recording from the following;

1. Ask for household record from the person who gives the data.
2. Recording names from the arrangement in the household record, especially the well-known person in the present and also stay permanent in the household.
3. Recording name of the person who belonging in the same family tree with the leader of family (son or nephew) especially the person who announce for moving out or do not usually stay in the family
4. Recording name the person who often live in household that does not have their name listed in the household record that following by large to small amount number of ages.
5. Recording names by using "the full name" and "the first alphabet of the last name" or record by using " nickname" if you have it.
6. Ask the person who has given the data to double-check the listed names from the record before starting to fill in others recorded.
7. If listed names have more than 10 names in each household, then ask the person who has given the data to consider the listed names. again.
8. The household economic impact in the positive way is the person who supports the family. The household economic impact in the negative way is the person who is supported by the family.
9. Recordings of the data of those households suffering economic impact are made according to the same ranging order as being recorded for the first time without any authorization

The definition of permanent residents of each household

include those who...

1. live in this household regularly for more 2 days per week or more than 15 days per month during the pervious month.
2. Still live in the same household at present.
3. Plan to live in this household continuously.
4. Have at least 1 meal per day in this household or 30 meals per month during the previous month.

The definition of household

Each household consists of one or more individuals living in the same house or residing in the same housing boundary. These persons seek for and utilize their living needs together. They may either be relatives or not related to each other.

Item	Named member of household**	Name of household member relation with household head (recorded in number)	Pattern of living in this household		Sex	Age	marital status
	-named listed in the household registry - Living permanently - name not be listed in household registry - belonging in the same family tree - living permanently	(1) Household head, (2) spouse of household, (3) children (4) grandchildren, (5) parent (6) brother and sister, (7) cousin (8) relatives (9) son-in-law and daughter-in-law (10) brother, brother in law and brother, sister in law (11) a father in law and mother in law (12) relative of spouse (13) other non-relative household (14) employee who live permanently in the household, (15)others.....	normally live in this household (Yes=1, No=2)	live in this household last night (Yes=1, N0=2)	Male =1, Female =2	record the age in full year, live in less than one year record 00, household head didn't know record 99	single =1, married =2, a widow=3, to divorce=4 separate=5, others =6
*(1) hmemno**	*(2)-*	*(3) relatehh*	*(4)regstay*	*Instay*	*(5)sex*	*(6)age*	*(7)mstatus*
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*Variable name

** Name of those persons who have some economic impact on the small household and have to adjust themselves in either positive or negative manner. The reasons explaining low impact such as those who have already move out of the household but still have their name listed in household registry. The positive economic impact include being provider and bread winner of the household; the negative impact include those who has to seek support in the household.

Item	Named member of household	religion is respected in each "name"	studied or not (aged more than 6yrs)	The best education for those who stop studying	each "name" is studying or not	which level of those who is studying right now
		(1)Buddhism (2)Christianity (3) Islam (4) others... (8) do not know (9) Don' t know an answer	(1)studied (2)never studied	(1) primary school or lower (2) secondary school (3)Junior high school (4) high school (5) Vocational school (6) equivalent to university certificate (7) bachelor degree (8)upper than bachelor degree (9) Do not know (0) not applicable	(1) study (2) do not study, (8)do not know (9) do not answer	(1)primary school (2) secondary school (3) junior high school (4) high school (5)vocational school (6) equivalent to university certificate (7)bachelor degree (8) upper than bachelor degree (9) do not know (0) not applicable
(1)hmemno	*(2)*	*(8)religion*	*(9)study*	*(10)histudy*	*(11)stilstud*	*(12)studying*
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Case Section 2 Immigration of household members classified according to individuals

Immigration means moving the household from one village or municipal area in the past to the present village or municipal area.
To change municipal area or village because of expansion or separation by those persons within the household, which is still in the same place, does not involve immigration.

Item	Named member of household	how many years of each member "name" lived in this village	recording the last province before move in	what type of community you live in before immigrant
		less than 1 year records 00 live in not more than 5 years ask the next question live in more than 5 years skip to part 3 do not know =88 do not answer=99 skip to part 3	if it is a foreign country, specifies the name do not know=88 do not answer=99 not applicable=00	(1)municipal area (2)sanitary area (3)outside sanitary area (4) foreign country (8)do not know (9)do not answer (0) not applicable
(1)hmemno	*(2)*	*(13)stayyear*	*(14)lasttown*	*(15)prevcom*
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Item	Named member of household	The reason to move in because	how much income did you get before you come back	each "name" is studying or not	how many time you send your income back to your family last year
		(01)to find a job (02)on duty (03)to take care oneself because of illness (04) to follow the family (05)go back to permanent residence (06)come back to work at home (07)come back to take care parent (08) to visit temporary residence (09) other specified..... (88)do not know (99) do not answer (00)not applicable	(88888) do not know (99999) do not answer (00000) not applicable	(1) study (2) do not study, (8) do not know (9) do not answer	(77) Never send (88) Do not know (99) Do not answer (00) Not applicable
(1)hmemno	*(2)*	*(16) reamove*	*(17) wkincome*	*(18)stilstud*	*(19) notransf*
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Case Section 3 Jobs of household members classified according to individuals

Please ask only of those aged between 15-49 who have stopped studying.

Item	Named member of household	each individual "name" normally has current job or not, using code (Current job or main job means type of the job that those uses most of time to do it or the occupation that give you the most income (in case of equivalent of hour)	in case of no current job, have each name ever worked before	in case of each name has no job within last 1 month, "names" find or apply the job or not , using code
		(1) have (skip to Q26) (2)do not have (continue to ask Q21-23) (8)do not know (9)do not answer (0) not applicable	(1)worked (2) never work (8)do not know (9)do not answer (0)not applicable	(1) find a job (2)do not find a job (8) do not know (9) do not answer (0) not applicable
(1)hmemno	*(2)*	*(20)mainjob*	*(21)everwork*	*(22)findwork*
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Item	Named member of household	Ask only those who has no job that using code (2)in Q20 reasons of "names "do not find a job in the month of survey	How much monthly income did those who worked before using code (1) inQ21 but during this time have no job get recording the average money per month (daily income * an amount of days) thinking back to last month.	What does each "name" work, recording their responsibility, for example farmer, vegetable farmer, barber, engineer, public driver, sewer, corn grower, etc.
		(1)already apply for the job (2)no hope for any job (3)waiting for filling the job (4)wait for proper time (5) on house duty (6)studying (7) illness (8)receiving not enough application (9) taking care of the sick (10)other specified…… 88=do not know 99=do not answer 00=not applicable	(88888) do not know (99999) do not answer (00000)not applicable	(88) do not know (99) do not answer (00) not applicable
(1)hmemno	*(2)*	*(23)reanofin*	*(24)uwincome*	*(25)duty*
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Item	Named member of household	What current occupation that each "names" work for is for example rice mill, textile factory, kitchen ware factory transportation company, barber, bicycle repairing, jewelry cutting, fried pig skin, mating	What position each" names" work for, using code	Does each name have second or other job or not	specified second job for each "name"
		(77)have never been involved (88)do not know (99)do not answer (00)not applicable	(1)personal of private company (2)public worker (3)employer (4)personal business (5)worker of state agency (7) self employ without assistants (6)helping household business without being paid (8) do not know (9)do not answer (0) not applicable	(1) have (2) doesn't have (8)do not know (9) do not answer (0)not applicable	(88)do not know (99)do not answer (00)not applicable
(1)hmemno	*(2)*	*(26)typeduty*	*(27)Occ*	*(28)subocc*	*(29)subocenm*
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Case Section 4 Economic status of household members classified according to individuals

I would like to ask questions about the economic status and income received by these household members (ask only of those aged between 15-49)

Item	Named member of household	In the last 6 month, what is occupation of each "names"	In the last 6 month, what is the reward of each "names"	In the last 6 month, the amount of the money per month for each "names" is	Does each name have second or other job in the last 6 months
		(1)worker (ask the next question) (2)study (3)house duty (4) has no job (5)handicap (6)other specified..... (8)do not know (9)do not answer (0)not applicable answering on (2)-(6)ask Q33	(1) cash (2) thing (3) both (4)no payment	(88888) do not know (99999) do not answer (00000) not applicable	(1) have (2)doesn't have
(1)hmemno	*(2)*	*(30)6mocc*	*(31)6mpaytyp*	*(32)6mmoney*	*(33)6msubocc*
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Item	Named member of household	Does each name who has second job in the last 6 month own the firm in (1)-(3)	In the last 6 months, what is the reward for those who has a second job	In the last 6 months, how much monthly payment does those who has a second job get	Does each name have savings deposit (bank saving/ a cooperation)	Only ask those who gives the main data "what is your position in your community"
		(1)cattle/fisheries (2) trader (3) an artisan (4) private worker (5) public worker (6)household business (no payment) (7)other specified.... (8)doesn't know (9)doesn't answer (0)not applicable	(1)cash (2)things (3)both of them (4) no payment	(88888) Doesn't know (99999) doesn't answer (00000) not applicable	(1) have (2)doesn't have (8)doesn't know (9) Doesn't answer (0) not applicable	(1) very good (2) good (3)average (4)poor (5) very poor (8) doesn't know (9)no answer
(1)hmemno	*(2)*	*(34)6msbocty*	*(35)6msbocpy*	*(36)6msbocmn*	*(37)saving*	*(38)famlev*
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Item	Named member of household**	Record of other incomes earned by member who receive money from the following items based on the total amount received during the previous year					
		Retirement fund and bonuses receive in the previous year (baht) e.g. in the case of war veterans	Money send from cousin who used to be household member during the past year	Funding received from the government or various agency during the last twelve months (baht)e.g. funding for Aids patient ,crippled, elderly people, other supporting fund	Funding received from other person outside household per year e.g. (Donation for education of the kid)	Rental fee within the last 12 months (land rental fee, house rental fee, estimate the cost if being received as gift	Interest an divined received the last 12 months (interest from money saving or giving loan)baht
		(888888) unknown (999999) no answer (000000)non	(888888) unknown (999999) no answer (000000)non	(888888) unknown (999999) no answer (000000)non	(888888) Unknown (999999) No answer (000000) Non	(888888) Unknown (999999) No answer (000000) Non	(888888) Unknown (999999) No answer (000000) Non
*(1) hmemno**	*(2)-*	*(39)pension*	*(40)mnrel*	*(41)mngov*	*(42)mnoth*	*(43)mnhire*	*(44)mnint*
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*Variable name

Case Section 5 Personal health of household members

I would like to ask about the personal health of you and the members in this household, chronic illnesses and disabilities

Item	Question	Variables	Answer
45	Comparing to other person of the same aged, how would you rate your health in general? (1) excellent (2) very good (3) good (4) fair (5) very bad	hltyou	
46	Comparing to members of other household nearby of the same age, how would you rate personal health of your household members? (1) excellent (2) very good (3) good (4) fair (5) very bad	hltoth	
47	Do any of your household members suffer from any physical handicap (1) yes (2) no	handyn	
48	What kind of deformation do the y have? (Specified the parts of body that are crippled and the nature of information)	handtyp	
49	Does any of this deformation affect the following daily activities or not? (1)yes (2) no		
	Going to work	handwork	
	Going to school	handsch	
	Doing household work	handhw	
	Other activities such as hobby and travel	handoth	
50	How would you consider your life to be (1) very stressful (2) stressful (3) fairy stressful (4) no stress (5) having no stress at all	mental	

Case Section 6 Utilisation of various services by household members

I would like to ask about use of health services

Item	Question	Variables	Answer
51	Where do you and your household members go for check up and receive treatment most of the time? Please specified the first 3 rankings (00) go to government hospital (02) go to private hospital (03) go to private clinic (04) self medication (05) Traditional medicine or folklore treatment (06) taking herbs (07) go to healthcare office (08) receiving no treatment (88) unknown (99) no answer (00) not applicator (09) others, specified...	hltserv1 hltserv2 hltserv3	1st Rank..... 2nd Rank..... 3rd Rank.....
52	The expense of treatment when being sick, including all cost of each individual within the past 6 months (baht) (88888) unknown (99999) no answer (00000) not applicator	6mhltpy	
53	Who support for the cost of treatment of this person? (00) paid by the family (02) receiving free treatment from social security (03) health card (04) social security (05) health insurance (06) support from cousin/refund from government and public agency (08) company welfare (09) making loan (10) other specified...(88)unknown (99) no answer (00) not applicable	hltpyer	..... others, specified .....
54	How long does it take for you and your household members to go for the treatment (your first choice in Q 51) each time (time in minute) minute (back and forward)	hlttin	
55	How do you and your household members go for treatment? (1) walking (2) bicycle (3) personal car (4) public transport (5) boat (6) hired driver (7) motorcycle (8) other specified	hlttv	
56	Is it easy to go to that place? (1) very easy (2) easy (3) fairy difficult (4) difficult (5)very difficult (6) other specified	hlttveas	
57	Do you and your household members suffer from the following due to treatment? (1)yes (2) no (1) cost of medication	difdrug	
	(2) travel expenses	diftv	
	(3) cost of hospital stay	difhltmn	
	(4) accommodation expenses	diftivmn	

Item	Question	Variables	Answer
58	Where do the expenses come from? (1) personal and family saving (2) social security (3) selling good (4) loan (5) from cousin who are not household members (6) from other persons (7) insurance e.g. life insurance (8) other specified	pyfrom1 pyfrom2 pyfrom3	1st Rank..... 2nd Rank..... 3rd Rank.....
59	In general, who make the decision in choosing health services for you and your household members? (1) oneself (2) husband/spouse (3) wife /spouse (4)cousin (5) other persons (6) other specified	hltdecid	..... others, specified .....
60	How do you and your household member satisfied with the health services received (1) very good (2) good (3) fairy good (4) not satisfied (5)very disappointed	hltappre	
61	Ask only those who are interviewed regarding adequacy of income, how do you rate the income of your household (1) enough with some being saved (2) enough but non being saved (3) not enough but without debts (4) inadequate with debt	yourinc	

I would like to ask questions on non-health services

Item	Question	Variables	Answer
62	In your community do you have the following services? if yes, If it difficult to get access to this services (1) no (2) yes, easy to access (3) yes, difficult to access		
	(1)primary school	primsch	
	(2)secondary school	secsch	
	(3) health care center	hltcent	
	(4) government hospital	govhosp	
	(5) temple /church	wat	
	(6) police station	polstn	
	(7) village library	newssite	
	(8) play ground community exercise facility	playgrnd	
	(9) market	market	

Item	Question	Variables	Answer	Variables	Answer
63	In your community, do you have the following social services or not? Do you or your household members go for services or not?		(1) have (2)doesn't have		(1) use (2) doesn't use
	Social welfare services	welfav		welfut	
	Lunch support for school children	lunchav		lunchut	
	Club for elderly person	oldchav		oldchut	
	Project for community agricultural development	agrav		agrut	
	Project for orphans or community child care	orpav		orput	
	Group of housewife and community development	devav		devut	
	Project for giving consultation on extra earning activity for community housewife	suboccav		subocout	
	Project for donation or food loan, working material, money e.g. village funding, district aid funding.	donfdav		donfdut	
	Project for community of patient	ptcomav		ptcomut	
	Project for finding job in the community	occcomav		occcomut	
	Community participation and community acceptance in target decision	discomav		discomut	
	Consultation services	concolav		concolut	
	Complementary health care services	alhltav		alhltut	
	Project on education an community nutrition	eduav		eduut	
	Project on training of nursing aid of patient in the family and community	ptcarav		ptcarut	
	Vocational training and support for income of household and community	occtrnav		occtrnut	
	Treatment and group consultation	groupav		grouput	
	Meditation	meditav		meditut	
	Group support for patient suffering from target disease and self health group	helpptav		helpptut	
	Other specified	othserav		othserut	

Item	Question	Variables	Answer
64	Recall back to the previous month have their been any places for you and your household members often (1) Yes (2) No friend house	gofri	
	cousin house	gorel	
	school	gosch	
	church/temple	gowat	
	market/ shop	gomark	
	family plan clinic	gofp	
	working places	gowrksit	
	house club in community	gohw	
	doesn't go to anywhere	gonone	
65	In your community, if you and your household members suffer from illness, you can ask for the help depend on the need from your community. (1)yes (2) no	comhask	
66	In your community, if you and your household members suffer from illness, you are always getting help depend on the need from your community (1)yes (2) no	comhreev	
67	In your community, if you and your household members need the money, you would loan money from people in your community.(have to pay money and don't have to pay money) (1)yes (2) no	commnask	
68	In your community, if you and your household members suffer from illness, you are always getting help to deliver patient to the hospital from your community. (1)yes (2) no	comhspgo	

Case Section 7 Assets and household residence

I would like to ask for information about the owner of cattle and various utensils in this household - include model of the house

Item	List of things	Variable	Does this household member own the following thing or not	Variable	A number or a quantity of This things	Variable	How much for the cost in the listed thing (baht) if you would like to sell now	Variable
69	building		(1)yes (2)no	hmyn		hmam		hmvl
70	land (a residence)		(1)yes (2)no	lnyn	(area)	lnam		lnvl
71	agricultural area		(1)yes (2)no	agyn	(area)	agam		agvl
72	various vegetable (vegetable listed)		Does this household member own the following thing or not?		a number/a quantity of each category of vegetable		unit value of each category of vegetable	
	1	pl1nm	(1)yes (2)no	pl1yn		pl1am		pl1vl
	2	pl2nm	(1)yes (2)no	pl2yn		pl2am		pl2vl
	3	pl3nm	(1)yes (2)no	pl3yn		pl3am		pl3vl
	4	pl4nm	(1)yes (2)no	pl4yn		pl4am		pl4vl
	5	pl5nm	(1)yes (2)no	pl5yn		pl5am		pl5vl
73	various cattle(animal listed)		Does this household member own the following thing?		number of each category of animal		unit value of each category of animal	
	1	an1nm	(1)yes (2)no	an1yn		an1am		an1vl
	2	an2nm	(1)yes (2)no	an2yn		an2am		an2vl
	3	an3nm	(1)yes (2)no	an3yn		an3am		an3vl
	4	an4nm	(1)yes (2)no	an4yn		an4am		an4vl
	5	an5nm	(1)yes (2)no	an5yn		an5am		an5vl

Item	List of things	Variable	Does this household member own the following thing or not	Variable	A number or a quantity of This things	Variable	How much for the cost in the listed thing (Baht) if you would like to sell now	Variable
74	Animal product (dairy product)		Does this household member own the following thing or not?		a number/a quantity of each category of animal		unit value of each category of animal	
	1	pr1nm	(1)yes (2)no	pr1yn		pr1am		pr1vl
	2	pr2nm	(1)yes (2)no	pr2yn		pr2am		pr2vl
	3	pr3nm	(1)yes (2)no	pr3yn		pr3am		pr3vl
	4	pr4nm	(1)yes (2)no	pr4yn		pr4am		pr4vl
	5	pr5nm	(1)yes (2)no	pr5yn		pr5am		pr5vl
75	Instrument for farming /fishing classified according to type		Does this household member own the following thing?		number of each category of instrument for farming/fishing		unit value of each category of instrument	
	1	in1nm	(1)yes (2)no	in1yn		in1am		in1vl
	2	in2nm	(1)yes (2)no	in2yn		in2am		in2vl
	3	in3nm	(1)yes (2)no	in3yn		in3am		in3vl
	4	in4nm	(1)yes (2)no	in4yn		in4am		in4vl
	5	in5nm	(1)yes (2)no	in5yn		in5am		in5vl
76	Others, specified		Does this household member own the following thing or not?		a number/a quantity of each category of others		unit value of each category of others	
	1	ot1nm	(1)yes (2)no	ot1yn		ot1am		ot1vl
	2	ot2nm	(1)yes (2)no	ot2yn		ot2am		ot2vl
	3	ot3nm	(1)yes (2)no	ot3yn		ot3am		ot3vl
	4	ot4nm	(1)yes (2)no	ot4yn		ot4am		ot4vl
	5	ot5nm	(1)yes (2)no	ot5yn		ot5am		ot5vl

I would like to know about the housing size, material, electricity, drinking water, water utility, and toilet, including both building or single room in which the members of this household stay.

Item	Question	Variables	Answer
77	What is the type of your residence? (1) single house (2) townhouse (3) expanding family housings (4) hut and other small housing (5) other specified	hmty	
78	How many rooms are there in your house? (Including toilet, bedroom, kitchen, living room, etc.) if not being counting answer 00	room	
79	How long have your family live in this house?(answer by total number of year, if less than 1 year the data will not be counted in this study)	lgstay	
80	What kind of material were your houses made from? Can be answer more than one (1) earth (2) parquet (3)limestone(4)cement(5)wood(6)bamboo(7)tile(8) other specified	floor	
81	What was the outside wall of the house made from? (1) cement (2) brick (3) wood (4)bamboo (5) other specified	outwall	
82	What sources of water that this household use for washing cloth /cleaning dishes (if answer more than one please skip to Q87) (1)tap water (2) wells (3) underground water (4) rain (5) river (5) lake (6) water trailers (7)other specified	watersc	
83	How long does it take you to bring the water from that source (please specified the unit of time involved)	watertm	___h___m
84	Does your family drink the water from that source? (1) yes (2) no if yes skip to Q86	drink	
85	What is the source of your drinking water? can be answer more than one (1) tap water (2) wells (3) underground water (4)rain (5) river (6)lake (7) water trailers (8) drinking water from the bottle (commercially available) (9) other specified	drinksc	
86	How long does it take you to bring the drinking water from that source (please specified the unit of time involved)?	drinktm	___h___m
87	What time of lavatory of your household use? (1) American standard type (2) conventional lavatory (3) hold digging (4) not available (5) other specified...	toilet	
88	Does your house have electricity in this room? (1) all room (2) some room (3) no electricity	electric	

Item	Question	Variables	Answer
89	Does your household member own the following thing? (1) yes (2) no		
	radio	radio	
	television	tv	
	VDO	video	
	refrigerator	refrig	
	bicycle	bicy	
	motorcycle	motcy	
	car	car	
	gasoline stove	gas	
	washing machine	wash	
	sewing machine	sew	
90	Does this house belong to your family ? (1) owner (2) joint-owner (3) renting (4) under leasing (5) other specified if renting skip to Q95	hmown	
91	How did your family acquired this house? (1) will (2) building by oneself (3) building house partially (4) buying (5) other specified	hmsc	
92	Do you pay monthly in the installment for this house? (1) yes (2) no	hmrent	
93	How much did you pay for each monthly in installment? total .....Baht per month	MonthPay	
94	How much does did house cost?, how much do you want to sell at present ? Total...Baht	MmV12	
95	If it is the rental house how much do you pay per month or per year? (select one answer)	HmRentPy	.....Baht per month .....Baht per year (in case of yearly payment

Case Section 8 Data on illnesses of household members classified according to individuals

I need to know information about patients who live in this household related to their general being, various expenses and economic impact on the household, such as data on illnesses of household members, sources of income covering treatment expenses, working condition and income before being sick, changes in time consumption of household members, changes in household productivity, immigration of household members, etc. This information will be used to study the household characteristics and probability of adjustment, in order to provide guidelines to the government in offering further support. I would like to talk to you who are the household leader.

96	During the last 6 months have you had any family member older than 15 years who used to earn income before becoming sick? ( ) none (if the answer is none, stop interviewing the household and go on to interview other household) ( ) yes 1 person name.....(specified by using nickname or real name without surname) ( ) yes 2 person name ..... and name..... ( ) the person who is sicken at present, sex, age, education, and relation with household leader					
Item	Question	Variables	1st person	2nd person	3rd person	4th person
97	Age(year)	page				
98	sex (1) male, (2) female	psex				
99	highest education (1) uneducated (2) grade1-4 (3) grade 5-6 (4) grade 7-10 (5) grade11-12 (6) vocational college (7) university (8)unknown (9) no answer (0) not applicable	pedu				
100	Relation with the household leader (1) being household leader (2) spouse (3) son/daughter (4)n in law (5) grand children (6) parent(7) cousin (8)unknown (9) no answer (0) other specified(e.g. dependents, servant , employee)	prel				

Care of children

Item	Question	Variables	1st person	2nd person	3rd person	4th person
101	Marital Status of PWA (1) single (skip toQ107) (2) married (3) separated (4) widow (8)unknown (9) no answer (0) not applicable	pmar				
102	Does patient have any children (1) yes (2) no (8)unknown (9) no answer (0) not applicable	pkidyn				
103	If there are some children, how many off spring, does the patient have? Please answer in number of person. (88)unknown (99) no answer (00) not applicable	pkidam				
104	The number of spring of patient within different age group					
	0-5 yr.	pkid05				
	6-11 yr.	pkid611				
	12-15yrs	pkid1215				
	>15yrs	pkid15up				
105	Before being sick who took care of the children (1) living parent (2) grandparent (3) other cousin (4) older siblings (5) child care center (6)neighbor /benefactor (7) old enough to take care of themselves (8) living with the priest (9) other specified	bekidcar				
106	After being sick who took care of the children (1) living parent (2) grandparent (3) other cousin (4) older siblings (5) child care center (6) neighbor /benefactor (7) old enough to take care of themselves (8) living with the priest (9) other specified	afkidcar				

Care of elderly person

Item	Question	Variables	1st person	2nd person	3rd person	4th person
107	Does the patients have the burden to take care of elderly person in the house? (1) yes (2) no (skip to part9) (8) unknown (9) no answer (0) not applicable	podcaryn				
108	If yes how many (88) unknown (99) no answer (00) not applicable	podcaram				
109	Who are the elderly people to be taken care of (answer more than 1question)? (1) parent (2) grand parent (3) other specified (4) uncle and aunt (8) unknown (9) no answer (0) not applicable	podwho				
110	How many elderly person with the age of					
	50-60yrs	pod5060				
	61-70yrs	pod6170				
	>70yrs	pod70up				
111	Who took care of the elderly person before getting sick? (1) self care (2) spouse (3) cousin (4) living with the priest (5) neighbor (6) son/daughter (7) other specified (8) unknown (9) no answer (0) not applicable	beodcar				
112	Who took care of the elderly person after getting sick? (1)self care (2) spouse (3) cousin (4) living with the priest (5) neighbor (6) son/daughter (7) other specified (8)unknown (9) no answer (0) not applicable	afodcar				

Case Section 9 History of illnesses and treatment cost according to individual

Item	Question	Variables	1st person	2nd person	3rd person	4th person
113	Other illnesses of the patient besides present illnesses (answer more than 1 question) (01)cancer (02) emphysema (03) cirrhosis (04) diabetes (05) heart disease (06) asthma (07) high blood pressure (08) gastrointestinal disease (09) other specified (88)unknown (99) no answer (00) not applicable	othchro1				
		othchro2				
		othchro3				
114	Duration of illnesses due to target diseases starting from having the symptom (record monthly) (888)unknown (999) no answer (000) not applicable	duratar				
115	Was the patient being treated by the following means (answer more than 1 question) according to the first 3 ranking? (1) go to the government hospital (2) go to the private hospital (3) private clinic/pole clinic (4) self medication buying from the drug store (5) treated with traditional doctor(folklore doctor)(6) herbal treatment(7) public health center/ health care center(8)otherspecified	pttret1				
		pttret2				
		pttret3				
116	Have the patient been admitted in the hospital during the past 6 month?	6madm				
117	If yes how many times	6madmt				
118	How many day that the patient were admitted longest in the hospital?	admlgdy				
119	Counting all day that patient have to be admitted during the past 6 months (counted by interviewer)	dmtldy				

Other expenses related to patient treatment during the last 6 months

Item	Question	Variables	1st person	2nd person	3rd person	4th person
120	The average cost of transpiration each time (including every one) for bringing the patient to the treatment center back and forward (Baht) (888) unknown (999) no answer (000) not applicable	carpyrx				
121	How many time (times)? (88) unknown (99) no answer (00) not applicable	carpyt				
122	In what way are most of those who bring the patient for the treatment related to the patient? (0) Go by one self (1). Parent (2). Spouse (3). Children (4). Grandchildren (5) sibling (6). Cousin (8) unknown (9) no answer (7) other specified e.g. go alone and go with someone else...	sdrlpt				
123	Do the people who bring the patient each time have to stop working in order to do errand? (1) stop working (2) in general the do not work (3) they are school children and just simply don't go to school (4) other specified 0= no one taking them 8= unknown 9= no answer	sdspwk				
124	If the person who bring the patient have to stop working, do they have to quit their job the whole day or not? (1) the whole day (2) half a day (maximum 2 hours) (3) less than half a day (4) other specified 0 = not applicable (don't bring them/ do not work) 8= unknown 9= no answer	sdspdy				
125	By stop working each time do they have to loose their income from their job (0) lose (2)do not lose because receiving monthly payment (government official) (3) don't because working with the family without regular income but their may be no assistant for the household work (4) other specified (8) unknown (9) no answer (0) not applicable (do not bring them /no work)	spwklt				
126	If losing income please specified the amount of income loss each time after stop working (Baht) Bringing the patient for the treatment (specified per day/per half day or per hour) May ask for monthly income then converted to daily then convert to average per hour or per half day do not record if not applicable..."000" unknown....."888" no answer...."999"	spwkinlt				
127	How many minute would it take to bring the patient for the treatment (record in minute)? starting from living the house until finished the treatment and return back home (specified in minute with the average waiting time for the treatment) if not applicable record..."0000" unknown....."8880" no answer...."9999"	ptrxtm				
128	Do you have to pay for your meal each time when you come for the treatment ? (record the amount of money (include every one in Baht) record if not applicable..."0000" unknown....."8888" no answer...."9999"	rxpyyfd				
129	Do you have to pay for your hotel rental each time when you come for the treatment? (Record the amount of money (include every one in Baht) Record if not applicable..."0000" unknown....."8888" no answer...."9999"	rxpyacm				

Home based care

Item	Question	Variables	1st person	2nd person	3rd person	4th person
130	During the patient treatment time, do you usually have household members to take care the patient? 1.yes 2.no 3.do not need to take care 4. Other specified.....8= unknown 9= no answer	hmcarm m				
131	If yes, who is taking the patient most of the time? (1) Spouse 2. Children 3. Parent 4.granchildren 5.other cousin6.other specified 8= unknown 9= no answer 0=not applicable(no one to take care of)	carmt				
132	Do the person who takes care of the patient have to stop working? 1. stop 2.do not stop 3.stop for some days 4.stop half a day 5.in general have nothing to do 6. other specified 8= unknown 9= no answer 0=not applicable(no one to take care of)	carspwk				
133	If the people who take care of the patient are school children do they have to stop go to school? 1.stop going to school 2.do not stop going to school / taking care of after school 3.do not have to go to school 4. Resign from school in order to take care of 5. Other specified 0=not applicable(no one to take care of_)= unknown 9= no answer	cdspsch				
134	Do they have to loose their income each time they stop working? (1)Lose (2)do not lose because receiving monthly payment (government official) (3) don't because working with the family without regular income but their may be no assistant for the household work (4) other specified (8) unknown (9) no answer (0) not applicable (do not bring them /no work)	ltinc				
135	In case of income loss the estimated amounted money lost (Baht)	ltincam				
	How much money was lost in the last 6 month (answer in month)?	ltinctm				

Hospital based care

Item	Question	Variables	1st person	2nd person	3rd person	4th person
136	Do the people who bring the patient each time have to stop working in order to do errand? (1)stop working (2) in general the do not work (3) they are school children and just simply don't go to school (4) other specified 0= no one taking them 8= unknown 9= no answer	carptspw				
137	If the person who bring the patient have to stop working, do they have to quit their job the whole day or not? (1) the whole day (2) half a day (maximum 2 hours) (3) less than half a day (4) other specified 0 = not applicable (don't bring them/ do not work) 8= unknown 9= no answer	spwkad				
138	By stop working each time do they have to loose their income from their job (1) lose (2)do not lose because receiving monthly payment (government official) (3) don't because working with the family without regular income but their may be no assistant for the household work (4) other specified (8) unknown (9) no answer (0) not applicable (do not bring them /no work)	spwltinc				
139	If losing income please specified the amount of income loss each time after stop working (Baht) Bringing the patient for the treatment (specified per day/per half day or per hour) May ask for monthly income then converted to daily then convert to average per hour or per half day Do not record if not applicable..."000" unknown....."888" no answer...."999"	ltincer				
140	In case of income loss the estimated amounted money lost (Baht)	tlltinc				
	How much money was lost in the last 6 month (answer in month)	6mltinc				

Expenses related to costs of patient treatments and support of healthcare

Item	Question	Variables	1st person	2nd person	3rd person	4th person
141	Buying drug from the drug store					
	number of times	bydgtm	.....times	.....times	.....times	.....times
	estimated expenses per time (Baht)/	bydgam	.....Baht	.....Baht	.....Baht	.....Baht
	payer (01) pay by oneself (02) free from social welfare (03) free from health card (04) free from social security (05) health insurance (06) being paid by the cousin(07) reimburse from the government) (08) reimburse from the company social welfare(09) other specified	bydgpyer	.....Payer	.....Payer	.....Payer	.....Payer
142	Cost of treatment in private clinic / polyclinic					
	number of time	clipoltm	.....times	.....times	.....times	.....times
	estimated expenses per each time (Baht)/	clipolam	.....Baht	.....Baht	.....Baht	.....Baht
	payer used the same codes as 141	clipolpyer	.....Payer	.....Payer	.....Payer	.....Payer
143	Cost of herb					
	number of time	herbtm	.....times	.....times	.....times	.....times
	estimated expenses per each time (Baht)/	herbam	.....Baht	.....Baht	.....Baht	.....Baht
	payer used the same codes as 141	herbpyer	.....Payer	.....Payer	.....Payer	.....Payer
144	Expenses of health center					
	number of time	hltcttm	.....times	.....times	.....times	.....times
	estimated expenses per each time (Baht)/	hltctam	.....Baht	.....Baht	.....Baht	.....Baht
	payer used the same codes as 141	hltctpyer	.....Payer	.....Payer	.....Payer	.....Payer
145	Expenses of government hospital					
	number of time	gvhptm	.....times	.....times	.....times	.....times
	estimated expenses per each time (Baht)/	gvhpam	.....Baht	.....Baht	.....Baht	.....Baht
	payer used the same codes as 141	gvhppyer	.....Payer	.....Payer	.....Payer	.....Payer
146	Expenses of government hospital					
	number of time	prihptm	.....times	.....times	.....times	.....times
	estimated expenses per each time (Baht)/	prihpam	.....Baht	.....Baht	.....Baht	.....Baht
	payer used the same codes as 141	prihppyer	.....Payer	.....Payer	.....Payer	.....Payer
147	Total expenses (Baht)	tiampyer				
	The interviewer makes the calculation (after finishing the interview)					

Case Section 10 Sources of income covering the cost of treatment classified according to the individuals

What are the sources of income that your family used to pay for treatment of the patient during the last 6 months?

Item	Question	Variables	1st person	2nd person	3rd person	4th person
148	Money saving of each patient (1) being used (2) not being used (3) no money saving in the house hold (8) unknown (9) no answer (0) no applicable	savpt				
149	If being used, estimate the amount of money used for the cost of treatment (Baht) (888888) unknown (999999) no answer (000000) not applicable	savut				
150	Selling the household asset in order for using the money to pay for treatment cost (1) sell (2) don't sell(3) there are no household asset (8) unknown (9) no answer (0) not applicable	sclass				
151	If selling the asset specified the amount received for paying treatment cost (answer more than 1 answer in Baht) (8) unknown (9) no answer (0) not applicable					
	land	slland				
	jewelry	sljew				
	car truck motorcycle or other vehicle	slvan				
	cow /buffalo/other animal	slanm				
	other specified	sloth				
152	Money loan to pay for the cost of treatment (1) making loan to pay for the cost of treatment (2) do not pay from the money loan (3) no loan(8) unknown (9) no answer (0) not applicable	bwrx				

Item	Question	Variables	1st person	2nd person	3rd person	4th person
153	If making loan, whom do you loan from bank (2) investor/loaner/acquaintance (3) cousins(4) cooperative/recycle funding (5) other specified	bwfmwho				
154	Getting money from relative and the other to the family for the treatment (1) being used (2) don't being used (3) nobody send the money (8) unknown (9) no answer (0) not applicable	tfmnrx				
155	If being used, who send the money?(answer more than 1) 1.husband/wife of household head 2. Child of household head 3.cousin of household head 4. Other relative of household head 5 other persons specified.....	whtfmn				
156	Besides the money from relative and the other do you used money from this sources for the treatment? (answer more than 1) (1) from the government (2) from health insurance company (3) from the welfare (4) from the elderly card (5) From the other specified... (8) unknown (9) no answer (0) not applicable					
	source 1	utmn1				
	source 2	utmn2				
	source 3	utmn3				
157	Does the patient buy or use the health care government card for treatment or not? (1) buying –use(2) buying –don't use (3) no health care card (4) non buying but right to use (5) non buying –don't use (8) unknown (9) no answer (0) not applicable	hltcard				
158	Does the patient use the social security card for treatment or not? (1)yes (2) no (3) doesn't have the social security card (8) unknown (9) no answer (0) not applicable	soccard				

Working and income before suffering from the target disease

Item	Question	Variables	1st person	2nd person	3rd person	4th person
159	Main occupation of household members before being sick (1) growing rice (2) growing plant (3) gardener (4) government official (5)employee (6) merchant (7) unemployed (8) other specified	maoccbf				
160	What are the main income of the patient before being sick record the type of work such as growing rice, growing vegetable ,barber, engineer, hire driver, etc.,	occptbf				
161	Nature of work yielding the main income (1) self business with employee (2) self business without employee (3) government official/government employee (4) clerks/private employee (5) household business without being paid (6)errands other specified=7 (8) unknown (9) no answer (0) not applicable =9 not applicable=0	stwkinv				
162	Income from the main/regular job about how many Baht per month(if growing rice, gardener, service job, estimate yearly income and divided by 12 month) if unknown record.....88888 no answer.....99999	mtinc				
163	Besides the major occupation do you also have extra job (1) yes(continue asking the question (2) no(8) unknown (9) no answer (record the nature of work such as growing rice, growing vegetable, barber, engineer ,taxi driver ,etc.	subwk chrawk				
164	Income obtained secondary job (estimate per month) If unknown record.....88888 no answer.....99999 not applicable...00000	subinc				
165	When learning about your sickness and know that it has to be treated , do you still continue working (1) primary job (2) secondary job (3) doing all job(8) unknown (9) no answer	afskwk				

Item	Question	Variables	1st person	2nd person	3rd person	4th person
166	If this continuing the job please specified why you have to discontinue (1) Not strong enough to continue working because being sick very often 2. The employer dismisses from the job because being discriminated by the co-worker 3. Lost of will power to work, stop doing every thing, feeling, hopeless 4. Other specified(8) unknown (9) no answer(0) not applicable	ntwkrea				
167	If continue working do you still work with the same job 1= same job 2= changing job 8= unknown (9= no answer(0= not applicable	wkodwk				
168	Reason for changing the job 1. Being discriminated by coworker 2.resign for rehabilitation at home, after getting better then t looking for a new job 3. The type of previous job is not suitable for the current health status 4. Others specified star8= unknown (9= no answer(0= not applicable	chwkrea				
169	After being sick are most of the patient 's job generating income for the household or not ? 1= generating income 2= not generating income8= unknown 9= no answer0= not applicable	afwkcash				
170	If the job is not generating the income what kind of job is it ? describe the nature of job that the patient do with out generating the income	charwkaf				

Case Section 11 Changes in time consumption of household members after someone becomes sick

After a household member becomes sick, it may affect other household members, making them change their time consumption compared with their previous activity before someone became sick. Make a cross in the space provided below.

Item	Question	Variable	(01) father	(02) mother	(03) husband	(04) wife	(05) son	(06) daughter	(07) a nephew	(08) a niece	(09) brother	(10) sister	(11) other relatives
171	Having to work harder in order to compensate for the income deficit	subwork											
172	Having to go outside to work instead of staying at home as before	lvjob											
173	Having to help the household business in order to compensate for the income deficit	hpachh											
174	Having to find a new job in order to earn more income	chjob											
175	Having to look for extra job in addition to the previous one	fdjbspe											
176	Having to resign in order to taking care of the house and children or patient in the household	lvjbcar											
177	Having to decrease the work load in order to look after the house	redwk											
178	Having to quit from school in order to look for a job	lvscwk											
179	Having to quit from school in order to take care of the house/ look after children and the patient	lvsccarc											
180	Other specified.....	oyhch											

Changing the time: (88) unknown (99) no answer (00) nothing has to be changed

Case Section 12 Changes in levels of household productivity

Please ask the question only of households having household business or activity (household industry) and agricultural activity; if not applicable skip to part 13.

Item	Question	Variable	Answer
181	Number of employee who were hired to assist in activity or business	noemp	.....person
182	How long has your household been involved in this activity? (1) before the patient was sick (2) at the time when the patient was sick (3) other specified	stact	
183	If having done it before or at the time being sick (code 1 or2) how much the patient has actually contributed to the household productivity (1) being involved before being and stop after being sick (2) being involve being sick , after being sick still work a little bit but less than before(3) not being before being sick , give some help after being sick because the patient have to stay at home (4) no participation, skip to next part Other specified	bfptact	
184	If the patient has been involved in household productivity and business, has it has any effect on the household activity after being sick? 1. having a very strong impact . 2. Having some impact but not much 3. No impact 4. Other specified 8. Unknown9. No answer 0 not applicable	afskimp	
185	Does the decline in productivity affect the household income? 1. markedly decrease 2. Decrease slightly but not much 3. No decrease 4. Other specified 8.Unknown9. No answer 0 not applicable	decpro	
186	If the household income was decreased, please specified by how much. The interviewer should estimate the percentage reduction in household income .Unknown....88 No answer....99 not applicable.....00	deinchh	
187	Explain why the household productivity doesn't decrease 1. Hiring someone to work for 2. All household member has to work harder 3. Have the household members quit school and work 4. Have other household members who usually do not work give some help 5. Other specified... 8. Unknown 9. No answer 0. Not applicable	prontrea	

Case Section 13 The household money transfer

Money transfer after being sick

Item	Question	Variable	Answer
188	Does this household receive the money transfer from previous member or relative who live in other places in order to pay for the cost of treatment? (1) Yes (2) no (8). Unknown (9). No answer (0). Not applicable	tfmnrel	
189	How often does your family receive money transfer from outside per year? 77= less than month a year 88=Unknown 99=. No answer 00=. Not applicable	tfmntim	
190	The total amount of money transfer that you have received per year 88888 =Unknown99999=. No answer 00000=. Not applicable	tfmnam	
191	Who transfer the money to this family (specified 3 first ranking) according to the amount of money received from last to small? 1. spouse 2. Parent 3.son 4. Daughter 5.grandchildren 6. Sibling 7. Other relative 8.. other specified		
	1st rank	whst1	
	2nd rank	whst2	
	3rd rank	whst3	
192	How have most of the money transfer being spend? (select 3 answer by ranking from1 2 3) 1. general household expenses 2. building house 3. paying debt 4.cost of treatment 5. sending children to school 6. buying land 7. business investment (specified type of business) 8. other specified...9. no answer 0. not applicable	tfmnut	

Transfer money in

Item	Question	Variable	Answer
193	Before being sick how would you compare the amount of money being transferred previously comparing at present (select more than 1 answer) 1. More than now 2.same as now (skip to Q 212) 3.less than now 4. No money received 8. unknown 9. No answer 0. Not applicable		
	1st rank	bftfnw1	
	2nd rank	bftfnw2	
	3rd rank	bftfnw3	
194	If less than now please explain the reason why 1. the patient used to send the money before being sick , therefore this kind of money no longer exists 2. Those who used to send the money come back home without working in other places 3. The person who used to send the money could no longer to afford to do so any more because he or she has to take care of family and have more financial burden 4. Other specified... 8. unknown 9. No answer 0. Not applicable	lesrea	

Changes in household money transfer... please provided information on money transfers into the household and transfers out at the time before being sick compared with now.

Money transfer outward before being sick

Item	Question	Variable	Answer
195	Does this household have to send the money to other person living outside this household? 1. yes 2. No 8.=unknown 9=no answer	hhtfot	
196	If yes please specified how many time per year 77. less than once a year 88 = unknown 99 =no answer 00= not applicable	hhtftm	
197	The amount of money you have to transfer outward. 88888 =Unknown99999=. No answer 00000=. Not applicable	hhtfam	
198	To whom the money have been sent to (specified 3 first ranking) according to the amount of money received from last to small 1. spouse 2. Parent 3.son 4. Daughter 5.grandchildren 6. Sibling 7. Other relative 8.. other specified		
	1st rank	hhtfwh1	
	2nd rank	hhtfwh2	
	3rd rank	hhtfwh3	
199	How have most of the money send being spend (select 3 answer by ranking from1 2 3) 1. general household expenses 2. building house 3. paying debt 4. cost of treatment 5. sending children to school 6. buying land 7. business investment (specified type of business) 8. other specified... 9. no answer 0. not applicable		
	1st rank	hhtfut1	
	2nd rank	hhtfut2	
	3rd rank	hhtfut3	
200	Before being sick how would you compare the amount of money being transferred previously comparing at present (select more than 1 answer) 1. more than now 2.same as now (skip to Q 212) 3.less than now 4. No money received 8. unknown 9. No answer 0. Not applicable	bfsfot	
201	If less than now please explain the reason why 1. the patient used to send the money before being sick , therefore this kind of money no longer exists 2. Those who used to send the money come back home without working in other places 3. The person who used to send the money could no longer to afford to do so any more because he or she has to take care of family and have more financial burden 4. Other specified... 8. unknown 9. No answer 0. Not applicable	bfsfles	

Case Section 14 Expenses for household consumption

Please provide information on household expenses according to the following categories

Item	List of expenses	Variable	Answers
202	.cost of food and drink regularly consumed in the household		
		fddrkd (num)	average Baht per day
		fddrkm (num)	Average Baht per month
203	clothing expenses	clothsyr (num)	average Baht per year
204	entertainment (play music, movie,)	movyr (num)	average Baht per year
205	education for children, brother . sister, grandchildren, Cousin.	eduyr (num)	average Baht per year
206	cost of treatment and medication	rxmth (num)	average Baht per month
207	cost of cigarette, alcoholic drink	cigamth (num)	average Baht per month
208	donation charity	donatyr (num)	average Baht per year
209	travel expenses	tvmth (num)	average Baht per month
210	other specified...	oth (text)	
211	total household expenses	tlexp (num)	

Changing in household expenses

Having a household member who used to work and earn some income become sick would have some impact on the household consumption. Please provide information on changes in household consumption according to the following categories, comparing the past (before sickness) to the present, by marking (*) in the appropriate space provided

Item	Changed in household expenses on	variable	Least affected (1)	Slightly affected (2)	Moderately affected (3)	Much affected (4)	Very much affected (5)	No answer unknown (6)
212	cost of food and drink	fddrkex						
213	clothing expenses	clothex						
214	entertainment play, music, movie	movex						
215	education for children grandchildren	educx						
216	cost of treatment	rxex						
217	cost of cigarette, alcoholic drink	cigacx						
218	donation charity	donatex						
219	travel expenses	tvex						

Case Section 15 Household debt

Item	Question	Variable	Answer
220	Does this household have debt at present? 1. yes 2. No 8.=unknown 9=no answer	hhdebt	
221	If being have, how much does the total of debt? 888888 unknown 999999 no answer 000000 not applicable	tldebt	
222	This debt borrows from whom? Specified the first 3 ranking of the amount of loan money following by the large to small number 1.relatives 2.neighbor 3. Loaner 4.bank 5. Cooperative 6. Recycle funding 7. Other specified		
	1st rank	debtwh1	
	2nd rank	debtwh2	
	3rd rank	debtwh3	
223	Who is loaned the most money? Specified the first 3 ranking of the amount of loan money following by large to small number 1.relatives 2.neighbor 3. Loaner 4.bank 5. Cooperative 6. Recycle funding 7. Other specified		
	1st rank	mostdbt1	
	2nd rank	mostdbt2	
	3rd rank	mostdbt3	
224	What is the purpose to loan the money? (Selected 3 questions following by large to small number) 1.normally expenses 2.tuition fee for children 3.patient treatment 4. Buying working aid/business investment 5. fund to work in foreign country 6. Fund to work outside locality	debtut1 debtut2 debtut3	
	1st rank		
	2nd rank		
	3rd rank		
225	Does the household have saving money? 1. yes 2. No 8=unknown 9= no answer	hhsav	
226	What different between household debt at present and the past? 1. more debt now 2.less debt now 3.no debt now but used to have debt in the past 4.now have debt but in the past doesn't have 5. At this present and in the past has the same debt 6.other specified...8 unknown 9 no answer 0 not applicable	hhdbtbf	
227	If having more debt now, how much more? 888888 unknown 999999 no answer 000000 not applicable	dbtmore	
228	The main reason why now have more debt because 1. less income now because lack of income from the patient then household income is inadequate 2. household members is unemployed because of being taken offence then inadequate income 3. other specified 8 unknown 9 no answer 0 not applicable	reamore	

Item	Question	Variable	Answer
229	If having less debt now, how much for the less?(from the most debt) 888888 unknown 999999 no answer 000000 not applicable	dbtlesam	
230	The reason why the debt decrease 1. doesn't have to loan for treatment patient anymore 2.many household members work then have more income 3. other specified... 8 unknown 9 no answer 0 not applicable	dbtlerea	
231	If having no debt now but used to have it in the past (Baht) 8 unknown 9 no answer 0 not applicable	bfdbt	
232	The reason why having debt in the past because 8 unknown 9 no answer 0 not applicable		
	1st reason	bfdbtrea1	
	2nd reason	bfdbtrea2	
	3rd reasib	bfdbtrea3	
233	The reason why having debt now but in the past doesn't have (to specified more than 1) 1. treatment cost 2. Loaning to be expenses in the house because inadequate income 8 unknown 9 no answer		
	1st reason	afdbt1	
	2nd reason	afdbt2	
	3rd reasib	afdbt3	

Case Section 16 Social discrimination

Item	Question	Variable	Answer
234	Do you think the target disease patient in your household is the disease that takes offence from social? 1.yes 2.no 3.not sure 8 unknown 9 no answer 0 not applicable	socdis	
235	When do you know that the patient suffering from target disease? 1. since still have no symptom and go to check up in the hospital 2. Start to have symptom often 3.after getting sick and have symptom 4. After getting very sick 5.other specified...8 unknown 9 no answer 0 not applicable	regcopt	
236	Who is the person to tell other that the patient suffers from the chronic target disease? 1. the patient tell it 2. Doctor/nurse/public health official 3. Wife/husband of patient 4.other relatives 5.nobody tell but knowing 6. other specified...8 unknown/ not remember 9 no answer 0 not applicable	whotell	
237	Besides household members know that the patient suffer from target disease does the other person in your area know about it? 1. nobody know 2.most people know 3.only relative know 4.somebody know 5.other specified...8 can't tell/unknown9 no answer 0 not applicable	nebknow	
238	Do you think most people take offence from the target disease patient? 1. most taking offence 2. Most don't take offence 3.somebody take offence somebody don't take offence in the same amount of number 4. other specified...8 can't tell/unknown9 no answer 0 not applicable	nebdis	
239	Do you think people take offence other household members that have the patient? 1. Most taking offence 2. Most don't take offence 3.somebody take offence somebody don't take offence in the same amount of number 4. other specified...8 can't tell/unknown9 no answer 0 not applicable	nebdishh	

During the time that your household has the patient, does a neighbour or employer show any of the behaviour from the following with your household members or not? Please mark with a cross (x)

Item	Behaviorcharacteristic	variable	Show (1)	Don't show (2)	Other specified (3)	Unknown (8)	No answer (9)	Not applicable (10)
240	the patient is forced to quit their job	ptfrlvwk						
241	members in the patient's household are forced to quit their job	hhfrlvwk						
242.	nobody buy the goods (if having household business) :	nocust						
243	your employees quit their job	emplv						
244	a client used to order/ stop the order (if having)	custsp						
245	nobody associate with	nofrd						
246	neighbors give prohibit their children not to play with the children in the patient family	cdprhb						
247	forcing to moving out from the community	frlvcom						
248	the kid have to leave their school	cdfrlvsc						
249	other : specified.....	othsp						

Annex 5.4 Questionnaire for control households

Annex 5.4 Questionnaire for control households

The questionnaires for this study are for use in the household survey as part of research to provide information for policy on relief measures for the economic impact of chronic illness of family members on households in the north of Thailand. There are two types of questionnaires - one for interviewing case households and one for control households.

This questionnaire forms part of a survey from the research project entitled "The economic impact of HIV/AIDS morbidity in upper-north Thailand: Phayao case study", which reports on the socio-economic impact on households resulting from chronic HIV morbidity, and the policy and measures for government to help the households and community in this situation. This survey will provide information for determining the policy required to alleviate the economic and social impact at the household and community level. Especially in the rural areas, the research results depend on the answers to this questionnaire.

1.2 Questionnaire for control households

For control households, the questionnaire consists of eleven parts:

1. Household form
   - Introducing oneself to the household to be interviewed
   - Data recording
2. Immigration of household members classified according to the individual
3. Working status of household members classified according to the individual
4. Economic status of household members classified according to the individual
5. Personal health of household members
6. Utilization of various services by household members
7. Assets and housing of household
8. Data on child care and care of elderly persons in the household
   - Childcare
   - Care of elderly persons
9. Household money transfer
10. Expenses for household consumption
    - Household expenses
11. Debts of household

QUESTIONNAIRES ON THE ECONOMIC IMPACT OF HIV/AIDS MORBIDITY IN UPPER-NORTH THAILAND: PHAYAO CASE STUDY

QUESTIONNAIRE FOR CONTROL HOUSEHOLDS

Table of contents

QUESTIONNAIRES ON THE ECONOMIC IMPACT OF HIV/AIDS MORBIDITY IN UPPER-NORTH THAILAND: PHAYAO CASE STUDY

This questionnaire is used in the data recording for the research project entitled "The economic impact of HIV/AIDS morbidity in upper-north Thailand: Phayao case study", which is a Doctoral thesis from a lecturer in the public health faculty, Mahidol University, with the support and cooperation from the ministry of public health. The project reports on policy and measures for government to help the economic and social impact on households resulting from HIV/AIDS illness of family members.

This data recording will give the best results for determining government policy of alleviating the economic and social impact on households and community. Especially in the rural areas, the results from the research depend on the answers to this questionnaire. The researcher faculty would like your cooperation for giving your time to answer the questions completely and accurately. Your answers will not have any negative impact for you. The data recording will be kept strictly confidential, and no personal details will be disclosed.

Number of Questionnaires.....
Classified interview household is family (member age 15-49) which has had no patient from chronic illnesses or target disease and no death in last 2 years.
Address; House number..... Moo number.....Village number..... Street..... Soi.....
Tumbol.....Amper.....
Province.....
( ) municipal area ( ) sanitation area ( ) outside area
Name of household head.....
The total number of household members .....persons
Name of interviewer.....
Relation with the household head.....

The nature of this household
the household selected for interviewing (including reserves)
the household interview instead of the selected one due to
(2.1) the house can't be found
(2.2) housing without residence living in
(2.3) the house was demolished or burnt away
(2.4) having been visited for 3 times without meeting the interview responder
(2.5) didn't receive cooperation
(2.6) has already moved away
(2.7) other specified ....

Nameofinterviewer.....date.....Month.....1999
Timeofinterviewing.....date.....Month.....1999
Check the by .....date .....Month.....1999

Signature of recorder .....date.....month.....year.....

Measures to select household for survey participation by random method

Household Case	Household Control
Quantity of 300 household	Quantity of 300 household
The random selected come from medical record and OPD Card in community hospital and visiting an official in health station By using community map from health station and public health to find location of household or interview from the leader of community	The random selected come from household survey by considering the data from the location of household from district and community map from health station or public health to find location of household or interview from the leader of community
Economic and social status (income less than 3,000 Baht/month/household)	Economic and social status (income less than 3,000 Baht/month/household)
Leader of family or a representative is willing to joint in the project	Leader of family or representative is willing to joint in the project
Having family members at least 1 person which is sicken from the target disease and still in the level to show a symptom is male and female aged 15-49 year Family members have important symptom, for example: lose weight about 10% more than 1 month having diarrhea more than 1 month having fever more than 1 month having pneumonia 2 times or more in 6 months ago having an infectious disease.....	No patient from the target disease
Having patient which is the member of household and live in for 6 months (at least 1 person) and live in the house at least 1 year)	No patient from the target disease is the member of household that live in more than 6 months and live in the house at least 1 year
Never have the member of household (aged 15-49 years) died from the target disease at least 2 years	Never have the member of household(aged 15-49) died from the target disease
Never have the member of household (aged 15-49 years) sicken from chronic illnesses until cannot feed yourself normally and continue to include more than 6 months within 2 years	Never have the member of household(aged 15-49 years)sicken from chronic illnesses until cannot feed yourself normally and continue to include more than 6 months within 2 years
Never have the member of household(aged 15-49 years) died within 2 years	Never have the member of household (aged 15-49 years) died within 2 years

Control Section 1 The survey of household form

Presentation to interviewed households

Hello!, my name is .....I would like to know the information about the person that lives in this house. We are surveying several villages in Phayao province to study their characteristics and ability to adjust themselves. Then suggesting the ways in which government can help. I would like to talk with you as the leader of your family.

Data recording

Start data recording from this following;

1. Ask for household record from the person who gives the data.
2. Recording names from the arrangement in the household record especially the well-known person in the present and also stay permanent in the household.
3. Recording name of the person who belonging in the same family tree with the leader of family (son or nephew), especially the person who announce for moving out or do not usually stay in the family
4. Recording name the person who often live in household that does not have their name listed in the household record that following by large to small amount number of ages.
5. Recording names by using "the full name" and "the first alphabet of the last name" or record by using " nickname" if you have it.
6. Ask the person who has given the data to double-check the listed names from the record before starting to fill in others recorded.
7. If listed names have more than 10 names in each household, then ask the person who has given the data to consider the listed names again.
8. The household economic impact in the positive way is the person who supports the family. The household economic impact in the negative way is the person who is supported by the family.
9. Recordings of the data of those households suffering economic impact are made according to the same ranging order as being recorded for the first time without any authorization

The definition of permanent residents of each household

include those who...

1. live in this household regularly for more 2 days per week or more than 15 days per month during the pervious month.
2. Still live in the same household at present.
3. Plan to live in this household continuously.
4. Have at least 1 meal per day in this household or 30 meals per month during the previous month.

The definition of household

Each household consists of one or more individuals living in the same house or resides in the same housing boundary. These persons seek for and utilize their living needs together. They may either be relative or not related to each other.

Item	Named member of household**	Name of household member relation with household head (recorded in number)	Pattern of living in this household		Sex	Age	marital status
	-named listed in the household registry - Living permanently - name not be listed in household registry - belonging in the same family tree - living permanently	(1) Household head, (2) spouse of household, (3) children (4) grandchildren, (5) parent (6) brother and sister, (7) cousin (8) relatives (9) son-in-law and daughter-in-law (10) brother, brother in law and brother, sister in law (11) a father in law and mother in law (12) relative of spouse (13) other non-relative household (14) employee who live permanently in the household, (15)others.....	normally live in this household (Yes=1, No=2)	live in this household last night (Yes=1, N0=2)	Male =1, Female =2	record the age in full year, live in less than one year record 00, household head didn't know record 99	single =1, married =2, a widow=3, to divorce=4 separate=5, others =6
*(1) hmemno**	*(2)-*	*(3) relatehh*	*(4)regstay*	*lnstay*	*(5)sex*	*(6)age*	*(7)mstatus*
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							

*Variable name

** Name of those persons who have some economic impact on the small household and have to adjust themselves in either positive or negative manner. The reasons explaining low impact such as those who have already move out of the household but still have their name listed in household registry. The positive economic impact include being provider and bread winner of the household; the negative impact include those who has to seek support in the household.

Item	Named member of household	religion is respected in each "name"	studied or not (aged more than 6yrs)	The best education for those who stop studying	each "name" is studying or not	which level of those who is studying right now
		(1)Buddhism (2)Christianity (3) Islam (4) others... (8) do not know (9) Don' t know an answer	(1)studied (2)never studied	(1) primary school or lower (2) secondary school (3)Junior high school (4) high school (5) Vocational school (6) equivalent to university certificate (7) bachelor degree (8)upper than bachelor degree (9) Do not know (0) not applicable	(1) study (2) do not study, (8)do not know (9) do not answer	(1)primary school (2) secondary school (3) junior high school (4) high school (5)vocational school (6) equivalent to university certificate (7)bachelor degree (8) upper than bachelor degree (9) do not know (0) not applicable
(1)hmemno	*(2)*	*(8)religion*	*(9)study*	*(10)histudy*	*(11)stilstud*	*(12)studying*
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

Control Section 2 Immigration of household members classified according to individuals

Immigration means moving the household from one village or municipal area in the past to the present village or municipal area.
To change municipal area or village because of expansion or separation by those persons within the household, which is still in the same place, does not involve immigration.

Item	Named member of household	how many years of each member "name" lived in this village	recording the last province before move in	what type of community you live in before immigrant
		less than 1 year records 00 live in not more than 5 years ask the next question live in more than 5 years skip to part 3 do not know =88 do not answer=99 skip to part 3	if it is a foreign country, specifies the name do not know=88 do not answer=99 not applicable=00	(1)municipal area (2)sanitary area (3)outside sanitary area (4) foreign country (8)do not know (9)do not answer (0) not applicable
(1)hmemno	*(2)*	*(13)stayyear*	*(14)lasttown*	*(15)prevcom*
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

Item	Named member of household	The reason to move in because	how much income did you get before you come back	each "name" is studying or not	how many time you send your income back to your family last year
		(01)to find a job (02)on duty (03)to take care oneself because of illness (04) to follow the family (05)go back to permanent residence (06)come back to work at home (07)come back to take care parent (08) to visit temporary residence (09) other specified..... (88)do not know (99) do not answer (00)not applicable	(88888) do not know (99999) do not answer (00000) not applicable	(1) study (2) do not study, (8) do not know (9) do not answer	(77) Never send (88) Do not know (99) Do not answer (00) Not applicable
(1)hmemno	*(2)*	*(16) reamove*	*(17) wkincome*	*(18)stilstud*	*(19) notransf*
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

Control Section 3 Jobs of household members classified according to individuals

Please ask only of those aged between 15-49 who have stopped studying.

Item	Named member of household	each individual "name" normally has current job or not, using code (Current job or main job means type of the job that those uses most of time to do it or the occupation that give you the most income (in case of equivalent of hour)	in case of no current job, have each name ever worked before	in case of each name has no job within last 1 month, "names" find or apply the job or not , using code
		(1) have (skip to Q26) (2)do not have (continue to ask Q21-23) (8)do not know (9)do not answer (0) not applicable	(1)worked (2) never work (8)do not know (9)do not answer (0)not applicable	(1) find a job (2)do not find a job (8) do not know (9) do not answer (0) not applicable
(1)hmemno	*(2)*	*(20)mainjob*	*(21)everwork*	*(22)findwork*
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

Item	Named member of household	Ask only those who has no job that using code (2)in Q20 reasons of "names "do not find a job in the month of survey	How much monthly income did those who worked before using code (1) inQ21 but during this time have no job get recording the average money per month (daily income * an amount of days) thinking back to last month.	What does each "name" work, recording their responsibility, for example farmer, vegetable farmer, barber, engineer, public driver, sewer, corn grower, etc.
		(1)already apply for the job (2)no hope for any job (3)waiting for filling the job (4)wait for proper time (5) on house duty (6)studying (7) illness (8)receiving not enough application (9) taking care of the sick (10)other specified..... 88=do not know 99=do not answer 00=not applicable	(88888) do not know (99999) do not answer (00000)not applicable	(88) do not know (99) do not answer (00) not applicable
(1)hmemno	*(2)*	*(23)reanofin*	*(24)uwincome*	*(25)duty*
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

Item	Named member of household	What current occupation that each "names" work for is for example rice mill, textile factory, kitchen ware factory transportation company, barber, bicycle repairing, jewelry cutting, fried pig skin, mating	What position each" names" work for, using code	Does each name have second or other job or not	specified second job for each "name"
		(77)have never been involved (88)do not know (99)do not answer (00)not applicable	(1)personal of private company (2)public worker (3)employer (4)personal business (5)worker of state agency (7) self employ without assistants (6)helping household business without being paid (8) do not know (9)do not answer (0) not applicable	(1) have (2) doesn't have (8)do not know (9) do not answer (0)not applicable	(88)do not know (99)do not answer (00)not applicable
(1)hmemno	*(2)*	*(26)typeduty*	*(27)Occ*	*(28)suboce*	*(29)subocenm*
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

Control Section 4 Economic status of household members classified according to individuals

I would like to ask about the economic status and income received by these household members (ask only of those aged between 15-49)

Item	Named member of household	In the last 6 month, what is occupation of each "names"	In the last 6 month, what is the reward of each "names"	In the last 6 month, the amount of the money per month for each "names" is	Does each name have second or other job in the last 6 months
		(1)worker (ask the next question) (2)study (3)house duty (4) has no job (5)handicap (6)other specified..... (8)do not know (9)do not answer (0)not applicable answering on (2)-(6)ask Q33	(1) cash (2) thing (3) both (4)no payment	(88888) do not know (99999) do not answer (00000) not applicable	(1) have (2)doesn't have
(1)hmemno	*(2)*	*(30)6mocc*	*(31)6mpaytyp*	*(32)6mmoney*	*(33)6msubocc*
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

Item	Named member of household	Does each name who has second job in the last 6 month own the firm in (1)-(3)	In the last 6 months, what is the reward for those who has a second job	In the last 6 months, how much monthly payment does those who has a second job get	Does each name have savings deposit (bank saving/ a cooperation)	Only ask those who gives the main data "what is your position in your community"
		(1)cattle/fisheries (2) trader (3) an artisan (4) private worker (5) public worker (6)houschold business (no payment) (7)other specified.... (8)doesn't know (9)doesn't answer (0)not applicable	(1)cash (2)things (3)both of them (4) no payment	(88888) Doesn't know (99999) doesn't answer (00000) not applicable	(1) have (2)doesn't have (8)doesn't know (9) Doesn't answer (0) not applicable	(1) very good (2) good (3)average (4)poor (5) very poor (8) doesn't know (9)no answer
(1)hmemno	*(2)*	*(34)6msbocty*	*(35)6msbocpy*	*(36)6msbocmn*	*(37)saving*	*(38)famlev*
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

Item	Named member of household**	Record of other incomes earned by member who receive money from the following items based on the total amount received during the previous year					
		Retirement fund and bonuses receive in the previous year (Baht) e.g. in the case of war veterans	Money send from cousin who used to be household member during the past year	Funding received from the government or various agency during the last twelve months (Baht)e.g. funding for Aids patient ,crippled, elderly people, other supporting fund	Funding received from other person outside household per year e.g. (Donation for education of the kid)	Rental fee within the last 12 months (land rental fee, house rental fee, estimate the cost if being received as gift	Interest an divined received the last 12 months (interest from money saving or giving loan)Baht
		(888888) unknown (999999) no answer (000000)non	(888888) unknown (999999) no answer (000000)non	(888888) unknown (999999) no answer (000000)non	(888888) Unknown (999999) No answer (000000) Non	(888888) Unknown (999999) No answer (000000) Non	(888888) Unknown (999999) No answer (000000) Non
*(1) hmemno**	*(2)-*	*(39)pension*	*(40)mnrel*	*(41)mngov*	*(42)mnoth*	*(43)mnhire*	*(44)mnint*
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							

*Variable name

Control Section 5 personal health of household members

I would like to ask about the personal health of you and the members in this household, chronic illnesses and disabilities

Item	Question	Variables	Answer
45	Comparing to other person of the same aged, how would you rate your health in general? (1) excellent (2) very good (3) good (4) fair (5) very bad	hltyou	
46	Comparing to members of other household nearby of the same age, how would you rate personal health of your household members? (1) excellent (2) very good (3) good (4) fair (5) very bad	hltoth	
47	Do any of your household members suffer from any physical handicap (1) yes (2) no	handyn	
48	What kind of deformation do the y have? (Specified the parts of body that are crippled and the nature of information)	handtyp	
49	Does any of this deformation affect the following daily activities or not? (1)yes (2) no		
	Going to work	handwork	
	Going to school	handsch	
	Doing household work	handhw	
	Other activities such as hobby and travel	handoth	
50	How would you consider your life to be (1) very stressful (2) stressful (3) fairy stressful (4) no stress (5) having no stress at all	mental	

Control Section 6 utilization of various services of household members

I would like to ask for information on health services

Item	Question	Variables	Answer
51	Where do you and your household members go for check up and receive treatment most of the time? Please specified the first 3 rankings (00) go to government hospital (02) go to private hospital (03) go to private clinic (04) self medication (05) Traditional medicine or folklore treatment (06) taking herbs (07) go to healthcare office (08) receiving no treatment (88) unknown (99) no answer (00) not applicator (09) others, specified...	hltserv1 hltserv2 hltserv3	1st Rank..... 2nd Rank..... 3rd Rank.....
52	The expense of treatment when being sick, including all cost of each individual within the past 6 months (Baht) (88888) unknown (99999) no answer (00000) not applicator	6mhltpy	
53	Who support for the cost of treatment of this person? (00) paid by the family (02) receiving free treatment from social security (03) health card (04) social security (05) health insurance (06) support from cousin/refund from government and public agency (08) company welfare (09) making loan (10) other specified...(88)unknown (99) no answer (00) not applicable	hltpyer	..... others, specified .....
54	How long does it take for you and your household members to go for the treatment (your first choice in Q 51) each time (time in minute) minute (back and forward)	hlttm	
55	How do you and your household members go for treatment? (1) walking (2) bicycle (3) personal car (4) public transport (5) boat (6) hired driver (7) motorcycle (8) other specified	hlttv	
56	Is it easy t o go to that place? (1) very easy (2) easy (3) fairy difficult (4) difficult (5)very difficult (6) other specified	hlttveas	
57	Do you and your household members suffer from the following due to treatment? (1)yes (2) no (1) cost of medication y	difdrug	
	(2) travel expenses	diftv	
	(3) cost of hospitalsta	difhltmn	
	(4) accommodation expenses	diftlvmn	

Item	Question	Variables	Answer
58	Where do the expenses come from? (1) personal and family saving (2) social security (3) selling good (4) loan (5) from cousin who are not household members (6) from other persons (7) insurance e.g. life insurance (8) other specified	pyfrom1 pyfrom2 pyfrom3	1st Rank..... 2nd Rank..... 3rd Rank.....
59	In general, who make the decision in choosing health services for you and your household members? (1) oneself (2) husband/spouse (3) wife /spouse (4)cousin (5) other persons (6) other specified	hltdecid	..... others, specified .....
60	How do you and your household member satisfied with the health services received (1) very goof (2) good (3) fairy good (4) not satisfied (5)very disappointed	hltappre	
61	Ask only those who are interviewed regarding adequacy of income, how do you rate the income of your household (1) enough with some being saved (2) enough but non being saved (3) not enough but without debts (4) inadequate with debt	yourinc	

I would like to ask questions on non-health services

Item	Question	Variables	Answer
62	In your community do you have the following services? if yes, If it difficult to get access to this services (1) no (2) yes, easy to access (3) yes, difficult to access		
	(1)primary school	primsch	
	(2)secondary school	secsch	
	(3) health care center	hltcent	
	(4) government hospital	govhosp	
	(5) temple /church	wat	
	(6) police station	polstn	
	(7) village library	newssite	
	(8) play ground community exercise facility	playgrnd	
	(9) market	market	

Item	Question	Variables	Answer	Variables	Answer
63	In your community, do you have the following social services or not? Do you or your household members go for services or not?		(1) have (2)doesn't have		(1) use (2) doesn't use
	Social welfare services	welfav		welfut	
	Lunch support for school children	lunchav		lunchut	
	Club for elderly person	oldcbav		oldcbut	
	Project for community agricultural development	agrav		agrut	
	Project for orphans or community child care	orpav		orput	
	Group of housewife and community development	devav		devut	
	Project for giving consultation on extra earning activity for community housewife	suboccav		suboccut	
	Project for donation or food loan, working material, money e.g. village funding, district aid funding,	donfdav		donfdut	
	Project for community of patient	ptcomav		ptcomut	
	Project for finding job in the community	occcomav		occcomut	
	Community participation and community acceptance in target decision	discomav		discomut	
	Consultation services	concolav		concolut	
	Complementary health care services	alhltav		alhltut	
	Project on education an community nutrition	eduav		eduut	
	Project on training of nursing aid of patient in the family and community	ptcarav		ptcarut	
	Vocational training and support for income of household and community	occtrnav		occtrnut	
	Treatment and group consultation	groupav		grouput	
	Meditation	meditav		meditut	
	Group support for patient suffering from target disease and self health group	helpptav		helpptut	
	Other specified	othserav		othserut	

Item	Question	Variables	Answer
64	Recall back to the previous month have their been any places for you and your household members often (1) Yes (2) No		
	friend house	gofri	
	cousin house	gorel	
	school	gosch	
	church/temple	gowat	
	market/ shop	gomark	
	family plan clinic	gofp	
	working places	gowrksit	
	house club in community	gohw	
	doesn't go to anywhere	gonone	
65	In your community, if you and your household members suffer from illness, you can ask for the help depend on the need from your community. (1)yes (2) no	comhask	
66	In your community, if you and your household members suffer from illness, you are always getting help depend on the need from your community (1)yes (2) no	comhrecv	
67	In your community, if you and your household members need the money, you would loan money from people in your community.(have to pay money and don't have to pay money) (1)yes (2) no	commask	
68	In your community, if you and your household members suffer from illness, you are always getting help to deliver patient to the hospital from your community. (1)yes (2) no	comhspgo	

Control Section 7 assets and household residence

I would like to ask for information about the owner of cattle and various utensils in this household - include model of the house

Item	List of things	Variable	Does this household members own the following thing or not	Variable	A number or a quantity of This things	Variable	How much for the cost in the listed thing (Baht) if you would like to sell now	Variable
69	building		(1)yes (2)no	hmyn		hmam		hmvl
70	land (a residence)		(1)yes (2)no	lnyn	(area)	lnam		lnvl
71	agricultural area		(1)yes (2)no	agyn	(area)	agam		agvl
72	various vegetable (vegetable listed)		Does this household members own the following thing or not?		a number/a quantity of each category of vegetable		unit value of each category of vegetable	
	1	pl1nm	(1)yes (2)no	pl1yn		pl1am		pl1vl
	2	pl2nm	(1)yes (2)no	pl2yn		pl2am		pl2vl
	3	pl3nm	(1)yes (2)no	pl3yn		pl3am		pl3vl
	4	pl4nm	(1)yes (2)no	pl4yn		pl4am		pl4vl
	5	pl5nm	(1)yes (2)no	pl5yn		pl5am		pl5vl
73	various cattle(animal listed)		Does this household members own the following thing?		number of each category of animal		unit value of each category of animal	
	1	an1nm	(1)yes (2)no	an1yn		an1am		an1vl
	2	an2nm	(1)yes (2)no	an2yn		an2am		an2vl
	3	an3nm	(1)yes (2)no	an3yn		an3am		an3vl
	4	an4nm	(1)yes (2)no	an4yn		an4am		an4vl
	5	an5nm	(1)yes (2)no	an5yn		an5am		an5vl

Item	List of things	Variable	Does this household members own the following thing or not	Variable	A number or a quantity of This things	Variable	How much for the cost in the listed thing (Baht) if you would like to sell now	Variable
74	Animal product (dairy product)		Does this household members own the following thing or not?		a number/a quantity of each category of animal		unit value of each category of animal	
	1	pr1nm	(1)yes (2)no	pr1yn		pr1am		pr1vl
	2	pr2nm	(1)yes (2)no	pr2yn		pr2am		pr2vl
	3	pr3nm	(1)yes (2)no	pr3yn		pr3am		pr3vl
	4	pr4nm	(1)yes (2)no	pr4yn		pr4am		pr4vl
	5	pr5nm	(1)yes (2)no	pr5yn		pr5am		pr5vl
75	Instrument for farming /fishing classified according to type		Does this household members own the following thing?		number of each category of animal		unit value of each category of instrument	
	1	in1nm	(1)yes (2)no	in1yn		in1am		in1vl
	2	in2nm	(1)yes (2)no	in2yn		in2am		in2vl
	3	in3nm	(1)yes (2)no	in3yn		in3am		in3vl
	4	in4nm	(1)yes (2)no	in4yn		in4am		in4vl
	5	in5nm	(1)yes (2)no	in5yn		in5am		in5vl
76	Others, specified		Does this household members own the following thing or not?		a number/a quantity of each category of others		unit value of each category of others	
	1	ot1nm	(1)yes (2)no	ot1yn		ot1am		ot1vl
	2	ot2nm	(1)yes (2)no	ot2yn		ot2am		ot2vl
	3	ot3nm	(1)yes (2)no	ot3yn		ot3am		ot3vl
	4	ot4nm	(1)yes (2)no	ot4yn		ot4am		ot4vl
	5	ot5nm	(1)yes (2)no	ot5yn		ot5am		ot5vl

I would like to know about the housing size, material, electricity, drinking water, water utility, and toilet, including both building or single room in which the members of this household stay.

Item	Question	Variables	Answer
77	What is the type of your residence? (1) single house (2) townhouse (3) expanding family housings (4) hut and other small housing (5) other specified	hmty	
78	How many rooms are there in your house? (Including toilet, bedroom, kitchen, living room, etc.) if not being counting answer 00	room	
79	How long have your family live in this house?(answer by total number of year, if less than 1 year the data will not be counted in this study)	lgstay	
80	What kind of material were your houses made from? Can be answer more than one (1) earth (2) parquet (3)limestone(4)cement(5)wood(6)bamboo(7)tile(8) other specified	floor	
81	What was the outside wall of the house made from? (1) cement (2) brick (3) wood (4)bamboo (5) other specified	outwall	
82	What sources of water that this household use for washing cloth /cleaning dishes (if answer more than one please skip to Q87) (1)tap water (2) wells (3) underground water (4) rain (5) river (5) lake (6) water trailers (7)other specified	watersc	
83	How long does it take you to bring the water from that source (please specified the unit of time involved)	watertm	____h____m
84	Does your family drink the water from that source? (1) yes (2) no if yes skip to Q86	drink	
85	What is the source of your drinking water? can be answer more than one (1) tap water (2) wells (3) underground water (4)rain (5) river (6)lake (7) water trailers (8) drinking water from the bottle (commercially available) (9) other specified	drinksc	
86	How long does it take you to bring the drinking water from that source (please specified the unit of time involved)?	drinktm	____h____m
87	What time of lavatory of your household use? (1) american standard type (2) conventional lavatory (3) hold digging (4) not available (5) other specified...	toilet	
88	Does your house have electricity in this room? (1) all room (2) some room (3) no electricity	electric	

Item	Question	Variables	Answer
89	Does your household member own the following thing? (1) yes (2) no		
	radio	radio	
	television	tv	
	VDO	video	
	refrigerator	refrig	
	bicycle	bicy	
	motorcycle	motcy	
	car	car	
	gasoline stove	gas	
	washing machine	wash	
	sewing machine	sew	
90	Does this house belong to your family ? (1) owner (2) joint-owner (3) renting (4) under leasing (5) other specified if renting skip to Q95	hmown	
91	How did your family acquired this house? (1) will (2) building by oneself (3) building house partially (4) buying (5) other specified	hmsc	
92	Do you pay monthly in the installment for this house? (1) yes (2) no	hmrent	
93	How much did you pay for each monthly in installment? total .....Baht per month	MonthPay	
94	How much does did house cost?, how much do you want to sell at present ? Total...Baht	MmVl2	
95	If it is the rental house how much do you pay per month or per year? (select one answer)	HmRentPy	.....Baht per month .....Baht per year (in case of yearly payment

Control Section 8 Data on childcare and care of elderly persons in the household

Care of children

Item	Question	Variables	1st person	2nd person	3rd person	4th person
96	Status of household head (1) single (skip toQ107) (2) married (3) separated (4) widow (8) unknown (9) no answer (0) not applicable	hmar				
97	Does household head have any children? (1) yes (2) no (8)unknown (9) no answer (0) not applicable	kidyn				
98	If there are some children, how many off spring, does the patient have? Please answer in number of person. (88)unknown (99) no answer (00) not applicable The number of spring of household head within this age groups	kidam				
	0-5 yrs	kid05				
	6-11 yrs	kid611				
	12-15yrs	kid1215				
	>15yrs	kid15yr				
99	Who took care of the children? (1) living parent (2) grandparent (3) other cousin (4) older siblings (5) child care center (6) neighbor /benefactor (7) old enough to take care of themselves (8) living with the priest (9) other specified	kidcare				

Care of elderly person

Item	Question	Variables	1st person	2nd person	3rd person	4th person
100	Does the household head has the burden to take care of elderly person in the house? (1) yes (2) no (skip to part9) (8) unknown (9) no answer (0) not applicable	OdCarYN				
101	If yes how many? (88) unknown (99) no answer (00) not applicable	OdCarAm				
102	Who are the elderly person to be taken care of (answer more than 1question)?. parent (2) grand parent (3) other specified (4) uncle and aunt (8) unknown (9) no answer (0) not applicable How many elderly person with the age of?	OdWho				
	50-60yrs	Od5060				
	61-70yrs	Od6170				
	>70yrs	Od70Up				
103	Who took care of the elderly person? (1) self care (2) spouse (3) cousin (4) living with the priest (5) neighbor (6) son/daughter (7) other specified (8) unknown (9) no answer (0) not applicable	OdCar				

Control Section 9 Household money transfer

Money transfer after being sick

Item	Question	Variable	Answer
104	Does this household receive the money transfer from previous member or relative who live in other places in order to pay for the cost of treatment? (1) Yes (2) no (8). Unknown (9). No answer (0). Not applicable	tfmnrel	
105	How often does your family receive money transfer from outside per year? 77= less than month a year 88=Unknown 99=. No answer 00=. Not applicable	tfmntm	
106	The total amount of money transfer that you have received per year 88888 =Unknown99999=. No answer 00000=. Not applicable	tfmnam	
107	Who transfer the money to this family (specified 3 first ranking) according to the amount of money received from last to small? 1. spouse 2. Parent 3.son 4. Daughter 5.grandchildren 6. Sibling 7. Other relative 8.. other specified		
	1st rank	whst1	
	2nd rank	whst2	
	3rd rank	whst3	
108	How have most of the money transfer being spend? (select 3 answer by ranking from1 2 3) 1. general household expenses 2. building house 3. paying debt 4.cost of treatment 5. sending children to school 6. buying land 7. business investment (specified type of business) 8. other specified...9. no answer 0. not applicable	tfmnut	
109	How many people transfer the money? .....people		
110	Where the money transfers come from, please specified? ..... name of province		
111	Please specified the occupation of the person who transfer money (specified every person) 1.....2.....3.....4.....5.....		

Transfer money out

Item	Question	Variable	Answer
112	Does this household have to send the money to other person living outside this household? 1. yes 2. No 8.=unknown 9=no answer	hhtfot	
113	If yes please specified how many time per year 77. less than once a year 88 = unknown 99 =no answer 00= not applicable	hhtftm	
114	The amount of money you have to transfer outward. 88888 =Unknown99999=. No answer 00000=. Not applicable	hhtfam	
115	To whom the money have been sent to (specified 3 first ranking) according to the amount of money received from last to small 1. spouse 2. Parent 3.son 4. Daughter 5.grandchildren 6. Sibling 7. Other relative 8.. other specified		
	1st rank	hhtfwh1	
	2nd rank	hhtfwh2	
	3rd rank	hhtfwh3	
116	How have most of the money send being spend (select 3 answer by ranking from1 2 3) 1. general household expenses 2. building house 3. paying debt 4. cost of treatment 5. sending children to school 6. buying land 7. business investment (specified type of business) 8. other specified... 9. no answer 0. not applicable		
	1st rank	hhtfut1	
	2nd rank	hhtfut2	
	3rd rank	hhtfut3	
117	How many people transfer the money outward?.....people		

Control Section 10 Expenses for household consumption

Please provide information on household expenses according to the following categories

Item	List of expenses	Variable	Answers
118	.cost of food and drink regularly consumed in the household		
		fddrkd (num)	average Baht per day
		fddrkm (num)	Average Baht per month
119	clothing expenses	clothsyr (num)	average Baht per year
120	entertainment (play music, movie,)	movyr (num)	average Baht per year
121	education for children, brother . sister, grandchildren, Cousin.	eduyr (num)	average Baht per year
122	cost of treatment and medication	rxmth (num)	average Baht per month
123	cost of cigarette, alcoholic drink	cigamth (num)	average Baht per month
124	donation charity	donatyr (num)	average Baht per year
125	travel expenses	tvmth (num)	average Baht per month
126	other specified...	oth (text)	
127	total household expenses	tlexp (num)	

Changes in household expenses

Having a household member who used to work and earn some income become sick would have some impact on the household consumption. Please provide information on changes in household consumption according to the following categories, comparing the past (before sickness) to the present, by marking (*) in the appropriate space provided.

Item	Changed in household expenses on	variable	Least affected (1)	Slightly affected (2)	Moderately affected (3)	Much affected (4)	Very much affected (5)	No answer unknown (6)
128	cost of food and drink	fddrkex						
129	clothing expenses	clothex						
130	entertainment play, music, movie	movex						
131	education for children grandchildren	eduex						
132	cost of treatment	rxex						
133	cost of cigarette, alcoholic drink	cigaex						
134	donation charity	donatex						
135	travel expenses	tvex						

If unknown, record "8" according to the number of space provided in each question; if no answer, record "9"; if no expenses, record "0".

Control Section 11 Household debt

Item	Question	Variable	Answer
136	Does this household have debt at present? 1. yes 2. No 8.=unknown 9=no answer	hhdebt	
137	If being have, how much does the total of debt? 888888 unknown 999999 no answer 000000 not applicable	tldebt	
138	This debt borrows from whom? Specified the first 3 ranking of the amount of loan money following by the large to small number 1.relatives 2.neighbor 3. Loaner 4.bank 5. Cooperative 6. Recycle funding 7. Other specified		
	1st rank	debtwh1	
	2nd rank	debtwh2	
	3rd rank	debtwh3	
139	Who is loaned the most money? Specified the first 3 ranking of the amount of loan money following by large to small number 1.relatives 2.neighbor 3. Loaner 4.bank 5. Cooperative 6. Recycle funding 7. Other specified		
	1st rank	mostdbt1	
	2nd rank	mostdbt2	
	3rd rank	mostdbt3	
140	What is the purpose to loan the money? (Selected 3 questions following by large to small number) 1.normally expenses 2.tuition fee for children 3.patient treatment 4. Buying working aid/business investment 5. fund to work in foreign country 6. Fund to work outside locality	debtut1 debtut2 debtut3	
	1st rank		
	2nd rank		
	3rd rank		
141	Does the household have saving money? 1. yes 2. No 8=unknown 9= no answer	hhsav	
142	What different between household debt at present and the past? 1. more debt now 2.less debt now 3.no debt now but used to have debt in the past 4.now have debt but in the past doesn't have 5. At this present and in the past has the same debt 6.other specified...8 unknown 9 no answer 0 not applicable	hhdbtbf	
143	If having more debt now, how much more? 888888 unknown 999999 no answer 000000 not applicable	dbtmore	
144	The main reason why now have more debt because 1. less income now because lack of income from the patient then household income is inadequate 2. household members is unemployed because of being taken offence then inadequate income 3. other specified 8 unknown 9 no answer 0 not applicable	reamore	

Item	Question	Variable	Answer
145	If having less debt now, how much for the less?(from the most debt) 888888 unknown 999999 no answer 000000 not applicable	dbtlesam	
146	The reason why the debt decrease 1. doesn't have to loan for treatment patient anymore 2.many household members work then have more income 3. other specified... 8 unknown 9 no answer 0 not applicable	dbtlerea	
147	If having no debt now but used to have it in the past (Baht) 8 unknown 9 no answer 0 not applicable	bfdbt	
148	The reason why having debt in the past because 8 unknown 9 no answer 0 not applicable		
	1st reason	bfdbtrea1	
	2nd reason	bfdbtrea2	
	3rd reasib	bfdbtrea3	
149	The reason why having debt now but in the past doesn't have (to specified more than 1) 1. treatment cost 2. Loaning to be expenses in the house because inadequate income 8 unknown 9 no answer		
	1st reason	afdbt1	
	2nd reason	afdbt2	
	3rd reasib	afdbt3	

ANNEX FOR CHAPTER 7
ASSESSMENT OF COMPARABILITY OF SUB-SAMPLES WITHIN AND BETWEEN ACTIVE AND LESS ACTIVE DISTRICTS

Respondents

Table 1 Respondents in case and control households in both districts

Characteristics of respondents	Active (n=150)	Less active (n=150)	Chi square	p-value
Case household			0.127	0.722
-Household head	59 (39.3%)	56 (37.3%)		
-Key person/ caregiver	91 (60.7%)	94 (62.7%)		
Control household			0.232	0.630
-Household head	52 (34.7%)	56 (37.3%)		
-Key person/ caregiver	98 (65.3%)	94 (62.7%)		
	Case (n=150)	**Control (n=150)**	**Chi square**	**p-value**
Active district			0.701	0.403
-Household head	59 (39.3%)	52 (34.7%)		
-Key person/ caregiver	91 (60.7%)	98 (65.3%)		
Less active district			0.000	1.000
-Household head	56 (37.33%)	56 (37.3%)		
-Key person/ caregiver	94 (62.67%)	94 (62.7%)		

BASIC DATA OF HOUSEHOLD MEMBER ON SEX AND AGE DISTRIBUTION

Table 2 Percent distribution of household member by age and sex in both districts

Age	Active district				Less active district			
	Case		Control		Case		Control	
	Male	Female	Male	Female	Male	Female	Male	Female
Less than five years	7.6	10.5	8.8	8.3	10.5	7.3	5.9	11.1
Child (5-14y)	12.8	14.0	15.5	12.9	11.6	10.4	17.3	16.5
Adult (15-59y)	62.5	58.3	61.8	67.4	65.6	66.4	70.1	64.2
60y or over	17.1	17.2	13.9	11.3	12.3	15.9	6.7	8.2
All age	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
p-value	=0.553		=0.523		=0.366		=0.148	
Number of sample population	304	314	296	301	276	289	254	279

Comparability in district level

Composition of control households in both districts

Table 3 Household member characteristics of control household in active and less active districts

Characteristics	Active (n=597)	Less active (n=533)	Combined/ Different (active-less)	t-test/ p-value
Household size Mean	4.398	3.908	4.164/0.485	6.328/ 0.000***
Age of household member Mean	32.9	30.9	31.96/2.06	1.772/0.076
	n(%)	**n(%)**	**Chi-square**	**p-value**
Member regular stay	583(98%)	519(97%)	0.0924	0.761
Member slept last night	565(95%)	517(97%)	3.8503	0.050*
Sex - male	296(50%)	254(48%)	0.0138	0.907
- female	301(50%)	279(52%)		
Marital status of household member - single	246(41%)	202(38%)	11.278	0.046*
- married	295(49%)	281(53%)		
- widow	44(7%)	34(6%)		
Educated member	491(82%)	467(88%)	6.2990	0.012*
Child in school	144(24%)	143(27%)	1.0904	0.029*

Statistically significant at *5%,**1%,***0.1%

Composition of case households in both districts

Table 4 Household member characteristics of case household in active and less active districts

Characteristics	Active (n=618)	Less active (n=565)	Combined/ Different (active-less)	t-test/ p-value
Household size Mean	4.647	4.162	4.415/0.484	5.919/0.000***
Age of household member Mean	34.6	33.7	34.2/0.887	0.7373/0.461
	n(%)	**n(%)**	**Chi-square**	**p-value**
Member regular stay	559(97%)	542(94%)	0.8557	0.355
Member slept last night	574(93%)	518(92%)	0.5974	0.440
Sex - male	304(49%)	276(49%)	0.0138	0.907
- female	314(51%)	289(51%)		
Marital status - single	242(39%)	206(36%)	4.7404	0.578
- married	238(39%)	215(38%)		
- widow	113(18%)	109(19%)		
Educated member	457(74%)	456(81%)	7.6568	0.006**
Child in school	115(19%)	83(15%)	3.2515	0.071

Statistically significant at *5%,**1%,***0.1%

Characteristic of hiv symptomatic chronically ill

Table 5 Characteristics of chronically ill household members by districts

Characteristics	Active district n (%)	Less active district n (%)	p-Value
Number of CIA living in the household			0.69
-1 CIA	150 (92)	150 (93)	
-2 CIAs	13 (8)	11 (7)	
Sex			0.145
-Male	50.3	42.2	
-Female	49.7	57.8	
Marital Status			0.968
-Single	16.6	15.5	
-Married	36.8	37.3	
-Widow/separated	46.6	47.2	
No of household member			0.043*
1-3 persons (%)	37.4	42.9	
4-5 persons (%)	43.6	47.8	
> 6 persons (%)	19.0	9.3	
Had children to take care of			0.05*
-Yes	80.1	69.8	
-No	19.9	30.2	
Had elderly to take care of			0.05*
-Yes	80.1	69.8	
-No	19.9	30.2	

Statistically significant at *5%,**1%,***0.1%

ANNEX FOR CHAPTER 9
THE IMPACT OF CHRONIC HIV/AIDS MORBIDITY HOUSEHOLD INCOME AND ASSETS

Impact of AIDS on smallholder agricultural households

Table 1 Questions on ownership of household assets

Topic	Information collected	Note
The owner of house (building) and land in this household include model of the house		
• building (house) • land (a residence) • agricultural area	Does any of your household member own the following things or not... 1) building (house) 2) land (a residence), the house is on 3) agricultural area	Respondent reported Yes/No Yes/No Yes/No
	A number or a quantity of these things 1) building (house) 2) land (a residence) 3) agricultural area	Respondent reported Number/quantity Number/quantity Number/quantity
	How much for the unit cost in the listed things (THB) if you would like to sell now 1) building (house) 2) land (a residence) 3) agricultural area	Respondent reported Thai Baht (THB) Thai Baht (THB) Thai Baht (THB)
The owner of cattle and various utensils in this household include model of the house		
• various vegetables • various cattles • Animal product • Instrument for farming /fishing classified according to type • others (specified)	Does any of your household member own the following things or not... 1) vegetable listed 2) animal listed 3) dairy product listed 4) Instrument for farming /fishing classified according to type 5) others (specified)	Respondent reported Yes/No Yes/No Yes/No Yes/No Yes/No
	A number or a quantity of these things 1) vegetable listed 2) animal listed 3) dairy product listed 4) Instrument for farming /fishing classified according to type 5) other (specify)	Respondent reported Number/quantity Number/quantity Number/quantity Number/quantity Number/quantity
	How much for the unit cost in the listed things (THB) if you would like to sell now 1) vegetable listed 2) animal listed 3) dairy product listed 4) Instrument for farming /fishing classified according to type 5) other (specify)	Respondent reported Thai Baht (THB) Thai Baht (THB) Thai Baht (THB) Thai Baht (THB) Thai Baht (THB)
Does your household member own the following things? (Yes/No)	Radio, television, VDO, refrigerator, bicycle, motorcycle, car, gasoline stove, washing machine, sewing machine	Interviewer's observation
Respondent's ownership of the household	Does this house belong to your family? (1) owner (2) joint-owner (3) renting (4) under leasing (5) other specified	Respondent reported
	How did your family acquire this house? (1) will (2) building by oneself (3) building house partially (4) buying (5) other specified	Respondent reported
	If this is the rental house how much do you pay per month or per year?	Respondent reported

Table 2 Questions on economic activities and household income

Topic	Information collected	Note
Jobs of household members		
Individual household member	- Each individual member normally has current job or not? If yes, how much monthly income - In case of no current job, have each individual member ever worked before - In case of each individual member has no job within last 1 month, whether or not find or apply the job - Main current occupation of the one who has current job and the one who is unemployed during the survey - Second job, specified	- Ask only who has aged between 15-59, which stop studying. - Current job or main job means type of the job that those uses most of time to do it or the occupation that give you the most income
Economic status of household member		
Individual household member	In the last 6 months, what is the main occupation In last 6 months, how much monthly income for the main occupation Second job, specified In last 6 months, how much monthly income for the second occupation	- Ask only who has aged between 15-59, which stop studying
Individual household member	Does anyone have savings?	
	What is your position in your community in term of welfare?	Ask only the respondent who gave the main data
Other incomes		
Individual household member	Retirement fund and bonuses receive in the previous year, Money send from cousin who used to be household member, Funding received from the government or various agency during the last twelve months, Funding received from other person outside household per year, Rental fee within the last 12 months, Interest an divined received the last 12 months	

Table 3 Code of property

Plant 1-5		Animal 1-5		Animal product 1-5		Instruments		Others 1-5	
1001	Rice	2001	pig	3001	egg or hen egg	4001	pest spray (machine for spray pest/fly killer)	5001	TV
1002	Corn	2002	hen and cock	3002	duck egg	4002	plough car (rod tai+)	5002	Refrigerator
1003	Cotton	2003	cow			4003	Job (to dig the ground)		
1004	Bean, Soil bean	2004	Jackfish (pla dook)			4004	itan+ car	5004	fan
1005	Green bean, Yellow bean (soy bean)	2005	Duck			4005	uon (net for catching the fish)	5005	gas stove
1006	Tobacco	2006	Buffalo			4006	Bed tok pla (a stick to catch the fish)	5006	motorcycle
1007	Green cabbage	2007	Nil fish (pla nil)			4007	Jaw boat (reu jaw)	5007	bicycle
1008	Pumpkin					4008	water pump	5008	stereo, tape, radio
1009	Chili					4009	fish net	5009	clock
1010	mango					4010	hae+ (a big net to catch the fish, tod hae+=an activities to throw the hae+ to catch the fish)	5010	electric rice cooker
1011	rambutan					4011	Seam (a stick to dig the ground)	5011	cupboard
1012	papaya					4012	itok car	5012	gold, silver, ring, neglace
1013	bamboo					4013	a net to catch the prawn	5013	push car
1014	longan					4014	cutting grass machine		
1015	takrai					4015	a grass knife	5015	car
1016	Boub					4016	knife	5016	washing machine
1017	Rai Kong					4017	ya (medicine or tobacco, I am not sure)		
1018	lychee					4018	a net to catch fish (swing+)	5018	video
1019	Hom (garlic)							5019	electric fan
1020	Cauliflower (kalampli)							5020	iron

Plant 1-5		Animal 1-5		Animal product 1-5		Instruments		Others 1-5	
1021	Teak tree								
1022	Jack fruit (kanun)							5022	sewing machine
1023	long bean (tua fak yao)								
1023	Makeu								
1025	Kae (a kind of plant we eat white flower)							5025	water warmer
1026	Ginger (kink)								
1027	Banana							5027	chair/furniture
1028	vegetables								
1029	Guava (farang)								
1030	Garlic (krateum)								
1031	Big orange (som oo)								
1032	Noina								
1033	Coconut								
1034	Kraprao								
1035	Kha (like ginger)								
1036	Cha-om (fried with egg-very delicious)								

Table 4 Reported ownership of crop productions in both districts

Type of Plants	Active district		Less active district	
	Case	Control	Case	Control
Rice (%, n)	56 (65)	62 (96)	50 (61)	45 (71)
Corn, baby corn (%, n)	1 (1)	3 (5)	28 (34)	29 (45)
Cotton (%, n)	Not grown	Not grown	7(5.74%)	7 (11)
Vegetables (%, n)	13 (15)	13 (20)	14 (17)	10 (16)
Tobacco (%, n)	Not grown	Not grown	3 (2.46%)	4 (7)
Big plants, fruit (%, n)	26 (30)	13 (21)	Not grown	4 (7)
Herbs (%, n)	3 (4)	9 (14)	Not grown	Not grown
Total (%, n)	**100 (115)**	**100 (156)**	**100 (122)**	**100 (157)**

This result was regrouped from the plant lists in table 8.2. It's respondent's self-reported of type of plants.

Table 5 Ownership of livestock, dairy product productions and tools by households (Move to Annex for Chapter8)

Type of Livestock	Active District		Less active District	
	Case	Control	Case	Control
Pig (%, n)	9 (8)	4 (5)	18 (16)	21 (18)
Cattle (Cow, buffalo) (%, n)	15 (13)	11 (14)	11 (10)	6 (5)
Poultry (Duck, Hen, Cock) (%, n)	75 (67)	83 (101)	70 (62)	71 (62)
Aquatic animal (fish, Frog) (%, n)	1 (1)	2 (2)	1 (1)	2 (2)
Total (%, n)	100 (89)	100 (122)	100 (89)	100 (87)
	Chi-square=2.85, p=0.41		**Chi-square=2.10, p=0.55**	
Type of dairy product	**Active District**		**Less active District**	
	Case	**Control**	**Case**	**Control**
Egg (Hen) (%, n)	75 (12)	67 (8)	90 (30)	79 (30)
Egg (Duck) (%, n)	19 (3)	33 (4)	6 (2)	3 (1)
Milk (%, n)	6 (1)	50 (12)	3 (1)	18 (7)
Total (%, n)	100 (16)	100 (24)	100 (33)	100 (38)
	Chi-square=9.01, p=0.011*		**Chi-square=4.5, p=0.10**	
Type of Instruments	**Active District**		**Less active District**	
	Case	**Control**	**Case**	**Control**
Heavy equipment ; Instrument for rice growing including pest spray (machine for spray pest/ fly killer), car for field using (%, n)	31(11)	61 (30)	54 (39)	64 (54)
Other agricultural instrument (%, n)	46 (16)	27 (13)	44 (32)	35 (30)
Fishing instruments (%, n)	23 (8)	12 (6)	1 (1)	1 (1)
Total (%, n)	100 (35)	100 (49)	100 (72)	100 (85)
	Chi-square=7.27, p=0.026*		**Chi-square=1.42, p=0.492**	

Statistically significant at *5%,**1%,***0.1%

Multiple linear regression

Table 6 Descriptive data of household head by districts

Characteristics	Active District		Less active District	
	Case	Control	Case	Control
Sex of household head Male (%, n) Female (%, n)	67 (101) 33 (49)	85 (128) 15 (22)	64 (96) 36 (54)	87 (130) 13 (20)
	Chi-square=13.45, p=0.000* **		**Chi-square=20.74, p=0.000*** **	
Marital status of household head (%, n) (1) single (2) married (3) widow (4) divorce (5) separate	4 (6) 56 (84) 37 (56) 2 (3) 1 (1)	2 (3) 74 (112) 21 (31) 0 3 (4)	3 (5) 54 (81) 39 (59) 3 (5) 0	0 81 (122) 14 (21) 3 (4) 2 (3)
Employment of household head (%, n)	82 (69)	94 (113)	87 (97)	96 (136)
	Chi-square=7.42, p=0.006 **		**Chi-square=8.31, p=0.004** **	
Employment of second job (%, n)	47 (40)	68 (78)	50 (55)	60 (81)
	Chi-square=9.22, p=0.002 **		**Chi-square=2.45, p=0.117**	
Having saving (%,n)	13 (19)	25 (35)	16 (24)	24 (35)
	Chi-square=6.26, p=0.012*		**Chi-square=2.66, p=0.103**	

Statistically significant at *5%,**1%,***0.1%