

THE EPIDEMIOLOGY OF  
**INEQUALITIES IN HEALTH AND HEALTH CARE  
IN RURAL MEXICO:**

~~AN EPIDEMIOLOGICAL PERSPECTIVE~~

by

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Thesis submitted to the Faculty of Medicine of the University of London  
for the degree of Doctor of Philosophy

London School of Hygiene and Tropical Medicine  
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**1992**

To  
JESUS OCHOA AND ALICIA DIAZ LOPEZ  
with Affection and Gratitude



## ABSTRACT

The objective of this study was to document the social inequalities existing in both health status and health care utilization in rural areas of the Mexican state of Tlaxcala.

Whilst previous studies on the subject undertaken in Mexico and elsewhere have focused on examining differences between heterogeneous socio-economic groups within urban areas and between urban and rural areas, this investigation concentrated on analysing differences between groups and communities within rural areas which are considered to be more homogeneous. Particular attention was paid to examining differences between agricultural and non-agricultural occupations and between agricultural groups.

To compare the overall health of groups and areas, three different kinds of health measures were used: self-reported morbidity, childhood mortality, and positive health (based on self-appraisal of health state). Four types of morbidity measures were used: overall morbidity, number of symptoms reported, morbidity of high severity, and type of illness reported. Health care utilization was analysed in relation to perceived need. Social markers included both individual and area-based measures of socio-economic status. The former included measures such as educational level, occupation, land tenure and type, social class, source of medical care, entitlement to social security, frequency of meat consumption and housing conditions. The area-based measures included a composite index of living conditions and size of the locality.

The data were collected during a health interview survey of 1238 households (6622 individuals), sampled from households in localities with less than 15,000 inhabitants in the state of Tlaxcala. The sample was drawn by a multistage stratified cluster sampling scheme.

The general trend found was a significant rise in morbidity with decreasing socio-economic position, living standards and size of the locality. Agricultural occupations showed worse perceived health conditions than non-agricultural occupations, and among the former, waged labourers and peasants with access to poor-quality-land tended to have higher morbidity rates and appraised more unfavourably their health. Among females, those working at their homes had worse health conditions. Amongst the morbidity measures, the one based on severity of illness displayed the largest differentials and showed an inverse association between socio-economic status and prevalence of gastrointestinal diseases and musculoskeletal problems. Nervous and mild psychiatric problems were more prevalent in deprived small villages.

Childhood mortality was higher among children in families whose head had less schooling, a lower agricultural occupation, no social security, poor housing conditions, and among those living in the most deprived villages. Findings on unfavourable ratings of health paralleled those on perceived morbidity and showed the largest differentials between social groups. Among the social measures, education allowed the construction of groups that displayed the widest differentials.

The results showed a decreasing trend in health care utilization (illness-related and preventive contacts) with decreasing socio-economic position and living standards. The pattern of utilization suggests that the access to the health services is highly stratified and does not reflect the level of real need. The relatively high use of private services suggests a poor quality of the public services.

The advantages and limitations of the different health indicators and social measures used is discussed. The results have implications for health policy and planning at both central and local levels. The recommendations suggested have implications which are far wider than the health sector alone.



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## LIST OF ABBREVIATIONS

AGEB	Basic statistic geographic area
ARI	Acute respiratory infections
CCPNS	Consultative Council of the Solidarity National Programme
CEPAL	Economic Commission for Latin America
CL	Confidence limits
CONAPO	Population National Council
COPLAMAR	General Coordinating Board for the National Plan for Deprived Zones and Marginal Groups
CSPRC	Health centre for concentrated rural population
CSPRD	Health centre for dispersed rural population
DHSS	Department of Health and Social Security (U.K.)
ENAPS	Study on Needs for Primary Health Care
GDP	Gross domestic product
GHL	General Health Law
GHS	General household survey (U.K.)
GNP	Gross national product
G&O	Gynaecology and obstetrics
HBM	Health Belief Model
HIS	Health interview surveys
HMO	Health maintenance organization
IDRC	International Development Research Centre (Canada)
IMR	Infant mortality rate
IMSS	Mexican Institute of Social Security

INEGI	National Institute for Statistics, Geography and Informatics
ISSFAM	Mexican Institute of Social Security for the Armed Forces
ISSSTE	Institute of Social Security and Services for the Workers of the State
OHE	Office of Health Economics (U.K.)
OR	Odds ratio
PAHO	Pan American Health Organization
PHC	Primary health care
PRONASOL	Solidarity National Programme
PSU	Primary sampling unit
QALY	Quality adjusted life years
SES	Socio-economic status
SESA	Tlaxcala's state health system
SILOS	Local health systems
SSA	Ministry of Health
SSU	Secondary sampling unit
TFR	Total fertility rate
TSU	Tertiary sampling unit
UAS	Auxiliary health unit
UHC	Urban health centre
UNAM	National Autonomous University of Mexico
UNICEF	United Nations Children's Fund
U5MR	Under five mortality rate
WHO	World Health Organization

## ACKNOWLEDGEMENTS

This kind of research is the result of many different contributions. Thus, when trying to acknowledge all of them I run the risk of failing to mention important contributions. However, in particular I would like to express my gratitude to the following persons.

First, to all the people in the study area in Tlaxcala and in particular to the admirable peasant families who kindly agreed to participate in this research. Without their cooperation this study could never have been carried out at all.

Of my colleagues of the research team, I am particularly indebted to Héctor Javier Sánchez for his continued support from the early stages of the project to the analysis of the data, to Luis Martinez, Antonio Castillo and Salvador Gomez who gave much of their time and personal effort to this project.

During the different stages of this project I received special advice from many people, in particular I would like to mention the contributions made by Elsa Resano, Miguel Cervera and Roy Campos in the design of the sample, Alfonso Gonzalez in the analysis of the child mortality data, Eduardo Albarrán in the selection of the social indicators, Javier Rosado in the development of the instruments, Juan Carlos Gomez in the organization of the survey and Ananina Becerril in the graphic design of the research instruments.

To the excellent work done by the tenacious field-workers who dedicated long days and nights to the collection and checking of the data. To Ilse Fernandez, Justo Paredes, Rosa María Muñoz and Itzigueri Robles, all students of the Master of



Health Services Research degree at the National Autonomous University of Mexico (UNAM), for their help with the data processing.

In Mexico, this research was made possible thanks to the valuable institutional support granted by the Secretariat of Health (SSA) and the State Health System of Tlaxcala (SESA). Carlos Nava co-ordinated the valuable support received from the latter institution. I should note that Manuel Ruiz de Chavez, while being under-secretary of planning supplied the necessary backing to obtain the assistance from the SSA.

A particular debt is due to Eduardo de Gortari who gave the support that helped to resist the threats posed by political changes. Since then, he has provided continued and valuable support.

I would also like to thank the staff of the Directorate of Informatics and Systems of the SSA for their contribution in the processing of the data.

The support received from the General Directorate of Services of Academic Computing, UNAM for the analysis of the data is also greatly appreciated.

I would like to express special acknowledgment to the International Development Research Centre (IDRC), Canada for its financial support (grant No. 3-P-86-0247). I greatly appreciate the fast and efficient assistance that this institution gave to this project.

I am grateful to the CONACYT (Mexico's National Council for Science and Technology) and UNAM for supporting my doctoral studies in London. I am fortunate of having been privileged with a financial support which, unfortunately, is available for only a few of my fellow country people.



In London, to Professor Patrick Vaughan, my supervisor, who helped me make my mind when in the middle of my job responsibilities he encouraged me to think about doing a Ph.D., which seemed only a remote possibility. During several years he has provided advice, encouragement and support that I needed to keep up my morale. The two visits he made to the research area were of great help. I am also particularly grateful to Professor Robert Logan who provided valuable advice and support in the early stages of the project, to which this study forms a part. To Godfrey Walker and David Ross for their comments on earlier drafts of the project proposal and to John Blacker for his recommendations on the analysis of the child mortality data.

In Heidelberg, Germany, Professor Axel Kroeger provided very helpful advice for constructing the research instruments and for the analysis of the data. His work in Latin America has provided inspiration to this project. I received also helpful suggestions from María Luisa Vázquez and Wilson Ruiz for the construction of the questionnaire.

Antonio Ugalde and Nuria Homedes of the University of Texas granted valuable advice during the planning stage of the project. Nuria Homedes together with Héctor Javier Sánchez co-ordinated the fieldwork.

Many friends both in Mexico and Britain gave me much help during the period of my studies. I would like to express special gratitude to Cecilia Landgrave, Graciela Rodriguez, José Narro, Héctor Fernández-Varela and Ramón Alvarez Gutiérrez.

Finally, a special word of thanks is due for Anaïs to whom I am deeply indebted for all her understanding, patience and support during the last phase of this work, which thanks to her was more bearable.

## PART ONE

"...porque queremos que se cumpla la voluntad de la tierra que da sus frutos para todos."

(Federico García Lorca)

# I. INTRODUCTION

Inequalities in health and health care is a matter of increasing concern to a nation whose society has been historically divided, and represents one of the greatest challenges for achieving social justice.

Economic growth in Mexico during the last four decades has provoked a profound polarization of Mexican society. In recent years, the economic crisis and adjustment policies have accentuated this social polarization. There is recent evidence that the absolute and relative number of people who live below the poverty line has increased and that the gap in living standards between the rich and the poor, as well as between the regions, has widened (Boltvinik and Hernández-Laos, 1991; CCPNS, 1990).

Since the 1960s the agricultural sector has shown a rapid and rising decapitalization which has been associated with increased levels of poverty and the poorest conditions of health, education and housing in the country. The emphasis on the needs of the urban industrial sector during the last four decades has increasingly led to the neglect of the needs of the rural population.

Such a situation is reflected in the health conditions of the rural population, particularly the most vulnerable and disadvantaged groups: the poor peasants and rural labourers.

The existence of social inequalities in health and health care have been already recognized by the State and equity in health has been explicitly identified as a policy objective (Poder Ejecutivo Federal, 1989). However, very little is known about the causes and extent of differentials in health status and in the uptake of services between different socio-economic groups



and socio-geographic areas. Routinely collected statistics seldom reveal such differentials.

Previous studies on inequalities in health and health care undertaken in Mexico have mainly focused on examining differences between heterogeneous groups within urban areas and between urban and rural areas. However, there is insufficient evidence of the nature and magnitude of the socio-economic differences in health and health care between groups and communities within the apparently more homogeneous rural areas, which are at the worst end of the socio-economic spectrum in the country. The identification of the vulnerable groups at greatest risk is particularly relevant for the development of social policy and health planning at both national and local levels (Hayes, 1991).

The need to document the nature and extent of the social differentials in health status and health care among the rural population, together with the need to develop reliable and simple measures of health status and relative need for use in the information and evaluation systems at the local level, provide the main rationale for this study.

In sum, the major questions that this research addresses are:

- Who are the socio-economic groups and which socio-geographic areas that are most disadvantaged in health status?
- Are the health services equitably used by different population subgroups and in different areas?
- What is the relative importance of the public and private services to the population?

It should be noted that in undertaking this study I have been strongly stimulated by the precarious material circumstances and the situation of social injustice prevailing in the Mexican countryside throughout its modern history.

I was also stimulated by the reading the Black Report in 1980 (DHSS, 1980) and the continuing debate on this issue when I was in London attending the MSc course in Social Medicine of the London School of Hygiene and Tropical Medicine.

This study forms part of a larger research project on evaluation methods for primary health care development in rural Mexico conducted by the author at the Secretariat of Health (SSA), with the collaboration of the National Autonomous University of Mexico (UNAM) and with the financial support of a grant<sup>1</sup> from the International Development Research Centre (IDRC), Canada (Ochoa Díaz López, 1987). The purpose of such a large research project was to improve primary health care in rural areas of Mexico by developing methods for monitoring and evaluating the delivery of Primary Health Care (PHC). Although the results related to the topic of inequities in health care presented in this thesis are only a part of this research project, the findings constitute one of the main criteria for assessing the success of the primary health care strategy (Rifkin and Walt, 1986).

Given the shortcomings of institutional-based data, a population-based approach with a cross-sectional design was used in this research to gather the information. Routinely collected data do not allow the ascertainment of the distribution of health status and health care utilization by different socio-economic groups in the total population. Furthermore, to obtain information on the non-users of health services a population survey is necessary. To supplement mortality measures, different measures of health status were used such as self-reported morbidity and self-assessment of health. Social indices, including individual and area-based measures of socio-economic status, are used to construct sub-groups and compare their overall health status.

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<sup>1</sup>IDRC grant No. 3-P-86-0247.



This report comprises eleven chapters organized in two parts. The preliminary part, which includes the first five chapters, presents the background information to the study. In the second part of six chapters, the main part of this thesis, the results and conclusions are presented. The specific topics of the eleven chapters are outlined below.

In the introductory chapter the background and overall aim of this study and the format used for this report, are briefly described.

Chapter II presents a review of the research literature relevant to the subject under study and provides the conceptual framework for this study. In the initial section, the review examines the concept and dimensions of inequity and inequality in the context of health. In the second section, the widespread notion regarding the relevance of equity for health policy is emphasized. In the following section, three theoretical perspectives of equity are presented: the libertarian perspective, the liberal perspective and the materialist perspective. This is followed by a discussion on the Maximin theory, since in recent years this perspective has received particular attention in the research literature. The Black Report of 1980 (DHSS, 1980) summarized the different types of explanation for socio-economic differentials in health. These are presented in Section 4 of Chapter II. The last three sections are devoted to problems concerning measurement of inequalities in health and inequities in health care and provide the basis for the research strategy of this study.

Chapter III considers the impact of the economic crisis and adjustment policies on socio-economic differentials in health and health care in Mexico. Since the study concentrates on the health conditions of the agricultural population, the focus is directed at describing the present crisis in the rural sector. The report summarizes in the last section of this chapter the existing evidence on inequalities in health and health care in

the whole country published since the 1960s. The few studies that have been carried out so far on this subject in Mexico, are described in this section. This review focuses on the way in which health and health care vary in relation to the manner in which wealth and power are distributed in Mexico.

Chapter IV sets the scene for the research area: the Mexican state of Tlaxcala. It covers, in general, two related aspects: population and economy. Using published data, in the final section of this chapter, the overall health conditions and characteristics of health care provision in Tlaxcala are briefly described.

In Chapter V, the different studies that comprise the research project of which this study forms part are briefly described in the introductory section of this chapter. The aim and specific objectives of this study are presented in the second section of Chapter V. In the same section, the major research problems that this study addresses are discussed. The rationale for choosing Tlaxcala for the research is also given in this chapter. This is followed by a detailed description of the methods and techniques that were utilized in this research. Among the wide range of issues covered are: sampling procedures, selection of variables and measures, data quality assessment, data processing and analysis, and organization of the study. This is supplemented by four appendices including questionnaire, fieldwork manuals, coding instructions and sampling aspects.

Chapter VI describes the demographic profile of the survey population and considers the way in which the living conditions are distributed in rural Tlaxcala.

The way in which different health measures are distributed across the different socio-economic groups and socio-geographic areas constitutes the subject matter of Chapter VII. This chapter contains seven sections. In the initial four sections, the results over the four different morbidity



measures used are presented. The fifth section presents the results obtained using two indices of childhood mortality: infant mortality and under five mortality. In the following section of Chapter VII, the results obtained from a measure based on positive aspects of health are displayed.

Chapter VIII considers the utilization of health care by different socio-economic groups and socio-geographic areas. Thus, this chapter deals with the question of whether health care services are equitably utilized in relation to perceived need or in relation to other factors different from need, such as socio-economic status and social class.

Major findings presented in Chapters VI, VII and VIII are interpreted and discussed in Chapter IX. Comparisons are made between these findings and those found elsewhere in Mexico, Latin America and elsewhere. The discussion considers the results obtained by using a variety of health measures and social markers and compares their advantages and limitations. Implications for health policy of the study's findings are discussed here. Possible actions aimed at reducing inequalities in health and health care are discussed.

The conclusions of this study are presented in Chapter X. These are arranged into three sections following the same format as the results chapters: the first alludes to the findings regarding population and material conditions; the second presents the conclusions drawn regarding socio-economic differentials in health, while the third one displays the conclusions drawn regarding differentials in health care utilization.

Recommendations relating to the development of health policy at both national and local level are presented in Chapter XI. Since the evidence which emerges from this research suggests that the unequal distribution of health and health care lie in the unequal distribution of political power and material circumstances, the report highlights the importance of other



areas of social policy outside the health sector, to reduce the existing inequalities. The focus of these recommendations is particularly directed at policies related to intersectoral action and socio-economic development of the rural sector. Finally, the implications of the findings and conclusions point to the need for further research, as presented in the last section of Chapter XI.

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## II. CONCEPTUAL FRAMEWORK

This chapter presents a brief review of some theoretical and methodological aspects relevant to the issue of inequalities in health and health care. An exhaustive review of such a vast and multi-disciplinary subject is, of course, outside the scope and limits of this study. This chapter deals with problems concerning definition, dimension, explanation, and measurement of inequalities in health and health care. To avoid unnecessary repetitions some points concerning measurement are dealt with in Chapters V and IX.

### 1. The concept and dimensions of equity and equality

Equity is a complex term to define. According to Le Grand (1987) equity is a term capable of an almost infinite number of interpretations, depending upon the values of the person using it at the time. A cause of the absence of consensus on its meaning may be because, like 'equality', it has a definite politico-ideological notion, in contrast to the more neutral term of 'differentials' (Hansluwka, 1985). Even a term like 'efficiency' has something closer to a consensus on its interpretation (Le Grand, 1987). Furthermore, the concept of equity is more complex than that of equality.

Montoya-Aguilar and Marín-Lira (1986), when referring to services provided to the population, state that equity may be expressed as equality (in the provision), taking into account the needs of all identifiable subgroups.

Within the health context, particularly for health policy

purposes various definitions of equity are possible. Mooney (1983) suggests seven possible definitions of equity: equality of expenditure per capita; equality of inputs per capita; equality of input for equal need; equality of access for equal need; equality of utilization for equal need; equality of marginal met need; and equality of health. He considers that it is difficult to say which is correct and that what is 'right' is a value-laden question (Mooney, 1987) both for equity and for the relative weights attached to other objectives of any health care system. This implies a potential trade-off between equity and efficiency (Mooney, 1986).

Among the most common interpretations of equity that can be seen in the literature of social policy and health policy are: equality of access, equality of utilization and equality of outcome (Evandrou et al, 1990) and equality of quality of care.

#### **A. Equality of access**

Le Grand (1982), Mooney (1983, 1986) and Evandrou et al (1990), define equality of access as the requirement that each individual who 'needs'<sup>1</sup> the service concerned should face the same personal cost of using the service. In other words, individuals with the same health need should make the same sacrifice in terms of money and time to use the service, regardless of income, social class, occupation, education, gender, place of residence, etc.. This means that all individuals with the same need should have the same opportunity to use the health service. A situation of inequality does exist when some individuals have to spend more money or time to receive medical treatment. That is, they have a higher personal cost of treatment than others.

Musgrove (1986) points out that inequity results from

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<sup>1</sup>Inverted commas are used by Evandrou et al (1990).



differences in the ability to obtain health care, whatever the reasons may be, that prevent some people, but not others, from getting medical care.

Equality of access, perhaps, is the commonest definition of equity used in the literature. However, some authors (Aday and Andersen, 1981; Daniels, 1982) confuse equality of access with equality of treatment and of utilization.<sup>2</sup> Mooney (1986) quoted by Le Grand (1987) points out that access to treatment is purely a supply-side phenomenon, whereas the amount of treatment actually received depends on the interaction of both supply and demand. Thus there are situations where there may be equality of access but not equality of utilization and of treatment. Some people may choose not to use the service because they do not consider they need it.

#### **B. Equality of utilization**

Under this definition equal use of the service for equal need, is implied, regardless of social, economic or other characteristics (Mooney, 1987; Evandrou et al, 1990). According to this view of equity, utilization of services should be distributed only on the basis of individuals' need. Aday and Andersen (1981) consider that variation in the use of services as a function of the need component or associated age and sex correlates represents equity. If variation is a function of other personal characteristics the services are inequitable utilized.

In the literature on this subject a common expression found is equal treatment for equal need (Mooney, 1983, 1987; Musgrove, 1986; Le Grand, 1987; O'Donnell and Propper, 1991). However, this concept is not simple to interpret in practice. Le Grand (1987) gives some examples where unequal treatment for equal need could be sometimes equitable and vice versa. He argues that the focus for equity purposes should be upon equality of

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<sup>2</sup> See Mooney (1987).

opportunity of access, rather than on equality of treatment.

### C. Equality of outcome

This dimension of equity refers to the output of the health care system whereas the former definitions refer to the input side. The main criticism to this definition of equity with respect to the distribution of health care is that health care is only one means amongst others for producing health. Under this view, the equity concern should be with the distribution of health rather with the distribution of health care (Culyer, 1988; O'Donnell and Propper, 1991). However, outcome information is seldom available and is difficult and expensive to obtain.

Le Grand (1987) argues that it is impossible to redistribute health whereas it is possible to redistribute health care resources. That is, health care is amenable to policies concerned with promoting equity in a way that health is not. However, he recognizes that it is possible for policy decisions to affect the many factors that affect health, such as nutrition, housing, work conditions and medical care itself.

### D. Equality in the distribution of quality of care

Among the various aspects of equity that have been mentioned in the literature, some authors have included the quality of care. Whitehead (1988) suggested that four aspects of equity should be analyzed for equality in health care in Britain: equal access to available care, equal treatment for equal cases, equal quality of care and equal access to the service for equal need.

Wyszewianski and Donabedian (1981) examined whether the quality of health care services in the United States was equitable distributed across all groups in the population.



Equity in the distribution of quality of care was examined in relation to the three dimensions of quality: structure, process and outcome (Donabedian, 1966).

This study includes aspects of two dimensions of equity: equality of utilization and equality of outcome. However, its emphasis is on the utilization of health care services in relation to need. The reason for this is that the services are underused, which may be evidence of existing barriers. Also because it is crucial for health planning purposes to examine the factors that determine utilization to make adjustments to the health care system. The number of studies in Mexico and Latin America on this aspect of equity are very few.

## 2. Equity as a health policy goal

While there is no consensus to define equity, most societies agree that equity is one of the main goals for their health care systems.

At present it is increasingly accepted that health policy should not only aim at improving the level of health, but also it should aim to reduce inequalities in health within a given country, among the various groups of the population (Hansluwka, 1985).

The emphasis on equity as one of the main objectives of health services systems is now underlined by the international organizations. According to the Pan American Health Organization (PAHO), equity is one of the three essential qualities of a health services system. The other two are efficiency and effectiveness (PAHO, 1982). Equitable distribution of health services among the different groups of the population, not neglecting rural and isolated populations or peri-urban dwellers, is one of the five principles included in the definition of primary health care developed during the



WHO-UNICEF meeting on Primary Health Care in Alma Ata in 1978 (WHO and UNICEF, 1978; Walt and Vaughan, 1981).

The existence of socio-economic inequalities in health and of access to health services raises important and controversial issues of social policy in societies which have a commitment to social and economic equality. Following social demands, the Mexican Government introduced in 1983 within the General Constitution of the Republic the social right to health care (Soberón et al, 1983). This social reform was important one for a country which has been historically marked by inequalities that extend to all spheres of the country's life (Cordera and Tello, 1989).

### **3. Philosophical theories of equity**

In sum, there are three main perspectives under which equity can be seen (Mills and Gilson, 1988). These are the libertarian, liberal and collectivist views.<sup>3</sup>

#### **A. The libertarian perspective**

The libertarians see the market forces as the only and most beneficial means to determine the distribution of resources, since according to them this is the only way to be both efficient and protective of individual liberty. They are strongly opposed to interventions by the State to determine the distribution of resources because this undermines individual freedom. In practice, the libertarian view is a conservative perspective which defends the status quo and thus it tends to favour the existence of inequities.

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<sup>3</sup>Veatch (1981; quoted by Mooney, 1987) provides a summary of theories of distributive justice with relevance to the discussion of equity in health care.

## **B. The liberal perspective**

The liberal perspective also focusses on the individual freedom, but unlike the libertarian views it concedes a role for State intervention when the market fails to meet individual needs. Within the liberal perspective two important theories of social justice can be included: Utilitarianism and the Maximin theory. Utilitarianism is a theory sketched originally by David Hume, Adam Smith, Jeremy Bentham and John Stuart Mill which considers that the greatest happiness of the greatest number should be the end of all social and political action. It emphasizes efficiency rather than equity: that is, the maximization of social benefit from available resources. Utility is considered as the main criterion of action.

The theory of Justice or Maximin Theory, is based on the principles of the social contract, represented by John Locke, Jean-Jacques Rousseau and Immanuel Kant. This theory was first made explicit by John Rawls in his book 'A Theory of Justice' (Rawls, 1971) as an alternative explanation of justice to utilitarianism. This theory has become a very popular philosophy of equity, particularly in the press of western countries. It is based in the principle of maximin, that is, maximizing the position of the worst-off in society.

## **C. The collectivist/materialist perspective**

The collectivist view rejects distribution by the market since, they argue, it deepens existing inequalities. The goal of equity only can be reached by a redistribution of rights, power and wealth. State intervention in production and allocation is justified. According to this perspective, having equal opportunities does not ensure equity because fundamental inequalities at the end may remain. Amongst the collectivist views the most relevant is the Marxist one. In brief, this is based on the theory of class struggle, which establishes the existence of antagonist classes engaged in the process of production. The classes are defined by their relations to the



means of production. According to the Marxist perspective, the cause roots of social, including health, inequalities are the forms of social reproduction, which are the result of the ways in which the social groups are inserted in the capitalist mode of production and the consequent forms of exploitation and domination to which the exploited class is subjected.

#### **D. The Maximin Theory: a brief overview**

The two basic principles of justice are as follows (Rawls, 1971):

##### **First Principle**

"Each person is to have an equal right to the most extensive total system of equal basic liberties compatible with a similar system of liberty for all."

##### **Second Principle**

"Social and economic inequalities are to be arranged so that they are both:

- (a) to the greatest benefit of the least advantaged, consistent with the just savings principle, and
- (b) attached to offices and positions open to all under conditions of fair equality of opportunity."

According to Gill and Ingman (1986) the difference principle (second principle), which permits social and economic inequalities, has had the major impact on contemporary commentators since this principle "serves to justify the profit motive and system of fiscal incentives of current capitalist and mixed economies." They add that the most difficult problems that supporters of the profit motive "have had to deal with are the arguments of Ricardo and Marx that surplus value is ultimately the product of labor."<sup>4</sup> Nevertheless, the authors argue that Rawls' theory

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<sup>4</sup>The concept of surplus value is better explained in the following paragraph of Marx's Capital (1887): "During the second period of the labour-process, that in which his labour is no longer necessary labour, the workman, it is true, labours, expends labour-power; but his labour, being no longer necessary labour, he creates no value for himself. He creates surplus-value which, for the capitalist, has all the charms of a creation out of nothing. This portion of the working-day, I name surplus labour-time, and to the labour expended during that time, I give the name



provides "an alternative and an apparently acceptable moral alternative to justify the profit motive."

Under the theory of maximin the distribution of health care is based on opportunity. Thus equity is defined as equality of access to health care related to health need. Inequality could be justified only if such inequality benefited the least advantaged.

However, several objections to the application of Rawls' principle have been identified. Le Grand (1987) points out some of them. First, health as a natural primary good can not be distributed the same way as social primary goods, like income and wealth. Second, the maximin principle as a macro-criterion can not be applied to micro situations such as health and health care. Third, there are a number of theoretical and practical difficulties to apply the principle to the health area.

As a conclusion, Le Grand (1987) argues that "neither the utilitarians or Rawls can offer us a fully convincing account of equity in the health case (or indeed in any other)." Le Grand proposes a historical perspective to equity as an alternative to the "end-result" principles. He argues that simple observation of the facts about the distribution is not sufficient to determine the equity of that distribution. We need to know the history of that distribution. He suggests that the crucial fact that determines our judgement concerning equity lies on the extent that individuals' choices determine such a distribution. That is "...if an individual's ill-health results from factors beyond his or

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of surplus-labour. It is every bit as important, for a correct understanding of surplus-value, to conceive it as a mere congelation of surplus labour-time, as nothing but materialised surplus-labour, as it is, for a proper comprehension of value, to conceive it as a mere congelation of so many hours of labour, as nothing but materialised labour. The essential difference between the various economic forms of society, between, for instance, a society based on slave-labour, and one based on wage-labour, lies only in the mode in which this surplus-labour is in each case extracted from the actual producer, the labourer."

her control, then the situation is inequitable; if it results from factors within his or her control, then it is equitable." (Le Grand, 1987). However, this concept of equity is difficult to apply in situations where there is no consensus about what can be considered as ill-health. This is the case of certain rural regions in Mexico where suffering from diarrhoea, a common problem, is not considered as being ill. Another difficulty to apply Le Grand's concept of equity would be those cases of ill-health resulting from not having a good knowledge of the factors that cause the problem.

Moreover, it is recognized that the behaviour of the less informed individuals generates a greater inequity (Hellberg, 1984), since they are under pressures that affect their health. By contrast, the participation of better informed individuals is more efficient and fairer than that of the former groups.

It is very difficult to say whether an illness resulting from a rather low level of health education is equitable or not. That is, the problem of deciding what factors of ill-health are under the individual's control is not an easy one. Le Grand (1986) considers that in practice, people's behaviour is greatly influenced by the material constraints they face on their activities. He adds:

"The outcomes of the choices they make will of course partly be a function of their tastes or preferences; but it will also depend heavily on their constraints (such as their income). Moreover, even their tastes may be in part determined by their, or their parents', constraints. Individuals brought up in poor households whose parents found it cheaper to buy white bread rather than brown, or to smoke a packet of cigarettes rather than take a walk in the country, are likely to develop tastes that accord with their situation."

For instance, in Britain Graham (1987, 1988) has examined the way mothers deal with the stress of caring for their children in poverty. She concludes that there is evidence that cigarette smoking is used by women as a way to cope with such a stress. She gives many examples in which mothers behaviour



would seem irreponsible for some doctors. However, she points out that such behaviour is the only rational way of caring for their children in poverty (Graham, 1984).

## 4. Explanations

### A. Health inequalities

A number of different explanations of health inequalities have been offered. The Black Report (Townsend and Davidson, 1982) summarized them in four categories:

- (1) Artefact explanations.
- (2) Theories of natural and social selection.
- (3) Materialist or structuralist explanations.
- (4) Cultural/behavioral explanations.

According to the Black Report the first approach suggests that the relationship between health and social class may be an artefact of the manner in which data are collected and analysed with little causal significance.

Referring to the British context, Davey-Smith et al (1991a) discusses the different types of artefact explanations that have been proposed in the literature. There are several ways in which artefact associations can be produced. In sum, these are: (a) numerator-denominator bias, which may occur when social class coding of death certificates (the numerator) differs from coding of social class during the decennial census (the denominator).

(b) Social class categorization may be another potential cause of artefact. This may occur if the reclassification of occupations into social class categories are done in such a way that "socio-economic groups with high mortality levels were



differentially pushed into lower social groups, and vice versa." (Davey-Smith et al, 1991a).

(c) The changing size of social class groups explanation suggests that the widening of social class mortality differentials may become apparent by the construction of small occupational groups with high mortality levels. In Britain, this would apply to the lowest occupational class, which is decreasing in size.

(d) Other possible artefact explanations refer to problems related to the health statistics (e.g. groups not included in the mortality statistics), type of measures of socio-economic position and health measures used in the analysis.

Under the second approach (social selection), it is suggested that the social variable is the dependent variable and health is the independent or causal one rather than the opposite. That is, health is the basis for social selection. Thus, upper class categories have lower morbidity and mortality rates because they are constructed by the fitter and stronger people. Two types of social mobility have been advanced to account for the production of health inequalities: intragenerational selection, and intergenerational selection (Davey-Smith et al, 1991a, 1991b).

According to the intragenerational selection sick people move downwards in the social spectrum, whereas the healthier move upwards, which leads to a polarization of groups at different levels of risk. Intergenerational selection could occur directly or indirectly. The first is suggested to occur if health status in childhood determines both health status and class in early adulthood, whereas the second could occur if common socio-economic background factors determine both social mobility and later health (Davey-Smith et al, 1991b).

The materialist/structuralist approach emphasizes the role of economic and socio-structural factors in the distribution of

health. The axis of this theory is the direct effect on health of economic deprivation resulting from economic exploitation.<sup>5</sup>

While the materialist approach emphasizes societal characteristics, such as distribution of wealth and income, working conditions, labour market, etc., the cultural and behavioural approach focuses on the causal role of individual's behaviour in disease and death. Behavioural traits of a self-destructive character such as smoking, drinking, inadequate diet, stressful living, etc., are among the most important determinants of disease. Although it is widely recognized that materialist and behavioural explanations are not independent, which has led to some authors (Blaxter, 1983) to argue that they cannot be separated, there are important reasons to maintain this distinction. As put by Davey-Smith et al (1991a):

"...the collapsing of materialist and behavioural factors tends to discount any influence of the social and material environment which is not mediated through behavioural patterns. Thus intervention becomes reduced to developing culturally sensitive methods for encouraging lifestyle changes, and neglects the possibility of environmental change."

In summary, three major dimensions can be recognized: biological, social<sup>6</sup> (including economic and political), and behavioural. Each of these is made up a set of factors that interacts with the other two. Most of the specific direct processes remain unknown.

The Black Working Group concluded that the materialist and structuralist approach fitted better with the evidence than any of the other theories. Whitehead (1988) confirmed that the socio-economic circumstances continued to play the major part in explaining health inequalities in Britain. Although recent

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<sup>5</sup>For further description of this approach see Section 3.C.

<sup>6</sup>Runciman (1969) distinguishes three dimensions of social inequality: economic (class), social (status) and political (power).



evidence puts increasing importance on the role of behavioural variables, she alluded to several studies that have shown how adverse social conditions can limit the choice of life-style, that is, behaviour cannot be separated from its social context. This is particularly true for Third World societies.

### **B. Health care inequalities**

According to a theoretical approach, in Third World countries the level of unmet needs of the different social groups depends on their insertion within the social relations of production and organization as well as on their political strength (Boltvinik, 1989).

The distribution of health care among the different groups of the population is related to the class structure of society. Roemer (1964) found in a study carried out in five Latin American countries<sup>7</sup> that associated with each of six identified different social classes is an equally distinguishable system of medical care. He also found that for certain classes there may be more than one system. He says that in Latin America "one could readily identify a person's social class (and all the concomitants of this identification) by examining the way he obtained medical care."

Hernandez (1991) points out that the conditioning factors of equity can be grouped in three categories according to their level of influence: type and level of economic development, role of the State, and community dynamics. The first refers to such problems as income distribution, international trade, external debt and the technological dependence. These factors influence the availability of resources for the welfare and health of the population.

The level of participation of the State reflects the relative importance that society gives to the standard of living and

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<sup>7</sup>Brazil, Chile, Costa Rica, Mexico and Peru.



welfare of its population. Apart from the social policies, there are mechanisms within the communities that can either aggravate or alleviate existing inequities. They are expressed as social network interaction (Fox, 1988) which consists of a form of community organization to create and distribute resources that affect health.

In industrialized countries, class differentials in the use of health services are explained in terms of the balance between perceived costs and benefits of getting care and complying with the prescribed regime. In Britain, often the costs for the working classes surpass the benefits because of the poorer quality of services and reduced provision to which they have access (Townsend and Davidson, 1982).

Other possible explanations that have been given include the following: absence of medical facilities in poorer areas; worse access to such facilities for the poor, (e.g. the poor possess fewer cars and telephones); higher cost for manual workers than for salaried middle class, since the former lose money when they take time off to go see the doctor; communication difficulties between middle-class medical staff and working-class patients (Le Grand, 1986).

In Third World countries, a wider range of variables - including changing cultural and aetiological concepts interact in the use and choice of health services. Kroeger (1983) summarizes them in the following categories: characteristics of the subjects (including demographic, education, occupation and socio-economic status); characteristics of the disorder and their perception (including expected benefits and consumer satisfaction); enabling factors (including geographical accessibility, communication between healers and patients, quality of care and costs).

# 5. Measurement of equity

## A. Approaches

The measurement of equity depends on how it is interpreted, i.e. the dimension in which is measured (see Section 1). In this study the emphasis is on equity in terms of utilization of health services relative to need. In the case of this study, self-reported morbidity is used as the main indicator of need. Socio-economic factors have seldom been analysed in relation to utilization of health care in Mexico and other Latin American countries. An examination of this dimension of equity (utilization) leads to an analysis of the factors that determine utilization. This is examined in Section 6 of this chapter. As need is seen as major determinant of utilization, a section is included at the end of this chapter to analyze its meaning and measurement.

For some authors (Montoya-Aguilar and Marín-Lira, 1986) measuring inequalities in coverage approximates to measuring inequities in health care. For them this is because equity may be expressed as equality (in the provision of services), taking into account the needs of all identifiable subgroups, whereas coverage is expressed as the percentage of the population in need of a specific service that obtains it. The authors applied a set of 11 indicators which reflect most of the components of primary health care in 40 countries to illustrate their method. According to Musgrove (1983, 1986) the different dimensions of equity can be expressed as probabilities. Given a set of health states<sup>8</sup> and the passage from an initial state to a final one, four probabilities can be described:

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<sup>8</sup> A person may or may not :  
-become sick or hurt;  
-receive treatment;  
-be cured as the result of treatment; or  
-be recovered in the absence of treatment.



P(S) the unconditional probability of needing medical care.  
P(T/S) the conditional probability of receiving treatment,  
given the need for it.  
P(C/T) the conditional probability of being cured by  
treatment.  
P(R/T) the conditional probability of recovering without  
treatment.

If the health system is equitable the probabilities will be equal across the various population groups (Musgrove, 1986). Emphasis is put on the second probability, that is, the probability of receiving treatment when ill. This is the most valuable probability to describe the system's equity.

The probability of receiving treatment P(T/S) varies more in the population than P(C/T) and P(R/T) since if the disease is not lethal or permanent disabling, P(C/T) and P(R/T) will approximate 1.0. Thus, the information provided by these two latter indicators are of less value than the former.

An approach that has been commonly applied to study equity, is to construct use/need ratios and compare them across different social groups. In a study of equity in health care in Britain, Le Grand (1978) examined the ratio of health services utilization to need at socio-economic group level<sup>9</sup>. He defined need as the number in each socio-economic group reporting acute and/or limiting long standing illness and divided total health care expenditure on the group by that number. Applying this method he found that the higher two socio-economic groups received 40% more health expenditure in hospital and GP services per person reporting ill than the lower two.

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<sup>9</sup>The use-need ratio is given by:

$$\frac{X_j + X'_j}{n_j}$$
where  $X_j$  and  $X'_j$  are the amounts of services used by persons in the ill and not ill groups respectively; and  $n_j$  is the number of persons in the ill group. O'Donnell and Propper (1991) consider that given the distribution of morbidity, the Le Grand methodology has a bias towards the higher socio-economic groups in describing the distribution of health care relative to morbidity (see also Le Grand, 1991).



By contrast, Collins and Klein (1980) did not find evidence of pro-higher class inequity in the use of GP services. These authors selected individuals of a given self-reported morbidity, and examined the proportion using GP services across different socio-economic categories. The ill groups were defined by their responses to the General Household Survey questions and included a not-ill group. The contradictory results are probably due to the different methodologies applied.

O'Donnell and Propper (1991) adopted the methodology employed by Collins and Klein which they thought appeared better suited to an examination of equity in terms of equal treatment for equal need. Nonetheless, they also replicated Le Grand's methodology to enable comparisons.

Another example of the use of health status indices to measure equity of health care utilization is provided by Andersen (1978) who compared an 'empirical measure' with two health status measures using data from national surveys of the U.S. population. The 'empirical' indicator was the mean number of physician visits per person by year by income level. The other two comprised a use-disability ratio and a symptoms-response ratio. While they are better and more refined measures than the empirical indicators, they also have some limitations. The main limitation of the former is that disability days may be influenced by the kind of sickness benefits. With regard to the symptoms-response ratio this is highly dependent upon respondent's perception of ill-health. These measures do not identify needs for preventive care.

## **B. Measures of inequality**

Inequality is a concept of a relative nature. A distribution is unequal if it does not agree with a previously established criterion. The equity principle that is used to assess how a variable is distributed, is usually affected by value judgements without universal acceptance. The differing views

with respect to a particular distribution pattern represent conflicting theoretical and methodological positions (Cortés and Rubalcava, 1982).

Nevertheless, most of the statistical measures used to study inequalities have favoured the criterion of democratic equality. That is, the same amount of the variable to everybody.

Measures of inequality were originally used by economists to compare the degree of inequality between countries and to study the distribution of income and wealth among different groups of the population. The measures most commonly used in empirical studies are: the variance, the coefficient of variation, the relative mean deviation, the Gini coefficient and the standard deviation of logarithms (Atkinson, 1973).

Among the summary (concentration) measures, the Gini coefficient is the most commonly used to study equity in health. The Gini coefficient is an overall measure to see whether a distribution is more or less equitable than another. It is the ratio of the area between the diagonal and the Lorenz curve, to the total area under the diagonal, a measure which increases from 0 to 1 as inequality increases. Thus, the coefficient is calculated by first drawing the Lorenz curve (see Figure II.1), which relates the cumulated population across groups to the cumulated population ranked by health or by resource or utilization measure studied, ranking the groups from lowest to highest values of resources/use per capita<sup>10</sup> (Musgrove, 1986).

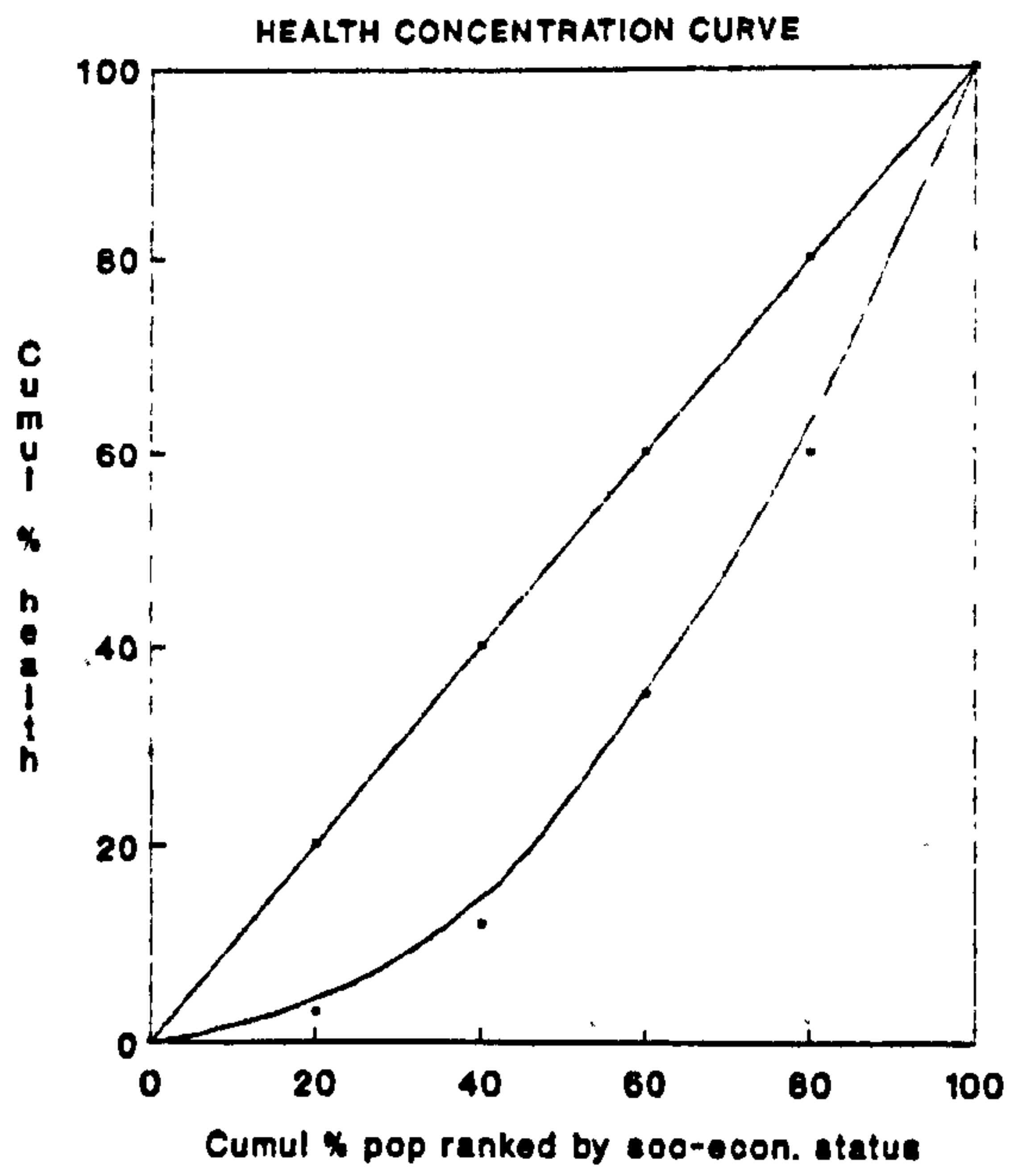
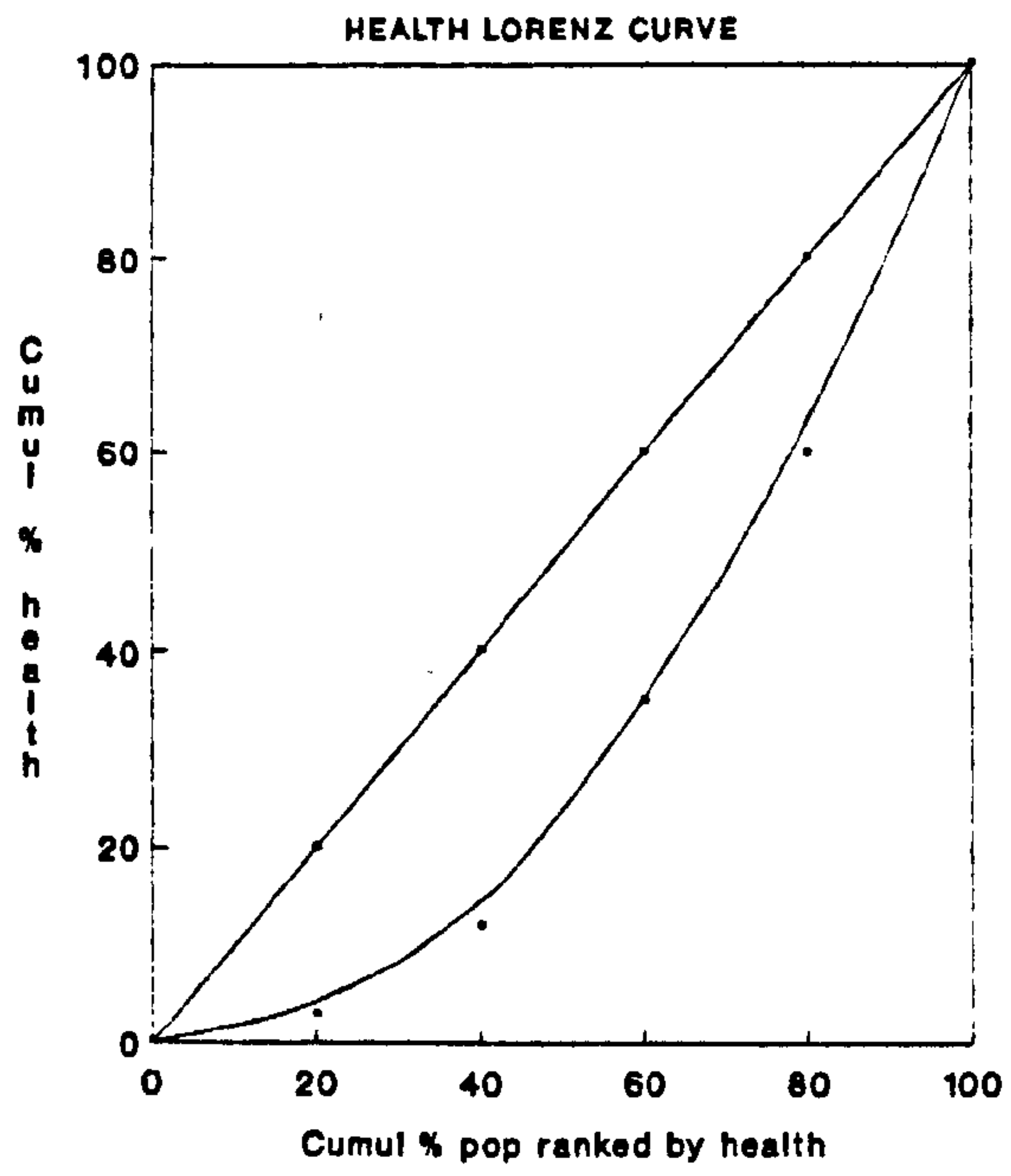
According to Wagstaff et al (1991) a measure of inequality should meet the following three minimal criteria:

i. To reflect the socio-economic dimension to inequalities in health.

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<sup>10</sup>or an externally defined categorization, e.g. social class.

FIGURE II.1 MEASURES OF INEQUALITY  
IN HEALTH



SOURCE: REDRAWN FROM:  
WASTAFF ET AL, 1991



ii. To reflect the experiences of the entire population.

iii. To be sensitive to changes in the distribution of the population across socio-economic groups.

By using morbidity and mortality data generated by a number of studies regarding inequalities in health, Wagstaff et al reviewed six measures of inequality reported in the literature on inequalities in health: the range; the Gini coefficient (and the associated Lorenz curve); a pseudo Gini coefficient (and an associated pseudo Lorenz curve); the index of dissimilarity; the slope index of inequality; and the concentration index (and the associated concentration curve). They concluded that only the last two measures meet such requirements and that the first four measures failed to meet one or more of these requirements.

Figure II.1 shows a concentration curve for health. Unlike the Lorenz curve<sup>11</sup>, the concentration curve plots the cumulative proportions of the population, ranked by socio-economic position, against the cumulative proportions of health. Thus, the Gini coefficient and the Lorenz curve are insensitive to the socio-economic dimension to inequalities in health (Wagstaff et al, 1991).

Use/health status ratios. Among the most commonly used measures to study equity of utilization, are the use-health status indicators ratios. For example, the use-disability ratio, the symptoms-response ratio, episode of illness analysis (Yergan et al, 1981). Health status can be interpreted in a wide range of ways depending upon the dimension of health of interest for the objectives of the study. The most widely utilized health status indicators to explain health services use are: perceived health status, role

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<sup>11</sup>which plots the cumulative proportions of the population ranked by health against the cumulative proportions of health.

limitations, restricted activity days, and functional limitations (Pope, 1988).

## 6. Determinants of health care utilization

### A. Health care use models

The behavioural model. The health care seeking behaviour has been extensively studied in developed countries during the last three decades. Conceptual frameworks have been developed to study the different factors that influence the utilization and the choice of health services. Among these frameworks there is one that has exerted a large influence on the research on the subject: the behavioural model which is related to health and illness behaviour. This model was originally developed by Andersen (1968). With few modifications it has been broadly used during the last twenty years in developed countries, particularly in the U.S. The original model of family health service use is based on the following assumptions:

- (1) A family must be predisposed to receive medical care.
- (2) There are enabling conditions that allow the family to be predisposed to receive medical care.
- (3) The family must perceive a need for these services.

The three basic components of Andersen's model include the following variables (Andersen and Newman, 1973).

Predisposing: demographic (age, sex, marital status, past illness); social structure (education, race, occupation, family size, ethnicity, religion, residential mobility); beliefs (values concerning health and illness, attitudes toward health services, knowledge about disease).



Enabling: family (income, health insurance, type of regular source, access to regular source); community (ratios of health personnel and facilities to population, price of health services, region of country, urban-rural character).

Need (illness level): perceived (disability, symptoms, diagnoses, general state); evaluated (symptoms, diagnoses).

This model is related to the Health Belief Model (HBM), which describes health-related behaviour (Becker, 1974), since 'health beliefs' (used in the HBM) are part of the set of predispositions (included in Andersen's model) to use health services. According to the HBM, these predispositions represent individual's perception of the value of medical care.

A large number of studies have been conducted to understand the nature of the effect and predictive power of the three classes of factors on the utilization of different type of health services. According to an exhaustive research bibliography (Maurana et al, 1981)<sup>12</sup> for the U.S. about 1000 studies were carried out during the sixties and seventies. Accessibility to health services has been a favoured research topic ( Aday and Andersen, 1974; Aday, 1975; Andersen, 1978, 1983; Dutton, 1986; Guendelman and Schwalbe, 1986; Kasper, 1987; Newacheck, 1988).

In recent years the main focus of interest of research in the U.S. has shifted from accessibility to cost-containment, regulation of the use of services and more recently Health Maintenance Organizations (HMOs). This is in accordance with the market orientation of the health system of the U.S., which is an 'open system' according to Anderson's 'closed-open' taxonomy (1966).

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<sup>12</sup> See also: Aday and Eichhorn, 1972; Aday and Andersen, 1975.



Many empirical studies have been replicated elsewhere though with different focus of interest. For instance, in Britain with a state orientated health system (Anderson's 'closed type'), the distribution of health and personal social services across the different social classes has been an important research topic (Collins and Klein, 1980; Scott-Samuel, 1981; Townsend and Davidson, 1982; Whitelegg, 1982; Bucquet and Curtis, 1986; Coulter, 1986; Balarajan et al, 1987; Whitehead, 1988; Evandrou et al, 1990; Aiach and Curtis, 1990; O'Donnell and Propper, 1991). Also, in other European countries research work has focused on social inequities in health and health care, as can be illustrated by the numerous case-studies found in the literature on the subject (Fox, 1989; Illsley and Svensson, 1990).

There is a bulk of evidence produced by empirical work carried out in the developed world that shows the need component as the most important predictor of health service use (Andersen and Newman, 1973; Wan and Soifer, 1974; Hershey, Luft and Gianaris, 1975; Berki and Kobashigawa, 1976; White, Anderson, Kalimo et al, 1977; Wolinsky, 1978; McAuley and Arling, 1984). Many of these studies have applied multivariate regression analysis techniques to explain variation in the health care utilization accounted by the different factors.

Regarding determinants of physician utilization, large-scale multivariate studies have found that psychosocial and organizational factors explain only small amounts of the variation. In contrast, qualitative studies find such factors as very important. Mechanic (1979) points out that prediction can be improved by combining the research strategies of both the large-scale surveys, including multivariate analytical designs, with the small-scale in depth qualitative studies.

## **B. Alternative models**

A number of alternative approaches to the behavioural model and the multivariate model have been developed. It is out of

the scope of this study to try to review exhaustively all of them. For the sake of brevity, some of the most representative theoretical approaches commonly found in the research literature are briefly described.

Rosenstock (1966), using a socio-psychological perspective, proposed a model to explain preventive health behaviour. The model focuses on the subjective component of the individual. Two types of variables are included: a state of readiness to take specific action and the individual's perception of the extent to which he/she believes such an action would be beneficial. A cue or stimulus is necessary to trigger the individual's response.

Trying to explain the high physician utilization in Israel, Antonovsky (1972) proposed a "multifaceted epidemiological approach" a more comprehensive model which is comprised of characteristics of the host (the potential user, e.g. latent need, tendency to define oneself as ill, and orientation to the use of professionals); the agent (the provider, e.g. availability of physicians, characteristics relevant to performance of latent functions, and 'welcoming' behaviour of the physicians); and the environment (the social structure and the value system, e.g. organizational facilitation of use of services, absence of stigma attached to visits, cultural pressure not to tolerate ambiguity of symptoms, and non-availability of functional alternatives).

It is assumed that the factors interact with another to encourage physician use. It is noteworthy that this model does not include morbidity.

Another comprehensive model was proposed by Feldstein (1966). It introduced the concept of choice of care among alternative services and included the notion of interaction between patients' and providers' characteristics. However, according to Bice and White (1971) Feldstein's model did not include social factors on consumers' or potential consumers' choices.



In summary, the utilization of health care has been extensively studied from different theoretical perspectives. Anderson (1973)<sup>13</sup> and Andersen (Andersen and Anderson, 1979) based on earlier classifications (Mechanic, 1968; Gibson, 1972; McKinlay, 1972) summarized them in five approaches: the sociocultural approach; the sociodemographic approach; the social-psychological approach; the organizational approach; and the social systems approach. Anderson's early article provides a vast amount of references on studies covering each of the five approaches.

The socio-cultural approach considers health services as a part of a cultural complex. Thus, health care is related to other institutions in a society. The cultural context has a great influence on the organization of health care.

Many studies have showed that utilization is related to socio-demographic variables such as: age, sex, marital status, ethnic group, family size, education and occupation.

The socio-psychological approach addresses questions such as mechanisms for perception of illness and choice of health service. The factors most commonly studied under this approach are the following: perceptions of the characteristics of illness including etiologic concepts, attitudes and perceptions of the characteristics of health staff and health services, perception of the benefits of getting treatment.

In the organizational approach the structural characteristics of the health care system are examined to explain the utilization behaviour. Among the main factors that can affect utilization mentioned in the literature are the following characteristics of the services: accessibility, supply, costs, quality, health expenditures, types of funding, distribution of health services, bureaucratization, and different social and cultural backgrounds of staff and users.

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<sup>13</sup>See also: Andersen and Anderson, 1979; and Cockerman, 1982.



The social systems approach emerged in the decade of the seventies as a very promising approach to understand the utilization behaviour. Under this approach the health care system is considered as a set of interrelated elements comprising health resources and population.

### **C. Approaches to the study of health care use in Third World countries**

The research literature shows a large number of studies on health care use that have been carried out in Third World countries. Approaches and methodologies used extend over the distinct categories that are described in A. and B. of this section.

The diversity of factors that have been most commonly studied include the following: structural and organizational factors (Stock, 1983; Kloos, 1990), perceptions on the characteristics of the services (Amin et al, 1989; Najera-Aguilar and Infante-Castaneda, 1990), pluralistic therapy and indicators (Subedi, 1989), social network (Infante-Castaneda, 1990), household environment (Poland et al, 1990), demographic and organizational (Scarpaci, 1988), need (Selwyn et al, 1980, 1985), illness perception (Habib and Vaughan, 1986; Kroeger et al, 1988), socioeconomic (Kroeger, et al 1991), previous use/health status (Fosu, 1989). In fact, each of the cited studies cover more than one of the factors considered.

A thorough review of the literature on health-seeking behaviour in developing countries (Kroeger, 1983) shows a 'polarity' between two major approaches: the socio-medical approach (epidemiological in a broad connotation) and the anthropological approach.

The socio-medical approach focuses on objective structural factors such as accessibility and costs. By contrast, the anthropological approach concentrates on subjective factors such as etiological perceptions. The author suggests that a

combined approach to the process of health care use is highly desirable to include all the important factors that intervene in such a process. Both approaches complement each other. Thus the observational /anthropological approach would benefit from epidemiological methodology to quantify its observations, while epidemiological research would use qualitative techniques to develop better survey instruments and improve quality of interviews.

Kroeger (1983) points out that there are two main types of models to explain how people enter the sick role and make choices among the different kinds of health services: (1) pathway models and (2) determinants models. The former are based on the notion that health and illness behaviour consists of a chain of steps from perception of symptoms or illness recognition to health service use. Empirical pathway studies are chiefly of an observational and qualitative nature. The 'determinants' models give major attention to the set of independent variables and characteristics that affect the choice and use of different kinds of health services. The kind of variables that are considered in 'determinants' models were already described at the beginning of this section. Studies on health care determinants are described in the literature on the line of quantitative research.

Models so far proposed have some limitations for Third World countries. First, they have been developed in different social, cultural and political contexts, that is industrialized countries. Thus, they may be culturally biased, which is reflected in the kind of questions posed and the selection of variables (Muller, 1986). It is well known the distinctive complexity of health and illness behaviour and diversity of health systems in changing societies of the Third World. Thus, the range of intervening variables in the process of health care use in these societies varies in both number and type to that in western societies, although many of them are similar.



Figure II.2 shows an integrated model for the study of health care use which was adapted from Andersen's (1968) and Kohn and White's (1976) frameworks for the needs of Third World countries (Kroeger, 1985). It is assumed that the model is a better one for the context of a developing country, where the different socioeconomic groups have a diverse range of options regarding health services. It has been already applied in Latin American countries (Kroeger, et al, 1984, 1987).

## 7. Concept and measurement of need

### A. Concept of need for health care

Before reviewing the different approaches and methods to measure need for health care, particularly for primary care services, it is necessary to understand what is meant by the term 'need'. The concept of need for health care is a controversial research issue. During the 1970s it was an important research and policy-making topic in the health field.

Twenty years later the debate on the best way to interpret need still continues. It can be defined from a broad spectrum of perspectives. Some of those most commonly found in the research literature are briefly described in the following paragraphs<sup>14</sup>.

#### The "anti-need" approach

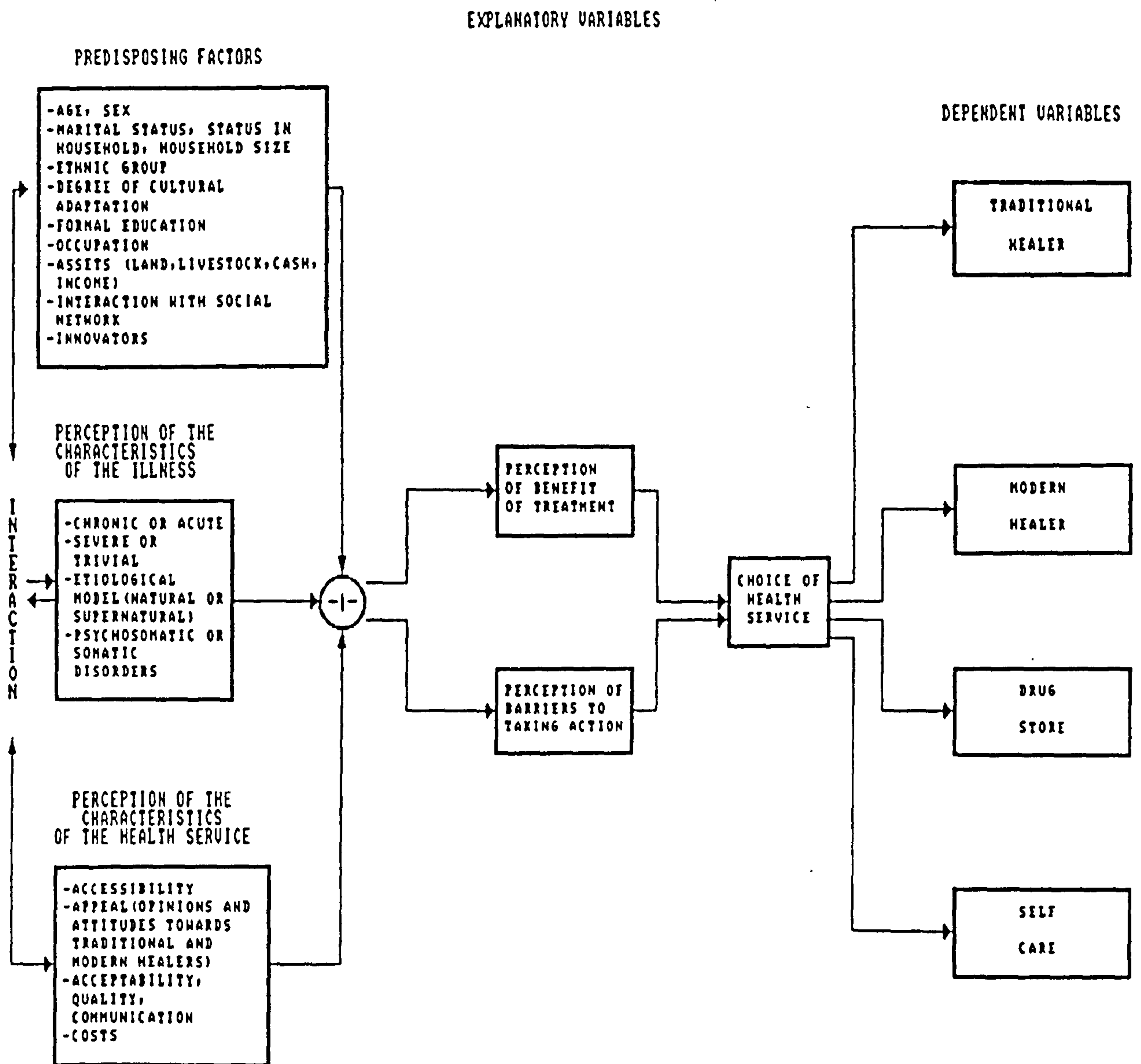
Some authors are strongly opposed to the use of need as a basis for health planning. Some consider that from the community perspective, needs may be defined unrealistically

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<sup>14</sup>Most of the material reviewed comes from the British research literature. The reasons for this are that it has been an important topic for debate during the last two decades with the consequent abundant literature. By contrast, the subject has not been much discussed in the context of Third World countries.



FIGURE II.2 CONCEPTUAL FRAMEWORK FOR THE ANALYSIS OF THE HEALTH CARE SEEKING PROCESS IN DEVELOPING COUNTRIES



SOURCE REDRAWN FROM : KROEGER, 1985.

(Bugbee, 1970). Other authors consider that the term 'need' reflects only the value judgements of those who intend to define it. Glass (1976) in a rather provocative position, emphasized that "Need is a useless concept: it fulfills no function." His major objection to the term is that need necessarily implies a consequent action which, in practice, is frequently not so.

According to Boulding (1966) "Only the slave has needs; the free man has demands". From a liberal perspective, he favours the term demand because it implies autonomy of the individual and choice according to the preferences of the individual.

Among the advantages of using demand instead of need, that have been mentioned in the literature, there is the idea that it is easier to measure demand and use than it is to measure need. According to this notion such measures based on demand and use are more reliable (MacStravic, 1978). The liberal perspective favours the idea that planning "should be based on what people are willing to buy given a choice of goods." (Jeffers et al, 1971).

### Social need

In 1972 Bradshaw (1972) proposed a taxonomy of social need, a concept of particular interest to economists and, of course, to research workers and policy makers in the social and health sectors. It comprises four types of need:

Normative need. This is what the expert or professional defines as need. The identification of this type of need is based on a comparison between a desirable standard and the standard that actually exists. Its main pitfall is that the definition of standards is greatly influenced by changing value judgements.

Felt need. This has the same meaning of want and it is based on the individuals' perceptions. Despite the fact that it should be an important component of any definition of need,

its main limitation is that it is usually inflated by overdemand.

Expressed need or demand. This is 'felt need' turned into action, i.e. demand for a service. In the case of health services, a commonly used definition of this type of need is the waiting list (unmet need).

Comparative need. This is defined by studying the characteristics of people in receipt of a service and identifying those with similar characteristics not in receipt of the service. This type of need is useful for comparing areas regarding provision of resources relative to need.

The interrelation of the above four types of need in Bradshaw's framework provides twelve possible combinations, which refer to the same number of theoretical possible situations. The main problem for using Bradshaw's taxonomy is the difficulty in establishing criteria for the different categories of need (Cartwright, 1974).

In Britain, Frankel (1991) challenges the view of the infinity of demand ('overdemand'), which, according to him, is sustained by the persistence of waiting lists, which are taken as an indicator of overwhelming demand. He suggests that this assumption "...should be questioned and abandoned in favour of empirical determination of health care requirements, with the assumption that there may be no need to ration those interventions of undoubted efficacy."

#### Need and demand

In 1973 the WHO (Hogarth, 1975) pointed out that:

"Health needs may be defined as scientifically (biologically, epidemiologically, etc.) determined deficiencies in health that call for preventive, curative and eventually (= where appropriate?) control or eradication measures."

In 1971 a WHO expert committee on health statistics proposed a classification consisting of five categories:



"(a) Perceived need: the need for health services experienced by the individual and which he is prepared to acknowledge. Under certain conditions it may exceed the professionally defined need.

(b) Professionally defined need: the need for health services recognized by a health professional from the point of view of the benefit obtainable from advice, preventive measures, management or specific therapy. Under certain conditions it may exceed the perceived need.

(c) Scientifically confirmed need: the need confirmed by objective measures of biological, anthropometric or psychological factors, expert opinion or the passage of time. It is generally considered to correspond to those conditions that can be classified in accordance with the International Classification of Diseases.

(d) Potential demand: the demand for health services corresponding to whichever is the greater of the perceived and professionally defined needs for each particular condition or for all the conditions affecting a given population.

(e) Expressed demand: the demand actually made on the health services available to a population. It may be greater than the actual utilization because of the existence of waiting lists, limited resources or differences between patients' perceptions of their needs and professionals' definition of those needs." (Hogarth, 1975).

Regarding the differences between the two concepts (need and demand), another framework (OHE, 1971) recognizes three levels:

The technically defined need which refers to the treatments and procedures of proven value. Not all of these needs are expressed into demand. The unrecognized needs constitute the "clinical iceberg".

The second level is the expressed demand which includes only the treatments within the existing medical technology, and excludes the unrecognized needs. This level exceeds the technically defined need.

The third level alludes to the need defined in terms of the WHO's definition of health, that is, complete wellbeing. This is, of course, an unreachable level, which exceeds even the

level of expressed demand. Figure II.3 shows the relationship between needs and demand for medical care.

#### The epidemiologist's perspective

With regard to the definition of need from an epidemiological approach, Alderson (1976a) suggested a classification of the following two categories:

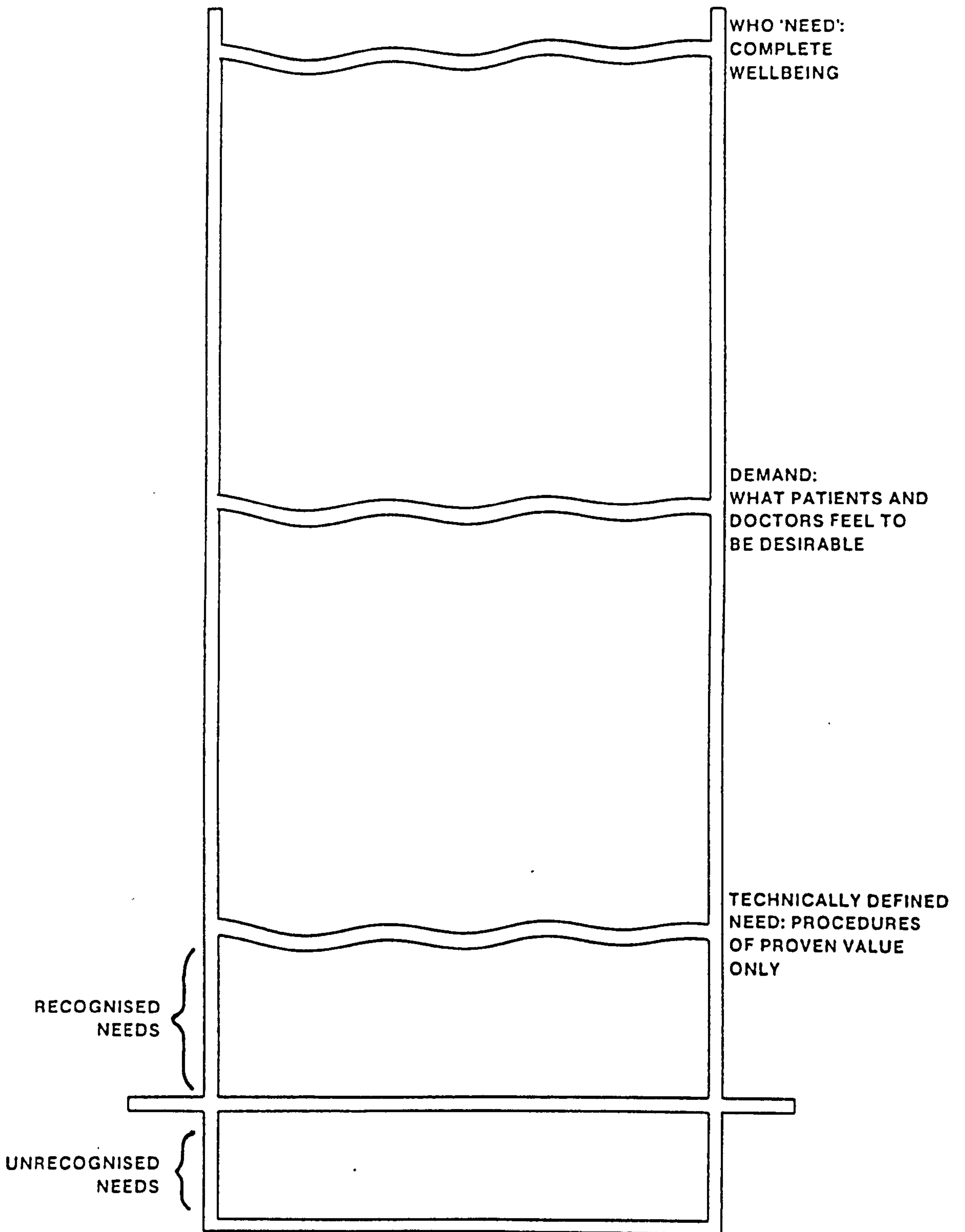
Health need unperceived. This is a condition that is not recognized by individuals or their families. But it "is potentially discoverable by a practitioner on careful investigation of the total physical, mental, and emotional well-being of the individual..." However, in practice, such an exhaustive medical examination is unrealistic.

Health need perceived. Here, it is the individuals or their families who decide whether they have a need or not. In some cases the professional does not agree with the definition.

By introducing the concept of demand, Alderson (1976b) added three categories to his previously described classification. Demand, stifled. The need (perceived) that is not translated into demand due to problems in the provision of facilities. Demand, unmet. Failure to fulfill the requests for health care. Waiting lists for specific services are illustrative examples of this definition. Demand, met. "A health need, however identified, that has been handled by one of the branches of the health service." Met demand is also expressed as use of health services.

Glass (1976) considers that Alderson's definition makes an important distinction since "...the problem of the definition of medical need is that it is too generally only the doctor who decides what is needed." Using a similar approach, Matthew (1971) considered that "...a need for medical care exists when an individual has an illness or disability to which there is an effective and acceptable treatment or care." However, this implies that many cases to whom there is no effective and acceptable care will not be identified.

FIGURE II.3 NEEDS AND DEMAND FOR MEDICAL CARE



SOURCE: REDRAWN FROM: OHE, 1971.



Cochrane (1976) suggested that there is need when there is available "...some medical intervention that has positive utility and that actually alters the prognosis of the disease in some favourable way."

Unmet needs. This is a concept commonly used in both the research and the health policy literature. And it is of particular value to the study of equity. Unmet needs are defined by Carr and Wolfe (1976) "...as the differences between services judged necessary to deal appropriately with health problems and services actually received." In their view, unmet needs are sociomedical indicators, and to consider unmet needs as health status indicators is an error. Since they assess "the social capacity of the society to care for the sick." Based on this principle a comprehensive and multidimensional approach<sup>15</sup> was developed, which, in addition to the traditional medical indicators, included social and quality of life indicators.

According to Kalimo (1979a) unmet need is the difference between need and expressed demand. And use reflects expressed demand. He proposed a method for estimating the need for medical care that consists of an estimation of the average need among patients suffering from a specific disease, made by a panel of physicians (Kalimo, 1979b). A similar approach which included medical examination was applied in a study of social inequalities undertaken in Sweden (Bygren, 1974).

#### The economist's perspective

Need is considered as a supply concept. If there is nothing can be done for sick people they are not in need (Williams, 1974). According to this perspective, it is important to make a distinction between demand and need. Culyer (1976) points out that while the former implies two notions: demand for health and demand for health care, the latter usually refers to need for health care rather than need for health.

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<sup>15</sup>The Meharry Medical College Approach (Carr and Wolfe, 1976).

However, he considers it sensible to regard the need for health care as ultimately related to a need for health per se, if health services are considered as instruments for the promotion of health. It is in the notion of services as instrumental means where, Culyer believes, the concept of technical need (for services) lies.

This concept implies three points. The first refers to the inclusion of a third party in the evaluation of need. That is, the public, the practitioners, the experts, the professionals. The second alludes to the relative nature of need. This due to the fact that there is a variety of means to reach an end. Thus, choice has to be made and this is greatly dependent upon not only society's prevailing culture and philosophy but also upon the cost to meet a given need.

Finally, the third implication of Culyer's definition refers to the indicators that are required so that the third parties be able to assess whether an individual is at need or not.

Some economists have been so critical of the literature on need that they have described it as 'needophobic'<sup>16</sup> (Ashley and McLachlan, 1985). Nevertheless, these two authors consider that the economists have made an important contribution to the debate on the definition of need. That is, to note that "...in defining need in health policy terms, not only do the providers and the consumers have a view but that also the third parties, such as the public, economists, administrators, the medical profession, have a major stake."

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<sup>16</sup>This position is better illustrated by the following quotation made by Culyer et al (1972) and quoted from Culyer (1976): "...the word 'need' ought to be banished from discussion of public policy, partly because of its ambiguity but also because...in many public discussions it is difficult to tell, when someone says that 'society needs...', whether he means that he needs it, whether he means that society ought to get it in his opinion, whether a majority of the members of society want it, or all of them want it. Nor is it clear whether it is 'needed' regardless of the cost to society."



While epidemiologists focus on the identification of need economists pay more attention to the utility and cost of the different means to meet it. The previous conflicting approaches has led Acheson (1978) to describe two different approaches to the definition of need for health care, which are depicted in Figure II.4:

The first, 'humanitarian approach' which was proposed by Donabedian (1974) defines need as "some disturbance in health and wellbeing". It is called humanitarian because it emphasizes human suffering rather than resources or cost to relieve it. The humanitarian approach focuses on need identification, whereas the second approach, 'realistic approach' concentrates on the utility and cost of the procedures available.

Summing up these two approaches, Acheson (1978) argues that it is unrealistic to consider need in absolute terms. It "should be defined in relation to the procedures available to meet it and the resources that permit those procedures to be used." Thus the definition of need is, in some ways, political. It is a shared responsibility of both the professionals and their patients. This position is close to that of Culyer (1976) when he suggests that the third party is included in defining need.

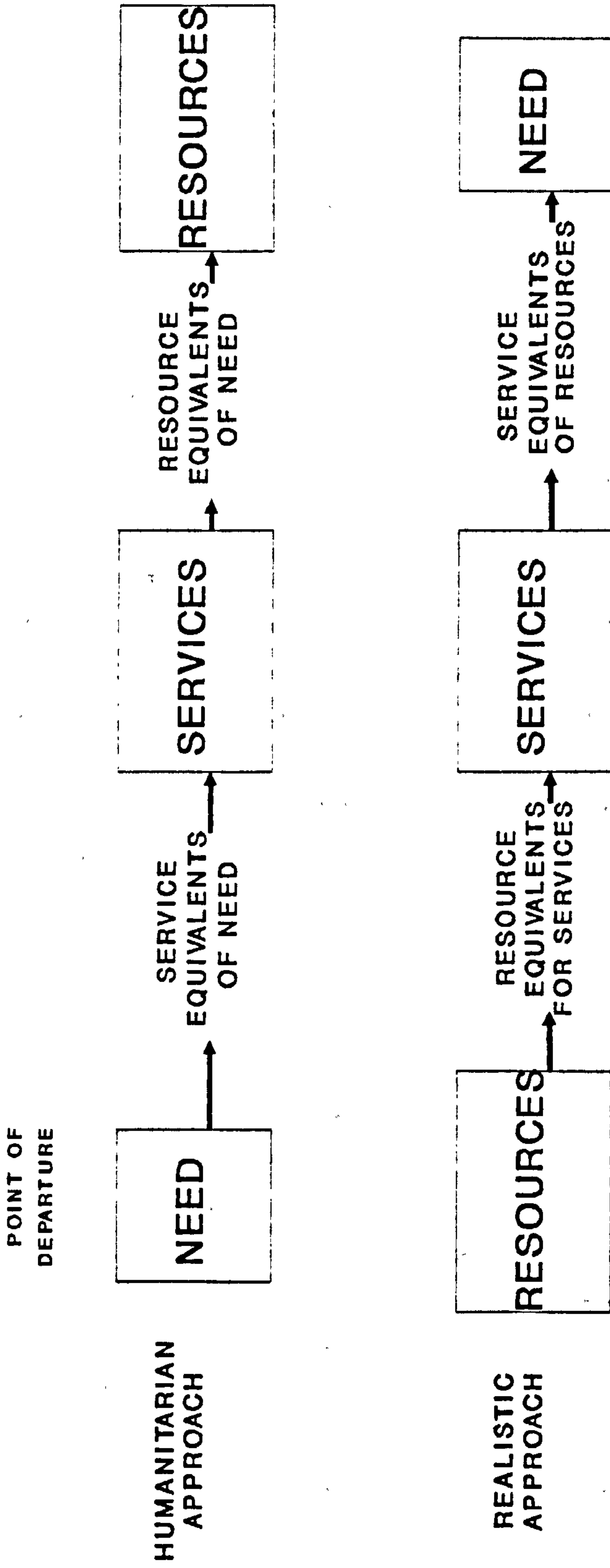
The definition of need used in this study is that proposed by Alderson (1976a), that is of health need perceived. The reason is that this definition suited the dimension of equity which was selected: equality of utilization relative to need. As it was shown in section II.6 there is much evidence that points to perceived need as a major predictor of health care use.

## **B.Measurement of need for health care**

The measurement of need depends on how it is defined. As mentioned before, in this study on health care inequities the focus is on perceived need. Though other measures of needs for



**FIGURE II.4 APPROACHES TO THE DEFINITION OF  
NEED FOR HEALTH CARE\***



specific health services were used, for example: specific items of health services for groups at a higher risk.

#### Health measurement

As mentioned before, it is assumed that need for health care is ultimately related to need for health (Culyer, 1976). It seems, therefore, reasonable to relate need measurement to health status measurement.

Health status measurement is a complex task that depends upon the definition of health, for which there is no universally accepted definition. However, it is widely accepted that it has a multidimensional nature. In practical terms, measuring health status depends upon the dimension or aspect of health we are aiming at from a definite theoretical perspective. It is out of the scope of this study to try to review and discuss all the pros and cons of the different approaches and strategies to health measurement. Suffice to mention the broad strategies and some of their characteristics, which were taken into account for choosing research methods for this study.

Measurement of the negative side or ill health. Mortality and morbidity statistics have been traditionally used as crude indicators of the overall level of health of populations. The main advantage of using mortality rates lies in the fact that death is an unambiguous event, relatively easy to register. In the majority of countries its registration is compulsory ensuring a level of completeness that many other indicators do not have. It can be disaggregated by epidemiological, demographic and socioeconomic variables to produce more detailed indicators such as death rates by cause, perinatal mortality, infant mortality, occupational mortality, etc (Ashley and McLachlan, 1985). Among its principal drawbacks, it is known that mortality statistics only reflect a small amount of the morbidity -what is viewed as the "tip of the morbidity iceberg".

With regard to morbidity, this is a concept more difficult to define and measure, and a large part of morbidity is not recorded in statistics, for example, when morbidity is not translated into demand and use. Overall, mortality and morbidity statistics are of limited value, since they only cover a small section of the population. Furthermore, these indicators do not provide information about other segments of the iceberg of disease, particularly about high risk groups or persons whose conditions are in pre-clinical stages.

Measures of well-being. These are alternative approaches which have been developed to measure the health status of individuals and communities in terms of degrees of sickness and wellness. According to the OHE (1985) there are three broad approaches: disability scales, health profiles and health indices.

The disability scales are measures of person dependence in respect of basic functional dimensions such as feeding, continence, mobility, dressing and bathing (Guttman, 1944). For example, disability scales have been used to measure the ability to function of elderly people (Wright, 1974); the extent of handicap as a result of a disease, for instance, multiple sclerosis (Kurtzke, 1981); and to measure mental disturbances such as anxiety and depression (Zigmond and Snaith, 1983).

Health profiles are more sophisticated indicators. They consist of measurements of dimensions such as mobility, pain, sleep, energy, social life, emotional reactions, home life, sex life, hobbies and interests, etc. As the scores along the various variables are not added together, the yield is, in fact, a profile of the well-being of a person. Good examples of health profiles are the Nottingham Health Profile (Hunt et al, 1980; McEwen, 1984) and the Sickness Impact Profile (Rosser, 1983).



Health indices are, in general, global measures of health status that combine the scores obtained for each of the dimensions being measured into a single figure. The number of health indices so far developed is so large that several classifications have been generated. According to level of applicability (WHO, 1957) macroindices, those applicable to populations, and microindices, those designed for individuals. According to the way health is conceptualized and operationally defined, we have the following three indices (Baumann, 1961) feeling state oriented, symptom oriented, and performance oriented. According to the data or measurement dimension (Chen and Bryant, 1975): self-reported, observed data and both self-reported and observed data. Chen and Bryant (1975) proposed a three-dimensional classification model based on the three previously described dimensions: applicability, orientation and measurement. The resulting geometric model sorts up to 42 different health indices categories.

Over the recent years there has been a growing interest in developing measures of the quality of life over a given time period, since this could provide indication of the prognosis of an individual's health state. The QALY has modified the concept of the traditional life expectancy indicator by introducing factors such as disability and discomfort which adjust the number of life years in terms of quality years (Williams, 1984). More recently, this measure has been used in economic techniques to compare the effects of projects and programmes in terms of utilities (the quality-adjusted health outcome caused or averted) (Mills and Gilson, 1988).

Among the major limitations of health status indices are the following: the lack of evidence about the relationship between the dimension being measured and the global health state, the difficulty of validating them and the amount of value judgements underlying their construction. Regarding the last point Culyer (1976) has pointed out that measuring health cannot be a purely scientific endeavour, and stressed the importance of identifying the value judgements that are made

in measuring health. He suggested, whatever the type and use of the health status measure, a procedure to analyse the different phases in measuring health. Another important limitation of the health status measures is that the majority of them are extremely complicated and expensive to implement and to replicate.

#### Perceived need and related morbidity

According to a model of health, illness, and use of health services (Purola, 1972; White et al, 1977) perceived morbidity is the recognition of disturbances (signs and symptoms) which cause distress and discomfort that in turn generate reactions to alleviate them, and perhaps decision to seek health care. As has been seen in section II.6, the decision to seek care is influenced by a number of predisposing and enabling factors. Perceived morbidity (self-reported morbidity) has been used in a number of studies in both industrial countries (Purola et al, 1968; White et al, 1977; Forster, 1979; Carr-Hill, 1990) and Third World countries (Kroeger, 1983; Ross and Vaughan, 1986; Nordberg, 1988; Timaeus et al, 1988) as a measure of need. Amongst the advantages in using perceived morbidity as an indicator of need that have been mentioned are the following:

- As seen before, there is much evidence that shows that perceived morbidity has a greater predictive value than predisposing and enabling factors (see Section 6.A).
- The best person to assess what an individual needs is the person him/herself (Evandrou et al, 1990).
- The person him/herself is the ultimate authority on the extent of his/her aches, pains and incapacities (Evandrou et al, 1990).
- This indicator does not require a physical examination and laboratory tests.



- Measurement of perceived morbidity is cheaper than medical examinations.
- In many cases there is no practical alternative.

It is true that the use of perceived morbidity has some limitations as a measure of 'actual' morbidity<sup>17</sup>. However, for the purposes of the study, perceived morbidity was considered as the appropriate measure of perceived need to be used to analyze the utilization of health services across social variables. It is important to emphasize that the study aims at measuring perceived illness rather than disease. The former is a broader concept than the latter, and it is more appropriate to explain social inequalities in the utilization of health care.

## 8. Conclusions

Several conclusions can be drawn from the preceding review of the extensive literature on inequalities in health and inequities in health care. Among the most relevant conclusions for the objectives of this study, the following can be summarized:

i. While there is no consensus to define equity/equality, most societies agree that such categories constitute relevant policy objectives for both the health sector and the wider socio-economic sector. Furthermore, equitable provision of health care to all people is one of the main principles of Primary Health Care. However, the nature of equalizing policies depends on the theoretical perspective by which social justice is viewed. In general terms, these perspectives differ in the role that is conceded to the market and State intervention for achieving equity.

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<sup>17</sup>This is discussed in Chapter IX, Section 2.D.



ii. Although in the research literature no distinction is often made between these categories, this study agrees with the view that equity is a more complex term than equality. 'Inequity' is usually associated with states of social injustice and distributional unfairness, whereas 'inequality' is mainly used to describe differences between social groups. In the present study, both terms are utilized. The term 'inequality' is used in the analysis of health differentials among social groups and socio-geographic areas, whereas 'inequity' is used for describing the social distribution of health care in relation to need. This definition implies that 'need' is the criterion used in this study to determine whether a distribution is inequitable or not.

iii. Within the context of health care, equity has several dimensions. This study is mainly concerned with equality of health care utilization for equal need. This implies that utilization of health services should be distributed on the basis of individuals' and groups' needs. Thus, inequalities are better identified by reference to vulnerable groups and the most in need.

iv. Much of the evidence found in the literature suggests that most inequalities in health and inequities in health care are explained in terms of the material circumstances of social life and distribution of power among social groups.

v. The literature on health care seeking behaviour is vast. However, most of the models proposed have been developed in the social, economic, cultural and political contexts of the industrialized countries. Thus, their application in Third World countries is limited. Furthermore, most of the categories included in such models are of a subjective nature, which leads to a failure in identifying the influence of social and economic categories of a higher hierarchical level. Moreover, when these are included they are analyzed either in an isolated manner or in an aggregated one (i.e. they are

treated as the other factors), failing to recognize the existence of different hierarchical levels of explanation.

vi. There are many ways to define and measure 'need'. For the purposes of this study, perceived morbidity was considered, for several reasons, as the appropriate measure of need to analyze the utilization of health services among social groups and socio-geographic areas.

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### III. THE NATIONAL CONTEXT

A knowledge of the characteristics of Mexico's socio-economic development process, particularly of the rural sector, is essential in understanding the pattern of health inequalities in rural Tlaxcala. By using published data, this chapter provides a brief look at the wider socio-economic context of the study area. It deals with a number of issues relevant to this study, such as the crisis in and the transformation of the agricultural sector and the impact on equity of the current economic and adjustment policies. In the final section, the literature on inequalities in health and health care in Mexico is presented.

#### 1. The social and economic context

##### A. Mexico: economic growth with unequal distribution of income

From 1940 to 1980 the Mexican economy developed on average by more than 6% annually, which is higher than the population growth and the average growth rate in Latin America, even including such favourably endowed countries as Argentina, Brazil and Venezuela (BNCE, 1977). The period was characterized by sustained economic growth, relative price stability and maintenance of the monetary exchange rate. Given that the focus of this study is on rural areas, the agricultural situation in Mexico will be described in more detail in Section 1.B.

During the same period the development of the industrial sector was considerable, with the value of manufactured goods

rising almost 8% per year and with a similar expansion in the building and electrical sectors.

However, the development strategy, known as 'stabilizing', applied during this period was based on an unequal distribution of income and wealth and on a great dependence of the country on foreign imports and technology (Gollás, 1982).

GNP in 1989 was 2,410 U.S. dollars (Financial Times, 1990); which is as much as in Argentina and Poland (World Bank, 1991). However, income is unevenly distributed. The share of the poorest 40% of households is between 8 and 12% of the total (World Bank, 1980). The trend shows that the extent of the inequality has sharply increased during the (1940-1990) period. According to Martinez-Hernandez (1989), in 1950 the share of the highest 10% of households was 23 times bigger than the share of the lowest 10%, whereas in 1975 was 73 times. In 1983, the share of the poorest 10% was only 1.3% whereas, in the other extreme, the highest 20% was 50% of the total national income (CCPNS, 1990).

Also the regional differences were striking. For instance, in 1980 the GDP per capita was 31,500 pesos<sup>1</sup> in Tabasco, thanks to the oil boom, compared to only 5,000 pesos in Oaxaca -a mostly rural state (CCPNS, 1990).

The living standards of the urban higher social classes were comparable to those of developed countries, whereas the conditions of the majority of the people living in rural areas and slums resembled those of the most underdeveloped countries.

The conclusion is that the model of economic growth applied in Mexico provoked a polarization of the society. Such a model put an emphasis on the industrial sector through economic policies that favoured protectionism and indiscriminate

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<sup>1</sup>Pesos at 1970 prices.



subsidies neglecting the primary sector of the economy. The result at the end of the so-called 'Mexican miracle' was a country with marked economic and social inequalities. (Molina et al, 1991).

### **B.Crisis and transformation of the agricultural sector**

The agricultural sector had remained almost stationary from the beginning of the century, but in the 1940's it began to develop at a higher rate (4.5%) than the rest of the economy (CEPAL, 1986). Agricultural exports were close to a half (47%) of all the country's exports in 1950 (Coll-Hurtado, 1985). From the mid 1960's the growth of the agricultural sector started to decrease at a fast pace. In 1950 the agriculture accounted for only 12% of the GDP and in 1975 it was only 5.6%. From 1986 there has been negative growth with -0.8% (SARH, 1990)<sup>2</sup>. Agricultural exports had a twofold decrease compared to the 1950's level (Coll-Hurtado, 1985).

The rural areas provided most of the labour force that the rising industrial sector was requiring and the migration of the rural population to the cities and the U.S. began. The rural population decreased from 65% to 45% during the period (CEPAL, 1986). Guaranteed prices of grains remained lower than those of other sectors of the economy. From 1965 to 1985 the price of a weighted index of Mexican crop prices fell by almost a quarter in real terms (Fraser, 1990a).

In summary, the agricultural sector has shown a rapid and rising decapitalization which was reflected in turn in increased levels of poverty and poorer conditions of health, education and housing.

Contrary to earlier projections, the rural population did not have access to the consumption market and services that the

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<sup>2</sup>Quoted from: Strahm and Spring, 1990

urban population did. Agricultural sector productivity sharply decreased and the period of self-sufficiency of Mexican agriculture had ended.

According to the CEPAL typology most of the campesinos (peasants) are classified within the under-subsistence stratum. That is to say, peasant families whose size of land is less than 4 hectares of non-irrigated land.<sup>3</sup> Following the agrarian reform, most of the country's agriculture land is partitioned in 'ejidos' which are a kind of communal land divided into parcels of a very small size and individually exploited. Many of the 'ejidatarios' (members of the 'ejidos') had to work for the wealthy private farms. Some authors (Bartra, 1975; Pozas, 1976; Paré, 1988) have described this process as a capitalist transformation of agriculture which has generated exploitation and proletarianization of the campesinos. However, this has been the cause of great debate (Canales, 1988). As far as this hypothesis is concerned, there are two broad positions: the 'campesinista' and the 'descampesinista'.

According to Feder (1982)<sup>4</sup> the 'campesinista' approach considers that the expansion of the capitalist agriculture requires the exploitation of numerous small-holders ('minifundistas'), either by the appropriation of the surplus generated by their land or by the direct exploitation of cheap labour. According to this view, these are the reasons the capitalist agriculture has to reproduce the 'minifundista' sector, particularly in those places where the process of capitalist expansion threatens its existence. Conversely, the 'descampesinistas', also called 'the

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<sup>3</sup>The CEPAL's classification is based on the following data and assumptions: maize is the main grain cultivated, the composition of the peasant diet (the protein and energy daily requirements of a family size of 5.5), the cost of such a diet and its equivalent in tons of maize, according to the average price of maize, and the average national maize yield per hectare of unirrigated land. The other three strata are: 'subsistence' (4-8 hectares), 'stationary' (8-12 hectares), and 'exceeding' (>12 hectares) (CEPAL, 1986).

<sup>4</sup>Quoted in: Canales, 1988.



proletarianist school', based upon the Leninist thesis of the decomposition of the campesino sector, consider that the 'minifundistas' will be transformed into waged labourers, that is to say rural proletarians, in the strict Marxist meaning of the term (Feder, 1982).

In more recent years the agriculture lands have been increasingly used for cattle raising, which has led to maize being replaced by forage.<sup>5</sup> The peasants have been expelled from their lands, not necessarily by force, but also by the fact that their agricultural yields<sup>6</sup> were not enough even to survive (Barkin, 1988).

In sum, the profile of the Mexican agriculture can be depicted by four great problems: a low growth and productivity rate; a high level of unemployment; a very low (and unevenly distributed) income per capita (Gollás, 1982); and proletarianization of peasants.

Under increasing economic and political pressures in the agricultural sector, in November 1991 the Federal Government passed a presidential decree that amends the 27 article of the Political Constitution in order to modify what is considered the foundations of Mexico's agricultural system: land reform and the semi-communal ownership of land ('ejidos'). According to such a decree the 'ejidatarios' will be legally permitted to own their land or rent it out if they wish so. Furthermore the 'ejidatarios' will have the right to set up societies (Presidencia de la República, 1991). The government believes that this reform will increase the productivity and stimulate private investment in the agricultural sector.

However, this reform implies the privatization of land, since

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<sup>5</sup>Maize represents 50% of the country's cultivated land.

<sup>6</sup>In 1981 the national average maize yield was 1.9 tons per hectare while in 1987 was 1.7 tons. In the same years the beans yield was 670 and 572 kilograms respectively (CCPNS, 1990).



under the present precarious material circumstances, the 'ejidatarios' will have no choice but to sell their land. Thus, the risk of a new 'latifundismo' (accumulation of the land in few big landowners) is now greater than ever since the Mexican Revolution of 1910.

### **C. Economic crisis and adjustment: widening of social inequalities**

Towards the middle of the 1970's the so called stabilizing development showed signs of exhaustion and the economy went into decline. The economy suffered severe crises in 1976 and 1982. In August 1982, the Mexican Government had to suspend payments on its huge foreign debt. During the period from 1982 to 1986, the average growth rate was negative (-1.5%) and a significant devaluation of the peso took place. In only five years the peso fell from 26 to the dollar to 915. That is, a devaluation of 3500%. The 1991 exchange rate was 3,037.40 pesos the U.S. dollar (El Financiero, 1991).

In 1986 the fall in the price of oil, which in that year accounted for 70% of the country's export revenues, together with the cost of reconstruction following the 1985 earthquakes, put increasing pressure on the government to continue servicing its \$100bn foreign debt (EIU, 1985; INEGI, 1984). In 1982 the total foreign debt and its servicing accounted for 55% and 12% of the GNP respectively (Aspe-Armella, 1990). This, in turn, pushed up the public financial deficit to 16% of the GNP (Martinez-Hernandez, 1989). Real wages dropped by 45% and unemployment doubled to 16% (Financial Times, 1986). The inflation rate escalated from 25% in 1980 to 106% in 1986 (Valdés-Olmedo, 1991). In 1987, it was already 160% (Valdés-Olmedo, 1991).

As a result of this economic crisis, tough adjustments were initiated by the last federal administration during the last two years of the presidential term (1982-1988) and continued by the present administration.

First, in 1987 a tripartite agreement, the Pact for Economic Solidarity and Growth (PECE), between the government, the employers and the unions was reached to restrain wages and prices so that the annual inflation rate could be brought down from 170% to less than 20% (Aspe-Armella, 1990; Johns, 1990).

Second, a large privatization programme was undertaken. In recent years, over 600 public companies have been either privatized or liquidated (Fraser, 1990b). For example, the banks, that had been nationalized in 1982, and the biggest state owned companies such as the national telephone company, the two Mexican airlines, the Cananea's mining company, and steel companies were privatized.

Third, public expenditure has been sharply reduced, particularly the budget of the social sector. For example, the public expenditure in the social sector in 1988 was only 3.2% of the GNP compared to 7.3% in 1981 (CCPNS, 1990). Thus, education, housing, health and welfare have been the most affected by the cuts. However, at the same time, the government has set up a programme, Solidarity National Programme (PRONASOL), to fight the increasing poverty. The PRONASOL has been largely criticized by the opposition parties as being an instrument to keep the ruling party -the Party of the Institutionalized Revolution (PRI)- in power, by regaining support from the poorest voters. In 1988's general elections, the PRI lost many seats in the Congress.

Fourth, the economy has been liberalized. Protectionism has been abandoned and emphasis has been put in increasing exports of manufactured goods. At the beginning of the 1980's oil accounted for 70% of export revenues, whereas currently it represents less than 40% (Graham, 1990). Foreign and private investment, particularly in the 'maquiladora' (assembling) industry, has been strongly encouraged. It is expected that Mexico will make a free trade agreement with the U.S. and Canada soon. Most (70%) of the trade of Mexico is with the U.S. (Graham, 1990).



Nevertheless, the impact of the economic crisis and the so-called 'Thatcherite' adjustment programme on the social conditions of the majority of the population is striking. The number, in both absolute and relative terms, of people that live below the poverty line has increased. For instance, in 1981 it was 32.1 million, whereas in 1987 it was 41.3 million (CCPNS, 1990). In the same period the total population grew from 71.4 to 81.2 million. Thus, in 1987, 50.9% of the population was beneath the poverty line as compared to 45% in 1981. In the period 1980-1989, the unemployment rate increased from 6% to 10.2% and the minimum real wages index decreased from 109 to 50.1<sup>7</sup> (CCPNS, 1990).

It can be concluded that the debt crisis and the lack of democracy precipitated a severe crisis that in turn increased the extent of the inequalities. The debt service absorbed a growing share of the already weakened budget (50% of the public expenditure in 1987) at the expense of a significant reduction of the expenditure in the social sector, particularly in health, education and housing. Under a neoliberal economic perspective, and shaped to a large extent by the IMF policies, the adjustment policies, through a large programme of privatization, low wages, additional reductions to the social expenditure, and open doors to the foreign investment, have led to further widening of economic and social inequalities.

## **2. Economic crisis and health policies**

### **A. State's health policies**

In response to the economic crisis, since 1983 the health sector led by the Ministry of Health (SSA) has been introduced some policy changes which purport to reform the inadequate and

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<sup>7</sup>1970=100



inefficient structure and functioning of the health care system, and consequently, to improve the coverage and quality of the health services.<sup>8</sup> Among the main policies that the health sector has been implementing during the 1980's, the following deserve special mention:

-The amendment of the Political Constitution of the Republic to introduce the social right to health care. As far as sanitary legislation is concerned, this is the most relevant advance made during the last years. Such a Constitutional right states that: first, everyone has the right to health care. Second, a new Law (the General Health Law was passed by the Mexican Congress in 1984) shall define the bases and the forms for the access to the health services. Third, the GHL shall define the concurrence between the Federation and the federal entities on general salubrity (Soberón et al, 1988). It has been recognized that health is a "crucial element for development" and that "in a society whose main principle is social justice and equity, health is an essential right for everyone" (Poder Ejecutivo Federal, 1989).

-The integration of the 'National Health System', which is a functional integration of the multiple health institutions rather than an organic one. It was set up; first, to improve the health services provided to the non-insured population, and to reduce the existing gap between such services and those offered by the social security institutions. Second, to strengthen the operative and management capacity of the health services of the governments of the states. Third, to link the health planning process to that of the overall national planning.

-The formulation of a National Health Programme. The main objectives of this programme were to achieve the goal of

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<sup>8</sup>The changes that have taken place in the health sector have been designated within the official discourse as either "the health care reform" or "the structural change of health". See: Soberón et al, 1986; Soberón, Kumate and Laguna, 1988.

universal coverage of the health services and to enhance the quality of the health services. This programme has been the central strategy of the federal government to make effective the participation of institutions of the health sector, the States of the Republic and the social and private sectors (Valdés-Olmedo, 1991). In order to consolidate the National Health System five strategies were considered: sectoralization, decentralization, modernization, intersectoral co-ordination and community participation.

In more recent years, the present federal administration has focused on the following four broad strategies: (1) to improve the quality of the services; (2) to reduce social inequalities; (3) to modernize the health care system; and (4) to decentralize and to consolidate the co-ordination of the health services (Poder Ejecutivo Federal, 1989).

Also recently, special emphasis has been put on the strengthening of the 'jurisdicciones sanitarias' (health districts) through the strategy known as SILOS (local health systems) and the strategy of primary health care. Among the specific health programmes, two have received distinctive attention: the immunization programme and the programme of family planning.

With regard to the former, the Mexican government has agreed to commit itself to achieve the objective of universal population coverage with basic vaccination by October 1992. Another programme that has received singular support is that of family planning, since as an instrument of the population policy of the government, it is linked to its economic policy.

As far as equity is concerned it is important to note that as a policy goal it has received singular attention, in official documents, by the last two federal administrations. For the first time equity as a policy goal has been explicitly included within both the National Development Plan (Poder Ejecutivo Federal, 1989) and the National Health Programme



(Poder Ejecutivo Federal, 1990). There are grounds to believe that the reason for this emphasis on equity is the state's aim to alleviate the effects of the unequal economic growth accentuated by the crisis and adjustment policies (Molina et al, 1991).

The National Development Plan (1989-1994), which is the main development policy instrument of the government, points out that priority will be given to increasing the coverage of health services of marginal urban and rural zones with emphasis on primary health care. Recognition has been given to the importance of linking the efforts of the health sector to those of other sectors such as food, housing, education, water and basic sanitation and environmental health through the Solidarity National Programme (PRONASOL), which is the government's instrument to combat the increasing extreme poverty (Poder Ejecutivo Federal, 1989).

**B. Impact of health policies on equity:  
good intentions are not enough**

Despite the good intentions of the last two administrations as far as health policy is concerned, few significant effects can be observed. There remains in Mexico a health care system which is largely unequitable, whose structure is predominantly curative and hospital oriented, despite the much talked about aim of shifting to a preventive model, most resources are still distributed on political and economic grounds rather than by population needs. The ideological function of Mexico's health care system has remained unchanged despite initiatives such as the so-called 'National Health System'. According to Ward (1987), the existing structure of the health care system reflects ideological functions of the state, and has evolved in response to powerful pressure groups. For example, there exists the view that the two largest health institutions (IMSS and the ISSSTE, which have most of the resources and provide good medical services) were established as a result of



effectively organized demand on the part of industrial and government workers (Stebbins, 1986). By contrast, the SSA (Ministry of Health) services are addressed to the poor non-insured population, who are at a greater need for effective and high quality health services, has insufficient and inadequate resources.

To illustrate the poor and contradictory results that the recent policy initiatives have had on specific areas of the health care system, three areas will be examined in more detail: health expenditure, population coverage of the health care system and health services decentralization. The impact on equity of such policy initiatives is analysed in more detail in Section 3.B.

#### Public expenditure on health

The economic crisis of the 1980's has caused sharp reductions in public spending on health. For instance, during the 1970's the percentage of the GDP allocated to the health sector had grown from 1.9% in 1970 up to 2.2% in 1982. However, the current economic crisis brought it down again to 1.8% in 1987. If the social security sector is also considered the figures are: 4.5% of the 1976's GNP and 2.7% for 1988. The health expenditure per capita (at 1980 pesos) in 1981 was 1500 pesos while in 1990 was only 1033 pesos, over 30% down (Valdés-Olmedo, 1991).

Furthermore, the effects of the economic crisis and consequent adjustment have not been distributed homogeneously among the different social groups of the Mexican population. The economic crisis and adjustment policies have particularly affected to the poor. To illustrate this: the annual average public investment in health during the period 1985-1988 in four less developed states (Oaxaca, Guerrero, Chiapas and Hidalgo) was 3.1 U.S. dollars per capita, while the national average was 100% higher (6.3 dollar) (CCPNS, 1990).

In sharp contrast to the health needs of the majority of the

population, the health care system focuses on hospital and individual curative care rather than on prevention, community or environmental health. For instance, in 1986 the expenditure of the health sector on prevention, health education, sanitation and environmental health was only 9.8% while the expenditure on curative care was 77% (Ochoa de Mendoza, 1990). Furthermore, the purchasing of drugs, of doubtful benefit for the majority of the population, takes one third of the public expenditure (Molina, 1988).

Intersectoral action for health has been receiving much lip-service but very little support, as far as intersectoral planning and budgeting are concerned.

#### Population coverage of the health services

It is now argued that to raise a community's health levels is it essential to provide effective and good quality primary health care services (PHC) in equitable and efficient ways, as a part of overall socio-economic development (WHO-UNICEF, 1978; Grosse and Harkavy, 1980; WHO, 1981). Despite the fact that health care policies underline the importance of the primary health care approach and the necessity to expand and improve the PHC services (Poder Ejecutivo Federal, 1989), neither the coverage nor the quality of the existing services are adequate.

With regard to the population coverage of the different health institutions, as Table III.1 shows, there is no consensus among the different sources. The range of differences in the figures provided by the distinct sources reflects the heterogeneity of the data and different definitions of coverage. For instance, some institutions use a definition of 'theoretical' coverage while others use the concept of 'actual' coverage. The social security institutions use the term of 'legal' coverage while the government services use the term of 'potential' coverage. Both terms are actually meaning 'theoretical' coverage.

**TABLE III.1 POPULATION COVERAGE (%) BY HEALTH CARE SYSTEM  
ACCORDING TO DIFFERENT SOURCES,  
MEXICO AROUND 1988**

Source/ Year	Ministry of health	Social security	Private sector	Without access	Total (%)
(1) 1985	31.6	45.1	4.9	18.4	100.0
(2) 1985	31.4	50.4	5.5	12.6	100.0
(3) 1987	50.5	42.9	6.8		100.0
(4) 1988*	36.5	19.8	38.8	3.8	100.0**
(5) 1990	30.3	59.3	4.4	6.0	100.0

Sources:

- (1) SSA, 1986
- (2) SSA, 1988d
- (3) SSA, 1988b
- (4) Ochoa et al, 1990
- (5) Salinas de Gortari, 1990

\* TLAXCALA

\*\* (Including  
'other':1.1%)



Also, the population without access is insufficiently defined, for the figures do not indicate the differences in the uptake of services by the various groups of the population. According to the Solidarity National Programme (CCPNS, 1990), currently the population not served accounts for 14 million, while other official sources give the figure of 4.9 millions (6% of the 1990 total population) (Salinas de Gortari, 1990; Valdés-Olmedo, 1991;). Molina (1991), citing the World Bank (1990), points out that the average population coverage of the health services was only 45% in 1985-1987, which is made up with a high coverage in urban areas (90%) and a very low coverage in rural areas.

#### Health services decentralization

Despite the promises made during the last administration to reverse the strong centralization that dominated almost all sectors of public administration following the Mexican Revolution of 1910, the programme of health services decentralization has failed to achieve its objectives. The programme was discontinued in 1987 when only 14 states (out of 32 including the Federal District) had taken control over their health care systems. In the interruption of the programme two factors played an important role: the political pressures coming from the biggest social security institution (IMSS) to maintain the control of the COPLAMAR clinics and the effects of the economic crisis of 1986 (Gonzalez-Block et al, 1989).

The results of decentralization in the states where it was implemented are rather contradictory. For instance, in a very interesting comparative study carried out in the decentralized state of Guerrero, and the centralized state of Oaxaca, which had a similar pattern of distribution of health care services and similar socio-economic conditions, it was found that after decentralization in Guerrero, health and health care inequalities between urban and rural areas were magnified. Furthermore, decentralization was not only associated with a greater use of services by the urban population but also with

a lower use by the indians and peasants. By contrast, Oaxaca, the non-decentralized state, bore the same pattern of distribution of services (Gonzalez-Block et al, 1989). According to the authors the results of their study show that: "...the incentives that were offered by the central authorities to decentralize were better assimilated by the richer and economically more strategic municipalities..."

In sum, there are reasons to believe that the shift in health policies following the economic crisis, reflects official rhetoric rather than a strong political commitment to change the inadequacies of the current health care system and the privileged position that the economic and political elites enjoy within such a system. Thus, most of the incongruities of the health care system that had been documented in the early 1980's (Lopez-Acuña, 1980a; COPLAMAR, 1982), prior to the so-called 'Health Care Reform', are still valid in the 1990's.

### **3. Patterns of health and health care inequalities**

#### **A. The social distribution of health**

Studies on social inequalities in health in Mexico are very scarce. However, there are some studies that provide evidence of the social pattern of disease in this country. In 1970, Celis and Nava (1970) published the results of a study carried out in Mexico City that compared mortality and morbidity causes among the patients of the General Hospital of the Ministry of Health, a population of non-insured campesinos and urban-underemployed temporary workers, and those of patients of private surgeries and patients covered by insurance companies, who come from middle and upper classes. The epidemiologic profiles of both groups of patients were described by Celis and Nava as 'poverty pathology' and



'abundance pathology'. The former comprised malnutrition, a high infant mortality, infectious diseases, cirrhosis of the liver, post-partum and abortion complications, and low rates of chronic and degenerative diseases. By contrast, the latter included degenerative diseases such as atherosclerosis, cerebrovascular problems, hypertension, and diabetes, and cancer. Infectious diseases were rare.

Another important and classical study on social inequalities in health was undertaken by Heredia-Duarte (1972) whose findings showed an inverse correlation between infant and toddler mortality and living standards. He did not find association between childhood mortality and medical care indicators.

In 1973 another study (Laurell et al, 1977) was carried out in two rural villages to analyse the impact of rural development on morbidity and the influence of socio-economic conditions on the distribution of illness. It was found that the village where the process of proletarianization was more intense, had a higher morbidity rate than the village with a greater access to land and fewer waged workers. Socio-economic indicators such as unemployment, literacy and migration, which differentiated groups of high and low morbidity were strongly associated to social class. Finally, the relationship between environmental conditions and morbidity was overdetermined by social class. The authors concluded that as a result of the process of proletarianization (see Section 1.B) of the agriculture sector, that some Latin American countries like Mexico and Brazil are experiencing, the living conditions of waged labourers are worse than those of the poor peasants.

More recently, the National Survey on Diarrhoea (SSA, 1988a) which included a sample of 100,000 households, showed significant regional differences in the prevalence of diarrhoea (for a 2 week period) in children under five years. Variations in prevalence among the regions ranged from 2.4%, in the northern states, up to 21.3% in the southeastern



states. Also the results revealed great disparities in the mortality level of the children among such regions, 5.3 deaths per 1000 children under five and 12.7 per 1000 respectively. The mortality caused by diarrhoea showed a similar pattern of inequality, the mortality in the southern region was over three times greater than in the northern region.

The National Health Survey (SSA, 1988b) showed similar patterns of inequality in mortality and in the availability of basic sanitation facilities among the different regions of the country.

In general, the prevailing health conditions in Mexico, reflect the current socioeconomic situation in the country. Thus, there are significant health inequalities among the different regions, particularly urban/rural areas and social groups (IMSS, 1982). For instance, in 1977 the infant mortality was 63.2 per 1000 live births in localities of less than 20,000 inhabitants, whereas in metropolitan areas was 44.7 (Table III.2) (Bronfman and Tuirán, 1983). In the same year, life expectancy at birth in rural areas was 61.6 years as compared with 65.9 in metropolitan areas.

Furthermore, differences in health are even greater among the various social classes. For example, the infant mortality among salaried agricultural labourers was 98.4 per 1000 live births, in sharp contrast with 61.9 for urban 'blue collar' workers. In the same year, life expectancy at birth was only 54.2 years and 62.3 respectively (Table III.3).

Overall, Mexico's current epidemiologic profile is characterized by a mixture of infectious and non-infectious diseases. As a result of country's industrialization and urbanization, the importance of the non-infectious causes, such as accidents, cardiovascular and diabetes, in mortality has increased in recent years, particularly among the better-off groups of the population. However, communicable diseases such as diarrhoeal diseases, pneumonia and acute respiratory

TABLE III.2 INFANT MORTALITY AND LIFE EXPECTANCY AT BIRTH  
RURAL AND URBAN AREAS

MEXICO, 1977

Size of locality	Infant mortality*	Life expectancy at birth**
< 20,000	63.2	61.6
> 20,000	54.7	63.5
Metropolitan areas	44.7	65.9
National	61.4	62.4

Source: modified from: Bronfman and Tuirán, 1983

\* Rates per 1000 live births  
\*\*In years

TABLE III.3 INFANT MORTALITY AND LIFE EXPECTANCY AT BIRTH  
BY SOCIAL CLASS  
MEXICO 1977

Social class	Infant mortality*	Life expectancy at birth**
Non-agricultural:		
Bourgeoisie	36.3	67.9
Proletariat	61.9	62.3
Informal non-waged workers (subproletariat )	78.0	58.3
Agricultural (rural):		
Rich and middle peasants	71.3	60.0
Poor and semi-proletarianized	85.0	56.9
Salaried labourers	98.4	54.2
National	61.4	62.4

Source: modified from: Bronfman and Tuirán, 1983.

\* Rates per 1000 live births.  
\*\*In years.



infections are still the main causes of childhood mortality. For instance, amoebiasis is 30 times more frequent among the poor than among the rich. (CCPNS, 1990; Laguna, 1991).

Furthermore, the country's current economic crisis has aggravated nutritional deficiencies in children under five particularly among the poor. For instance, the poorest 30% of the population consume only 13% of the food products, whereas the wealthiest 10% consume 21% (CCPNS, 1990).<sup>9</sup> According to a recent study carried out by the National Institute of Nutrition (Reyes, 1990), in 1989, 50% of the children of rural areas were suffering from malnutrition, which was similar to 1974's level. Moreover, in the former year the percentage of severe cases was 15% while in 1974 was 7.5%. This peculiar mixed pattern of disease in Mexico, has been described by some authors (Frenk et al, 1989) as a "protracted epidemiologic transition", which according to them is characterized by the coexistence of pre- and post-transitional diseases, which in turn leads to an epidemiological polarization among the different social classes.

#### **B. Distribution of health care in Mexico: reproduction of regional and social inequalities**

Among the few studies on health care inequalities in Mexico that can be found in the scarce literature on the subject, two good reviews were produced in the early 1980's. López-Acuña (1980b) and the COPLAMAR (1982a) were among the first in describing the marked regional and institutional inequalities in health care in Mexico. However, studies on the distribution of health care among socioeconomic groups have rarely been carried out in Mexico. Most of the available data are aggregated at national level and in some aspects at regional

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<sup>9</sup> The maize consumption, which is the basic component of the diet of the majority of Mexico's population, has steadily decreased from 245.2 kilograms per capita in 1981 to only 142.4 kilograms in 1988 (CCPNS, 1990).

or institutional level. Hence, regional differences in health care and institutional disparities in the distribution of health resources are used in this section as proxy indicators of social inequalities in health care.

### Regional variations

Following the uneven pattern of regional distribution of health, described earlier in Section 3.A, the resources and benefits of the Mexican health care system have been concentrated in Mexico City and other metropolitan areas of the country neglecting the greater needs of the rural population (Ward, 1987; Kumate and Soberón, 1989). In 1984 the Federal District had 45% of all health resources (Dirección General de Evaluación, 1987)<sup>10</sup>.

Also, in Mexico regional inequities in health care coverage are striking. Kumate and Barnard (1988) in a study compared 13 indicators<sup>11</sup> of the coverage of PHC services among Mexico City (Federal District) and four regions of Mexico. Table III.4 shows marked disparities among the five regions included in the analysis. The gap in access to medical care facilities between the Federal District and region IV, which includes the mostly rural states, is particularly striking. Region IV presents lower scores in all indicators than the national averages.

Disparities in health and health care between the urban poor and rural population are illustrated by a study carried out by Kroeger in the northern state of Nuevo Leon in 1985 (Kroeger et al, 1991).

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<sup>10</sup>Quoted in: Gonzalez-Block, 1989.

<sup>11</sup>PHC coverage indicators: antenatal care, delivery care, child health care, BCG vaccination, DPT vaccination, growth surveillance, diagnosis and treatment of endemic diseases, medical care for terminal diseases. Accessibility indicators related to PHC: access to safe water, access to basic sanitation facilities, access to medical care facilities, medical consultations per person, and hospital discharges per 100 inhabitants. (See also: Montoya-Aguilar and Marín-Lira, 1986; WHO, 1983).



TABLE III.4 PRIMARY HEALTH CARE COVERAGE SCORES BY REGION  
MEXICO, 1985

Indicators	National	R e g i o n s				
		D.F	I	II	III	IV
PHC (8 indicators)	66.2	82.8	78.7	62.8	77.8	49.0
Accessibility (5 indicators)	60.6	86.6	70.0	55.2	55.4	44.1
Overall scores (13 indicators)	64.0	84.7	75.4	59.9	69.2	47.1

Source: Kumate and Soberón, 1989.

States included in each region:

I BC, BCS, COAH, CHIH, DGO, NL, SIN, SON, TAMPS.  
 II AGS, COL, GTO, HGO, JAL, MEX, MICH, MOR, NAY, QRO, SLP, VER, ZAC.  
 III CAMP, QR, YUC.  
 IV CHIS, GRO, OAX, PUE, TAB, TLX.  
 D.F. Federal District

Contrary to what has been found elsewhere, the deprived sectors of Monterrey, the country's second largest industrial city, showed to have some advantages in comparison to the rural areas of the state of Nuevo León. Such advantages were in terms of a higher level of education, a lower migratory flow to the U.S., lower fertility rate, lower severe perceived morbidity rates, lower infant mortality, higher social security coverage, and better access to health services and prevention. The rural areas were doing better than the deprived urban areas in number of caesarean sections and duration of breast feeding.

### Institutional differences

The disparities in the distribution of the scarce resources among the distinct health institutions are marked. For example, there are significant differences in the availability of hospital beds between the social security sector and the government sector. As Table III.5 shows, the former has 1 bed per 1000 insured people, while the latter has only 0.6 beds per 1000. Another example is concerned with human resources. 70% of the 54,000 doctors and 76,000 nurses work for the social security institutions, whereas the remainder 30% work for the government sector, which has to cover more of 50% of the total population (SSA, 1986).

TABLE III.5 HEALTH RESOURCES/POPULATION RATIOS BY SCHEME

MEXICO, 1984

Scheme	\$ Per capita	Beds /10,000	Doctors /10,000	Nurses /10,000
Social security	78.6	1.06	10.9	17.0
Government sector	22.7	0.60	4.9	5.6
All health sector	48.8	0.81	7.7	10.9

Source: SSA, 1986.

\$: U.S.A. dollars.



Analysis of the public expenditure in health shows a remarkable inequity in the distribution of the resources among the different institutions. In 1984, the social security institutions, with a population coverage of 46.6%, accounted for 75% of the total expenditure, whereas the government sector, with a population coverage of 53.4%, accounted for 25.5% of the expenditure on health. This gives an expenditure per capita of 9,440 pesos in the former and only 2,722 pesos in the latter (Poder Ejecutivo Federal, 1984). Inequity in the distribution of health expenditure has widened in recent years. For instance, in 1986, the health expenditure ratio between the social security sector and the government sector was 2.3 (696/304 pesos out of each 1000 pesos spent in health). In 1989 the ratio was 2.8 (738 to 262) (Valdés-Olmedo, 1991).

#### Social class structure and access to health care services

The Mexican health care system, as other health systems in Latin America (Roemer, 1964; López-Acuña, 1980b), has evolved over the past fifty years as a social class oriented system in such a way that it is possible to identify an individual's social class by knowing his/her regular source of care. For example, the bourgeoisie and the middle classes with purchasing power have the private sector. The state bureaucracy is entitled to the services of the Institute of Social Security and Services for State Workers (ISSSTE). Salaried urban workers and some agricultural salaried labourers are entitled to use the services of the social security institutions. The urban underemployed and unemployed, street sellers, peasants, 'jornaleros' (temporarily waged agricultural labourers) and the poor, in general, supposedly have as a regular source of care the services of the government sector. While some classes may have access to more than one system, for instance, the poor use certain kind of private services and the insured make use of the government facilities, the main pattern is that there is a clear link between social class and source of care.

In sum, as far as the distribution of the health care resources is concerned, there is evidence that the Mexican health care system is an inequitable system, since it does not match the distribution pattern of the population health needs (CCPNS, 1990; Ochoa et al, 1991). It is possible to state that Mexico's health care system fits the "Inverse Care Law" described by Hart (1971) for Britain, which points out that "the availability of good medical care tends to vary inversely with the need of the population served."

## 4. Conclusions

i. The model of economic development adopted in Mexico, which focused on the industrial sector and has neglected the agricultural sector, was based on an unequal distribution of income and wealth, which in turn has generated marked social inequalities.

ii. During the last three decades the agricultural sector has shown an increasing decapitalization which was associated with decreased levels of productivity, but also with unemployment, poverty and poorer health conditions.

iii. During the 1980s the Mexican economy experienced the worst crisis of this century. The social costs of this crisis and the adjustment programme have been strikingly high. The proportion of people living below the poverty line and in absolute poverty has increased. While the unemployment rate has doubled during the period 1980-1989, the real minimum wages have been halved during the same period. This situation has led to further widening of social inequalities in the country.

iv. While much lip-service has been given to equity in the health sector in order to alleviate the effects of the crisis and adjustment programme, no significant structural changes in

the highly stratified health care system are observed. The uneven distribution of resources among the different health care institutions and regions of the country remains unchanged. Furthermore, public expenditure on health has been sharply reduced, which has affected the population coverage and quality of public services, particularly in marginal rural and urban areas.

v. The few studies on the subject undertaken in Mexico have focused on examining health differences either between the rich and the poor or between the heterogeneous urban and rural areas. There are even fewer studies on health care inequalities and they are confined to the existing disparities both between broad regions and between health institutions. There is no recent evidence, in the research literature, of health and health care inequalities among social groups in the rural area of Mexico. The existing evidence on health differentials between social classes in the rural area is over 15 years old and is probably no longer valid.



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## IV. TLAXCALA: THE RESEARCH AREA

This chapter deals with the population and economy of the study area in the State of Tlaxcala, and presents a brief profile of the health conditions and health care provision. It compares rural Tlaxcala with rural Mexico as a whole. In describing the research area, published information is utilized but most of it is only available at the state or municipality level.

### 1. General characteristics

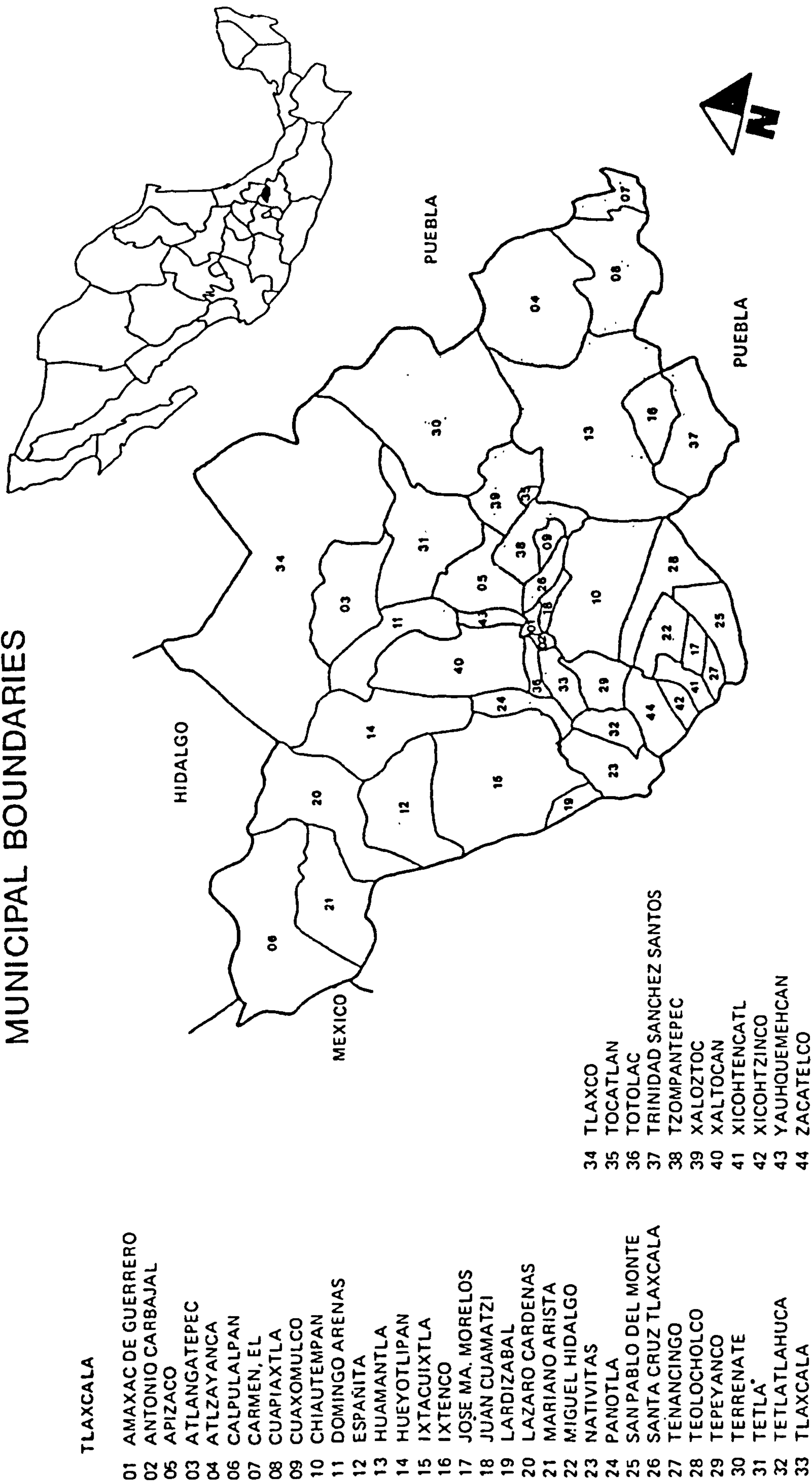
#### A. Geographical aspects<sup>1</sup>

The State of Tlaxcala, with an area of 4,060 square kilometers, is the smallest state of the country. It is located in the southeastern-central region of the national territory on the Transversal Volcanic Axis. Tlaxcala is adjacent to the north with the State of Hidalgo, to the northeast, east and south with Puebla, and to the west with the State of Mexico (see Figure IV.1). It is surrounded to the north and south by mountains and to the east and west by valleys and a desert zone. Its central relief is dominated by its highest peak: the Malintzi volcano, which rises to an altitude of 4,461 meters above sea level. All Tlaxcala's land is located over 2,000 meters above sea level. Its climate is moderate and sub-humid, with a summer rainy season. The annual average temperature is around 12°C to 18°C. The humidity is, in general, enough for unirrigated agriculture with medium yields.

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<sup>1</sup>Sources for geographical aspects: INEGI, 1986; INEGI, SPP and Fomento Cultural Banamex, 1989; El Nacional, 1990.

**FIGURE IV.1 TLAXCALA:  
MUNICIPAL BOUNDARIES**



Source: redrawn from INEGI, 1986



B. Population



Tlaxcala City



One of Tlaxcala's villages included in the Study  
Census (INEGI, 1990)



## B. Population

The total (projected) population of Tlaxcala was 671,027<sup>2</sup> in 1988 (SSA, 1988), the year in which this study was carried out, and 38.2% were under 15 years of age. The state population represents 0.9% of the country's population. The average growth rate has decreased from 2.6% in the 1970-1980 period to 1.7 in the 1980-1985 period (INEGI-CONAPO, 1985), which is lower than the national annual average rate of nearly 2.2 in the 1981-1987 period (SSA, 1987a). The lower growth rate compared to that of the country may be attributed to a higher overall mortality rate (6.4 per 1000 in 1987) than the national rate (4.9 per 1000) (SSA, 1990), which may be due to differences in age distribution, and partly to migration (INEGI, 1986).

Fertility has declined in the last 20 years, from a birth rate of 53 births per 1000 in 1970 to 30.3 in 1985 (INEGI, 1986). The overall fertility rate in 1987 was 183.7 per 1000 women of 15-49 years (SSA, 1990). Also the general mortality has declined from 13.5 deaths per 1000 in 1970 to 7.0 in 1985 (INEGI, 1986).

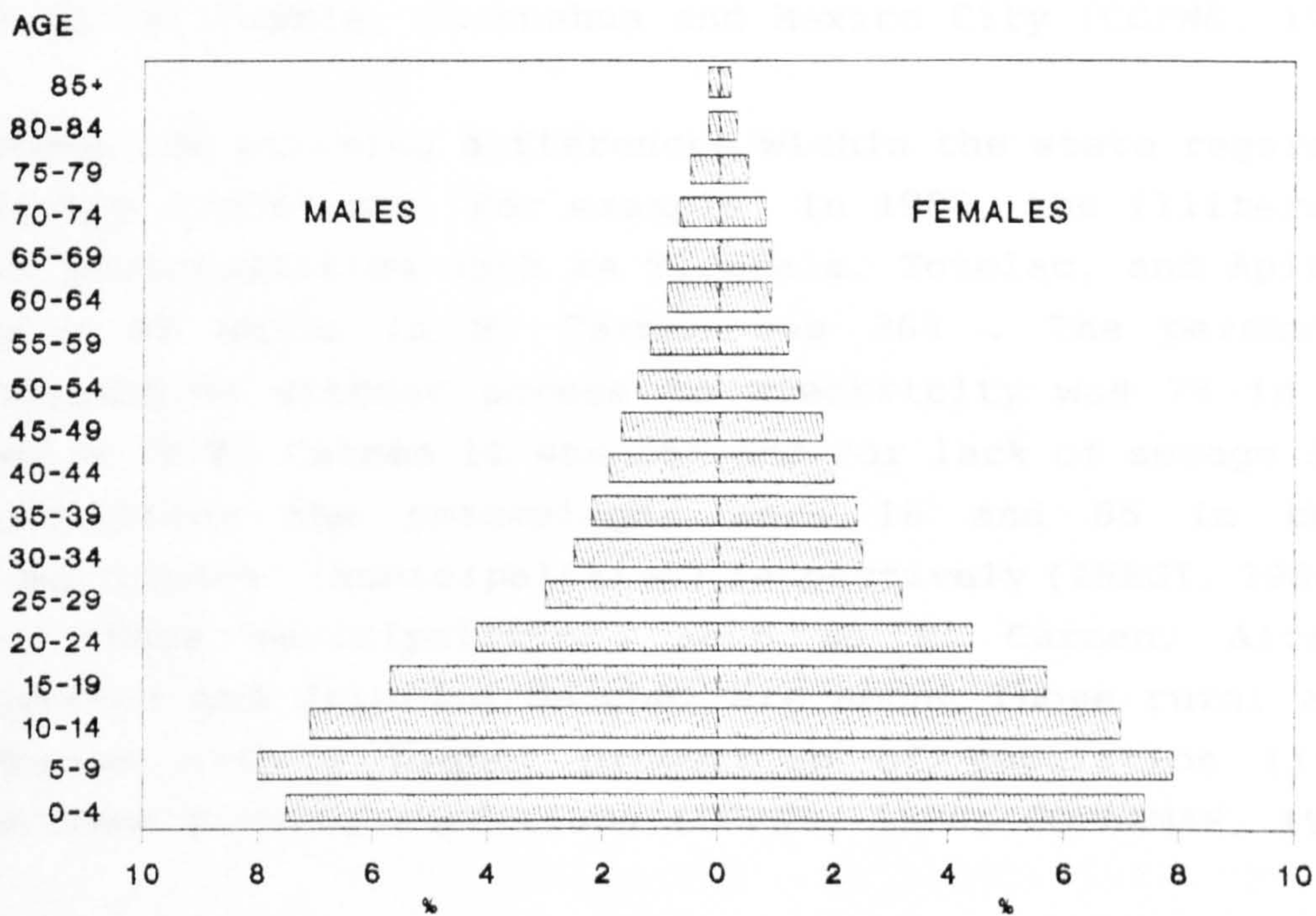
The 1980 census population pyramid (see Figure IV.2 ) still had a wide base though the population age structure is changing. Tlaxcala is one of the most densely populated states of the country with a population density of 143 per square kilometer compared to the national average of 34 (INEGI, 1986). In 1987, 42.4% of the population lived in dispersed rural localities (<2500 inhabitants), 33.5% in concentrated rural localities (2500-15000 inhabitants) and only 24.1% in urban localities (>15 000 inhabitants) (SSA, 1987b). The national percentages were 33.7, 14.5 and 51.8, respectively.

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<sup>2</sup>763,683 according to the preliminary figures of the 1990 Population Census (INEGI, 1990)



**FIGURE IV.2 POPULATION PYRAMID FOR TLAXCALA (BASED ON THE 1980 CENSUS)**



Source: INEGI, 1982

### C. Socio-economic characteristics

As far as some indicators of education, housing and employment are concerned, according to published data, Tlaxcala has similar conditions to the national average (14th position out of 32). For instance, the literacy rate for the population over 10 years was 85.8% in 1986 compared to the national average of 85% (INEGI, 1986). The percentage of households with tap water was 72%, which is also similar to the national average. However, the GDP per capita in Tlaxcala was only lower in three states (Oaxaca, Zacatecas and Guerrero) in 1980<sup>3</sup>. In the same year, over 68% of the population lived in overcrowded conditions compared to less than 48% of that of Baja California, Chihuahua and Mexico City (CCPNS, 1990).

There are striking differences within the state regarding the living conditions. For example, in 1980, the illiteracy rate in municipalities such as Tlaxcala, Totolac, and Apizaco was only 8% while in El Carmen was 36%. The percentage of households without access to electricity was 7% in Apizaco while in El Carmen it was 35% and for lack of sewage disposal facilities the percentages were 18 and 85 in the same 'municipios' (municipalities) respectively (INEGI, 1986). Some of these municipalities, such as El Carmen, Alzayanca, Ixtenco and Trinidad Sanchez are among those rural areas of Mexico with a higher proportion of population living in extreme poverty conditions (CCPNS, 1990; COPLAMAR, 1985).

According to a composite socioeconomic index proposed by the INEGI (1986), which includes 15 indicators<sup>4</sup> of income, education, housing, health and employment, the municipalities in the state were classified into three strata: 16 were above the State score mean, 13 at the middle and 15 were below, of which there were five with extremely poor living conditions.

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<sup>3</sup>In 1988 it occupied the 28th position and contributed with only 0.66% of the national GDP (Puig-Escudero and Rivas, 1990).

<sup>4</sup>See Table A.4.1



The better-off municipalities are located in the centre-south and northwest regions, while the poorest municipalities are located in the north and east of the State (Figure IV.3). Two other indices of social deprivation, one developed by the Population National Council (CONAPO, 1987) and the other by COPLAMAR (1985), which used analogous indicators, produced similar results to the INEGI's index.

In general, the available data show a clear correlation between the level of living conditions in the municipalities, (as indexed by the socio-economic index), and their productive characteristics<sup>5</sup>. That is to say, those municipalities having a more diversified productive structure, in terms of industrial and service activities, exhibit better living conditions than those municipalities having a more concentrated productive structure, particularly in the primary sector (INEGI, 1986).

In terms of the size of the labour force, the primary sector occupies first place with 38%, followed by the manufacturing sector (15%) and the services sector (10%). As far as the structure of income is concerned the overall situation in Tlaxcala is worse than in the rest of the country. For example, 33% of the active economic population of Tlaxcala earned in 1980 less than the minimum wage compared to 25% at the national level. Furthermore, incomes are unevenly distributed between municipalities, such as Totolac, where the earnings of 39% of the people are higher than the minimum wage, whereas others such as Atlzayanca, only 3.3% of the earners get more than the minimum wage (INEGI, 1986).

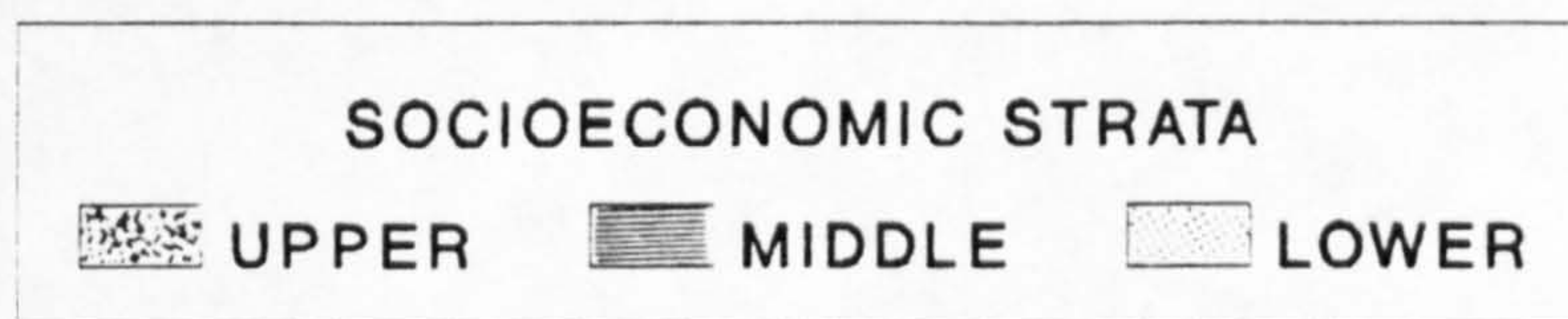
The main economic activities, in terms of their contribution to the state's GDP in 1980 were: manufacturing

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<sup>5</sup>The INEGI constructed an index of diversification of the productive structure using data on the economic active population by economic sector at the municipality level. The index relates to the degree of labour force concentration among the different economic activities (INEGI, 1986). Both indices, the socioeconomic and the productive structure, were correlated.



FIGURE IV.3 MUNICIPALITIES\* BY LIVING  
CONDITIONS INDEX\*\*



\*See Figure IV.1 for municipal boundaries.

\*\*See Table A.4.1 for indicators used.

Source: redrawn from INEGI, 1986.



(24%), commerce, restaurants and hotels (17.2%) and agriculture, live-stock, forestry and fishing (15.2%<sup>6</sup>) (INEGI, 1986).

Agriculture is the main economic activity within the primary sector, being 68% of the State's GDP and 1% of the national GDP (INEGI, 1986). Maize is the most important product, in terms of the volume of production (51.5%), followed by barley (16.1%), alfalfa (10.8%), beans (5.4%), potato (4.8%) and wheat (4.5%). Two thirds of the state territory are used for agriculture, of which only 10.8% is irrigated and the rest is rainfall land. The agricultural structure is of a dual nature. On the one hand, there is a sector that has the best irrigated land, uses modern technology and obtains high yields. On the other hand, there is another sector whose low yields rely exclusively on rainfall and obsolete technology.



A sample of Tlaxcala's rural landscape

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<sup>6</sup>8.3% for all the country (INEGI, 1986).



## 2. Health profile

In Tlaxcala the health conditions, in terms of mortality indicators, are worse than those of the country as a whole. For instance, life expectancy at birth was 67.3 years in 1987 while the national figure was 69.4 years (SSA, 1990). The infant mortality rate was 79.4 per 1000 in 1980 while in the whole country it was 38.8 (INEGI, 1986).

With regard to the crude mortality rates, among the 32 different Mexican states, in 1987 Tlaxcala occupied the 30th place with 6.4 deaths per 1000 inhabitants<sup>7</sup>. Only the states of Puebla and Oaxaca had higher death rates (Dirección de Estadística, 1990). Table IV.1 shows that Tlaxcala's mortality by age was higher than the national average in all age groups.

Regarding the causes responsible for overall mortality, as Table IV.2 shows, the epidemiologic transition currently observed in the country (Laurell et al, 1977; Soberón et al, 1986; Frenk et al, 1989) has not yet fully reached Tlaxcala, as it is only slowly showing the epidemiologic configuration of the country's mixed pattern of infectious diseases and chronic conditions. Infectious diseases such as influenza and pneumonia, and enteritis and other diarrhoeal diseases, are still among the three most important causes of death, whereas at the national level they have moved to the sixth and fourth places, respectively. Acute respiratory infections and gastroenteritis, as causes of death, are respectively 2.6 and 1.5 times higher in Tlaxcala than in the whole country. It is striking that in the State, malnutrition still appeared among the first ten causes of death in 1987.

The pattern of mortality in the early age groups in Tlaxcala does not differ to that shown by the whole country.

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<sup>7</sup>The national rate was 4.9 deaths per 1000 population.



TABLE IV.1 MORTALITY RATES<sup>1</sup> BY AGE GROUP  
TLAXCALA AND MEXICO 1987

Age group	Tlaxcala (State)	Mexico (National)
< 1	36.0 <sup>2</sup>	22.6 <sup>2</sup>
1-4	26.0	23.6
5-14	6.6	5.5
15-64	3.4	3.1
≥65	612.2	542.8

Source: SSA, 1990

<sup>1</sup> per 10,000

<sup>2</sup> per 1000 live births

TABLE IV.2 FIRST TEN CAUSES OF DEATH IN  
TLAXCALA AND MEXICO 1987

Causes of death	Tlaxcala		Mexico <sup>1</sup>	
	Rate <sup>2</sup>	Rank	Rate	Rank
Influenza and pneumonia	66.3	1	25.7	6
Accidents	63.4	2	51.7	1
Enteritis and other diarrhoeal diseases	55.9	3	36.5	4
Heart diseases	49.7	4	51.2	2
Malignant tumors	41.1	5	45.1	3
Certain causes of perinatal mortality	40.6	6	24.9	7
Cirrhosis and other chronic diseases of the liver	37.3	7	20.1	9
Diabetes mellitus	30.4	8	29.1	5
Cerebrovascular diseases	26.6	9	22.2	8
Malnutrition	17.4	10	(11.3)	(12)
Homicides	(8.3)	(15)	19.3	10

Source: SSA, 1990a; Dirección de Estadística, 1990.

<sup>1</sup> National  
<sup>2</sup> Rate per 100,000



The predominant causes of infant deaths are acute respiratory infections, enteritis and other diarrhoeal diseases, and perinatal causes. Also the first two, together with accidents and malnutrition, are among the first five causes of toddler deaths.

Available statistics on mortality show large disparities among the different municipalities, and this relates to their socio-economic conditions and productive structure. The pattern of inequality in childhood mortality is presented in Chapter VII.

Unfortunately, the routinely collected data on morbidity is neither complete nor reliable, since they are based upon institutional morbidity, in other words, met demand. Thus, morbidity that is not translated into demand does not form part of such statistics. Routine statistical systems do not provide information on the socio-economic and epidemiologic characteristics of the non-users of health care services. To reach them a household survey is necessary. In 1987 a national health survey (Subsecretaría de Servicios de Salud, 1988), which included a small sample of households of Tlaxcala, was carried out. However, data are aggregated at national and regional level and are not useful for state level analysis. Information on social and demographic inequalities in self-reported morbidity obtained by this study are analysed in Chapter VII.

### **3. The health care system**

#### **A. Structure**

The structure of Tlaxcala's health care system is, in general, similar to that of the rest of the country. The multiplicity of health institutions and fragmentation of Mexico's health care system is seen here. The same principles regarding the availability of health care in Mexico that has been previously

described (López-Acuña, 1980; Soberón et al, 1986; Ward, 1987) also operate here (see Chapter III, Section 3.B). Tlaxcala's health care system includes the following types of services:

-The services of the government or public assistance sector which are aimed at the population not covered by any of the social security agencies. These services are based upon the principle of the state's responsibility of assisting the poor or destitute. However, since the Constitutional amendment and passing of the General Health Law (see Chapter III, Section 2.A), such services are theoretically based on the social right of everyone to health care. Within this sector are the services of Tlaxcala's Secretariat of Health (state's government services) which are the most important. Following the process of decentralization in Tlaxcala, the health care services of small public assistance agencies and the services of the IMSS's Solidarity Programme for Marginal and Deprived Zones (IMSS-COPLAMAR) were merged together with the Secretariat of Health into the so-called State Health System (SESA) in 1984.

-The medical services of the social security institutions in the state of Tlaxcala which comprise the Mexican Institute of Social Security (IMSS), whose services are mainly provided to industrial workers, the Institute of Social Security and Services for the State Workers (ISSSTE), and the Mexican Institute of Social Security for the Armed Forces (ISSFAM). According to Soberón et al (1986), social security services are allocated to "priority groups" in Mexico under the principle of "socially perceived priority".

-The medical and dental services of the private sector, which mostly benefit those groups with purchasing power. As we will see in the results chapters, however, many of the poor make extensive use of ambulatory private services. Drug sellers come under this group and are an important choice in small localities for treating minor illnesses. Also, there are some non-profit making private institutions, such as the Red Cross



and parish medical surgeries, which aim at the indigent and are based on the principle of charity. However, because of their target population these services are usually classified within the first type and are regulated by the SESA.

-Finally, there are the traditional healers such as the 'curandero' (healer), 'hierbero' (herbalist) and 'huesero' (bone setter). Their importance is not well known, since people usually deny making use of healers when questioned by outsiders.

Theoretically and legally all the above mentioned institutions are integrated under the SESA and, therefore, headed by the Secretariat of Health. In practice they are still operating independently and in an uncoordinated manner.

## **B. Coverage**

Using official statistics (SSA, 1990) in 1989, the population coverage of the different public health services was estimated in 69%. This figure indicates utilization coverage, since to estimate it, user population<sup>8</sup> was only included. Of this figure (69%), the government health services (SESA) had a population coverage of 57%, while the coverage of the social security institutions represented 43%<sup>9</sup>. According to another data source (SSA, 1987b), the population coverage of the private services was 8% in 1987. Thus, these data suggest that more than 23% of the total population is not covered (as far as utilization coverage is concerned) by the formal health services.

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<sup>8</sup>'User population' refers to that population that makes use of the medical care services at least once a year (Dirección de Estadística, 1990).

<sup>9</sup>The IMSS, which is the largest agency among the social security institutions in terms of budget and human resources, contributed 77.3%, while the ISSSTE contributed 22% and other institutions the remaining 0.7% (SSA, 1990).

## C. Resources

Regarding health resources, as Table IV.3 shows, in absolute terms SESA has more primary care centres, hospital beds and medical personnel than the social security institutions. However, if we look at the resource/population ratios the social security institutions can better meet the needs of their target populations (see Table IV.4). For example, the number of beds and nurses per 10,000 in the ISSSTE is 1.6 times that in the SESA. As we can see, the government sector, concentrates on primary care (88% of the total health centres are under this sector), while the social security institutions focus on hospital care. As far as number of beds per 1000 population is concerned, Tlaxcala occupies the 26th place among the 32 Mexican states. Also, it is noteworthy that most of SESA's physicians and nurses are students at the final year of their studies, while for IMSS and ISSSTE most of the medical staff are graduates.

Furthermore, as far as health expenditure is concerned, there are striking disparities among the different health institutions. For instance, the health expenditure of SESA, whose target population represents 49.4% of the total population, accounted for 28.6% of the total expenditure in health in 1989, whereas the health expenditure of the social security sector, with a target population of 38%, accounted for 71.4% of the total health expenditure (SSA, 1990).

The health expenditure per capita in 1989, was 16.2 U.S. dollars in the government sector, while in the social security sector it was 52.5 U.S. dollars, which is 3.2 times as much as the expenditure per capita of the SESA (SSA, 1990).

Regarding the distribution of the budget, curative care takes a share of 73.3%, while the share of preventive care, which mostly includes immunization services, is only 4.1%. The government sector expenditure in prevention (6.2% of its total expenditure) is bigger than that of the social security sector



TABLE IV.3 SELECTED HEALTH RESOURCES BY INSTITUTION  
TLAXCALA AROUND 1989

Resource	No.	SESA	Social security	Social security
		%		
Primary care centres	138	87.9	19	12.1
Hospitals	5		3	
Beds	196	53.0	174	47.0
Physicians	351	59.4	240	40.6
Dentists	44	78.6	12	21.4
Nurses	485	51.9	450	48.1

Source: SSA, 1990

TABLE IV.4 SELECTED HEALTH RESOURCE/POPULATION INDICATORS BY  
INSTITUTION, TLAXCALA 1989

Resource per 10,000 popn <sup>1</sup>	Institution		
	SESA	IMSS	ISSSTE
Beds	5.87	5.93	9.45
Physicians	10.51	8.74	10.71
Nurses	14.52	16.12	22.05

Source: SSA, 1990

<sup>1</sup> Target (potential) population

(3.3%). By contrast, the social security expenditure in curative care is 76.9% while that of the government sector is 64.4% (SSA, 1990).

SESA's services are funded by central and local taxes, which are collected by the federal and state governments, whereas social security are funded by contributions from three parties: workers, employers and federal government. Following the decentralization of SESA's services in the 1980s, the share of the local government in the health expenditure has been increased.

#### **D. Provision of health care in rural areas**

The delivery of health care in rural areas is to a large extent, the responsibility of SESA. The structure of the SESA services in the State is similar to that proposed for the whole country and it is based upon the so-called 'model of health care for non-insured populations' (SSA, 1985). The structure of such a model is depicted in Figure IV.4. As we can see, the model is organized in levels of care related to the size of the catchment populations served by the different health establishments. For the delivery of health care in the rural area<sup>10</sup>, there are three types of health centres: the Auxiliary Health Units (UAS), the Health Centre for Dispersed Rural Population (CSPRD) and the Health Centre for Rural Concentrated Rural Population (CSPRC).

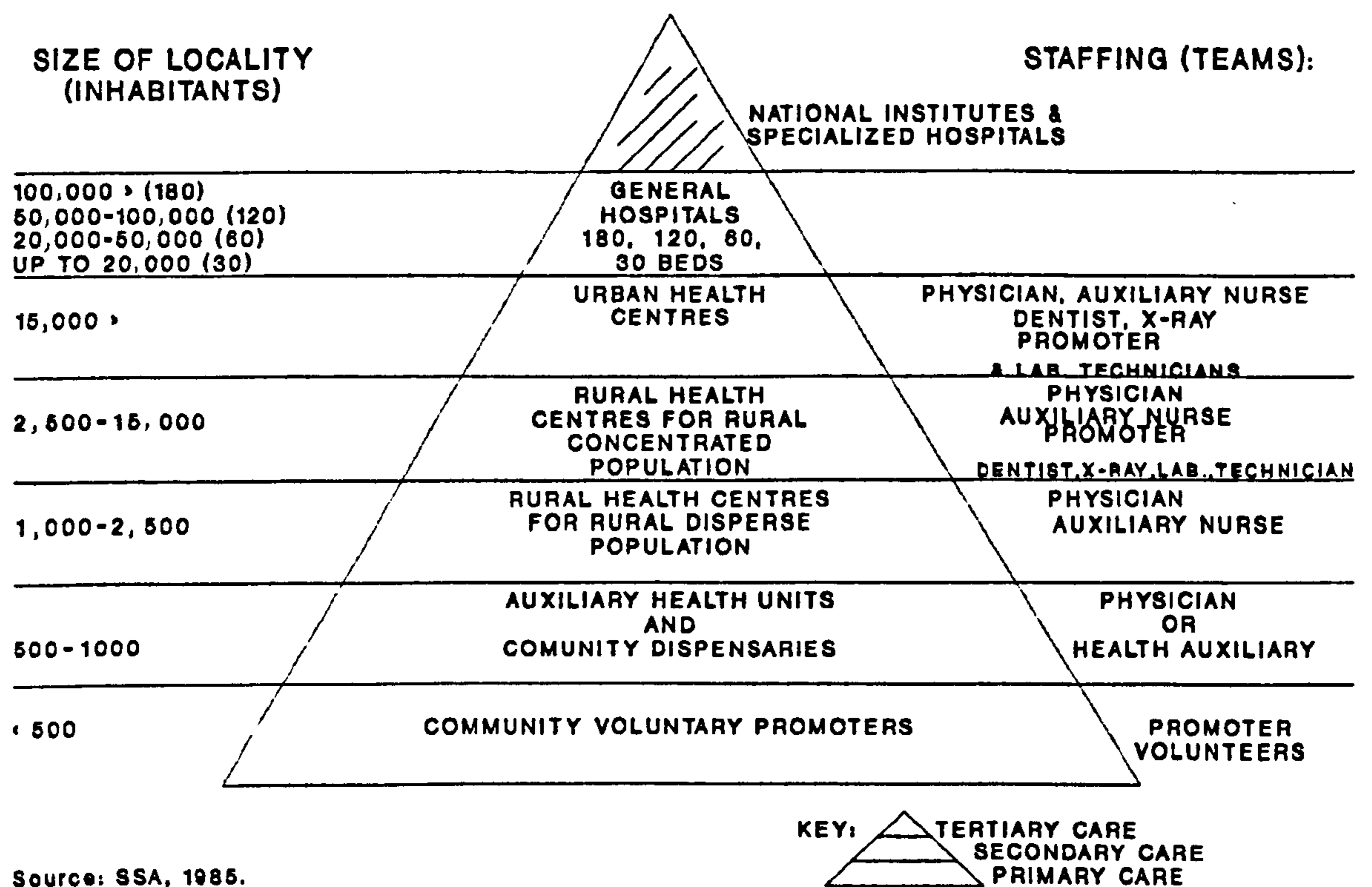
In the UAS, the health team (a physician and an auxiliary nurse) is in charge of 1,000 inhabitants, in the CSPRD of 2,000 inhabitants, while in the CSPRC there is a health team for each 2,500 inhabitants. In the urban areas (localities over 15,000 inhabitants) we have the Urban Health Centre (UHC) and the general hospitals. In the UHC, each health team covers

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<sup>10</sup>According to the regionalization criteria of the SSA (1985) there two types of rural population: 'dispersed' and 'concentrated'. 'Dispersed' includes those localities of less than 2,500 inhabitants and 'concentrated' a range of 2,500-15,000.



**FIGURE IV.4 MODEL OF HEALTH CARE FOR THE NON-INSURED POPULATION**



Source: SSA, 1985.

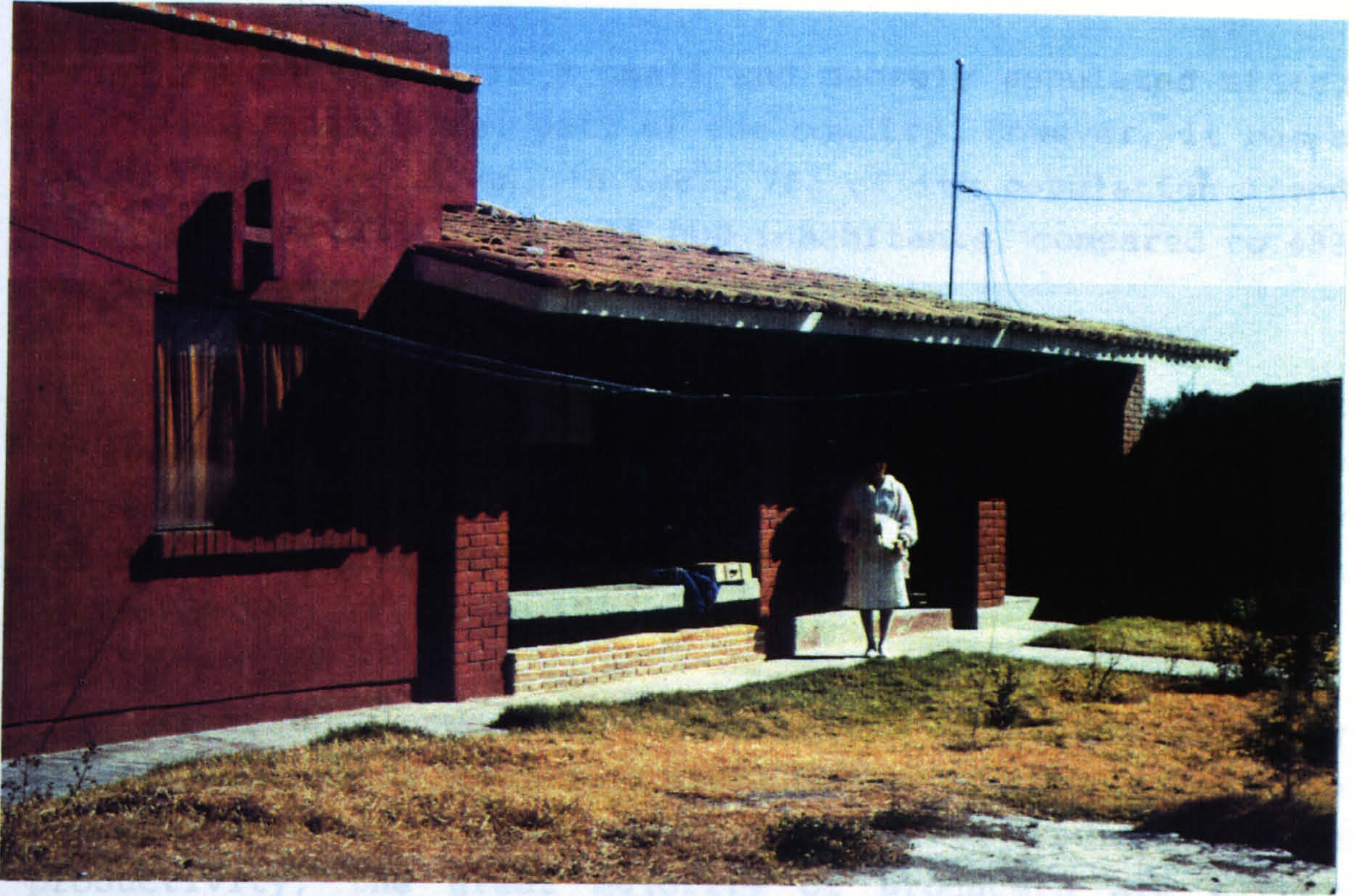
a population of 3,000 inhabitants. The above types of health centres differ from each other in relation to organizational and operational aspects such as staffing (quality and quantity), equipment, availability of supplies and drugs, supervision and referral support, operating schedules, etc.

Type of services provided by the health centres

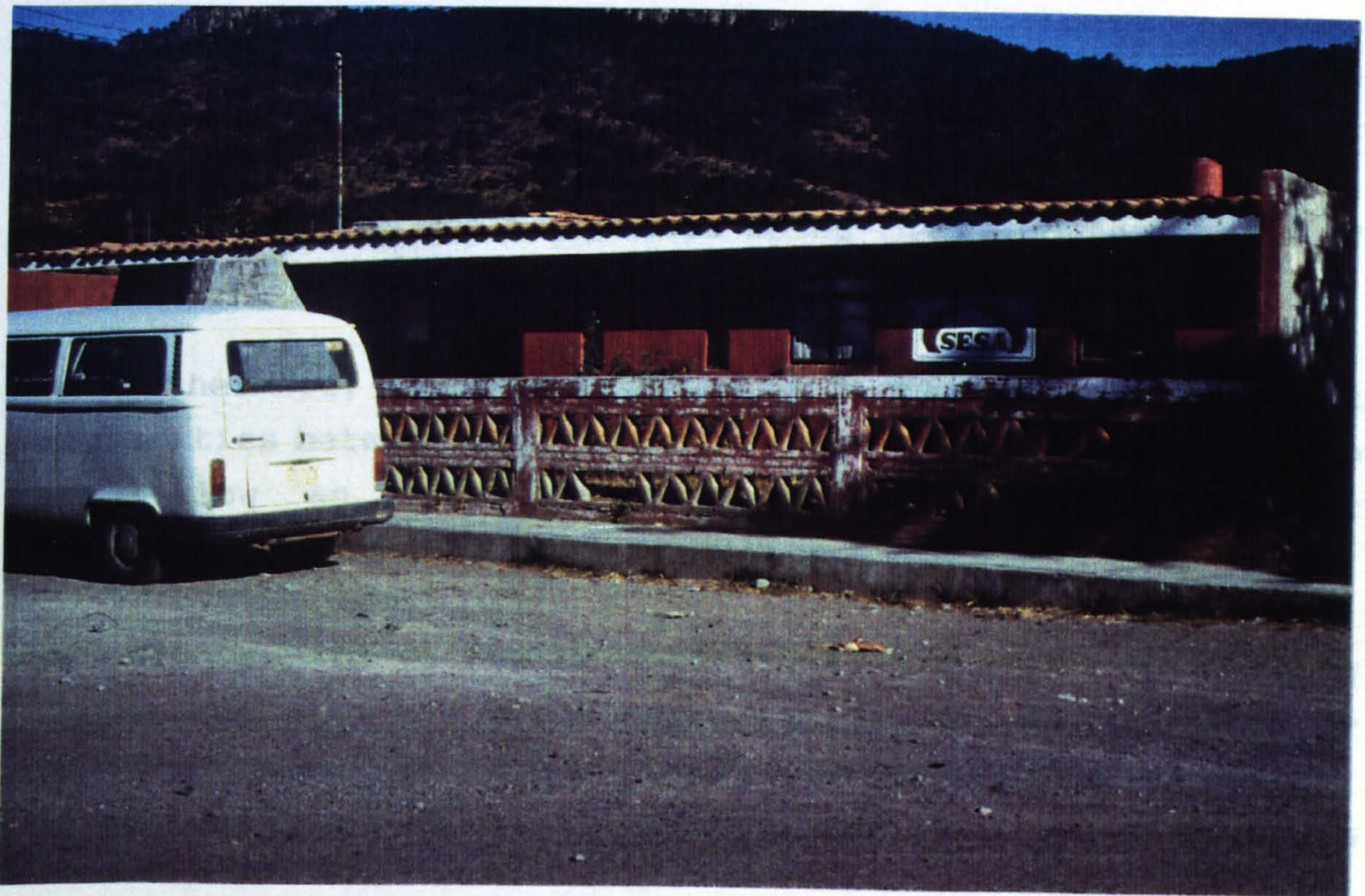
Finally, the health centres provide a range of services comprising the following services: maternal and child care such as antenatal care, sometimes delivery care, postpartum care, child growth monitoring, basic immunization (BCG, DPT, measles, polio), family planning, supplementary feeding (distribution of milk among high risk groups), care of common diseases, oral rehydration, referral of cases to upper levels of care. Other services that the centres are supposed to offer are: communicable diseases control (lepra, brucellosis, tuberculosis), rheumatic fever control, breast and cervix cancer screening, chronic diseases control (diabetes, hypertension), school and occupational health.



## 4. Conclusions



Health centres for dispersed rural population





## 4. Conclusions

i. In sum, Tlaxcala is a small and densely populated state, located in the central part of the country. However, it has a large rural population. In 1987, 76% of its population lived in localities of less than 15,000 inhabitants, compared to 48% in the whole country.

ii. Although Tlaxcala has an important agricultural sector, it exhibits the same problems and contradictions observed in the whole of rural Mexico: that is the low growth and productivity levels, increasing decapitalization and an uneven distribution of income.

iii. Rural development in Tlaxcala has generated striking disparities. While there is a small number of rich farmers who own the best land, use modern technology and have high productivity, the great majority of producers are either under-subsistence peasant land-holders or impoverished waged day-labourers.

iv. While the whole state shows similarities in some socio-economic indicators to the national average, in other indicators of living conditions, such as income and housing, it lies among the Mexican states being in the worse extreme of the socio-economic spectrum of the country.

v. Furthermore, there is evidence of large social and economic disparities between municipalities. However, published data do not allow an analysis of inequalities within smaller geographical areas of disaggregation.

vi. With regard to health conditions, Tlaxcala stands among the states with the worst health indicators, as suggested by its infant mortality rate and life expectancy at birth. Infectious diseases are still the predominant causes of death



in Tlaxcala, whereas at the national level they come after accidents and heart diseases.

vii. Tlaxcala's health care system is, in general, similar to that of the whole country. Its structure is characterized by the existence of multiple institutions and a highly stratified access to the health services. The three main health institutions are: the local government services (SESA), the social security services and the private sector services.

viii. Finally, the rural area of Tlaxcala was considered a suitable study area for the purposes of this research on the basis of its demographic, socio-economic and health characteristics, which are to a great extent similar to rural Mexico as a whole.<sup>11</sup>

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<sup>11</sup>The limitations for the extrapolation of the results of this study are discussed in Chapter IX, Section 4.B.

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## V.OBJECTIVES AND METHODS

### 1. Introduction

As mentioned earlier, the present study is part of a large research project on the "Evaluation Methods for Primary Health Care Development in Rural Mexico" (Ochoa-Díaz López, 1987a, 1987b).

The overall purpose of this whole project was to improve primary health care in rural areas of Mexico by developing methods for monitoring and evaluating the delivery of PHC, in order to obtain increasing effectiveness and quality.

The specific objectives of the project were as follows:

(1) To develop simple, inexpensive and practical methods and instruments to assess the use, coverage and quality of services provided by rural health centres.

(2) To test the reliability and practicality of such methods by undertaking a feasibility study in one federal state of Mexico.

(3) To assess and compare the performance of different health centres existing in such a state in terms of: unmet needs for basic PHC services; use of selected PHC services by groups of the population; quality of care regarding adequacy of the organizational structure of the centres, process of patient care, treatment compliance, and user satisfaction with the services provided by the health centres.



(4) To recommend practical steps to implement and incorporate the methods into the basic evaluation system of the Ministry of Health.

The project included a package of six studies using 11 instruments, which were successfully applied during the fieldwork carried out in Tlaxcala at the end of 1988. The strategy of small samples in depth (Nosseir et al, 1986) was implemented to complement the routine statistics and to provide a more relevant profile with more pertinent information. The objectives, information sources and overall characteristics of the six studies are as follows:

-Study on Needs for Primary Health Care (PHCNS). The main aim of this study was to identify and measure the needs of the different groups of the population, particularly of the non-users, as well as to ascertain the factors that determine health care utilization. The information was gathered through a household interview survey covering a sample of 1238 households (6622 persons) in Tlaxcala's localities with less than 15,000 inhabitants. As this report is mainly based on the results of the PHCNS, a detailed description of the methods and instruments used in this study will be given in the following sections of this chapter.

-Study on Demand for and Use of Primary Health Care (PHCDUS). The objective was to determine the demographic, socioeconomic and epidemiologic characteristics of health centre users, as well as to assess their satisfaction and dissatisfaction with the services given at the centres. It included data on reasons for choosing the health centre, distance travelled, drugs prescribed and costs. The sample of 1913 users consisted of a census of patients attending a representative sample of the different health centres of Tlaxcala's SESA. The sampling technique allowed the health centre activities to be studied during one whole week.

-Study on Resources and Organization of Primary Health Care (PHCROS). An inventory of resources and a review of the structure of the health centres were carried out to assess the adequacy of the inputs for the provision of basic PHC services. The information was gathered from interviews of centre staff and by direct observation. The study focused on tools, equipment, their use and maintenance; inputs supply system, grade and skill of staff; supervision and information systems. The sample included 14 centres for concentrated rural population (CSPRC)<sup>1</sup>, 17 centres for dispersed rural population (CSPRD), and 12 auxiliary health units (UAS).

-Study on the Process of Primary Health Care (PHCPS). The quality of care given by the various types of health centres of the SESA was assessed by the process approach (Donabedian, 1980), which is based on the assumption that, if in all phases of care, currently available medical knowledge and technology are fully applied, the outcome is more likely to be good than if the application of such knowledge is deficient (Vuori, 1982). To get an overall indication of the quality of care performed at the centres, the strategy for evaluating health care delivery known as the 'tracer method' (Kessner and Kalk, 1973a; 1973b) was applied. This method, which has been extensively used (Hulka and Cassel, 1973; Burdette et al, 1974; Amonoo-Lartson, 1981; 1985; Nutting et al, 1981), is based on the use of 'tracers' which are specific health problems that enable one to pinpoint the strengths and weaknesses of a health care system by analysing the interactions between the health providers and the patients. As tracers, common conditions were chosen such as diarrhoeal diseases, acute respiratory infections (ARI), antenatal and child care. The explicit and specific criteria of 'good' care were developed through peer review. A sample of 538 consultations given at the centres for such tracer conditions were observed.

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<sup>1</sup>Which is the universe of this type of centres in Tlaxcala.



-Study on the Compliance of Medical Treatment (SCMT). A sample of 125 children under five years suffering from ARI, whose consultations were observed, were followed for one week to study their compliance with the medical treatment. The data were collected by a household interview survey of the relatives responsible for the children.

-Retrospective Study of Hospital Admissions (RSHA). Finally, the follow up of a sample of 523 hospital admissions and outpatients of Tlaxcala's five general hospitals was conducted to study the interdependence of primary and secondary care. Prenatal and delivery care and ARI in children under five years were used as tracer conditions. The former included a sample of 350 women, while the latter included 173 children. The aim of this study was to see from the hospital level the manner in which the primary centres were working. If primary level is not effective in its function, patients could arrive too late and moribund at the hospital, or too early without the appropriate work up of investigations and treatment at the health centre. This was assessed by applying a severity index to such patients, which aimed at identifying failures and successes of the PHC level concerning the principle of matching the right patient with the right place and level of complexity of resources (Donabedian, 1985; Logan and Israel, 1985).

The methods and results presented in this thesis are exclusively based on those utilized in the Study on Needs for PHC (PHCNS).

## **2.Objectives of the study**

### **A.Research problems**

It is frequently said that a central objective of both social and economic policy in any country, but particularly in the

so-called 'developing countries', is to reduce inequality in the distribution of income and, consequently, of social inequality (Gollás, 1982).

A most important characteristic of Mexico's economic growth has been the profound inequality in the distribution of the benefits of economic growth. The accumulation of capital has accentuated social inequalities and these economic and social inequalities have been reflected in the health conditions and access to health care. This has generated a social polarization of the epidemiologic and health care use patterns in the country.

On the other hand, as mentioned in the previous chapter (Chapter III, Section 2.A) the present federal administration in Mexico is committed, through its National Development Plan 1989-1994 (Poder Ejecutivo Federal, 1989), to lessen social inequalities in health and health care, as one of its principal health policy goals. The effect of the current strategies to attain such a goal has not been assessed.

Although the existence of social inequities in health and health care are already recognized by the State and they are, at least theoretically, important for health policy purposes, they are not sufficiently well documented. Very little is known about the extent of inequities in both health and health care, the differences in the uptake of services among distinct groups of the population and, consequently, disparities in levels of unmet need. Routinely collected statistics seldom reveal such inequities. The research implications of the subject under study have been discussed in Chapters II and IX. This study is justified in both research and health policy terms.

The research issues on which this study is based can be summarized by two broad categories, as the problems of defining and documenting the extent of differentials and then



methodological problems of measuring them. As they are inter-related, they will be described together.

First, it is very important to gain knowledge on the extent of inequalities in health, particularly in perceived morbidity, since there is a lack of information on this subject in comparison to data on mortality differentials.

A comparative analysis of a mortality indicator, such as childhood mortality, and morbidity indicators, for example, perceived illness or restriction of activities, using the same social measures and the same population, may contribute to the elucidation of this problem. A concern of this research is that morbidity may show even greater differentials than mortality.

The problem of inequities in health is not only a problem of measuring their magnitude, but also of identifying epidemiologic patterns related to such inequalities. Although analysis of mortality data shows that the relative contribution of infectious diseases compared to that of chronic conditions is different among different social groups, there is the possibility that analysis of morbidity data may show different patterns in the type and magnitude of the predominant conditions.

A second issue that stems from the first is the possibility of analysing epidemiological patterns for inequality in morbidity rather than mortality, which has formed the basis of most previous studies. The epidemiologic polarization that has been recently reported for the country (Soberón et al, 1986; Frenk et al, 1989) has been described using mortality as the only health indicator and entitlement to social security as a proxy social measure. The results of this study may constitute a starting point for further assessments of the epidemiologic polarization, but this time in terms of morbidity data.

A third issue is related to the identification and measurement of inequities in health care utilization. This is a problem studied less than that of inequalities in health, in both Third World and industrialized countries. The results seem to be contradictory. Two questions are particularly important: Firstly, are there significant social or economic gradients in health service use among those with the same needs?; and secondly, who are those people not being reached by the services? The hypothesis is that the health care system allows privileged access to, and use, of health services by those groups with either political power or with economic priority.

For health policy planning purposes it is of considerable importance to identify those groups making less use of health services and to ascertain the factors that influence the use of health care services, so that the delivery characteristics of the health care system could be modified accordingly.

A fourth issue concerns the lack of attempts in Mexico to use different ways of categorizing need in analyses of social inequities in health care, nor to compare different social measures to study inequity of utilization relative to need. Alternative ways of defining and measuring need for health care are described in Chapter II, Section 7.

The few studies that have been carried out so far have concentrated on regional or urban/rural differences. Studies using other specific socio-economic characteristics, such as occupation or social class, to distinguish groups of high and low morbidity and health care use have rarely been undertaken.

As mentioned earlier (see Chapter II, Sections 3-4), according to the materialist perspective it is the way in which the social groups are inserted in the productive process and the resulting forms of social reproduction which determines the patterns of inequality in health. Thus, it seems of particular value to use social class as a variable by which inequalities in rural areas are measured since this approach may contribute



to the debate about differentials in living conditions among the different agricultural workers in Mexico<sup>2</sup>.

This study provides also the rare opportunity of comparing a socio-economic area-based measure (see Chapter IV, Section 1.C) with individual-based social measures including social class.

### **B. Aim of the study**

The principal aim of this study is to document the social polarization of health status and the inequities in health care utilization relative to need in a rural region of Mexico. It is hoped that the study will contribute reliable but simple measures of inequity and need. More and better information on inequities in health care, and methods to measure their extent, may be used to formulate policies oriented at delivering more effective and equitable health services, in order to meet the health needs of Mexico's rural population.

### **C. Specific objectives**

i. To identify and ascertain the extent of demographic, social and area (socio-geographic<sup>3</sup>) variations in perceived morbidity and in childhood mortality in rural areas of the State of Tlaxcala, Mexico.

ii. To determine the extent of demographic, social and area disparities in health care utilization according to various measures of perceived morbidity and health need.

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<sup>2</sup>There is the hypothesis that the process of capitalist accumulation in the Mexican agriculture sector, and the consequent proletarianization of the campesinos, has accentuated the social inequalities. Laurell et al (1977) and others (Bronfman and Tuirán, 1983) have found worse health conditions among waged agricultural workers than among poor peasants working their own plots of land.

<sup>3</sup>According to size and socio-economic stratification of locality of residence.

iii. To document the existence and extent of social class differences in morbidity and health care utilization among the distinct agricultural groups living and working in Tlaxcala.

iv. To make comparisons of different health measures<sup>4</sup> of inequality, including the following:

- self-reported morbidity (overall morbidity, number of symptoms and illnesses, morbidity of high severity, and types of illnesses reported)
- childhood mortality (infant and under five mortality)
- self-assessment of health state

v. To compare different social measures<sup>5</sup> of inequality in health and health care, such as:

- socio-economic indicators (education, occupation, entitlement to social security, source of medical care, income-related indicators, housing conditions, size of the locality of residence and a socio-economic index of area of residence)
- land tenure (access to land and type of land)
- social class (position in the production system)

vi. To analyse the role of the different health care systems of Tlaxcala in the utilization of health care services relative to perceived need.

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<sup>4</sup>With regard to their power to show clear social differentials.

<sup>5</sup>Regarding their capacity to distinguish groups of high and low morbidity, and groups of high and low utilization of health services.



vii. To examine the relationship between demographic and socio-economic factors, and population's responses (including health care choices) to perceived morbidity.

viii. To develop population-data methods for further monitoring of trends and changes in patterns of inequality in morbidity and health care use, as well as to assess the impact of changing health policies and health services programmes.

### 3. Choice of methods for data collection

As discussed earlier (see Chapter III), routine statistics in Mexico do not provide the type of data necessary to study the distribution of both morbidity and health care services across all groups of the population. As is well known, routine information systems provide no information on unmet need and, as in industrialized countries, they provide very little about the social differences in the uptake of health services and unmet demand (Ashley and McLachlan, 1985).

Routine systems use mainly mortality data, which are aggregated so that only analyses at the national or regional levels can be performed. Another problem is that existing statistics on morbidity are limited to those persons using the health services, which says very little about those people, not using the services.

One method that has been extensively used to measure the prevalence of self-reported morbidity<sup>6</sup> and use of health care services is to interview a sample of people to obtain

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<sup>6</sup>Self-reported morbidity can be measured through interview survey methods, in terms of diagnostic categories, symptoms or the functional impact of illness (Aiach and Curtis, 1990) (see Section 6.B on health measures).

information about recent illness and contacts with different kinds of health services, together with demographic and socioeconomic characteristics. This tool is known as Health Interview Surveys (HIS) (Alderson and Dowie, 1979; Kroeger, 1983; Ross and Vaughan, 1986; Timaeus et al, 1988). Despite its pitfalls (Cartwright, 1983) the HIS is still the most reliable, if not the only, method of gathering information about the non-users of the health services, and about the level of unmet need and its distribution among the different population groups (WHO, 1981; White, 1985).

It was decided, therefore, to use the HIS methodology to obtain the data needed to achieve the objectives of this study.

## 4. Choice of the study area

For the purposes of the study and to ensure a better control of the field-work, it was decided to confine the research to one federal state of the country. Several states were considered, including Hidalgo, Mexico, Morelos, Queretaro, Tlaxcala and Zacatecas. Finally, the state of Tlaxcala was selected as a suitable choice for the research on the basis of its demographic, socioeconomic and health characteristics, which are described in Chapter IV. Among the criteria that were considered for selecting the state, particular emphasis was put on the following:

(1) Tlaxcala is a small state, with relatively good communications.

(2) It has a large proportion of both types of rural population, dispersed and concentrated, and an important agricultural sector.



(3) Overall, the state has similar socio-economic characteristics to the national averages (see Chapter IV).

(4) The state includes the full range of health care systems that exist in Mexico.

(5) Further, the government's health care system (SESA) in Tlaxcala includes the different types of health centres to be assessed by the other studies of the research project.

(6) The state had completed the process of accepting decentralized control of its health services. At the time in which the study was carried out, 14 Mexican states had already decentralized their services.

(7) There was a willingness of the local health authorities to participate in the research.

The decision to focus the study on the rural population (i.e. those residing in localities of less than 15,000 inhabitants) was taken because in the last two decades both social policy and research have concentrated on urban problems and neglected the rural areas (see Chapter III). As mentioned earlier, the available evidence shows that such areas are the most vulnerable in the country. As the localities included in the study can be stratified according to their size, comparisons are possible using different definitions for rural and urban areas. For example, the INEGI defines as rural any locality of less than 2,500 inhabitants, while others put it up to 5,000.

## **5. Sample size and sampling design**

### **A. Sample size**

For the purposes of the study and in view of existing cost and time constraints, it was decided to draw a sample of the

population currently living in households' situated in localities with less than 15,000 inhabitants (target population) of the state of Tlaxcala<sup>8</sup>.

The sample size was estimated taking into account the objectives of the study, the variables required for the analysis, and the budget available. As known, the statistical precision and confidence level is a function of the sample design and sample size (Dowd, 1988). The sample size was determined to estimate proportions and means, according to the following formula (Kish, 1965)<sup>9</sup>:

$$n = \frac{Z^2}{d^2} * \frac{q}{p} * \frac{deff}{(1-NRR)}$$

Given that it was considered that the proportions of the socio-demographic characteristics to be estimated would take values between 0.05 and 0.5, the sample size of persons was determined for a probability value of 0.05. For the precision required (0.15) it was taken into account the variances, expected values of the variables and the budget and time constraints. Regarding the design effect or design factor this was estimated to be 2.10 since a three-stage sampling scheme

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<sup>7</sup>The analysis units were defined as all the persons living in such 'hogares' (households) of the dwellings. A 'hogar' (household) was defined as a separate group of persons who live together in the same dwelling and share an income obtained by one or more persons of such group to cover their feeding expenses. Whereas a 'vivienda' (dwelling) was defined as the house or place used for living. This distinction is important to make, since in Mexico, particularly in rural areas, a dwelling can include several households. For operational reasons, collective dwellings such as hostels, barracks, hospitals, monasteries, prisons, etc, and nomadic groups with no fixed home were not included in the sample.

<sup>8</sup>According to the Population Census of 1980.

<sup>9</sup>Where Z is the value in the statistical tables necessary to obtain the confidence desired in the estimations; d is the precision required; p is the proportion to be estimated; q=1-p; deff is the design effect of clustering sampling to get the same efficiency which would be obtained from a simple random sample; and NRR is the expected non-response rate.



was used (Kish, 1965, 1987; Kish and Frankel, 1974; Dowd, 1988). Thus, substituting the following values in the formula:

$$\begin{aligned} Z &= 1.96 \text{ (for a 95\% confidence level)} \\ d &= 0.15 \\ p &= 0.05 \\ q &= 0.95 \text{ (1-p)} \\ deff &= 2.1 \\ NRR &= .10 \end{aligned}$$

$$n = \frac{(1.96)^2}{(0.15)^2} * \frac{0.95}{0.05} * \frac{2.1}{0.9} = 7569.38 \approx 7570$$

According to the 1980 Census data (INEGI, 1986) the mean number of persons per household in Tlaxcala was 5.96, thus we have:  $7570/5.96=1270$  households.

## B. Sampling design

The sampling design utilized for selecting the households was a three-stage stratified sampling scheme. First, the 44 municipalities<sup>10</sup> of Tlaxcala were stratified into three strata (upper, middle and lower) according to the socio-economic (living conditions) stratification of the National Institute for Statistics, Geography and Informatics, using 1980 census data (INEGI, 1986). The 15 indicators used by the INEGI are of a structural nature since their changes are neither sudden nor rapid (see Chapter IV, Section 1.C and Table A.4.1).

All localities of less than 15,000 inhabitants<sup>11</sup> were then identified, since they constituted the study population. To identify such localities the Basic Statistic Geographic Areas

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<sup>10</sup>The stratification was done at this level since information for a finer geographic level of disaggregation is not available.

<sup>11</sup>638, according to the 1980 Population Census.

(AGEB)<sup>12</sup> were utilized, since through them it was possible to ascertain the municipality in which each locality was located.

Secondly, with the AGEBs it was possible to locate on the map a geographical area and to identify within such an area all the localities with less than 15,000 inhabitants. With the AGEBs it was also possible to assign a selection probability for such areas, since the population size is known, whereas the population of the very small localities is not always known.

Six localities of more than 15,000 inhabitants were excluded, which represented only 0.9% of the 644 localities of Tlaxcala. The information provided by the 1980 Population Census was updated with the 1985 Economic Census data.

With the AGEBs, comprising the population under study, was applied the following procedure:

- Each stratum to which each AGEB belongs, was identified.
- In each stratum, the urban AGEBs were first sorted out, and then the rural ones.
- Each Primary Sampling Unit (PSU) was constructed with an AGEB or a group of AGEBs in the few cases in which an AGEB did not have population.<sup>13</sup> The size of the sample of households was estimated proportional to the size of each stratum. Then, the number of AGEBs in the sample was estimated.

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<sup>12</sup>The AGEB is a geographic subregion of the municipalities, that was created for the 1980 Population Census. Its main characteristics are: (a) its topographical boundaries can be easily identified; (b) in general, it is an homogeneous area in terms of its geographic, social and economic characteristics; (c) its extension is of a such size that it can be walked round by a person. The AGEBs are classified in urban (localities of 2,500 and over inhabitants) and rural (geographic areas of 10,000 hectares).

<sup>13</sup>In these cases, the AGEB was merged to the nearest AGEB within the same stratum.



•The PSUs within each stratum were selected with a selection probability, proportional to their size and with replacement.

For each selected PSU, listed areas of about 20 households each were constructed. These areas are the Secondary Sampling Units (SSU). Two SSUs were selected within each PSU by a random sampling scheme and with a selection probability proportional to the size of each listed area (SSU).

Complete lists of dwellings/households -the Tertiary Sampling Units (TSU)- were constructed in the field for each SSU selected. Also maps to locate the dwellings selected were drawn.

The TSUs were selected by a systematic procedure. For each SSU about 20 households were selected. The selection probability of the households was the inverse of the size of the listed areas (according to 1980 Census data). Thus the sampling scheme was self-weighted, since all the dwellings and households, and their occupants, had a similar selection probability. As mentioned earlier all persons living in each selected household were included in the study.

The methods used for estimating the selection probability of the households, estimates and variances are presented in Appendix 2.

The sampling scheme utilized can be summarized as follows:

Living conditions strata:	municipalities
Primary sampling units:	AGEB
Secondary sampling units:	listed areas
Tertiary sampling units:	households

### **C. Sampling frame**

To attain the objectives of the study, a sampling frame of households was constructed, which was drawn for the geographic

areas using several stages of selection. The selection of the PSU and SSU was done using information and cartographic material of the 1980 Population Census. The lists of households were made two and a half months prior to the study's field-work with the help of staff of the INEGI and of community health technicians. All the rural areas of Tlaxcala were covered. It was clearly important to have an updated and reliable sampling frame to reduce the non-response rate and to increase the statistical precision of estimates.

#### D. Non-response rate

The application of the sampling scheme produced a final sample size of 1339 households and a total of 1238 (92.5%) interviews were made. The non-response rate (7.5%) was lower than had been expected (10-15%). The analysis of the causes of non-response is presented in Table V.1, which shows that 4.1% could be attributed to problems with the sample frame, and only 2.4% to interviewee non-contact. The percentage of refusals was only 1.1%. The non-response rate is so small that its effect on the representativeness of the sample can be considered as negligible. Among the factors that contributed to a such high response rate, we have the following:

(1) The sample frame was constructed only 45 days before the main study was carried out. Thus it was updated at the time in which the interviews were made. This may explain the differences found for the rate of "unoccupied households" between this study and other studies in Mexico.

For instance, the National Health Survey (SSA, 1988) reported a percentage of 7.0 of unoccupied households, whereas in this study such a rate was only 1.6%.

(2) A non-response was only accepted after a household had been visited at least on four different occasions.



**TABLE V.1 SAMPLE SIZE AND NON-RESPONSE**

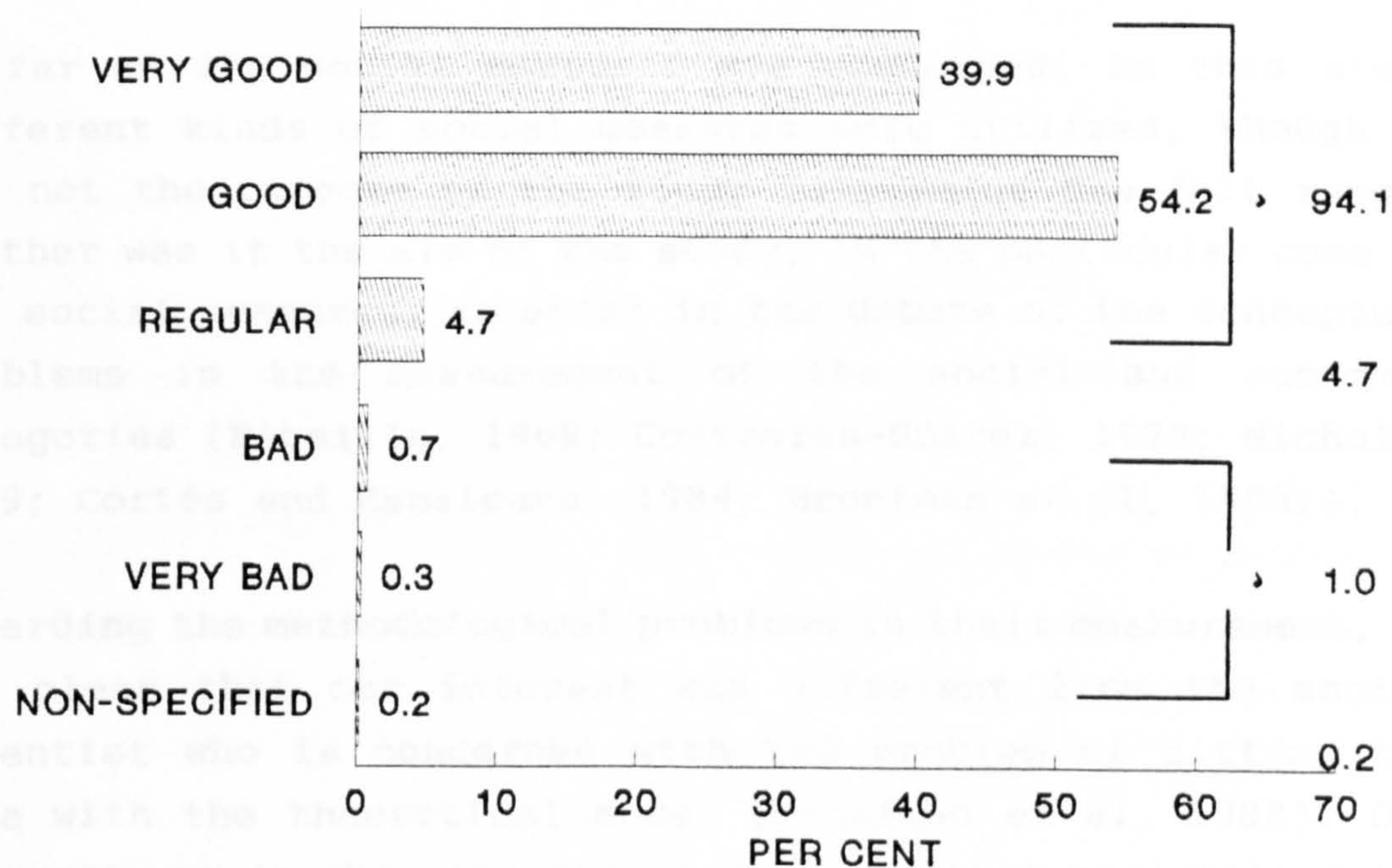
Result	No.	%
Complete interviews	1238	92.45
Non-response		
-Refusals	14	1.05
-Inadequate respondent	3	0.22
-Nobody was found	23	1.72
-Temporarily absent	6	0.45
-Unoccupied household	22	1.64
-Not a household	19	1.42
-Temporary household	14	1.05
Subtotal	(101)	(7.55)
Total no. of households in sample	1339	100.0



(3) The collaboration of the population was excellent (see Figure V.1). In fact, the refusals found in one municipality (Amamaxac de Guerrero) had been where there were polls for local authorities a few days before the interviews and the interviewers were associated by the households with one of the political parties.

In the 1218 dwellings where a response was obtained, a total of 1238 families (households) were interviewed, which gives a mean of 1.01 households per dwelling, and the range was between one and three households per dwelling. The analysis of the data was done at the household and person levels. The total number of persons studied was 6622. The percentage of the population studied (population fraction sample) in respect of the total population of Tlaxcala living in localities of less than 15,000 inhabitants was 2.1%, and 1.2% in relation to the total, urban and rural, population of Tlaxcala in 1980 (INEGI, 1986).

**FIGURE V.1 COLLABORATION OF FAMILIES INTERVIEWED**



(n=1238)



## 6. Variables, measures and indicators

In summary, in this study the variables that were measured are: health status and need indicators, health care utilization indicators, and the demographic and social dimensions by which inequalities in ill-health and inequities in health care were measured.

Table V.2 shows the main variables examined and the different measures upon which this study has relied.

The operationalization and categorization of each variable and measure utilized in the analysis are presented in the corresponding chapters of results and Appendix 1 (Questionnaire). Further discussion of their meaning, dimensions, and some problems in the measurement of the distinct variables and indicators used in this study are discussed in Chapters II and IX. Other measures of inequality and need for health care are also presented in Chapter II.

### A. Social measures

As far as the social measures are concerned, in this study different kinds of social measures were utilized, though it was not the purpose of the study to examine the full range. Neither was it the aim of the study, in the particular case of the social measures, to enter in the debate of the conceptual problems in the measurement of the social and economic categories (Bèteille, 1969; Contreras-Súarez, 1978; Nichols, 1979; Cortés and Rubalcava, 1984; Bronfman et al, 1988;).

Regarding the methodological problems in their measurement, it was clear that our interest was different from the social scientist who is concerned with the problem of fitting the data with the theoretical model (Bronfman et al, 1988). Our interest was in choosing social measures that ascertained the extent of social inequalities and inequities in health and

TABLE V.2 STUDY'S MAIN VARIABLES AND INDICATORS

Variable	Indicator
<u>Demographic</u>	-age -sex -fertility
<u>Social Indicators:</u> Socio-economic status (SES) and income	-education -occupation -entitlement to social security -habitual source of medical care -housing conditions -meat consumption
Agricultural social class	-position in the agricultural production -access to land -size and type (quality) of land
Socio-geographic area	-socio-economic index -size of locality
<u>Health and need</u> Self-reported morbidity	-overall morbidity -number of symptoms reported -severe illnesses -type of illness reported
Mortality	-childhood mortality infant mortality under 5 mortality
Positive health	-self-assessment of health state
<u>Health care use:</u> Source of care	-habitual source of medical care
Illness-related	-treatment utilized for principal illness -health services used
Child health care	-preventive visits -basic immunization



health care at a local rural level. It was important that the measures could distinguish groups with different patterns of morbidity and health care use within an apparently homogeneous population.

Measures of socio-economic status. Five social markers were selected to indicate socio-economic status (SES)<sup>14</sup>: education, occupation, entitlement to social security services, source of medical care and housing conditions.

Level of education. This a variable of great socio-economic and health significance, since it influences socio-economic status, type of occupation, life-style and overall values and beliefs, including health care seeking behaviour.

Occupation. This is a central variable in studies regarding inequalities in health and health care. Besides the specific risk factors directly related to particular occupations, the type of occupation is strongly related to income and, consequently, to the material conditions of life. The categorization used for occupational class was defined according to the characteristics of the study area and objectives of the study. In those cases in which the respondent had two or more occupations, the main occupation, was defined as the occupation that takes the greatest working time.

In industrial countries such as Britain, occupation has been used most commonly in the analysis of inequalities in health and health care for many years, as an indicator of social class (Townsend and Davidson, 1982; Fox et al 1985; Le Grand, 1986; Wilkinson, 1986; Carr-Hill, 1987, 1990; Whitehead, 1988; Goldblatt, 1989; Davey-Smith et al, 1990a; Illsley, 1990). Recently, however, alternative social measures to occupation

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<sup>14</sup>Socio-economic status (SES) is used here with a broad meaning and reflects different dimensions of social stratification, namely economic situation and material well-being as well as general standing (in social prestige and power terms) within the community.

have been proposed, such as area deprivation (Jarman, 1983; Townsend et al, 1988; Carstairs and Morris, 1989, 1991; Curtis, 1990;), car access and housing tenure as markers of income (Goldblatt, 1990; Davey-Smith et al, 1991;) and employment grade and car ownership (Davey-Smith et al, 1990b).

In Latin American countries, social class (in its materialist-historic connotation) has been used as an alternative measure to commonly used measures of socio-economic position, i.e. education, housing conditions, etc. (Laurell et al, 1977; Casas, 1981; Bronfman and Tuirán, 1983; Laurell, 1989).

Entitlement to social security. This indicator is related to the occupation of the head of the household and, consequently, to income, since most industrial workers and state workers and their families have the constitutional right to be covered by the services of one of the social security institutions, i.e. the Mexican Institute of Social Security (IMSS) and the Institute of Social Security and Services for the State Workers (ISSSTE). It can be, therefore, used as a SES indicator.

Habitual source of medical care. The regular source of care was used in this study as an indirect social indicator, since, as mentioned in Chapter III, Section 3.B, in Mexico it is strongly related to the social class membership.

Housing conditions and basic amenities variables. These were used as measures of socio-economic status and indirect indicators of income. Housing conditions as an indicator of SES has been often used in similar studies in Britain (Fox and Goldblatt, 1982; Townsend et al, 1988; Goldblatt, 1990) and elsewhere (Bronfman et al, 1988). Housing conditions indicators also play an important role in the study of the effects of the social environment upon health. Direct effects of housing conditions and other indicators (i.e. meat consumption) on health are discussed in Chapter IX.



The five best indicators for reflecting the living circumstances of the study population were: source of drinking water, floor construction materials, sanitary facilities, possession of a refrigerator and type of fuel used for cooking. These variables were analysed separately and combined in a composite index as follows.

Housing conditions index. A composite index of housing conditions was constructed with the following indicators: possession of a refrigerator, location of water source, presence of a W.C., quality of floor construction materials, and type of fuel used for the stove. Each of the variables had two categories measured in a nominal scale and a value of '1' was assigned to the 'positive' and '0' to the negative category. For example, for excreta disposal facilities, having a W.C. was given a value of 1, whereas lacking a W.C. was assigned a value of 0. The maximum score was 5 and the minimum score was 0.

Income indicators. Income was indirectly measured through consumption. Two types of indicators were considered to discriminate better between socio-economic groups: housing conditions and meat consumption. Among the former, two indicators represent a good reflection of income in the study area: possession of a refrigerator and floor construction materials. Regarding meat consumption, the assumption is that there is an increasing expenditure on meat with increasing household income.

Socio-economic profile of the agricultural workers. Given that this group represents the great majority of the working population in the study area, it was considered of particular importance to define appropriate groupings for analysis of inequality. Groupings were based upon several kinds of criteria, which are described below or elsewhere.

Agricultural social class. In this study, social class was defined by the position that agricultural workers had in the

production system as well as by the relationship they had to the means of production (Cueva, 1975). Hence, main occupation and access to land were used to define agricultural social class. Thus, two broad groups of agricultural workers were defined: peasant land-holders and waged labourers. The first group constitutes the majority of the agricultural workers, occupied in a semi-cash economy. According to the CEPAL's typology most of them are classified as 'subsistence' peasants (CEPAL, 1986). Their basic characteristic is that they have access to a plot of land, which is owned either by them or their families. They work the land without receiving a wage. This group comprises different types of peasants such as 'ejidatarios' and comuneros (agricultural workers on communal lands), 'nacionaleros' (peasants working federal lands), small private farmers, etc (see Appendix 1: Questionnaire). The second group, the waged agricultural labourers, mostly landless peasants, constitute the workforce of the capitalist sector of agriculture. These two groups differ in working and living conditions, with the waged labourers being at a disadvantage (Laurell, 1977, 1981).

Other indicators used to categorize the agricultural population were size of plot of land and type (quality) of available land with regard to availability of irrigation facilities. These have proved elsewhere to be reliable indicators, since they allow the distinction of agricultural groups with different patterns of morbidity and mortality (Laurell et al, 1977; Victora and Vaughan, 1985).

Finally, another index used to discriminate between the various types of peasants was the CEPAL index, which is described in detail in Chapter III, Section 1.B.

Socio-geographic area. Two area-based indicators were chosen: a socio-economic index of locality of residence and size of locality. The first is a composite index developed by the National Institute of Statistics, Geography and Informatics (INEGI) that represents the living conditions of the study



area (see Chapter IV, Section 1.C and Table A.4.1). The second indicator reflects the urban/rural nature of the area of residence. The criteria proposed by the INEGI was used to define the type of a locality according to its number of inhabitants (rural: <2,500 people; urban: >2,500 people).

## **B. Health status and need indicators**

With regard to the health status measures, most studies of inequalities in health in industrial countries have concentrated on mortality data as health measures compared to other ill-health measures (Le Grand, 1986; Blaxter, 1989; Illsley, 1990; Carr-Hill, 1990). According to Illsley (1990) very little use is made of morbidity in either national or international studies of inequalities in health<sup>15</sup>. An important problem, which was mentioned earlier (see Chapter II), is the lack of complete and reliable morbidity statistics.

Self-reported morbidity. Recently, increasing use has been made of self-reported morbidity obtained by population surveys in studies of inequalities in health in industrial countries. For instance, in Britain extensive use has been made of self-reported morbidity data obtained by the General Household Survey (GHS) (Le Grand, 1978; Collins and Klein, 1980; Evandrou et al, 1990; O'Donnell and Propper, 1991). Also, self-reported morbidity data obtained by health interview surveys has been utilized (Bucquet and Curtis, 1986; Aiach and Curtis, 1990; Curtis, 1990; Marmot et al, 1991). Likewise, self-reported illness data have been used to study regional gradients in health in Third World countries, though studies of inequalities in health are rarer in these countries than in industrial countries (Kroeger et al, 1991).<sup>16</sup>

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<sup>15</sup>The advantages and disadvantages in using morbidity data instead of mortality data are mentioned in Chapter II.

<sup>16</sup>For a review of the literature regarding the use of perceived morbidity in Third World countries, see Chapters II and IX.

Although, it is recognized that self-reported illness is influenced by psychosocial and cultural factors, making national and international comparisons difficult (Illsley, 1990), these types of data have proved to be useful for examining gradients in health within homogeneous regions in cultural terms, as well as for predicting health care use (see Chapter II). As far as validity is concerned, Blaxter (1989) considers that "the acceptance of self-reports may be thought problematic, but in fact, where comparisons have been made, the agreement with doctors' assessments or medical records has been high." Furthermore the use of self-reported morbidity data has been advocated for planning and resource allocation purposes in England and Wales (Dajda, 1979).

Another alternative measure (based on morbidity data) to overall morbidity and number and type of symptoms and health problems used in this study, was self-assessment of the severity of the principal illness. This allowed the categorization of individuals by degree of illness, as well as the examination of the validity of responses.

In sum, four morbidity measures were selected to provide a profile of the overall health of different social groups: overall morbidity, number of symptoms and problems reported, illnesses perceived as severe and type of illnesses reported. Further discussion of the advantages and shortcomings of the morbidity measures used, is presented in Chapter IX.

Positive health. The use of alternative health measures to self-reported morbidity measures, such as self-evaluation of health has been advocated by some authors (Blaxter, 1989; Piperno and Di Orio, 1990). Blaxter considers that self-perceived health is an important topic in equality, since it can be used to examine relationships with other lifestyle and psychological variables. Piperno and Di Orio (1990) quoting to Ferrera and Zincone (1986) point out that poor health perception characterizes lower socioeconomic strata.



Child mortality. Regarding child mortality, two indices were used: infant mortality ( $q_1$ ) and under five mortality ( $q_5$ ). Their meaning, method for their estimation and limitations are described in Chapters VII and IX.

Health care utilization indicators. Three indices of the use of health services were used in this study: source of medical care, illness-related use and child health care. Habitual source of medical care was defined as the health service to which a respondent usually goes when he/she is in need or ill. Illness-related use is defined as the visit to a formal health service (public or private) in response to need or symptoms in the two weeks preceding the interview. For child health care two indicators were chosen in this study: preventive visits (during the year preceding the interview) for under five year olds and basic immunization. Further description and categorization of these indices is provided in Chapter VIII.

## 7. Questionnaire

### A. Development

In designing the questionnaire, use was made of other instruments utilized in studies carried out in Mexico and elsewhere.

From surveys carried out in Mexico the most helpful were: the survey on health, illness and health services in Nuevo León undertaken by the University of Heidelberg and the University of Monterrey (Kroeger et al, 1987); the project for the strengthening of PHC in Ecatepec de Morelos, Mexico (Universidad de Heidelberg and ISEM, 1988); the health care survey of the Mexico-BID Project (SSA, 1985); the survey on demand and use of the health services in Tlalpan, Mexico City (SSA, 1979; Selwyn and Ruiz de Chavez, 1985); the national

household survey on income and expenditure (INEGI, 1983); the national fertility and health survey (SSA, 1989).

From surveys undertaken elsewhere: the U.S. Hispanic Health and Nutrition Examination Survey (NCHS, 1980); the British General Household Survey (GHS) (OPCS, 1973); the WHO International Collaborative Study of Medical Care Utilization (Kohn and White, 1976); the French INSEE/CREDOC survey (Aiach and Curtis, 1990).

To pretest the feasibility of the study and to design the survey instrument for the pilot trial, small observational studies using techniques of social anthropology such as participant observation and interviews were carried out in peripheral communities of Mexico City. This was particularly valuable for constructing the preliminary checklist of tracer conditions and symptoms according to the local situation (Kroeger, 1983; Ross and Vaughan, 1986).

As a result of the extensive review of the literature on health interview surveys, the above mentioned pretests, as well as national and international consultancies, a preliminary 124 item questionnaire was constructed for pilot-testing.

#### **B. Pilot study**

The pilot study was carried out in the state of Querétaro, and its objectives were:

(1) To test the feasibility of the study methods by estimating the costs, time, number of interviewers and field supervisors, number of vehicles, workloads and schedules.

(2) To assess the acceptability and applicability of the survey instrument in terms of wording of questions, understanding of terms, sensitivity of questions, layout,



order and sequence of questions, recall periods, duration of interview, and response rates.

(3) To estimate the variances of important study variables to estimate the sample size.

(4) To define the characteristics of the interviewers to be utilized in the main study.

In the selection of the state of Querétaro for the pilot-testing of the instruments, the following criteria were taken into account:

-The similarity between the state of Querétaro and the state of Tlaxcala, in terms of their demographic, socio-economic and health characteristics.

-Willingness to participate in the study of the local health authorities and of the University of Querétaro.

-The easy access to the state from Mexico City and Tlaxcala.

The field-work team for the pilot study consisted of 16 persons, the principal researcher, two research assistants, and 13 interviewers. Of these, six had received training as community health technicians and were recruited in the state of Mexico. The other seven were recruited from the local area. Five of them were nurse students, one was a psychologist and the other was a professional interviewer. Thus, comparisons among the different types of interviewers were possible.

The pilot study was undertaken during the week 11-16 of July 1988 in the first health district of Querétaro. A multistage, stratified sampling scheme was applied to draw a sample of about 100 households among different rural communities. 106 households were visited and 102 health centre users were interviewed (Ochoa-Díaz López, 1988b). The results of the pilot study proved to be very useful, and substantial

adjustments to the instruments, instructions and data collection procedures, were made as a result.

### C. Description

Questionnaire contents and design. The final version of the questionnaire is presented as Appendix 1. The structured and precoded questionnaire comprises the following sections:

(i). Front page: introductory text<sup>17</sup>, record identification number and identification of household, which includes sampling data such as, municipality, AGEB, listed area, and socioeconomic stratum of the locality. Another section of the front page includes data on the number of visits made to the household, date and duration of interview and identification of the interviewer, field supervisor, field editor<sup>18</sup> and data entry operator.

(ii). The matrix section. This section has a matrix design in order to collect the data on each person living in the house. It includes the following questions (number of question in brackets): identification of each person, including identification of the head of the household (1); demographic characteristics (2-3); socio-economic aspects (4-6) i.e. education, occupation, length of residence in the locality; entitlement condition to social security (7); self-assessment of health (8); usual source of health care and utilization of health centre services (9-13). At the end of the matrix section five population subgroups are identified: children under five years of age (14); women of 12-49 years of age (15), of these, women who have had children (a), women who have been pregnant during the year prior to the interview (b), and women who are pregnant at the time of the interview (c);

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<sup>17</sup>Explaining the purposes of the survey and assuring the respondents of the confidential nature of the data produced.

<sup>18</sup>Who checked each questionnaire the same day of the interview.



and persons reporting illness during the two weeks prior to the interview (16).

(iii). The individual sections. There are three sections, each with different colour, for each of the above mentioned population subgroups, i.e. the yellow section for the persons reporting morbidity, three pink-coloured subsections, one for each of the subgroups of women of 12-49 years of age, and the blue section for the children under five years of age.

a). Morbidity and accidents. The yellow section (17-27) includes data on recent illnesses or accidents (two weeks prior to the interview), type of illness or accident, which were ascertained by a symptom and ill health problems checklist (green pages), severity and functional impact of the illness or accident, type of care utilized for the most important illness<sup>19</sup>, source of care, transport, costs of care and reasons for not using formal health services.

b). Women of 12-49 years of age. The pink-coloured section, which, in turn, has three subsections:

-Survival of children of previous pregnancies (28-30).

This section is applied to women of 12-49 years of age who had had one or more children, regardless of whether at the time of the interview the children were alive or dead.

-Last pregnancy during the year prior to the interview (31-40). It was applied to those women of 12-49 years of age who have been pregnant during the year commencing on 1 November 1987 and finishing the 31 October 1988. It includes questions on prenatal care, source of care,

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<sup>19</sup>It was the respondent him/herself who identified the illness or symptom that worried him/her most. The subsequent questions on severity, restriction of activities, utilization of health care and costs were related to such a 'most important' illness.

reasons for not attending the health centre, outcome of pregnancy, source of delivery care and costs.

-Care of present pregnancy (41-46). A section applied to those women of 12-49 years of age reporting to be pregnant at the time of the interview. It included questions on prenatal care, source of care, reasons for not receiving prenatal care and for not attending the health centre, and choice of place for delivery care.

c). Children of under five years of age. The blue-coloured section (47-55) included questions on child health care, i.e. contacts with health services during the year prior to the interview, monitoring of growth, source of care, breast feeding, basic vaccination (BCG, DPT, polio, measles).

(iv). Activities of the health centres in the community. This section (56-59) collects data on community activities carried out by staff of the health centre of the locality and suggestions by the population to improve the services offered by the centres.

(v). Economic profile of the household. This section (60-65) includes questions on the household's assets and agriculture indicators such as land tenure, type and extension of land, main products and crops cultivated, ownership of agricultural and working implements, livestock assets. Also, this section investigates the frequency of meat consumption as socio-economic measure.

(vi). Housing conditions. This section (66-70) includes questions on the type of construction materials utilized in the walls, roof and floor of the house, water sources, excreta disposal facilities, and ways of rubbish disposal.

(vii). Direct observation of sanitary conditions of the house. To fill in this section (71-82) the interviewers asked to be



allowed to come into the house to observe the hygienic conditions of the W.C. or latrine, presence of rubbish, presence of insects, water source, and presence of a fridge, type of stove, and availability of electricity supply.

(viii). Interview aspects. The final section of the questionnaire (83-84) identifies the main respondents for the interview and interviewer's appraisal about respondents' collaboration with the interview.

#### Illnesses check-list.

To collect information on morbidity and accidents a list of symptoms, illness conditions, including local illness terms and diagnostic labels, and accidents, was utilized (see questionnaire, Appendix 1). The development of the list involved the undertaking of qualitative studies in the study area and pre-testing for wording, completeness and understanding of concepts. The utilization of symptom check-lists has been largely used by Kroeger et al in Latin America (Kroeger, 1982; Kroeger et al, 1987, 1988; López and Kroeger, 1990), since (Kroeger, 1983):

"It reminds respondents even of minor complaints, forces the interviewer to use it as a strict regulation, does not depend on the respondent's ability to verbalize his opinion and overcomes the problem of variation in definition of illness and people's willingness to describe their complaints."

The list of illnesses was read after asking the following question: during the last two weeks who has been ill or has suffered an accident?. At the end of the list a final question was asked: any other problem of ill health?. Once the persons and their illnesses were identified and recorded, the interviewer applied a yellow section to each individual reporting illnesses starting with the question: which of the illnesses you mentioned, has worried you most?. Thus, all the subsequent questions of the morbidity section alluded to such a principal illness or health problem. The problem of separating two illnesses episodes in the same individual can

be handled, since a person can have two or more illness episodes at the same time (see Kroeger, 1988a).

Type of respondent. Table V.3 shows the type of respondent by questionnaire section. Questions concerning the sections for women of 15-49 years of age (sections pink-coloured), were asked only if the women were present. Answers to questions regarding children under five years of age (section blue) were only given by the mother. Direct reporting of illness and utilization of services (yellow section) was strongly encouraged. Direct replies in this section accounted for more than 79% of the total responses. Answers for an absent person's illness and his/her care were given by the person best acquainted with those. Information on young children's illness and care were also given by the mother. As expected, the main source of information for household and socio-economic characteristics was the housewife/mother, who in this type of communities seemed to be a better informed respondent than other household members.

Recall periods. Only two different recall periods were used: a two-week recall period for morbidity and related use of health services (questions 16-27); and a twelve-month recall period for utilization of the health centre (questions 12-13), last pregnancy (questions 31-40), health care contacts of children under five years of age (questions 48-51), and activities of the health centre in the community (questions 56-58). To minimize recall errors, when asking questions related to the twelve-month recall period, the beginning of the interval was linked to an important event of the life of the surveyed communities.

Detailed questionnaire instructions and fieldwork manuals and forms for quality control for both the interviewers and supervisors were developed.



**TABLE V.3 TYPE OF RESPONDENT BY QUESTIONNAIRE SECTION**

Information/Type of respondent	%
Household information *	
• Housewife	62.2
• Head of the household	18.4
• All the family	13.8
• Other member of the family	4.4
• Non-specified	1.2
(n)	(1238)
Household sanitary conditions	
• Interviewer **	100.0
Perceived morbidity and health care use	
• Direct	79.4
• Indirect	20.6
(n)	(2444)
Maternal health and child survival	
• Females 15-49 years	100.0
(n)	(1544)
Child health (under five year olds)	
• Mother or the person responsible for the child	100.0
(n)	(875)

\* Demographic , socio-economic, social security entitlement, health service utilization, housing conditions and assets

\*\* Direct observation

## 8. Assessment of data quality

### A. Reliability

The repeatability of the data collected was assessed by reinterviewing a sample of respondents according to the test-retest method (Ross and Vaughan, 1986; Bowling, 1991). During the survey, 12.1% of the household interviews were repeated to check for consistency of reporting (see Table V.4). Of the 12.1% (150) reinterviews, 83% were sampled using a systematic scheme<sup>20</sup> and repeated partially, whereas the other 17% were repeated completely because some errors had been detected.<sup>21</sup>

The interviews that were accompanied by a supervisor (25%) were excluded from the reinterviews. The reinterviews that were repeated partially included 10 questions from different sections of the questionnaire<sup>22</sup>. A negligible number of discrepancies were found between the two interviews.

To increase the reliability of the data various means were implemented: First, standardization of the data collection procedures and of the recording and coding of the data; second, adequate recruitment and training of interviewers; and third, strict supervising of interviews. Also, all the completed questionnaires were checked for completeness and internal consistency by the research team together with the supervisors and interviewers the same day they were applied, when errors were detected the interviewers were prompted to go

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<sup>20</sup>Every questionnaire whose record number ended in 3 was selected.

<sup>21</sup>The reinterviews were carried out by the supervisors.

<sup>22</sup>The questions repeated were: number of persons in the household; age, sex and education of each of them; persons reporting illness during the two preceding weeks; ensuring that the symptoms and health problems checklist was read; number of children of five years of age; number of women aged 12-49 years with children; women who had been pregnant during the year prior to the interview and women who were pregnant at the time of the interview.



**TABLE V.4 QUALITY ISSUES IN THE COLLECTING OF THE DATA**

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• No. of interviewers	29
• No. of households	1238
• Non-response rate (%)	7.6
• Refusals (%)	1.1
• Average No. of interviews per interviewer	42.7
• Daily average of interviews per interviewer	4
• No. of field supervisors	8
• Average No. of interviewers per supervisor	3.6
• No. of interviews accompanied by supervisor	310
• Re-interviews (%)	12.1
• Questionnaires checked in the field (%)	100.0

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back to the household to correct them. As mentioned, some questionnaires were completely repeated by different interviewers (see Section 9.C).

## **B. Validity**

The validity of the data was checked indirectly by means of: (1) internal consistency checks; (2) assessment of the consistency between the different study areas; (3) comparison of study's results with those obtained from other sources; and (4) comparison of results on morbidity with the likelihood of their occurrence in particular age and sex groups (Kroeger, 1983, 1986, 1988b; Ross and Vaughan, 1986).

The internal consistency checks (1) were done by two means and at two different times. As mentioned earlier, all the completed questionnaires were checked for internal consistency during the survey. All discrepancies detected were settled by means of the reconciliation technique (Kroeger, 1988b). The second opportunity to check the internal consistency was during the processing of the data.

As far as methods (2), (3) and (4) are concerned, as mentioned in Chapter VI, the age and sex structure of the sample was compared with that of the 1980 Population Census of Tlaxcala (see Table VI.1). No statistically significant ( $p > 0.05$ ) differences between the surveyed sample and the census population were found. Patterns of distribution of socio-economic characteristics, morbidity and of other important variables fit with those expected and are described in more detail in the corresponding chapters of results.



## 9. Organization of the survey

### A. Preliminary activities

The preliminary activities were conducted long before undertaking the fieldwork, and consisted of reviewing the research literature, preparing a project proposal for funding, getting approval from the central and local health authorities, designing and pilot-testing the instruments and field manuals and instructions (see Sections 7.A-B), designing the sample and constructing the sample frame (see Sections 5.A-C). These activities represented much office and field work, which was done in London, Mexico City, Queretaro City and Tlaxcala. Detailed reports of each of the phases of the project were prepared and are cited in this thesis (Ochoa-Díaz López, 1987a, 1988a-d, 1989, 1990; Ochoa-Díaz López et al, 1990a,b). The organization of the fieldwork was carried out during the fall of 1988, and included the arrangement of the field teams of interviewers and supervisors, as well as the logistics of the fieldwork and printing of the questionnaires. As the survey covered the whole state of Tlaxcala, three interviewing teams were set up with a vehicle each and strategically based in three cities of the state<sup>23</sup> to save time and to reduce transport costs.

### B. Interviewers and supervisors

Table V.5 shows the characteristics of the interviewers employed in the survey. To decrease interviewer bias it was decided not to utilize health staff from Tlaxcala's health services or medical students as interviewers.<sup>24</sup> Most of the

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<sup>23</sup>Calpulalpan, Huamantla and Tlaxcala.

<sup>24</sup>It has been suggested that "when asking questions on the existing health services (particularly on use of traditional health care services), health personnel (including medical students) should not be used as interviewers." (Peeters and Kroeger, 1988; Kroeger, 1986).

**TABLE V.5 GENERAL DESCRIPTION OF INTERVIEWERS**

Characteristics	No.	%
<b>Gender</b>		
Males	8	27.6
Females	21	72.4
<b>Place of origin</b>		
Metropolitan area of Mexico City	20	69.0
Local area	9	31.0
<b>Education</b>		
Community health technician	15	58.6
Social worker	7	24.2
Nurse	2	6.9
Other	5	10.3



interviewers were women (72%). Persons from the local area were also recruited and distributed among the three teams. Regarding the education level of the interviewers, the majority had been trained as community health technicians (health auxiliaries), who during the pilot study proved to be the most suitable interviewers, followed by those trained as social workers at the University of Tlaxcala.

The interviewers received training during one week. Training included reading of the questionnaire and manual, demonstration interviews, role playing and field practicals. Each of these interviewers carried out at least two test interviews in similar areas to those surveyed.

Eight field supervisors participated in the survey. Some of the recruited supervisors had previous interviewing experience. Some of them had participated in the pilot study and in the construction of the sample frame and had proven skill and motivation. Thus, they were acquainted with the questionnaire and study area. The training course for the supervisors lasted one week and they also participated in the training of the interviewers. The research team participated as field editors and field co-ordinators. The research team, including the author, also carried out interviews. The presence of the research leader and research assistants in the field during the survey, had a positive effect on the quality control of the data collection and encouraged the interviewers.

### **C. Fieldwork and supervision**

Interviewing started on November 1st 1988 and extended until the middle of December<sup>25</sup>. The interview lasted between 35 and

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<sup>25</sup>The survey period comprised two cold months. During this time of the year, there is a seasonal variation in the incidence of infectious respiratory diseases, which may affect prevalence rates and, consequently, utilization of health services. The survey was carried out during the harvest of corn, which prevented that temporary migration (December-March)

45 minutes, depending on the number of persons in the household. The interviews were carried out on all days of the week from 8:00 A.M. to 8:00 P.M. Interviewing the whole family was greatly recommended, though, obviously, this was not always possible. However, direct reporting of morbidity was 79.4%, and the women sections 100% (see Table V.3). A non-response was only accepted after four unsuccessful visits to the dwellings. The number of interviews per interviewer was limited to avoid a decline in the interviewer's motivation and subsequent errors. The average number of interviews per day per interviewer was four (see Table V.4). Each supervisor was in charge of 3-4 interviewers on average and carried out the following activities:

- (1) Checking on every completed questionnaire for completeness and internal consistency (see 'Reliability', Section 8.A);
- (2) carrying out of 'accompanied' interviews (25%) to observe the interviewers' performance particularly of the early interviews carried out by the interviewers (see Section 8.A);
- (3) Checking the non-responses;
- (4) in-field training of interviewers;
- (5) assigning the interviewers' work and locating the sample areas;
- (6) they were also in charge of the logistics (transport and drivers, accommodation, stationary) in their responsibility areas.

The research team (field co-ordinators and editors) had the following supervision activities:

- (1) field editing of the questionnaires (100%) for completeness and internal consistency;
- (2) coding of open questions;
- (3) sending back the interviewers to the households when the information was incomplete or errors were detected;
- (4) selecting the questionnaires for the re-interviews;
- (5) carrying out unannounced visits;
- (6) checking the supervisors'

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of agricultural workers affected the results.



and interviewers' performance"; (7) organizing evening meetings to discuss field problems and planning and evaluation of activities.



Participants in the survey during an interview





and interviewers' performance<sup>26</sup>; (7) organizing evening meetings to discuss field problems and planning and evaluation of activities.

## 10. Data processing

### A. Coding, entry and verification

Before the data were entered they were thoroughly edited in field and in the office. Also the open questions and closed questions with open elements were coded. A detailed coding instruction was prepared.

Computing programmes for the data entry were prepared for the CYBER mainframe of the SSA.

After the data were entered and data entry listings were produced, some sections of the questionnaire were verified manually in all the questionnaires, while other sections of the questionnaire were verified in a sample (25%) of questionnaires drawn by a systematic sampling scheme. Few data entry errors were detected by this technique, which showed the high quality of the data entry work. The data entry was also verified by re-entering of the data using different data entry operators.

### B. Editing

A programme to check the range of correct codes and internal consistency was written in Fortran for the mainframe. This programme does not accept 'prohibited' codes, i.e. different values to those specified as allowable for a specific variable. For instance, for the variable 'gender' the only accepted values were 1 or 2, codes for male and female,

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<sup>26</sup>During the survey one interviewer was dismissed, since his performance was unsatisfactory. All the interviews he had carried out were repeated.



respectively. The checking of internal consistency was done by inter-comparison of the replies on related variables. Thus, the congruity programme identifies all the possible correct 'combinations' of the replies on the inter-related variables. For instance, age/occupation and education, sex/age/number of sons and daughters. The programme allowed to detect errors and to identify the record number of the questionnaires for amendment of consistency errors. After checking back to questionnaires, another programme rectified the data base.

These programmes were run several times until no errors were detected. Once the information was clean, six computing files were created for the same number of sections of the questionnaire. Then, the data were transferred on magnetic tapes for tabulations and statistical analysis.

## **11. Analysis**

The analysis of the data was done using the Burroughs and A12 mainframe computers of the National University of Mexico. The software utilized was the Statistical Package for the Social Sciences (SPSS-X) (Nie et al, 1975, 1983). The final processing of tables and graphs was done on PC, and the software used was WordPerfect 5.1, WordStar Professional 4.0 and Harvard Graphics 2.12.

### **A. Presentation of results**

Tabulations were generated according to the study's framework and objectives. First, the demographic and socio-economic characteristics of the study population are described by frequency and cross-tabulations (see Chapter VI).

Second, contingency tables were produced to describe the distribution of health variables (self-perceived morbidity, and self-assessment of health) among the different population

groups. To present the perceived morbidity data, period (two-week) prevalence rates and average number of symptoms and illnesses reported per person for various population subgroups were calculated. Prevalence rates of illnesses perceived as severe were also calculated. Regarding childhood mortality, this is described for different population subgroups during the period of 1976-1985.

Third, the distribution of health care utilization resulting from the perceived morbidity among the different demographic and socio-economic population subgroups and socio-geographic areas were described by computing two-way and multiway tables (see Chapter VIII).

Health and health care utilization variables are treated as dependent variables, whereas the social measures are the independent variables. Most of variable relationships are controlled for age and sex. Graphs are also presented when they illustrate the distribution of a variable better than a table.

## **B. Statistical analysis**

The inter-group differences were tested by the chi-square statistic for independence (for categorical data). The chi-square test for linear trend (Mantzel extension) was used for ordinal data. Observed significance levels based on the chi-square statistic are presented when significant inter-group differences were found, otherwise it is indicated. The level of significance used to reject null hypotheses was  $< 0.05$ .

The direct method (Fleiss, 1981; Osborn, 1985) for age-standardization of rates was used when comparing morbidity rates between educational and occupational groups. The age-distribution of the sample population was used as standard population.



Odds ratios (OR) and 95% confidence limits (95% CL) for OR were calculated, according to standard procedures, using the software for epidemiology Epi Info version 5.01a (CDC and WHO, 1991).

The childhood mortality data were processed by PC and using the United Nations Software Package for Mortality Measurement (Mortpak-Lite) (United Nations, 1988). The method of estimation is described in Chapter VII.

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## PART TWO

"Inequality is not merely a matter of individual abilities and aptitudes; it is above all a social fact. The opportunities an individual has and even his abilities are in part governed by his position in society."

(André Béteille)



## VI. POPULATION AND INEQUALITIES IN LIVING CONDITIONS

This chapter presents the results on the distribution of the demographic and socio-economic characteristics of the population studied. First, the study's results are assessed by comparing the structure of the population surveyed with that described for Tlaxcala in published data. Then the fertility and migration patterns are described. This is followed by the distribution of the study population by socio-economic stratum of the localities and the educational and occupational structures of the population. This analysis includes entitlement to social security which is used as a socio-economic indicator. Finally, the housing conditions and meat consumption are analysed as indicators of living conditions. While the published data based on the decennial census and population surveys provide information on some demographic and socio-economic characteristics of the population of Tlaxcala, most of it is aggregated at the state level and does not permit analysis by smaller geographic levels such as urban/rural regions and locality level.

### 1. Demographic profile

#### A. Age-sex structure of the population

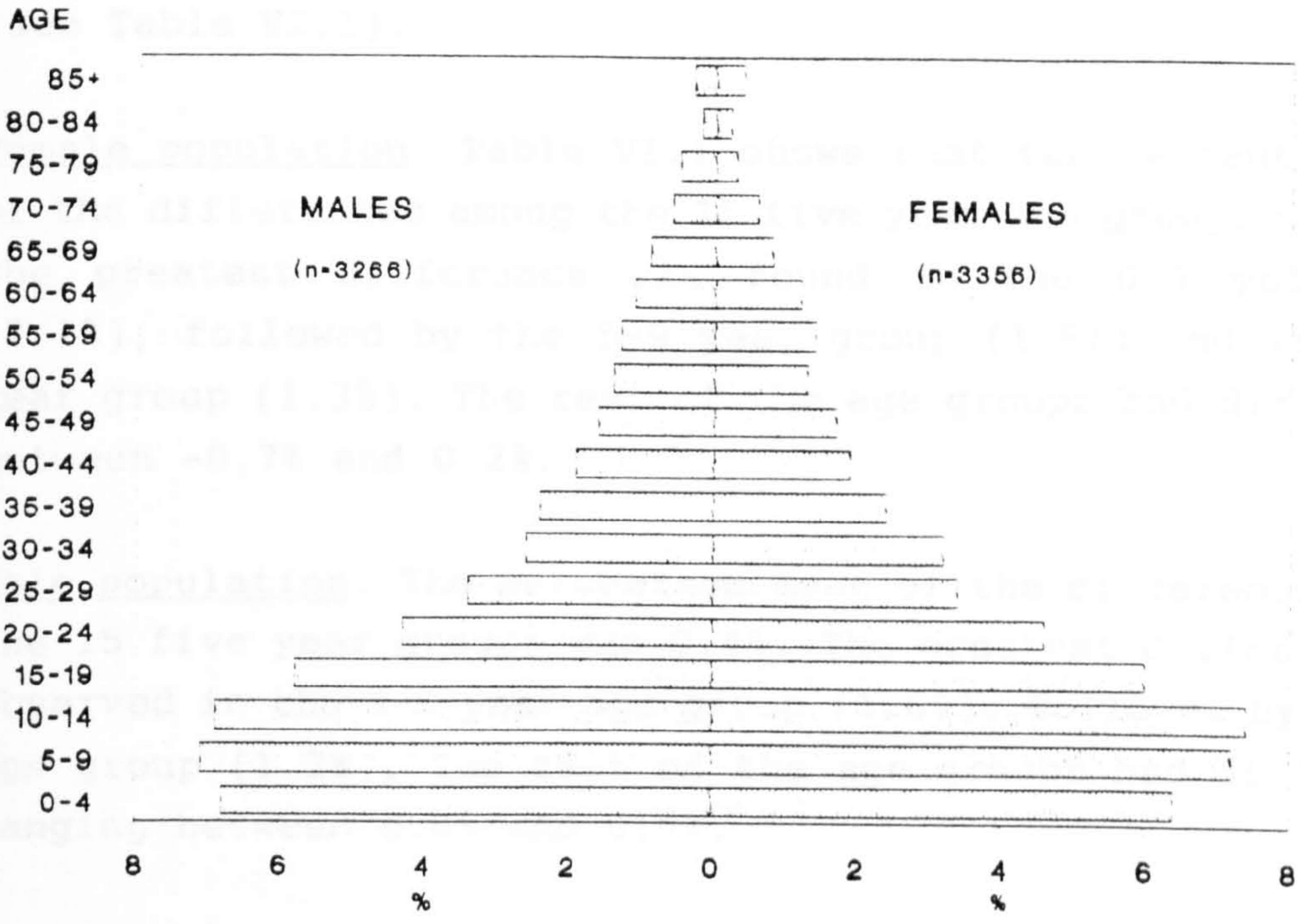
Population pyramid. Figure VI.1 presents the population pyramid by sex and five year age groups for the study sample. It shows the typical population distribution of a Third World country. Children under five years accounted for 13%. Children

under 1 year were nearly 2% of the total population. The percentage of children under 5 years was 12.5% and the childbearing age (15-49) accounted for 41% of the population. That of the children under 5 years was 12.5% of the total population.

**Representation of the sexes**

This was assessed by comparing the age and sex distribution of the sample with the corresponding population.

**FIGURE VI.1 POPULATION PYRAMID FOR THE SURVEY POPULATION**



Total population. The overall population age group distribution among the 15 age groups was 8%. Again, the age groups with the lowest age and the biggest difference were the 0-4 year olds (1.7%) and the 5-9 year olds (1.8%). Of a total number of 6622 persons studied, 30.7% were women and 49.3% men compared to 50.2% and 49.8% respectively for the 1990 Census population (1990, 1992).



under 1 year were nearly 3% of the total population. The percentage of those under 15 years was 42%. Women of childbearing age (15-49) accounted for 23%, which added to that of the children under 5 years accounted for 36% of the total population.

#### Representativeness of the sample

This was assessed by comparing the age and sex structure of the sample with the corresponding structure of the 1980 Census Population of Tlaxcala and the statistical significance of differences was tested. Distribution by age and sex in the sample did not differ significantly from the Census population (see Table VI.1).

Female population. Table VI.1 shows that the percentage mean of the differences among the 15 five year age groups was 0.6%. The greatest difference was found in the 0-4 year group (2.1%), followed by the 5-9 year group (1.5%) and the 30-34 year group (1.3%). The rest of the age groups had differences between -0.7% and 0.2%.

Male population. The percentage mean of the differences among the 15 five year groups was 0.4%. The greatest difference was observed in the 5-9 year age group (1.6%), followed by the 0-4 age group (1.2%). The rest of the age groups had differences ranging between 0.0% and 0.7%.

Total population. The overall percentage mean of differences among the 15 age groups was 0.5%. Again, the age groups with the bigger differences were the 0-4 year olds (1.7%) and the 5-9 year olds (1.6%). Of a total number of 6622 persons studied, 50.7% were women and 49.3% men compared to 50.2% and 49.8% respectively for the 1980 Census Population<sup>1</sup> (INEGI, 1982).

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<sup>1</sup>Differences were not statistically significant.

**TABLE VI.1 AGE AND SEX STRUCTURE OF TLAXCALA'S CENSUS POPULATION\* AND SURVEY POPULATION**

Age group	Total			Males			Females		
	Census %	Survey %	Difference %	Census %	Survey %	Difference %	Census %	Survey %	Difference %
0-4	14.9	13.2	1.7	15.0	13.8	1.2	14.7	12.6	2.1
5-9	15.9	14.3	1.6	16.0	14.4	1.6	15.8	14.3	1.5
10-14	14.0	14.3	-0.3	14.2	14.0	0.2	13.9	14.6	-0.7
15-19	11.4	11.8	-0.4	11.4	11.7	-0.3	11.3	11.8	-0.5
20-24	8.6	8.9	-0.3	8.4	8.7	-0.3	8.8	9.1	-0.3
25-29	6.3	6.8	-0.5	6.1	6.8	-0.7	6.4	6.8	-0.4
30-34	5.1	5.8	-0.7	5.1	5.3	-0.2	5.0	6.3	-1.3
35-39	4.6	4.8	-0.2	4.5	4.8	-0.3	4.7	4.8	-0.1
40-44	3.9	3.8	0.1	3.8	3.8	0.0	4.0	3.8	0.2
45-49	3.5	3.3	0.2	3.4	3.3	0.1	3.6	3.4	0.2
50-54	2.9	2.7	-0.2	2.9	2.8	0.1	2.8	2.6	0.2
55-59	2.4	2.7	-0.3	2.5	2.7	-0.2	2.4	2.7	-0.3
60-64	1.8	2.3	-0.5	1.8	2.3	-0.5	1.8	2.3	-0.5
65+	4.6	4.9	-0.3	4.7	5.2	-0.5	4.6	4.5	0.1
NS	0.2	0.4	-0.2	0.2	0.4	-0.2	0.2	0.4	-0.2
All	100.0	100.0	0.5	100.0	100.0	0.4	100.0	100.0	0.6
	(556,597)	(6,622)		(277,476)	(3,266)		(279,121)	(3,356)	

Source : INEGI (1982)

NS = Non specified

\* 1980



A comparison of the age and sex structure of the sample population was also made with that of a projection of the population of Tlaxcala for 1987 (INEGI and Gobierno del Estado de Tlaxcala, 1984). The results were similar to those described above. The overall percentage mean of differences was only 0.8% for each sex, likewise for the total.

It is important to note two points: first, although the Census data depict the structure of the total population of Tlaxcala, including both areas, urban and rural, most of Tlaxcala's population is rural. For example, according to census data, 42% of its inhabitants live in localities of less than 2,500 people, and 34% in localities of 2,500-14,999 inhabitants, whereas only 24% live in localities of over 15,000 (INEGI, 1986). At the national level such figures are 34%, 14% and 52%, respectively (SSA, 1987). Second, the age distribution of the urban and rural population in the sample did not differ significantly from the distribution in the whole population of Tlaxcala (CONAPO, 1984).

#### **B. Selected study population groups**

To attain the study objectives, special population groups were studied, with particular attention being paid to those vulnerable groups with specific health needs. The selected groups of the population, to whom an individual section of the questionnaire was applied, were: children under five years, women aged 15-49 years, women aged 15-49 years who had had children, women aged 15-49 years who had been pregnant during the year prior to the interview, women aged 15-49 years who were pregnant at the time of the interview, and persons reporting illness occurring in the two weeks prior to the interview. In Table VI.2 the numbers and percentages of such groups in respect of the total sample population are shown. Of the 1544 women aged 15-49 years, 63% had had children. During the 12 months prior to the interview 13% had been pregnant, with 6% being pregnant at the time of the interview.

TABLE VI.2 SELECTED SURVEY POPULATION GROUPS

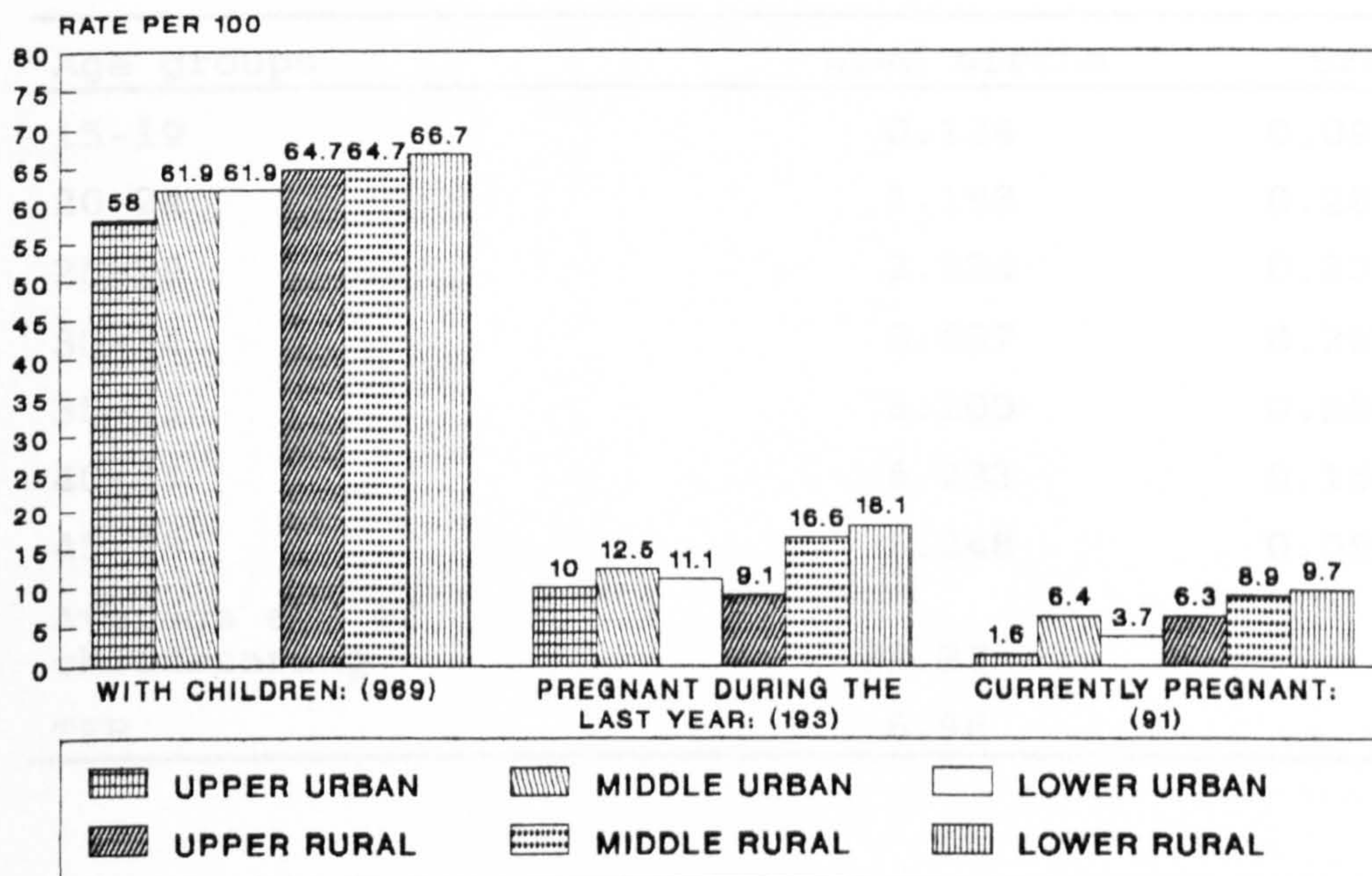
Population groups	No.	%*	Rate per 100
Children <5 years	875	13.2	
Women aged 15-49 years	1544	23.3	
Women aged 15-49 with children	969	14.7	62.8
Women pregnant during the year prior to interview	193	2.9	12.5
Currently pregnant (15-49)	91	1.4	5.9
Population reporting illness during the 2 weeks preceding the interview	2444		36.9
Total in sample	6622		

\*Percentage of the total sample population.



The distributions of the selected groups in the sample among the different socio-economic strata were tested. Regarding the distribution of children under five years of age, no significant differences were found among the different socio-economic strata. As regard to women aged 15-49 years, and women aged 15-49 with children, no statistically significant differences were found among the strata. With regard to the other two groups, pregnant women at the time of the interview and women who were pregnant during the year prior to the interview, while rates for those living in the lower rural stratum were higher, differences were not statistically significant (Figure VI.2).

**FIGURE VI.2 SELECTED MATERNAL GROUPS (15-49) BY SOCIO-ECONOMIC STRATUM OF THE LOCALITY**





## C. Fertility

Table VI.3 presents the specific fertility rates by age group and the total fertility rate<sup>2</sup>. The total fertility rate was nearly 7, which is higher than that for the whole country (3.8) in 1986 (Poder Ejecutivo Federal, 1990). Fertility rates were higher among women living in localities of 2,500 inhabitants and over than among those living in localities of less than 2,500 inhabitants. The total fertility among the former was 7.0, whereas in the latter it was 6.9.

**TABLE VI.3 AGE SPECIFIC FERTILITY RATES (SFR) AND TOTAL FERTILITY RATE (TFR)**

Age groups	Live births	SFR
15-19	0.124	0.0966
20-24	1.183	0.2844
25-29	2.524	0.2359
30-34	3.697	0.2679
35-39	5.200	0.2869
40-44	6.233	0.1663
45-49	6.248	0.0589
Average age of childbearing	29.22	
TFR	6.98	

<sup>2</sup>The fertility rates were estimated by indirect methods, utilizing the FERTCB programmes of Mortpak-Lite, which is a package of computing programmes developed by the Department of International Economic and Social Affairs of the United Nations (1988). The estimation of the specific fertility rates is based upon data on the number of live births to females of each five-year age group.



In Table VI.4 the fertility rates of the insured mothers are compared with those of the non-insured mothers. Mothers' entitlement to social security is used as a proxy measure of the type of occupation of the household's head. Fertility rates were 1.3 times higher in the agricultural non-insured population than in the non-agricultural insured population, which fits with the fertility patterns observed in the country (SSA, 1989).

TABLE VI.4 AGE SPECIFIC AND TOTAL FERTILITY RATES  
BY ENTITLEMENT TO SOCIAL SECURITY

Age group	Fertility rates	
	Insured mothers	Non-insured mothers
15-19	.0935	.0958
20-24	.2515	.3094
25-29	.2214	.2373
30-34	.2044	.2830
35-39	.1953	.3412
40-44	.1457	.1808
45-49	.0520	.0636
Mean age of child bearing	28.67	29.46
Total fertility rate	5.82	7.56

Table VI.5 shows that the fertility level increases as the mothers' educational level decreases. The TFR among mothers with incomplete primary school was 1.8 times that among those with secondary schooling or more. It seems that entitlement to social security and educational level are better indicators of living conditions and socio-economic status than area of residence.

#### **D. Migration**

The pattern of migration into the study area was examined through the length of residence of the population in the locality (see Figure VI.3). The results reveal that as far as change of residence is concerned, the study population is a stable one. Only 2% of the population had been living for less than a year in the locality at the time of the interview, with another 11% between one and nine years.

Length of residence in the locality was examined by sex, and socio-economic stratum of the locality. No significant differences were found.

## **2. Socio-economic profile**

#### **A. Population distribution by socio-geographic area**

Area of residence in Mexico is related to socio-economic differences, such as level of education, occupational structure, income and living standards. These differences are relevant in the analysis of health status and health care variations between geographic areas and population groups.

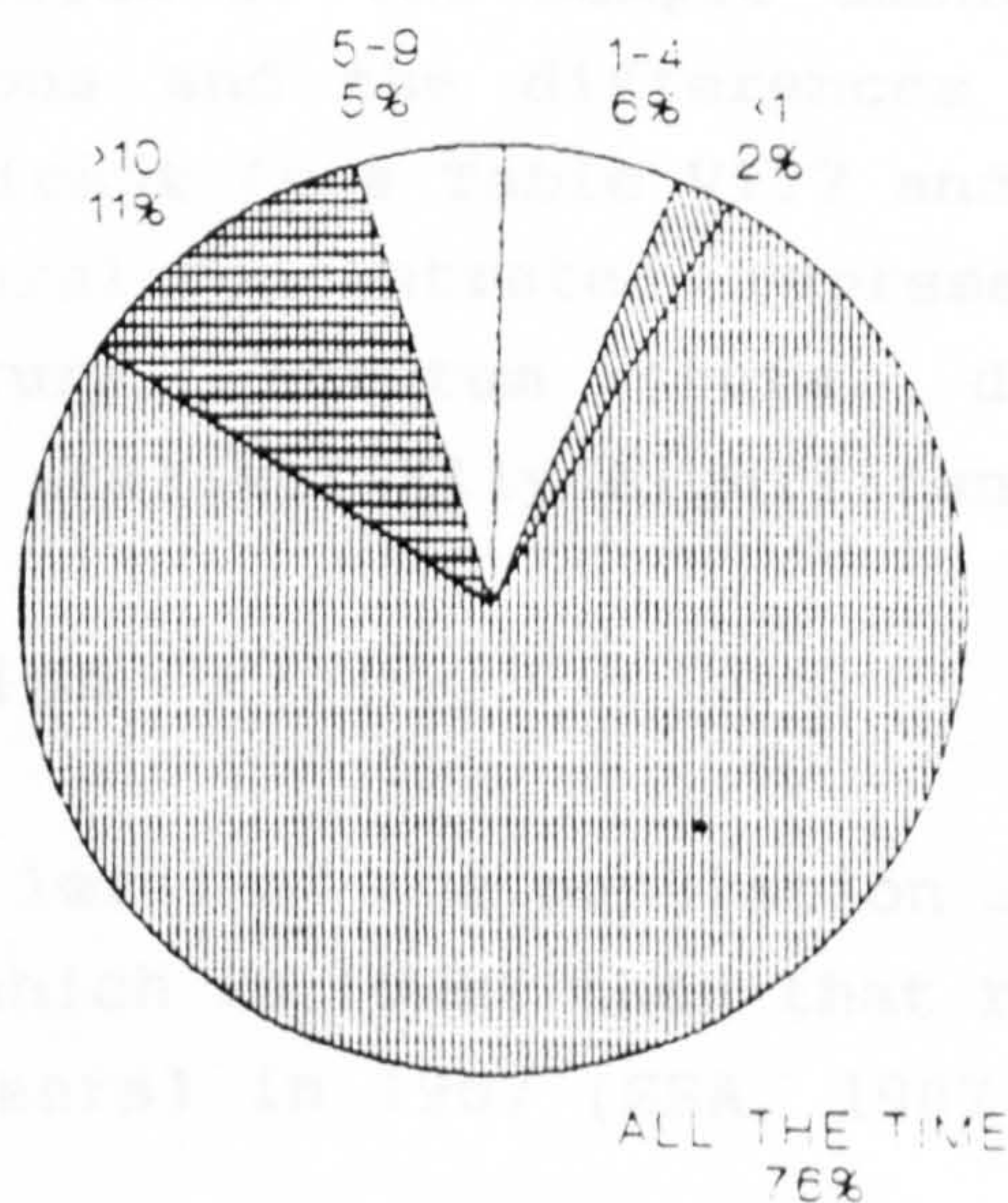


**TABLE VI.5 AGE SPECIFIC AND TOTAL FERTILITY RATES BY LEVEL OF EDUCATION**

Age group	Education		
	Incomplete primary school <sup>1</sup>	Complete primary school <sup>2</sup>	Secondary school or more <sup>3</sup>
15-20	.1802	.1486	.0545
20-25	.3910	.2844	.2155
25-30	.1830	.2067	.1423
30-35	.2543	.2185	.2267
35-40	.2578	.1573	.2083
40-45	.2031	.0623	.0086
45-50	.0707	.0229	.0032
Mean age of child bearing	27.89	26.67	28.13
Total fertility rate	7.70	5.50	4.30

<sup>1</sup>1-5 years, <sup>2</sup>6 years only, <sup>3</sup>≥7 years.

**FIGURE VI.3 LENGTH OF RESIDENCE OF THE SURVEY POPULATION IN THE LOCALITY**





As mentioned in Chapter V in the section on sample size, the municipalities<sup>3</sup> and the localities of less than 15,000 inhabitants, were stratified into three strata (upper, middle and lower) according to the INEGI's socio-economic index. Within each stratum, the localities were also classified according to the SSA's health care model as (SSA, 1985): 'concentrated' rural localities (2,500-14,999 inhabitants) and 'dispersed' rural localities (<2,500 inhabitants) (see Chapter IV, Section 3.D).

For comparison purposes, the 'concentrated' were recategorized as 'urban' and the 'dispersed' as 'rural', according to INEGI's classification (INEGI, 1980), which is used by other studies, as well as by development programmes (PRONADRI and COPLAMAR, 1985). The definition is of an operational character and can be easily applied to the data generated by the 1980 Population Census and the present study. Thus, the study population was categorized into six strata as it is seen in Figure VI.4. Table VI.6 displays the distribution of households (in sample) by socio-economic stratum of the locality. Differences among the strata were not statistically significant.

The age-sex distribution of the sample among the different strata was homogeneous and the differences found were not statistically significant (see Table VI.7 and Figure A.6.1). The urban stratum (rural concentrated) represented 49% of the sample, and the rural stratum (rural dispersed) 51%. Differences were not statistically significant.

## **B. Level of education**

The mean educational level of the population aged 15 years or more was 4.9 years, which is lower than that reported for the whole country (6.2 years) in 1987 (SSA, 1987) and for other

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<sup>3</sup>Of the 44 municipalities of Tlaxcala, 29 (66%) were included in the sample.

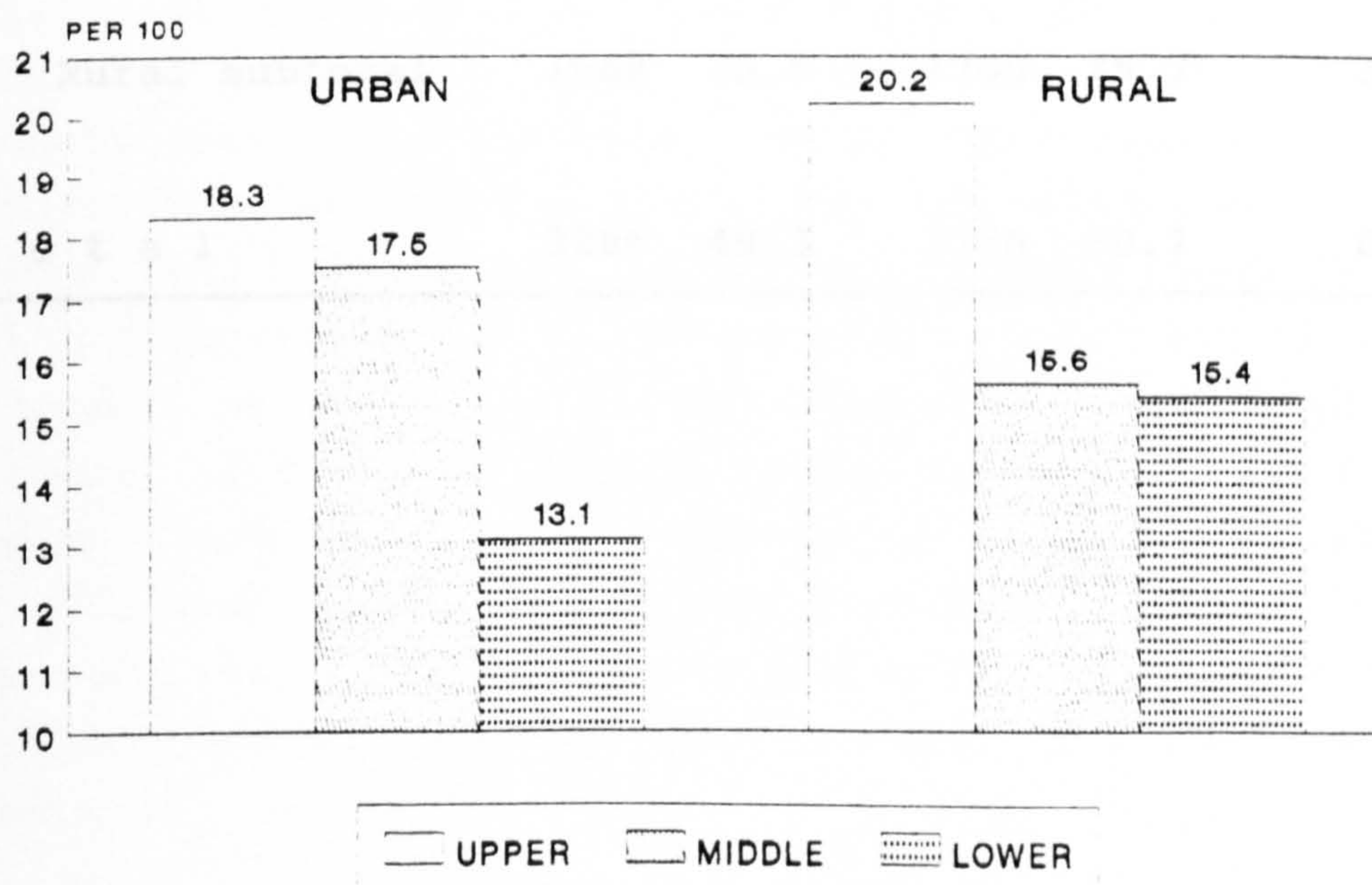


**TABLE VI.6 HOUSEHOLDS STUDIED BY SOCIO-ECONOMIC STRATUM OF THE LOCALITY**

Stratum	No.	%
Upper urban	237	19.1
Middle urban	196	15.8
Lower urban	161	13.0
Subtotal	594	47.9
Upper rural	263	21.2
Middle rural	197	15.9
Lower rural	184	14.9
Subtotal	644	52.1
<b>Total</b>	<b>1238</b>	<b>100.0</b>

Urban : 2,500 - 15,000 population  
 Rural : < 2,500 population

**FIGURE VI.4 STUDY POPULATION BY SOCIO-ECONOMIC STRATUM OF THE LOCALITY**



n= 6622

TABLE VI.7 SURVEY POPULATION BY SOCIO-ECONOMIC STRATUM  
OF THE LOCALITY

Stratum	Males		Females		All	
	No.	%	No.	%	No.	%
Upper urban	580	8.8	631	9.5	1211	18.3
Middle urban	575	8.7	581	8.8	1156	17.5
Lower urban	423	6.3	444	6.7	867	13.1
Urban subtotal	1578	23.8	1656	25.0	3234	48.9
Upper rural	673	10.2	662	10.0	1335	20.2
Middle rural	493	7.4	541	8.2	1034	15.6
Lower rural	522	7.9	497	7.5	1019	15.4
Rural subtotal	1688	25.5	1700	25.7	3388	51.1
T o t a l	3266	49.3	3356	50.7	6622	100.0



federal states, such as the Federal District, Nuevo León and Baja California (>7 years) (CCPNS, 1990). Of the population interviewed who were over 14 years old, 14% had had no schooling, 24% had had between one and five years of schooling, 25% had six years, and only 36% had over six years of schooling. Most of the population had between one and six years of schooling. Statistically significant differences in schooling were found between males and females ( $p < 0.001$ ). The percentage of persons without schooling was 1.7 times higher among females than among males (Table VI.8).

Regarding the educational level of the working age population<sup>4</sup> the situation found was better than the one described above. The number of persons without schooling decreases up to 10%, while those with more than six years of schooling make almost 40%. Of these, 58% had between seven and nine years of schooling (Table VI.9).

#### Education by socio-economic stratum of the locality

There is an association between the socio-economic stratum of the locality and the educational level of the population (Table VI.10). The population living in the localities of the upper urban stratum had a higher educational level than that living in the middle and lower strata. The same pattern was observed in the rural strata (localities of <2,500 inhabitants). For instance, 15% of those interviewed in the upper urban stratum had high school education, whereas in the middle and lower strata the equivalent values were only 6% and 5% respectively. Regarding the rural localities, the percentages were: 14% (upper stratum), 7% (middle), and 4% (lower). 20% of the people living in the localities of the lower urban stratum had had no schooling, whereas in the middle and upper strata the percentages were 13% and 9% respectively. In the rural strata, the percentages of those without schooling were: 22% (lower), 17% (middle) and 8% (upper).

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<sup>4</sup>Males and females aged 12-64 years.

**TABLE VI.8 EDUCATIONAL LEVEL BY SEX, POPULATION  
AGED ≥15 YEARS**

Education (years)	Males %	Females %	All %
None	10.7	18.0	14.4
1-5	23.1	25.5	24.3
6 only	25.6	24.1	24.8
≥7	40.5	32.4	36.4
(n)	(1848)	(1944)	(3792)

p>0.0001

**TABLE VI.9 EDUCATIONAL LEVEL OF THE WORKING AGE  
POPULATION (12-64 YEARS)**

Education (years)	Number	%
None	395	9.7
1-5	984	24.1
6 only	1059	25.9
7-9	942	23.0
10-12	511	12.5
>12	172	4.2
N.S.	27	0.6
Total	4090	100.0



TABLE VI.10 EDUCATIONAL LEVEL OF THE POPULATION ( $\geq 7$  YEARS) BY SOCIO-ECONOMIC STRATUM OF THE LOCALITY

Education (years)	Urban				Rural			
	Upper %	Middle %	Lower %	Total %	Upper %	Middle %	Lower %	Total %
None	9.0	13.5	19.8	13.6	8.1	17.1	22.1	14.9
1-5	29.7	41.4	39.6	36.5	29.9	34.8	38.6	33.9
6 only	19.0	19.6	17.2	18.7	22.0	25.5	18.2	22.1
$\geq 7$	41.8	25.3	21.9	30.4	39.1	22.1	20.6	28.5
NS*	0.5	0.2	1.5	0.8	0.9	0.5	0.5	0.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
(n)	(1020)	(940)	(741)	(2701)	(1150)	(844)	(833)	(2827)

\* Non-specified

## C. Occupational profile

The main occupation in the population aged seven years and over<sup>5</sup> was student (including school children) (35%), followed by household activities (26%). Among the most commonly occupations receiving a wage were: agricultural activities (15%), industrial worker (5%) and clerk and driver (5%) (Table VI.11). This occupational profile shows that the dependent population accounts for 61% of the total population.

However, it is important to bear in mind the kind of population we are studying. In rural areas, women and children carry out activities that benefit the family's economy. These activities are not waged, but make a substantial contribution to the maintenance of the family group. 10% of the population had typical urban occupations, such as clerical worker, driver and industrial worker.

The occupational profile of the working population was similar to that of the overall population. In general, the type of the occupations are those that require a low level of training, which is compatible with the educational profile described earlier.

Occupation and education. Table VI.12 shows that occupation varies according to the educational level: at a higher educational level the predominant occupations are of the urban type (non-agricultural). For example, among persons without schooling, 60% are dedicated to the agricultural activities or household activities, whereas among persons with college (10-12 years) or professional studies ( $\geq 13$  years), only 21% and 7% respectively, report them as the main type of activities. Persons with higher educational level are occupied as clerks, industrial workers or drivers and other non-agricultural occupations. Of the persons without schooling, only 2% are occupied as clerks and industrial workers.

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<sup>5</sup>See Appendix 1 for definitions.



TABLE VI.11 MAIN OCCUPATIONS FOR THE POPULATION  
AGED 7 YEARS AND OVER

Occupation	Males		Females		Total	
	No.	%	No.	%	No.	%
Student*	969	35.6	962	33.9	1931	34.7
Household activities	45	1.7	1414	49.8	1459	26.3
Agricultural activities	766	28.2	50	1.7	816	14.7
Clerk, driver	197	7.2	92	3.2	289	5.2
Industrial worker	212	7.8	65	2.3	277	5.0
Bricklayer, carpenters, blacksmith	190	7.0	2	0.1	192	3.5
Commerce	90	3.3	30	1.0	120	2.1
Domestic worker	2	0.1	63	2.2	65	1.2
None	45	1.7	18	0.6	63	1.1
Craftsman	27	1.0	3	0.1	30	0.5
Other	127	4.7	82	2.9	209	3.8
No specified	51	1.8	56	2.0	107	1.9
<b>Total</b>	<b>2721</b>	<b>100.0</b>	<b>2837</b>	<b>100.0</b>	<b>5558</b>	<b>100.0</b>

\* Including school children

TABLE VI.12 OCCUPATION BY LEVEL OF EDUCATION\*

Occupation	None %	1-5 %	6 only %	7-9 %	10-12 %	>12 %	Total
Student**	19.3	49.6	12.6	44.7	34.9	34.3	34.7
Household activities	39.4	23.6	37.6	17.3	14.8	6.3	26.3
Agricultural activities	20.6	14.9	18.9	10.1	7.3	0.5	14.7
Clerk, driver	0.9	1.8	6.8	6.5	13.7	19.4	5.2
Industrial worker	1.0	2.2	8.4	9.4	6.8	1.7	5.0
Bricklayer, blacksmith, carpenter	1.5	3.0	5.7	3.8	2.7	1.7	3.5
Commerce	1.6	1.2	3.4	2.6	2.9	2.9	2.1
Domestic worker	1.0	1.0	2.1	1.3	0.4	0.0	1.2
None	4.6	0.3	0.8	0.7	1.1	0.0	1.1
Craftsman	0.1	0.4	1.1	0.6	0.7	0.0	0.5
Other	1.2	0.8	2.3	2.7	13.5	32.6	3.8
No specified	8.7	1.3	0.3	0.3	1.2	0.6	1.9
Total (n)	100.0 (791)	100.0 (1986)	100.0 (1131)	100.0 (954)	100.0 (513)	100.0 (175)	100.0 (5550)

\*Population aged 27 years.

\*\*Including school children.



Occupation and socio-economic stratum of the locality. Table VI.13a-b presents the relationship between the type of occupation and the socio-economic stratum of the locality. Three occupations: clerk, industrial worker and craftsman were commoner in the upper socio-economic strata. By contrast, agricultural occupations were predominant among the lower socio-economic strata.

#### **D. Entitlement to social security**

This indicator is related to the occupation of the head of the household and, consequently, to income, since most industrial workers and State workers and their families have the right to be covered by the services of one of the social security institutions, i.e. the Mexican Institute of Social Security (IMSS) and the Institute of Social Security and Services for the State Workers (ISSSTE). It can therefore be used as a socio-economic indicator. The percentage of the non-insured population was 72%. Of the 28% insured population<sup>6</sup>, 76% was covered by the IMSS, 22% by the ISSSTE, and 2% by other institutions, such as the Social Security Institute for the Armed Forces (ISSFAM), private insurance.

Entitlement to social security and educational level. 80% of the population without schooling was not covered by any social security scheme, while 56% and 49% with high school or professional studies, respectively, lacked social security coverage.

Entitlement to social security and occupation. The occupational groups with the lowest percentages (<10%) of social security coverage were: craftman (7%); agricultural activities (9%); maid and washer (9%); and trade activities (9%). Groups whose percentages were between 10-30%: household activities and 'none' (24%); bricklayer, blacksmith, carpenter

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<sup>6</sup>Which is a poor population coverage, compared to the national 55% in 1988 (Salinas de Gortari, 1990).

TABLE VI.13a MAIN OCCUPATION BY SOCIO-ECONOMIC STRATUM OF THE LOCALITY\*

Occupation	Males									
	Urban					Rural				
	Upper %	Middle %	Lower %	Total %	Upper %	Middle %	Lower %	Total %		
Student	36.9	38.1	32.8	36.1	40.4	32.8	30.1	35.1		
Agricultural	14.3	27.9	32.5	24.1	18.3	37.6	44.4	31.9		
Industrial worker	12.7	8.7	10.4	10.5	9.1	3.2	1.9	5.2		
Clerk, driver	9.5	7.1	4.5	7.2	9.8	6.3	4.7	7.2		
Bricklayer	7.0	7.0	4.8	6.4	6.3	8.0	8.6	7.5		
Commerce <sup>1</sup>	4.3	4.2	4.2	4.3	2.9	3.4	0.7	2.4		
Household activities	1.0	0.9	3.9	1.7	0.5	1.2	3.3	1.6		
None <sup>2</sup>	1.7	1.9	1.7	1.7	1.4	1.7	1.6	1.6		
Craftsman	1.9	0.2	0.0	0.7	2.1	1.2	0.0	1.2		
Other	7.6	2.8	2.3	4.2	7.2	2.6	2.7	4.9		
Non-specified	3.1	1.2	2.9	3.1	2.0	2.0	2.0	1.4		
Total (n)	100 (482)	100 (470)	100 (357)	100 (1309)	100 (572)	100 (412)	100 (428)	100 (1412)		

\* For population aged ≥ 7 years

<sup>1</sup> Including shopkeepers and street sellers

<sup>2</sup> Unemployed



TABLE VI.13b MAIN OCCUPATION BY SOCIO-ECONOMIC STRATUM OF THE LOCALITY\*

Occupation	Females									
	Urban					Rural				
	Upper %	Middle %	Lower %	Total %	Upper %	Middle %	Lower %	Total %		
Household activities	44.4	52.7	49.9	48.8	42.1	56.9	57.2	51.2		
Student	35.2	33.5	34.2	34.4	38.1	29.8	30.8	33.4		
Clerk, driver	6.3	2.3	1.0	3.4	4.7	2.3	1.5	3.0		
Industrial worker	3.5	1.5	0.8	2.0	3.6	1.6	2.0	2.6		
Domestic worker	1.1	3.0	2.3	2.0	1.6	3.0	2.9	2.4		
Agricultural	1.3	1.7	5.4	2.6	0.4	0.7	2.2	1.0		
Commerce	0.2	1.1	3.3	1.4	1.5	0.2	0.2	0.8		
None	0.4	1.1	0.5	0.6	0.5	0.7	0.7	0.6		
Other	4.7	1.0	1.1	2.6	6.1	2.0	1.5	3.4		
Non-specified	2.9	2.1	1.5	2.2	1.4	2.8	1.0	1.6		
Total (n)	100 (543)	100 (474)	100 (395)	100 (1412)	100 (580)	100 (436)	100 (409)	100 (1425)		

\* For population aged ≥ 7 years

(26%); and students (28%). Occupational groups whose percentages were between 30-60%: clerks and drivers. The industrial workers were among the different occupational groups who had the highest proportion of social security coverage (76%), followed by the category 'others' (67%), which was mostly covered by the ISSSTE.

Entitlement to social security and socio-economic stratum of the locality. Figure VI.5 shows that, in general, the urban strata (>2,500 inhabitants) had a larger proportion of insured population than the rural strata. Also, the lower strata in both urban and rural areas had the highest proportions of non-insured population, with 76% and 87% respectively. The analysis by institution shows that the IMSS covered a larger number of persons in urban localities than in rural ones. The percentage of population under the IMSS scheme in the upper urban stratum was three times the percentage in the lower rural stratum. This was an expected result since this scheme mostly benefits workers in industry, being basically an urban occupation. Likewise the ISSSTE showed a similar pattern, except that the largest proportion of insured persons under this scheme was in the upper rural stratum.

#### **E. Classification of the peasants and land tenure**

Of the population with agricultural activities, 57% can be classified as 'under-subsistence' peasants (see Chapter III Section 1.B), since maize is the main grain cultivated and most of their plots of land are less than four hectares of unirrigated land. The maize yield of such plots is barely sufficient to meet the nutritional needs of a family of more than five persons.

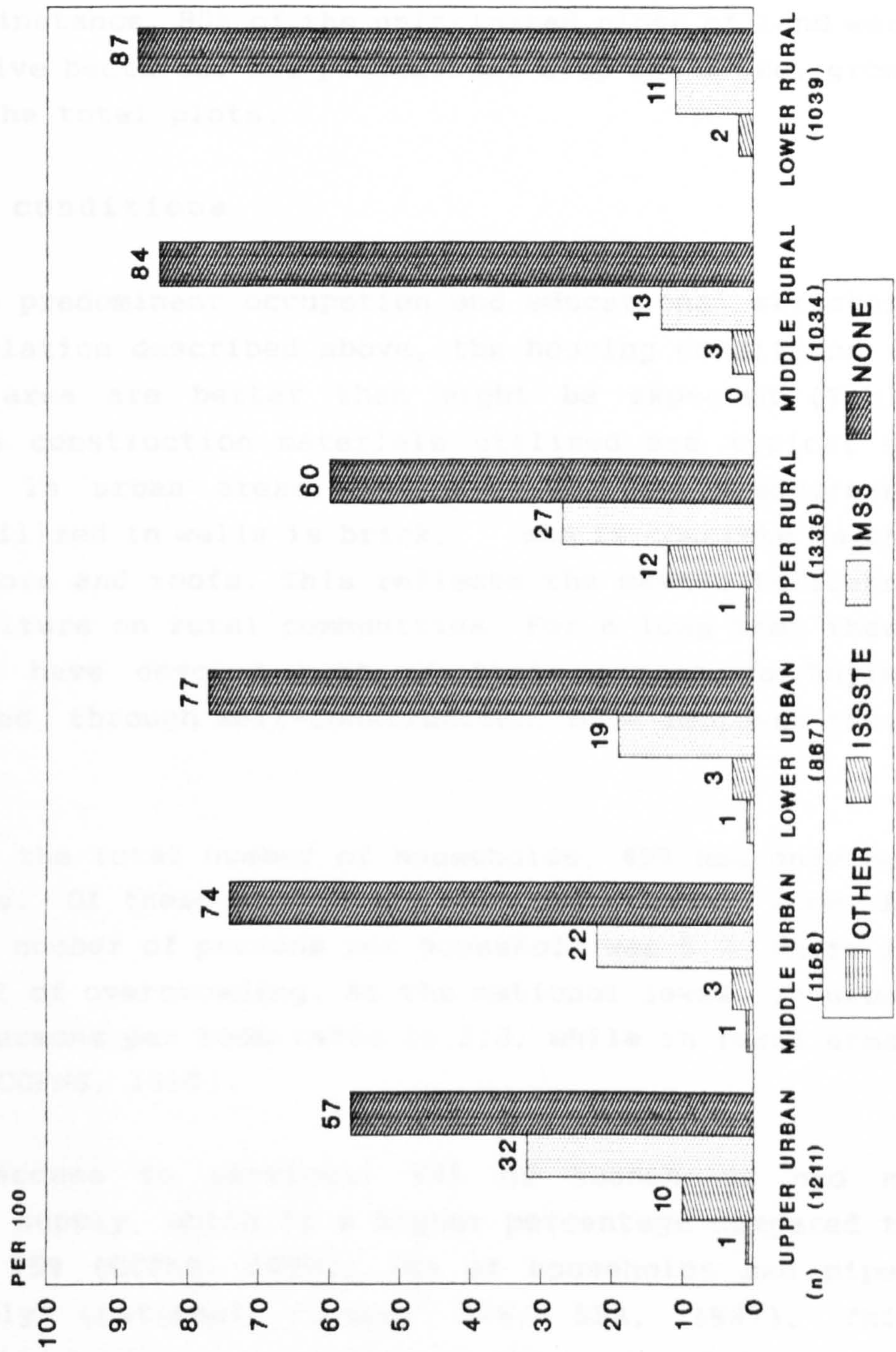
Land tenure. With regard to land ownership and related characteristics, 57% of the households had a plot of land. Of

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<sup>1</sup>High local government officers, soldiers, professionals, etc (see Appendix 1 .



**FIGURE VI.5 ENTITLEMENT TO SOCIAL SECURITY BY SOCIO-ECONOMIC STRATUM OF THE LOCALITY**





the total number of land-holders, 90% of the households owned unirrigated low-quality land, whereas the remaining 10% had irrigated good-quality land. Most of the plots were very small, for instance, 80% of the unirrigated plots of land were less than five hectares. The predominant crop was maize, grown on 94% of the total plots.

#### F. Housing conditions

Despite the predominant occupation and educational structure of the population described above, the housing conditions in the study area are better than might be expected (Table VI.14). The construction materials utilized are typical of those used in urban areas. For example, the predominant material utilized in walls is brick, and is concrete in the case of floors and roofs. This reflects the marked influence of urban culture on rural communities. For a long time these communities have devoted part of their income to buying materials and, through self-construction, have improved their houses.

However, of the total number of households, 45% had only one or two rooms. Of these households, 26% had only one room. As the average number of persons per household was 5.3, there is a high level of overcrowding. At the national level, in urban areas the persons per room ratio is 2.0, while in rural areas it is 2.5 (CCPNS, 1990).

Regarding access to services: 94% of households had an electricity supply, which is a higher percentage compared to a national 75% (CCPNS, 1990); 79% of households had piped water supply (national figure: 57%, SSA, 1987). This percentage is, however, lower than in the state of Nuevo León (88%) and the Federal District (93%) (CCPNS, 1990). By contrast, the availability of sewage disposal facilities is poor. Only 36% of the households had a W.C. compared to 67% in the state of Nuevo León (CCPNS, 1990).



**TABLE VI.14 SELECTED INDICATORS OF HOUSING CONDITIONS**

<b>Indicator</b>	<b>% of Households</b>
Proportion of households with 2 or less rooms	44.5
Average number of persons per household	(5.3)
Proportion of households with dirt floors	8.9
Proportion of households with no sanitary facilities	39.5
Proportion of households with no piped water supply	20.6
Proportion of households with no electricity supply	5.3
Proportion of households with no refrigerator	74.0

n=1238

The presence of sanitary facilities was significantly related to the educational level of the head of the household. For instance, 55% of the households where the head had had no schooling lacked sanitary facilities, whereas 35% and 18% of the households where their head had 6-9 years or >10 years of schooling, respectively, lacked such services. The percentage of households with a W.C. was 20% in those households whose head had no schooling, while it reached up to 83% in the households whose head had over 12 years of schooling (Table VI.15). The presence of dirt floors was inversely related to the educational level of the head of the household. For example, the proportion of households with dirt floors whose heads had had no schooling was nearly three times that of those whose head had 6 years of schooling and over and 13 times that of those with 10 years and over of schooling.

The possession of a refrigerator can serve as a socio-economic indicator, since it is related to income and socio-economic status. 74% of the households were lacking of a refrigerator at the time of the survey. The possession of a refrigerator was associated with the socio-economic stratum of the locality. For instance, the proportion of households in the upper urban stratum with a refrigerator was three times that in the lower urban stratum (Table VI.16).

### G. Meat consumption

The frequency of meat consumption is strongly related to income level. Therefore, it was included in the survey to serve as a socio-economic indicator. Of the total population studied, 59% consumed meat once or twice a week, 26% daily or every other day, and 15% once a fortnight or less. The higher the educational level of the head of the household, the more frequent is consumption of meat (Table VI.17). Frequency of meat consumption was also related to occupation. Table VI.18 shows that agricultural occupations reported a less frequent meat consumption than their non-agricultural counterparts, particularly clerks and storekeepers.



**TABLE VI.15 SANITARY FACILITIES BY EDUCATIONAL LEVEL OF HEAD OF HOUSEHOLD**

Facility	Education (years)						
	None	1-3	4-5	6 only	7-9	10-12	13+
None	55.4	46.7	45.5	35.1	30.1	18.3	5.0
W.C.	20.1	28.9	25.5	39.1	46.6	60.6	83.3
Latrine	24.5	24.4	29.0	25.8	23.3	21.1	11.7
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0
(n)	(224)	(291)	(110)	(322)	(133)	(71)	(60)

Significance of differences for presence of a W.C.:  $p < .001$  ( $\chi^2$  for trend: 107.69)

**TABLE VI.16 POSSESSION OF A REFRIGERATOR BY SOCIO-ECONOMIC STRATUM OF THE LOCALITY**

Presence of a refrigerator	Socio-economic stratum					
	Urban			Rural		
	Upper	Middle	Lower	Upper	Middle	Lower
Yes	36.4	16.9	12.4	29.8	19.8	20.9
No	63.5	83.1	87.6	70.1	80.2	79.1
Total	100.0	100.0	100.0	100.0	100.0	100.0
	(233)	(195)	(161)	(258)	(192)	(182)

p < .001 ( $\chi^2$  for trend: 33.46)

p < .05 ( $\chi^2$  for trend: 5.36)



TABLE VI.17 MEAT CONSUMPTION BY EDUCATIONAL LEVEL OF HEAD OF HOUSEHOLD

Frequency of meat consumption	Education (years)						
	None	1-3	4-5	6	7-9	10-12	13+
Daily or every other day	13.9	15.4	20.9	27.3	42.3	49.3	65.6
Once or twice a week	56.0	64.9	65.4	59.4	54.3	46.5	31.1
Once a fortnight or less	30.1	19.7	13.7	13.3	3.4	4.2	3.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
(n)	(224)	(294)	(110)	(322)	(133)	(71)	(61)

Daily or every other day versus other frequencies:  $p < .001$  ( $\chi^2$  for trend: 113.65)

TABLE VI.18 FREQUENCY OF MEAT CONSUMPTION BY OCCUPATION OF HEAD OF HOUSEHOLD

Frequency of meat consumption	Occupation					
	Waged labourer	Peasant (landholder)	Bricklayer	Industrial worker	Clerk Commerce	
Daily or every other day	7.2	15.0	15.3	36.1	50.5	54.7
Twice a week	15.3	18.6	20.3	35.5	30.5	22.6
Once a week	39.6	45.2	57.6	25.2	11.6	15.1
Once a fortnight or less	37.8	21.2	6.8	3.2	7.5	7.6
Total	100.0	100.0	100.0	100.0	100.0	100.0
(n)	(111)	(409)	(59)	(155)	(95)	(53)

Agricultural vs Non-agricultural occupations for daily or every other day:  $p < .001$  ( $\chi^2$ : 79)  
Waged labourers vs Landholders:  $p < .05$  ( $\chi^2$ : 4.51)



The relationship between frequency of meat consumption and socio-economic stratum of the locality was also examined. For the meat consumption category "daily or every other day", the higher the stratum (either urban or rural) of the locality the more frequent the occurrence.

### 3. Summary of findings

i. The survey population can be considered representative of the general population in the rural area of Tlaxcala (<15,000 population), since its age and sex structure was similar to that showed by the 1980 Census Population (INEGI, 1982).

ii. The distribution of the selected population groups in sample (under five-year-olds, women aged 15-49 years, women aged 15-49 with children and women aged 15-49 years who had been pregnant during the year prior to the interview) among the different socio-geographic areas was homogeneous.

iii. The shape of the population pyramid (wide-based) reflected high fertility rates and a relatively low life expectancy. The percentage contribution of the 0-14 year-age-group to the total population was 42%, which is greater than that for the whole country (38%) (Poder Ejecutivo Federal, 1990). However, the smaller proportion of the 0-4 year-age group, than that for the 5-9 year-age group suggests a decline in fertility rates.

iv. The total fertility rate in the survey population was nearly 7.0, as compared to 3.8 in the country as a whole in 1986 (Poder Ejecutivo Federal, 1990).

v. Fertility rates were higher among the non-insured population and the less educated.

vi. The mean educational level (4.9 years) was lower than that

reported for the whole country (6.2 years) in 1987 (SSA, 1987). Males had a higher educational level than females. Large differences in education between socio-geographic areas were found.

vii. The occupational profile of the survey population reflected the rural nature of the study population: agricultural occupations and those that require a low level of training were predominant. The distribution of occupations and educational levels varied according to the socio-geographic nature of the areas.

ix. The population coverage of the social security, as far as entitlement to health services is concerned, was relatively low (28%) as compared to the national average (55%) in 1988 (Salinas de Gortari, 1990). There are large differentials in entitlement to social security between occupations, educational groups and socio-geographic areas.

x. In general, the results indicate a marked decapitalization of the agricultural sector of Tlaxcala. It was found that most of the peasants work and live in under-subsistence circumstances.

xi. Large disparities in housing conditions, as indicated by construction materials, overcrowding level, availability of sanitation services and presence of basic amenities, were found between social sub-groups and socio-geographic areas.

xii. The frequency of meat consumption, used in this study as a social measure, was correlated with occupation, educational level and socio-economic stratum of the locality. This indicator of income and social status, proved to be useful in discriminating between population sub-groups and socio-geographic areas.



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## VII. INEQUALITIES IN HEALTH

This chapter deals with variations in health among different population groups of people in Tlaxcala. Various measures of health status are utilized to compare the overall health of distinct population groups defined by different social measures. First, gradients in perceived morbidity are presented. A number of perceived morbidity measures are utilized, such as prevalence of self-reported overall morbidity (during a two-week recall period) number of symptoms and health problems per 100 respondents (and per person reporting illness), self-assessment of severity of principal illness reported, and type of illnesses reported. Each measure is analysed by a number of social indicators of inequality. Second, the results based on mortality related indicators, such as infant mortality rate and under five mortality rate (U5MR), are compared to those obtained with perceived morbidity indicators. Finally, the positive component of health is examined along the different social groups through a measure of self-assessment of health.

### 1. Perceived overall morbidity

As mentioned in Chapter V, Section 7.C, the morbidity data were collected through an illness checklist which was read after the initial question: during the last two weeks who has been ill or has suffered an accident?. When a person had more than one illness or health problem, the respondent had to identify the problem that worried them the most ('most important' or principal illness). This enabled an estimate to



be made of both the period prevalence for ill persons<sup>1</sup> and the period prevalence of health problems or symptoms.

### A. Demographic differentials

Figure VII.1 shows a typical "U" shaped age distribution of morbidity. The rates were high in young children, then decreased in young adults and finally increased with age. There was a predominance of women, particularly of 25-34 and 35-44 years of age with prevalence rates of 45.3 and 55.2 per 100 respondents respectively. The overall prevalence rate for men was 31.6 per 100, whereas it was 42.1 for women. The global rate for both sexes was 36.9 per 100 respondents. The eight specific age-groups presented in Figure VII.1 were collapsed into the following five: 0-4, 5-14, 15-44, 45-64 and ≥65 for presentation purposes. The corresponding rates are presented in Table VII.1.

### B. Socio-geographic differentials

Urban/rural gradients. The general morbidity reported was 23% higher in localities of <2,500 inhabitants (rural), with a two-week period prevalence rate of 41.6 per 100 inhabitants, compared to localities of 2,500-15,000 inhabitants ('urban') with an overall rate of 31.9.<sup>2</sup> This pattern was observed in every age group and both sexes as Table VII.2 shows. This is compatible with the socio-geographic distribution of wealth and socio-economic development in the country.

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<sup>1</sup>Period prevalence is defined as the number of existing cases of a disease during a period or interval divided by the total population at risk (Vaughan and Morrow, 1989; Mausner and Kramer, 1985). The period utilized in this study was a two week period.

<sup>2</sup>These rates are not age-standardized because no differences were found in the age structure between the 'urban' and the rural populations.

**FIGURE VII.1 PREVALENCE OF SELF-REPORTED  
OVERALL MORBIDITY BY AGE AND SEX**

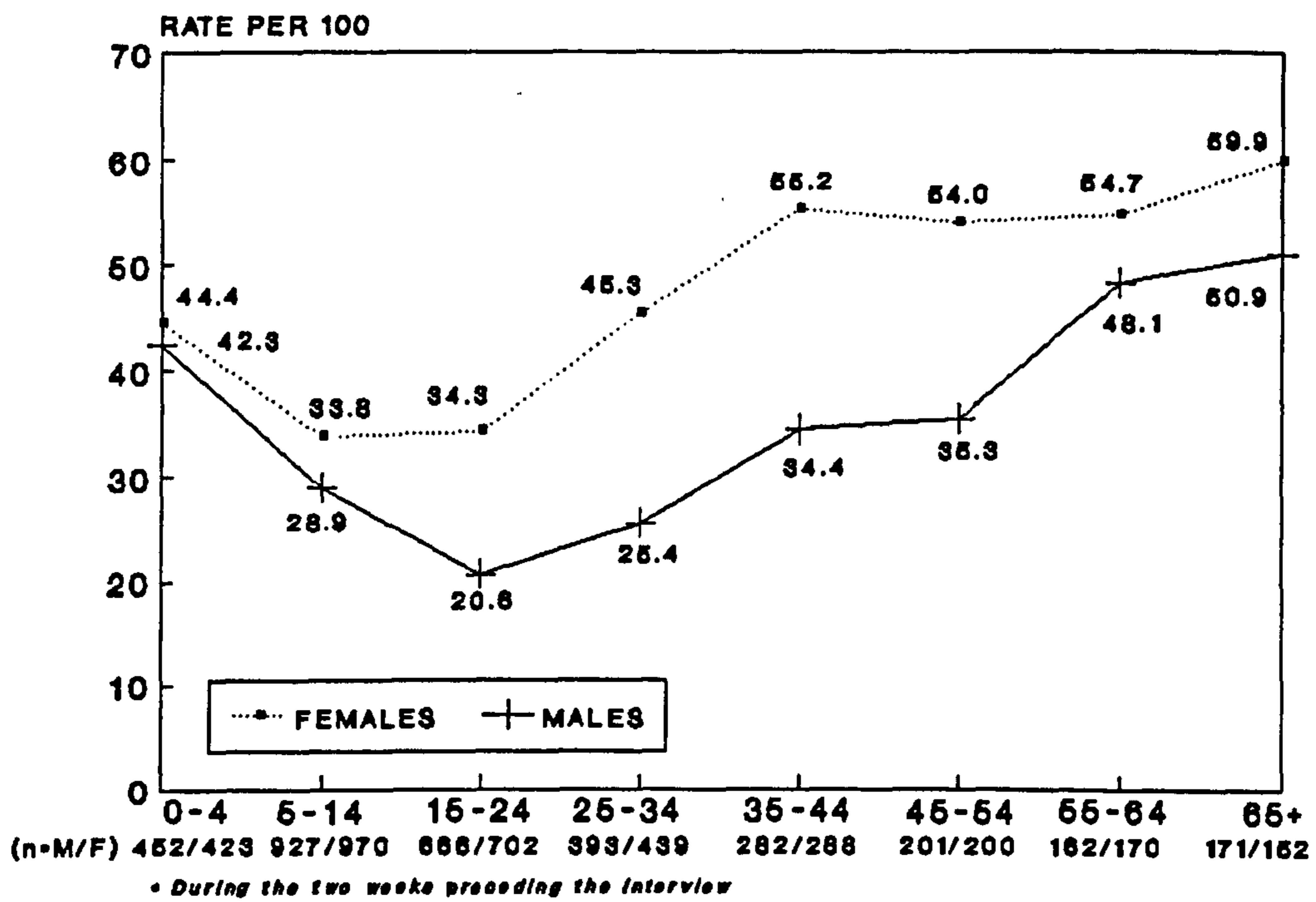




TABLE VII.1 PREVALENCE OF SELF-REPORTED OVERALL MORBIDITY\* BY AGE GROUP AND SEX

Age group	Males		Females		All	
	Rate per 100	(n)	Rate per 100	(n)	Rate per 100	(n)
0-4	42.3	(452)	44.0	(423)	43.3	(875)
5-14	28.9	(927)	33.8	(970)	31.4	(1897)
15-44	24.9	(1341)	41.9	(1429)	33.7	(2770)
45-64	41.0	(363)	54.3	(370)	47.7	(733)
≥65	50.9	(171)	59.9	(152)	55.1	(323)
All	31.6	(3254)	42.1	(3344)	36.9	(6598)

Probabilities based on  $\chi^2$  for independence P<0.001

P<0.001

P<0.001

\* During the last two weeks

**TABLE VII.2 PREVALENCE OF SELF REPORTED OVERALL MORBIDITY\*  
BY SIZE OF THE LOCALITY**

Age group	Males			Females		
	Rural <sup>1</sup>	Urban <sup>2</sup>	p( $\chi^2$ )	Rural <sup>1</sup>	Urban <sup>2</sup>	p( $\chi^2$ )
0-4	47.1 (227)	37.3 (225)	<0.05	46.5 (230)	40.9 (193)	NS
5-14	33.1 (478)	24.3 (448)	<0.01	41.8 (488)	25.5 (482)	<0.001
15-44	27.8 (690)	21.7 (650)	<0.05	49.1 (719)	34.0 (712)	<0.001
45-64	42.0 (181)	39.6 (182)	NS	51.5 (171)	56.3 (199)	NS
≥65	53.4 (103)	47.1 (68)	NS	67.8 (87)	49.2 (65)	<0.05
All	35.0 (1679)	27.8 (1573)	<0.001	47.9 (1695)	35.7 (1651)	<0.001

\* Rates per 100

<sup>1</sup>Rural = <2,500    <sup>2</sup>Urban = 2,500-15,000 population

NS: Not significant

(n) shows the total number of respondents from which each rate was calculated



Variations by living standards of the locality. When overall morbidity is analysed according to the socio-economic stratification of the area of residence<sup>3</sup>, important disparities are seen among the different living conditions strata (Figure VII.2). As this figure illustrates, intra-rural differences were greater than intra-urban differences. For instance, prevalence rate<sup>4</sup> for females in the lower rural stratum was 1.5 times greater than in the upper rural stratum ( $p < 0.001$ ), while the equivalent value in the lower urban stratum was only 1.2 times that in the upper urban stratum ( $P < 0.05$ ). Males from the lower rural stratum had a prevalence rate 1.4 times higher than males in the upper rural stratum. Differences found among socio-economic strata in both sexes were statistically significant in rural areas, but only among females in urban areas ( $p < 0.001$ )<sup>5</sup>. These results are consistently compatible with the levels of deprivation of the localities and municipalities as well as their productive structure (see Chapter IV).

### C. Socio-economic differentials

Selected socio-economic indicators (individual-based) such as education, occupation, entitlement to social security and housing conditions were used as alternative social measures to area-based analysis, since they are not subject to the error known as the ecological fallacy (Susser, 1973).

Overall morbidity by educational level. The results from the survey of self-reported overall morbidity by education show marked inequalities between groups with different educational

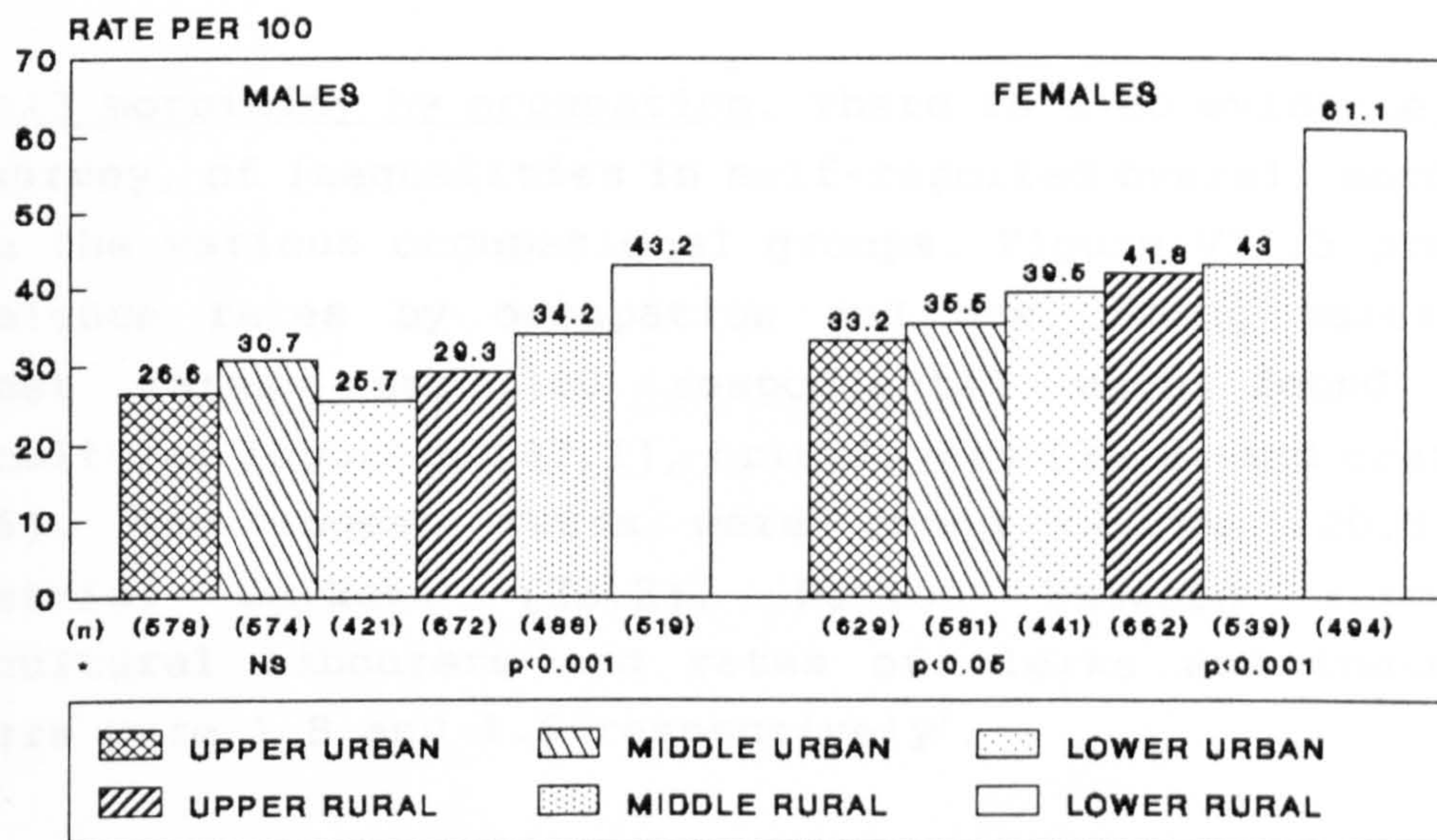
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<sup>3</sup>For description of the socio-economic index see Chapter IV, Section 1.C and Table A.4.1.

<sup>4</sup>Although the age composition among the socio-economic strata was similar (see Chapter VI, Section 2.A) prevalence rates were age-standardized. However, no significant differences were observed between standardized and crude rates. The method used was direct age-standardization (Osborn, 1985; Armitage, 1971; Fleiss, 1981).

<sup>5</sup>These probabilities are based on the chi-square for trend.

**FIGURE VII.2 PREVALENCE OF SELF-REPORTED OVERALL MORBIDITY BY SOCIO-ECONOMIC STRATUM OF THE LOCALITY**



• Probability based on the chi-square test for trend



levels. The lowest levels of education are associated with higher prevalence rates. For example, Figure VII.3 shows that males with no schooling had a prevalence rate of overall morbidity 2.6 times higher than males with university educational level, 1.9 times higher than males with high schooling or secondary schooling, and 1.6 times higher than those who completed primary school. For women, comparable gradients were found, although they were less marked.<sup>6</sup> Differentials persist between males with no schooling and those with over six years of schooling and completed primary schooling (rate ratios: 2.1 and 1.6 respectively) when age-adjusted rates are used (Figure VII.4). Again, differences among women with different educational level were less marked than among men.

Overall morbidity by occupation. There is also evidence, from the survey, of inequalities in self-reported overall morbidity among the various occupational groups. Figure VII.5 presents prevalence rates by occupation and sex. Among males, the highest rates (per 100 respondents) were found among agricultural laborers (37.1), bricklayers (36.8) and craftsmen (29.6). The lowest rates were among clerks (20.8) and industrial workers (22.2). Ratios between rates of agricultural labourers and rates of clerks and industrial workers were 1.8 and 1.6 respectively<sup>7</sup>.

Among females, the highest rates were among those engaged in household activities, such as housewives (49.4), and domestic workers (38.1). The lowest rates were among clerks (25) and industrial workers (29.2).

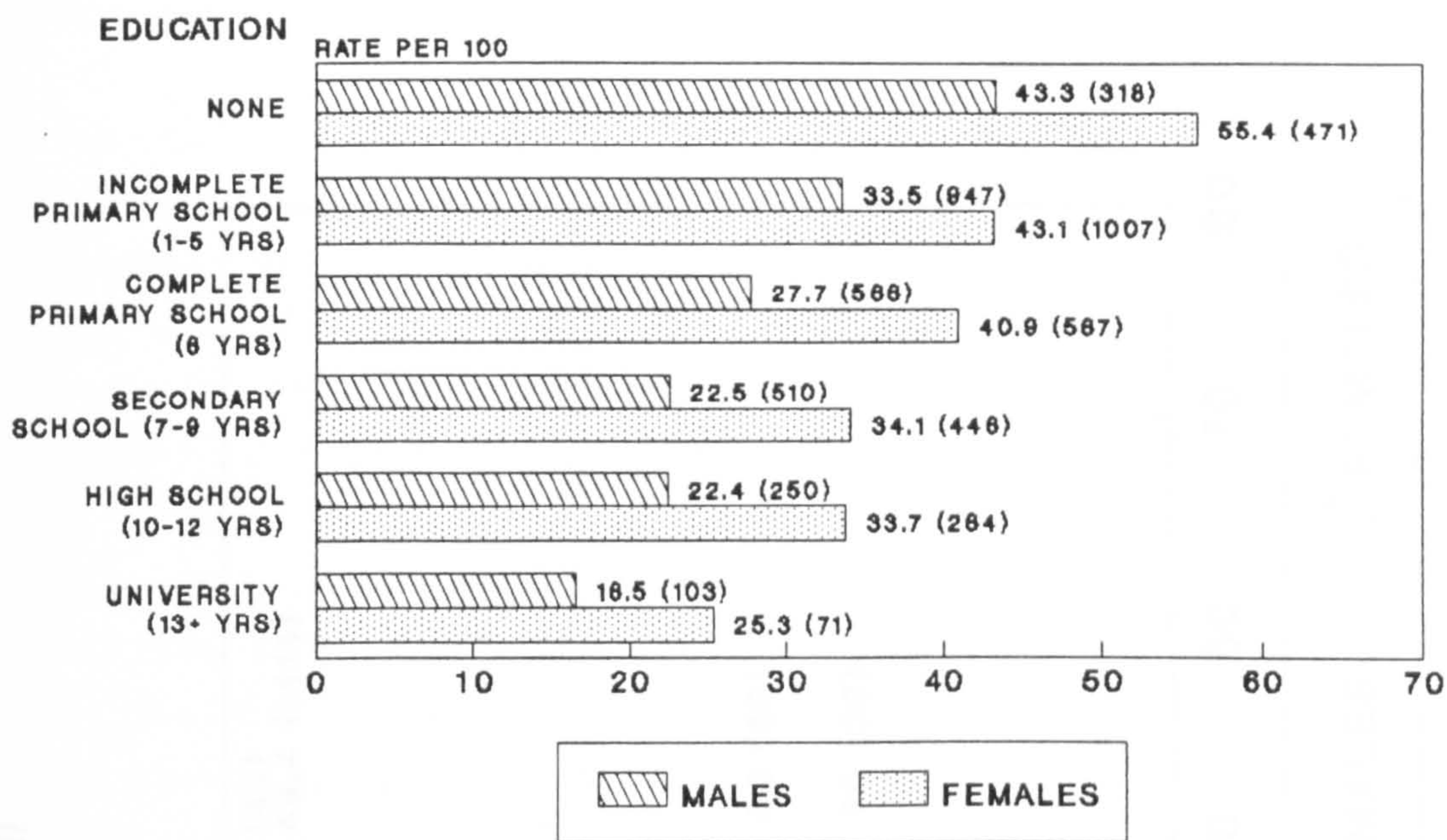
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<sup>6</sup>The low to high educational level odds ratios for both sexes were 4.06 (95% CL:2.69-6.16) for none/university, 2.6 (95% CL:2.04-3.33) for none/high school, 2.64 (95% CL:2.15-3.24) for none/secondary school, 1.9 (95% CL:1.57-2.3) for none/complete primary school. All odds ratios were highly significant ( $p < 0.0001$ ).

<sup>7</sup>Odds ratios were: 2.24 (95% CL:1.52-3.32) and 2.07 (95% CL:1.43-3.00) respectively.

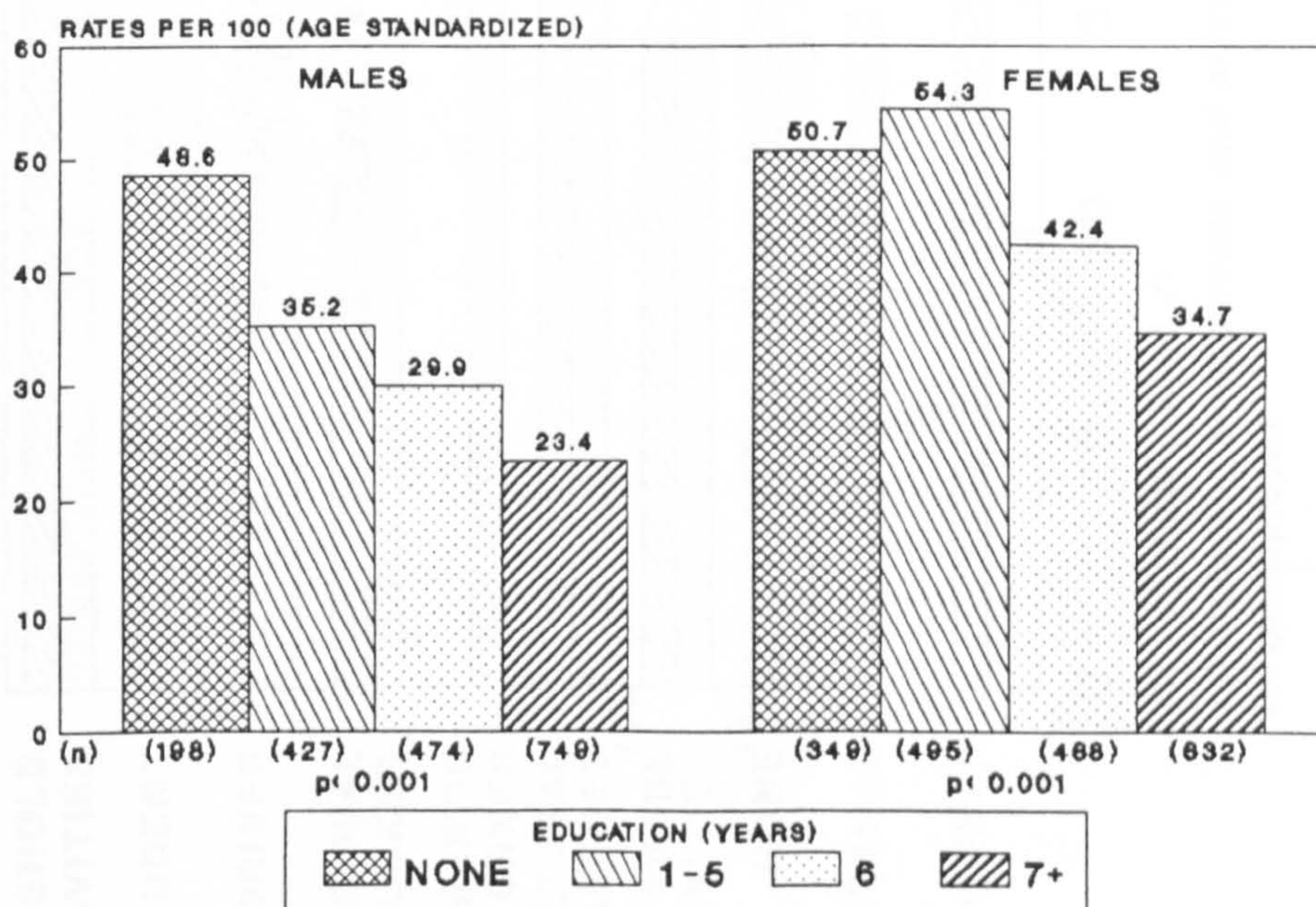


**FIGURE VII.3 SELF-REPORTED OVERALL MORBIDITY BY EDUCATIONAL LEVEL\***



Probability of chi-square statistic for linear trend:  
 Males:  $p < 0.001$ ; Females:  $p < 0.001$   
 \* Population aged 7+

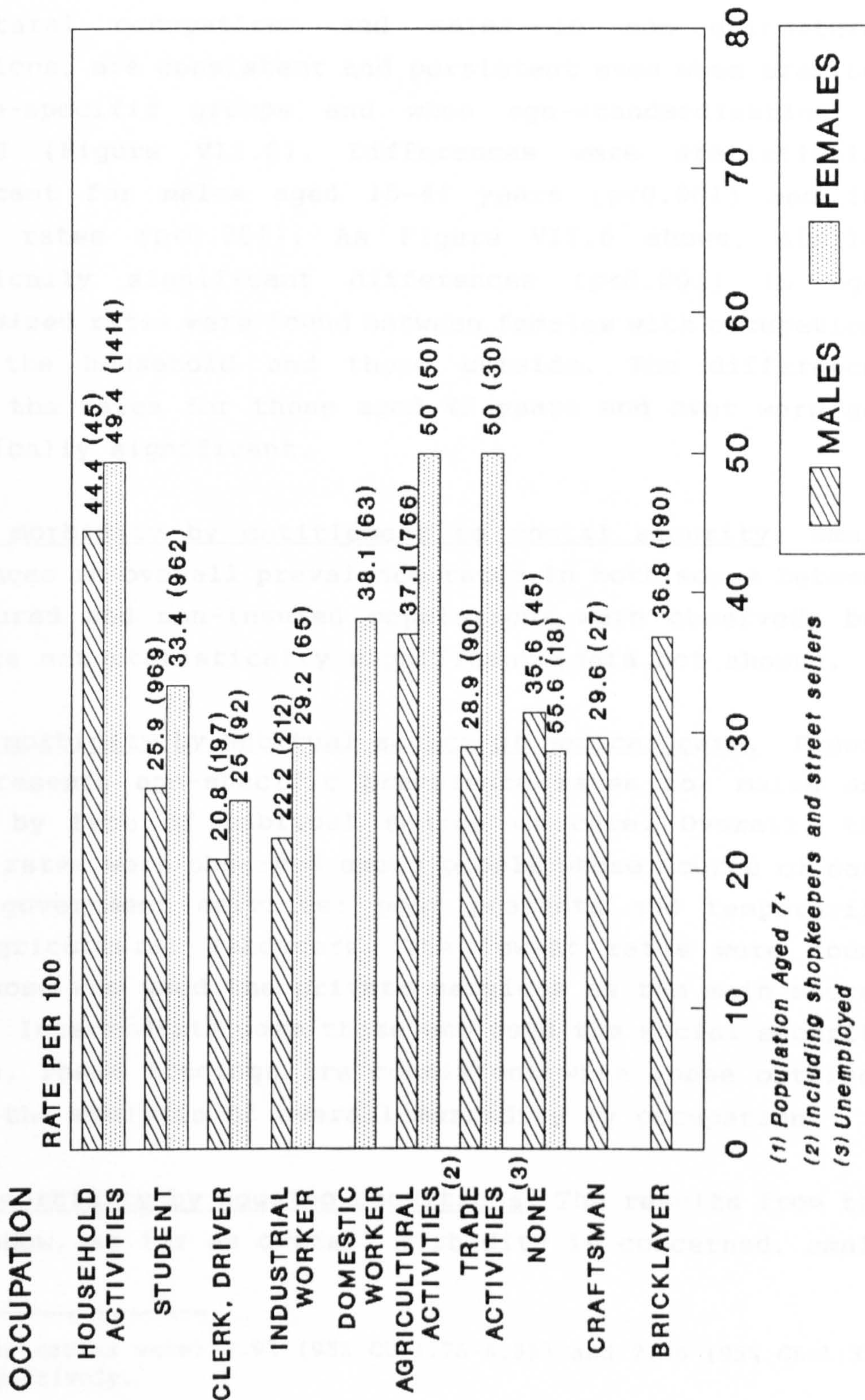
**FIGURE VII.4 PREVALENCE OF SELF-REPORTED OVERALL MORBIDITY BY EDUCATION, MALES AND FEMALES AGED 15+**



\* Probabilities based on chi-square for trend



**FIGURE VII.5 SELF REPORTED OVERALL MORBIDITY  
BY OCCUPATION<sup>(1)</sup>**



*(1) Population Aged 7+*

*(2) Including shopkeepers and street sellers*

*(3) Unemployed*



Ratios between the rates for housewives and those for women occupied as clerks and industrial workers were 2.0 and 1.7 respectively<sup>8</sup>.

Differentials in overall morbidity between males in agricultural occupations and males in non-agricultural occupations, are consistent and persistent even when examined for age-specific groups and when age-standardization is employed (Figure VII.6). Differences were statistically significant for males aged 15-44 years ( $p < 0.001$ ) and for overall rates ( $p < 0.001$ ). As Figure VII.6 shows, similar statistically significant differences ( $p < 0.001$ ) in age-standardized rates were found between females with occupations inside the household and those outside. The differences between the rates for those aged 45 years and over were not statistically significant.

Overall morbidity by entitlement to social security. Small differences in overall prevalence rates in both sexes between the insured and non-insured populations were observed, but they were not statistically significant (data not shown).

Overall morbidity by habitual source of medical care. Figure VII.7 presents age-specific prevalence rates for males and females by type of habitual source of care. Overall, the highest rates were observed among people whose source of care is the government services: poor peasants and temporarily waged agricultural labourers. The lowest rates were found among those who used the private services as the main source of care. Intermediate were those who used the social security services. These findings are consistent with those obtained through the analysis of overall morbidity by occupation.

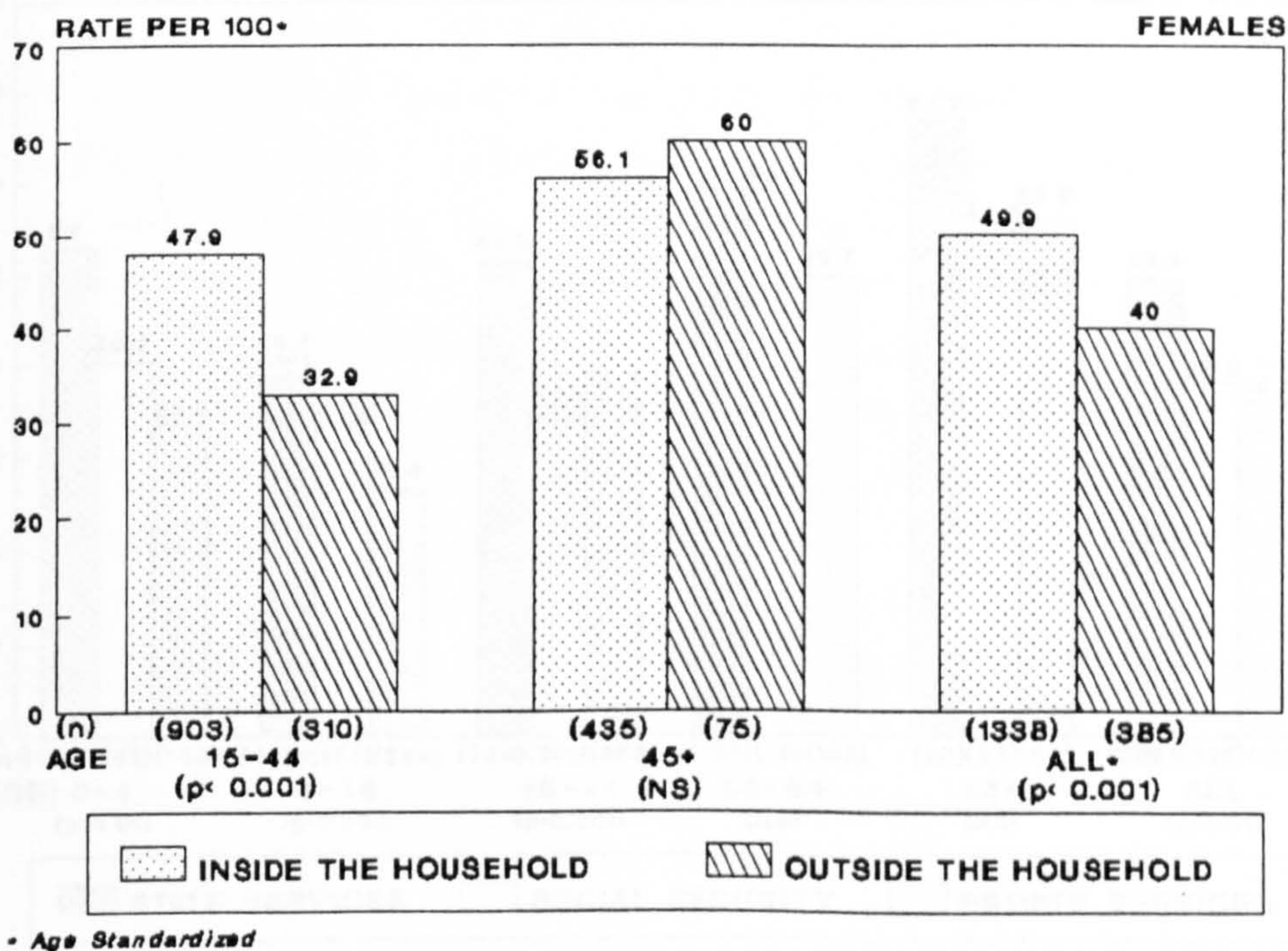
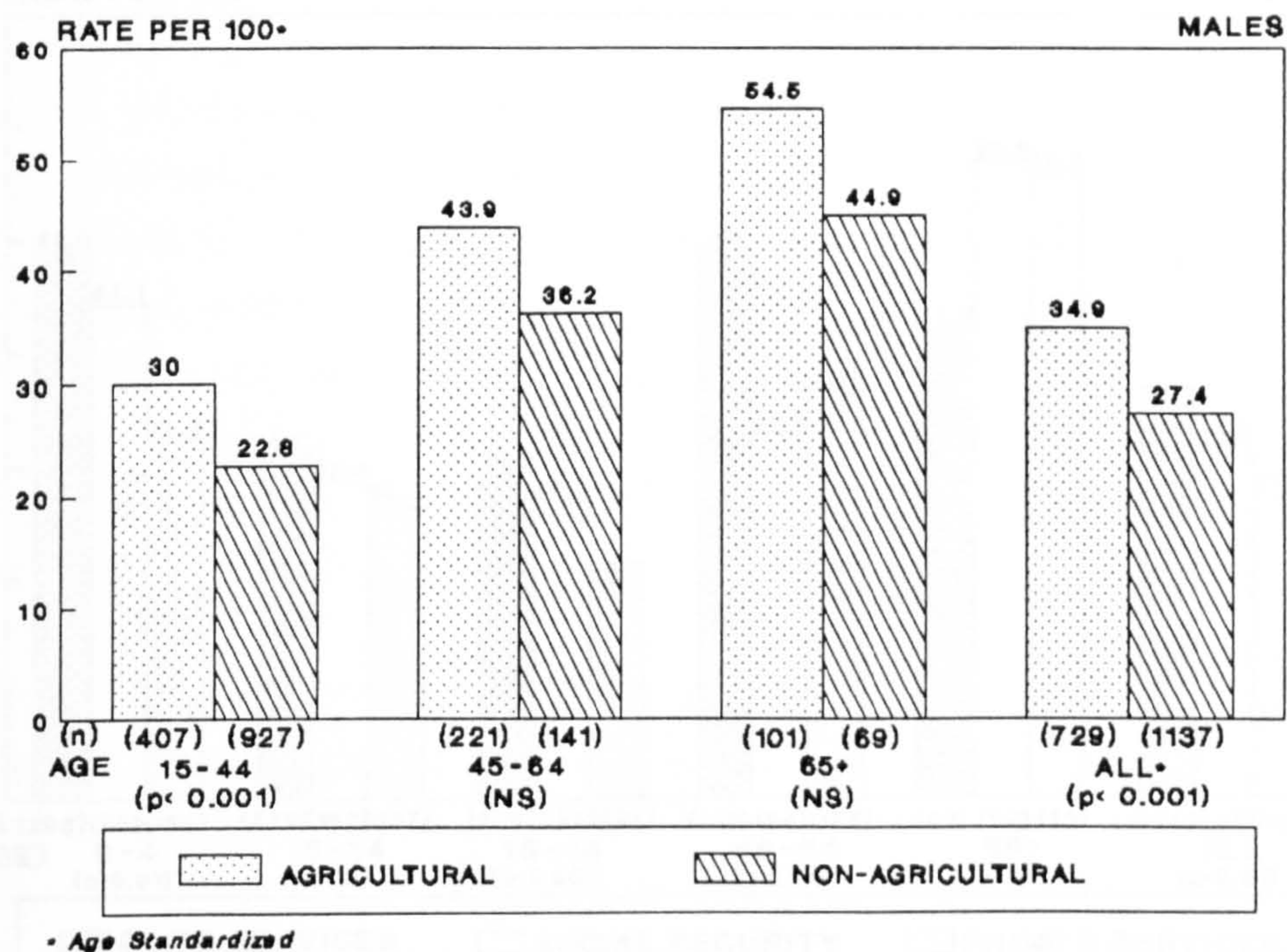
Overall morbidity by housing conditions. The results from the survey show, as far as overall morbidity is concerned, small

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<sup>8</sup>Odds ratios were: 2.92 (95% CL:1.76-4.88) and 2.36 (95% CL:1.33-4.22) respectively.

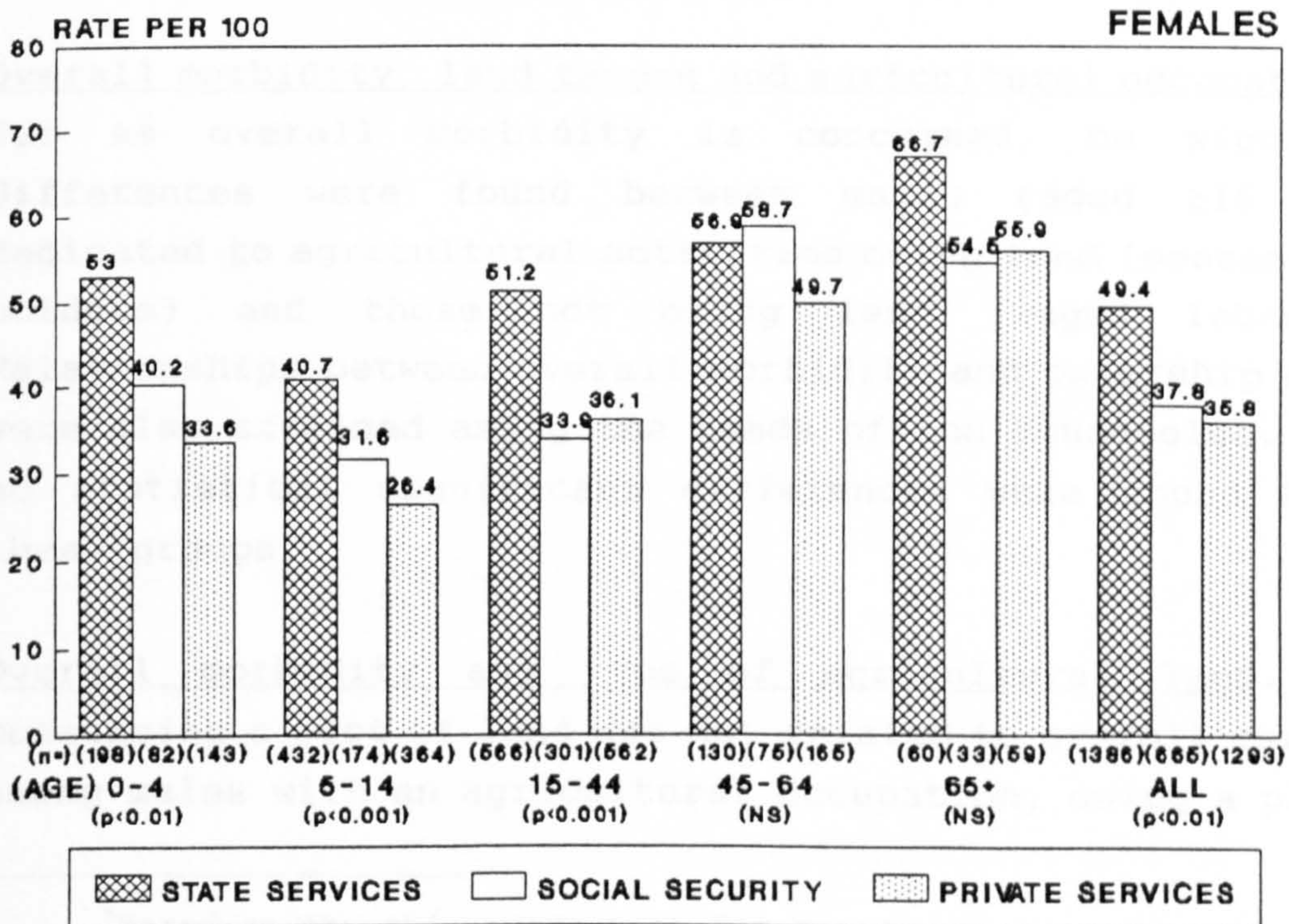
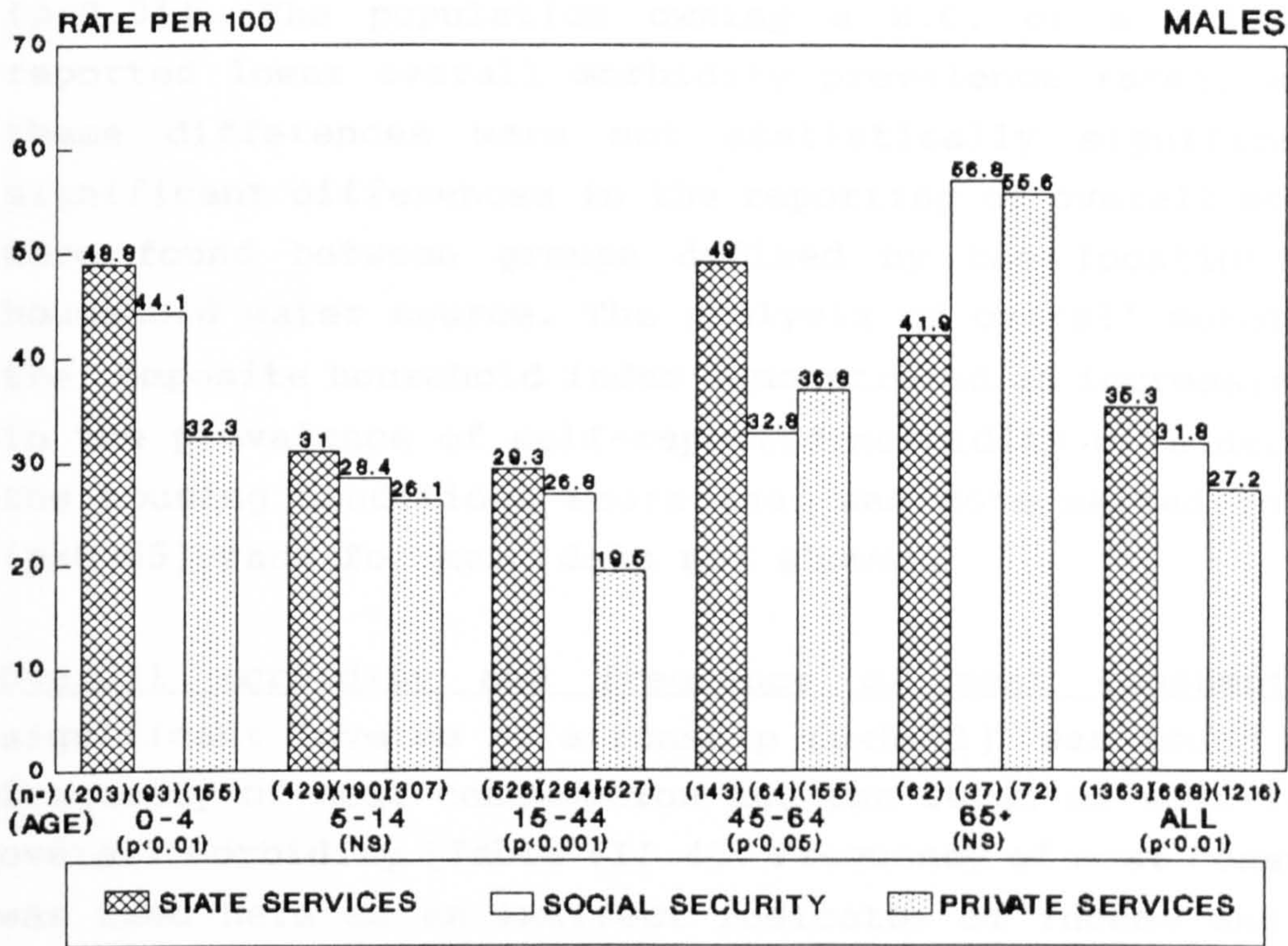


**FIGURE VII.6 PREVALENCE OF OVERALL SELF-REPORTED MORBIDITY BY OCCUPATION**





**FIGURE VII.7 SELF-REPORTED MORBIDITY BY AGE GROUP FOR SOURCE OF HEALTH/MEDICAL CARE**





gradients between households with different housing conditions. Table VII.3 shows prevalence of self-reported morbidity by selected housing indicators. Of the different indicators used, only the type of material of floors was statistically associated with the level of morbidity reported ( $p < 0.01$ ). The population owning a W.C. or a refrigerator reported lower overall morbidity prevalence rates, although these differences were not statistically significant. No significant differences in the reporting of overall morbidity were found between groups defined by the location of the household water source. The analysis of overall morbidity by the composite household index demonstrated an increasing trend in the prevalence of self-reported morbidity with decreasing the housing conditions score that was more marked for women ( $p = 0.05$ ) than for men (data not shown).

Overall morbidity and frequency of meat consumption. A significant inverse relationship ( $p < 0.01$ )<sup>9</sup> was found between frequency of meat consumption and the level of self-reported overall morbidity (Table VII.4). Frequency of meat consumption was used here as an indirect indicator of income and socio-economic status.

Overall morbidity, land tenure and agricultural occupation. As far as overall morbidity is concerned, no significant differences were found between males (aged  $\geq 15$  years) dedicated to agricultural activities owing land (peasant landholders) and those not owing land (waged labourers). Relationships between overall morbidity and ownership of land were also examined among the heads of the households. Again, no statistical significant differences were found between these groups.

Overall morbidity and type of agricultural land. While possessing a plot of land was not related to overall morbidity among males with an agricultural occupation, owing a plot of

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<sup>9</sup>Based on the chi-square test for trend.

**TABLE VII.3 SELF-REPORTED OVERALL MORBIDITY BY SELECTED HOUSING INDICATORS**

Indicator	Rate per 100	(n)	p( $\chi^2$ )
<b>Construction Material of floor</b>			
Dirt	42.5	(609)	< 0.01
Concrete	36.3	(5988)	
<b>Presence of a W.C.</b>			
Yes	35.6	(2366)	NS
No	37.5	(4225)	
<b>Possession of a refrigerator</b>			
Yes	35.7	(1632)	NS
No	37.5	(4902)	
<b>Location of water source</b>			
Inside the household	34.3	(5373)	NS
Outside the household	35.8	(1226)	

NS: Not significant

(n) Shows the total number of respondents from which the rates were calculated

**TABLE VII.4 PREVALENCE OF SELF-REPORTED OVERALL MORBIDITY BY FREQUENCY OF MEAT CONSUMPTION**

Frequency of meat consumption	Rate per 100
Daily or every other day	33.8 (1681)
Twice or once a week	37.1 (3935)
Once a fortnight or less	40.8 (973)
All	36.9 (6622)

p<0.01 ( $\chi^2$  for trend)

(n)



unirrigated (rainfall) land was associated with a higher prevalence rate (36.6 per 100) compared to the population owning a plot of irrigated land (30.1 per 100). This disparity was statistically significant ( $p < 0.01$ ). Type of land possessed is used here as an indirect measure of social class (see Chapter V), since the type and quality of the agriculture land is distributed according to social class. For example, unirrigated low-quality land is mostly owned by poor peasants and semi-proletarianized peasants, whereas the irrigated high-quality land is owned by richer farmers.

The relationship between the prevalence of overall morbidity and the size of the plot of land owned was also investigated, and it was found to increase as the size of the plot of rainfall land increased.

## 2. Number of symptoms reported

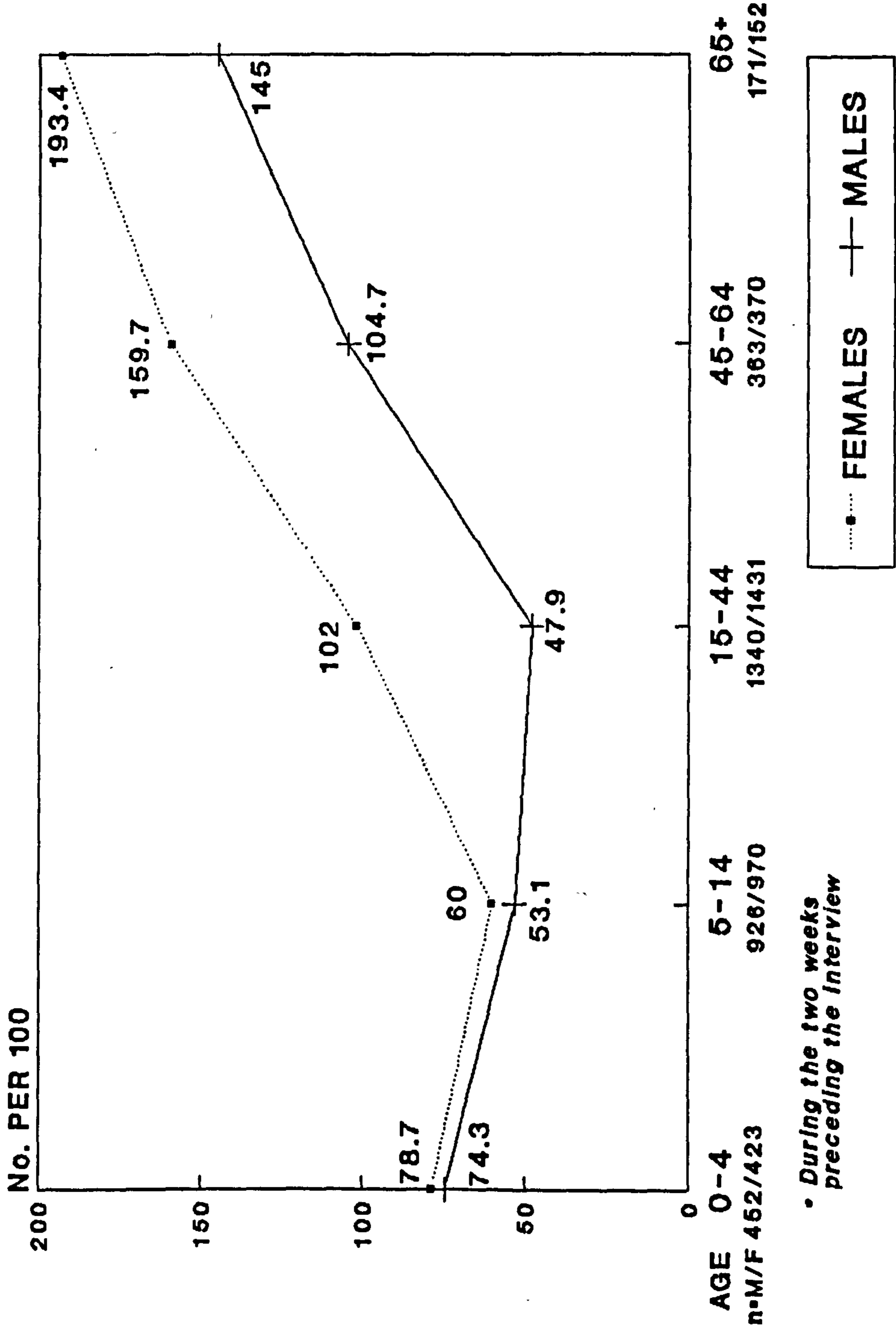
### A. Demographic differentials

Figure VII.8 presents the number of reported symptoms per 100 respondents by age and sex. Again, the highest rates were reported among the children between 0 and 4 years of age and among older people ( $\geq 65$ ). Female morbidity rates were higher in every age group, particularly 15-44 and 45-64 age groups, than for males. These findings are compatible with those shown in Figure VII.1, although, in general, this indicator displayed greater differences between sexes than that based on prevalence of overall morbidity (proportion of respondents reporting illness).

### B. Socio-geographic differentials

Urban/rural gradients. The number of symptoms reported per 100 respondents in localities of less than 2,500 inhabitants (93) was 1.35 times higher than the number in localities between

**FIGURE VII.8 NUMBER OF SYMPTOMS REPORTED\*  
PER 100 RESPONDENTS BY AGE AND SEX**





2,500 to 15,000 inhabitants (69). As Table VII.5 shows, the number of symptoms per 100 was greater in rural areas for every age and for both sexes, except for females aged 45-64 years. The analysis of the average number of problems per person reporting illness during the last two weeks showed differences between urban and rural areas. However, these were not as marked as those shown by the indicator based on the number of reported symptoms per 100 respondents.

Variations by living standards of the locality. The number of reported symptoms per 100 respondents is seen to vary considerably according to the socio-economic stratification of the area of residence, with an increasing number of symptoms per 100 with decreasing socio-economic stratum of the locality. As Figure VII.9 illustrates this pattern is consistent in both sexes. Again, this morbidity measure showed that the intra-rural differentials were greater than the intra-urban. For instance, the number of symptoms per 100 females in the lower rural stratum was 1.7 times higher than in the upper rural stratum, whereas the number in the lower urban stratum was only 1.4 times that in the upper urban stratum. The same trend was seen for males.

### **C. Socio-economic differentials**

Number of symptoms by educational level. Figure VII.10 shows that lower levels of education were related to a greater number of reported symptoms per 100 respondents. For instance, the number of reported symptoms by males aged 15-44 years without schooling was 3.5 times higher than for males with more than six years of schooling. Overall, this measure showed larger differentials between lower and higher educational subgroups than that based on the proportion of respondents reporting illness. These differentials persisted when age-standardized rates were used.

Number of symptoms by occupation. Overall, males with an agricultural occupation and females with an occupation inside

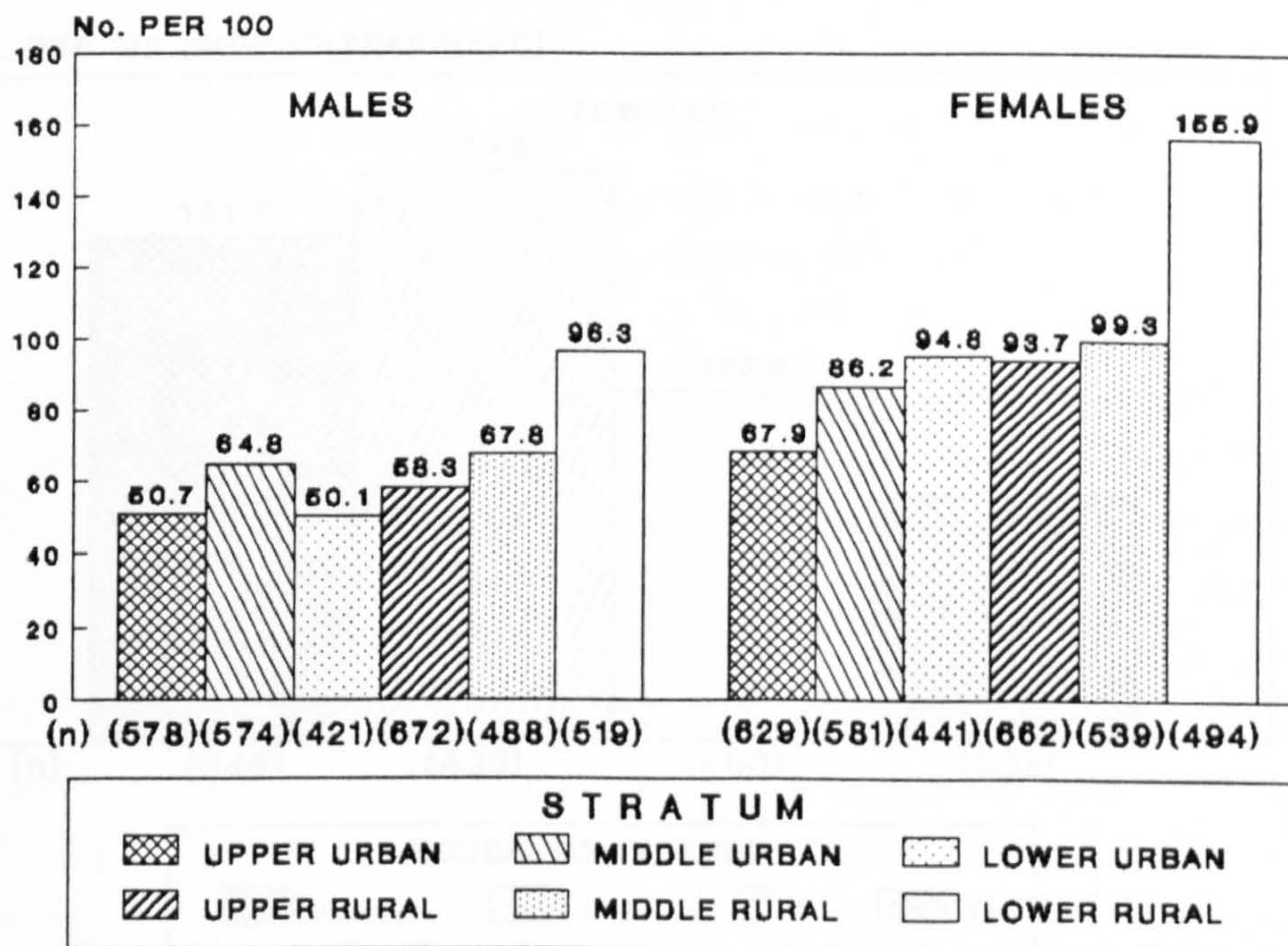


**TABLE VII.5 NUMBER OF SYMPTOMS PER 100 RESPONDENTS BY SIZE OF THE LOCALITY**

Age group	Males		Females	
	Urban*	Rural**	Urban*	Rural**
0-4	66.6 (225)	81.9 (227)	78.8 (193)	81.7 (230)
5-14	44.9 (448)	60.1 (478)	44.2 (482)	75.6 (488)
15-44	40.5 (650)	54.9 (690)	76.0 (712)	128.1 (719)
45-64	97.8 (182)	111.6 (181)	165.8 (199)	159.7 (171)
>65	127.9 (68)	157.3 (103)	166.2 (65)	213.8 (87)
All (n)	55.7 (1573)	72.8 (1679)	81.5 (1651)	113.6 (1695)

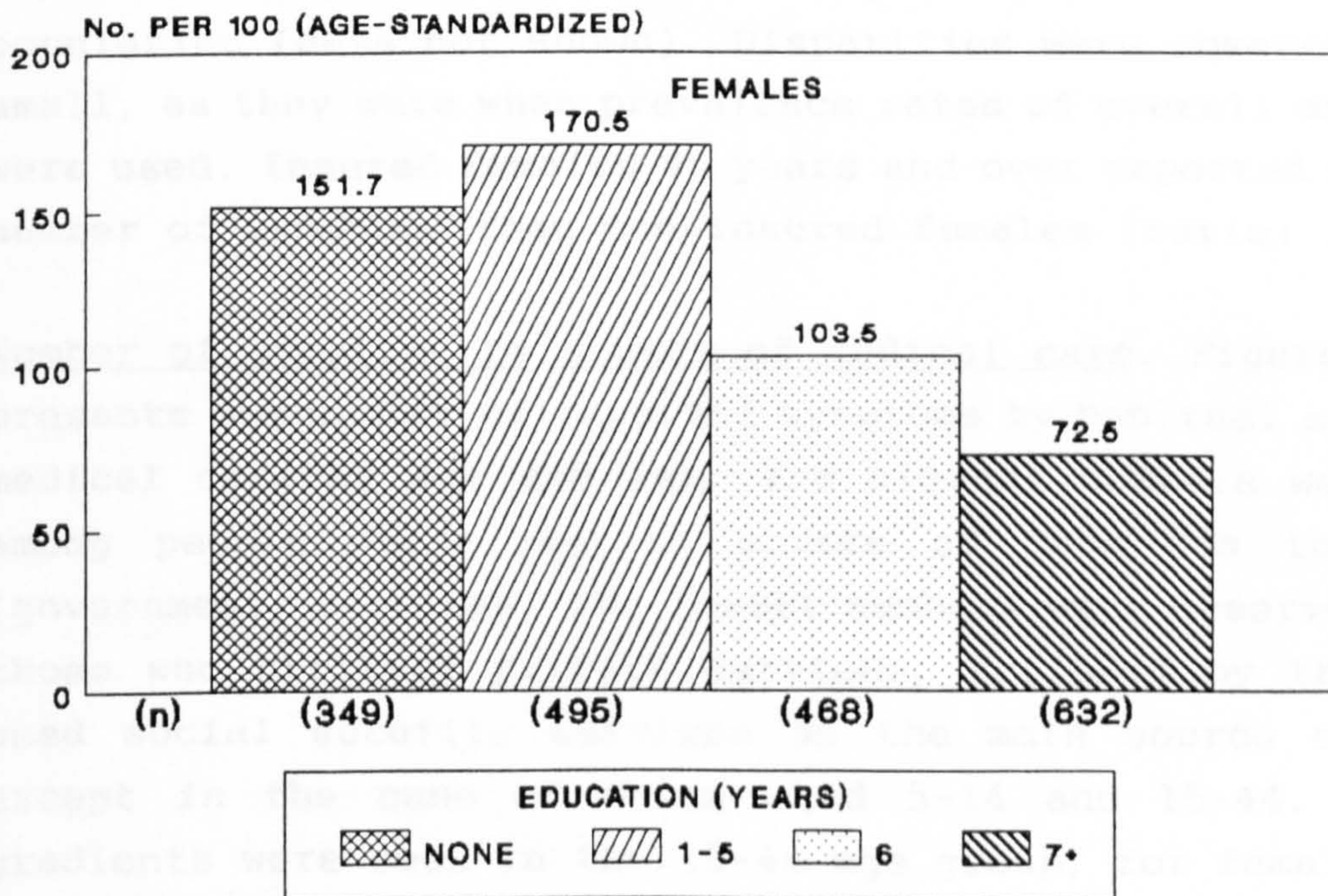
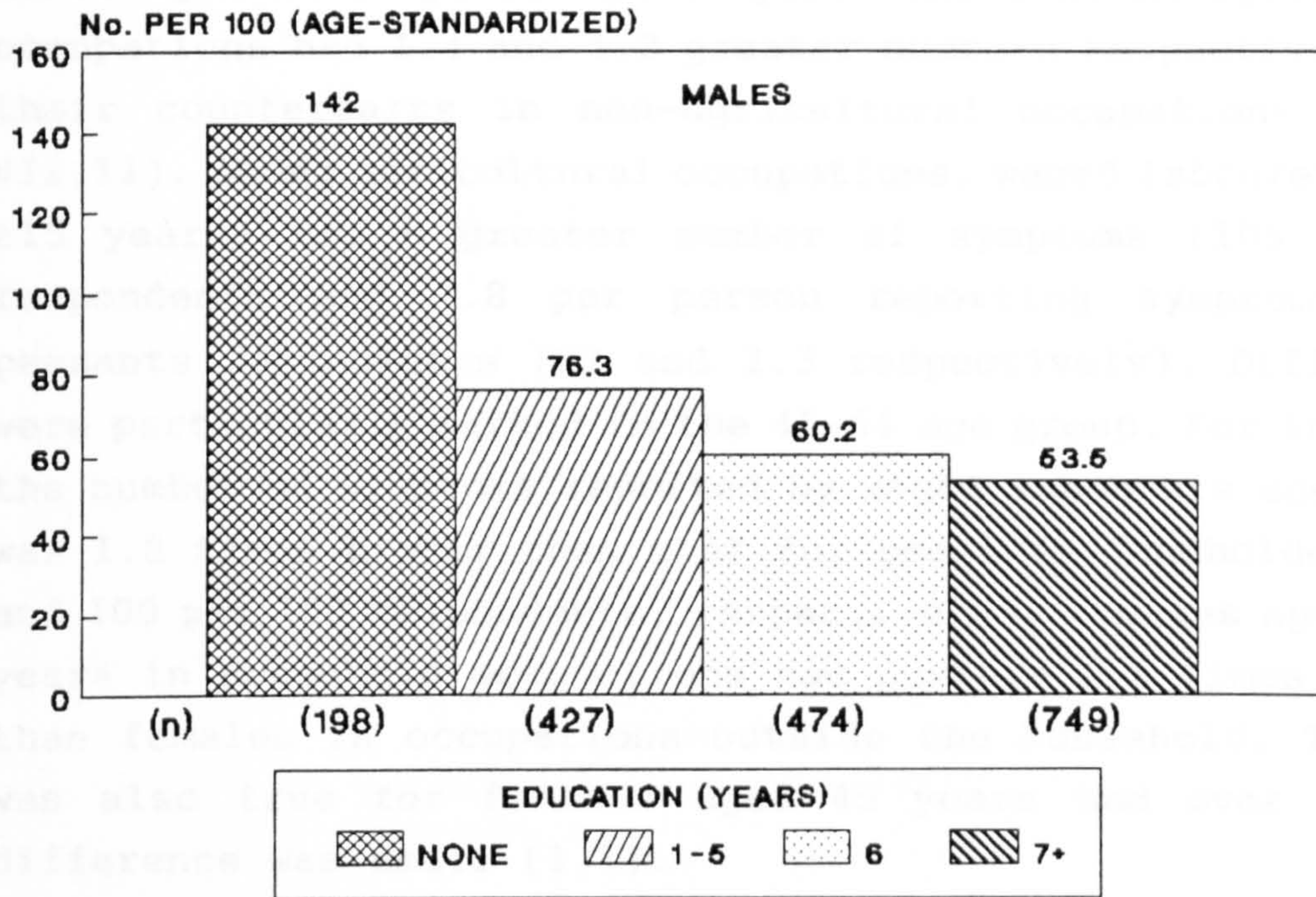
\* Urban = 2,500-15,000 population; \*\* Rural = < 2,500

**FIGURE VII.9 NUMBER OF SYMPTOMS REPORTED BY SOCIO-ECONOMIC STRATUM OF THE LOCALITY**





**FIGURE VII.10 NUMBER OF SYMPTOMS REPORTED BY EDUCATION**





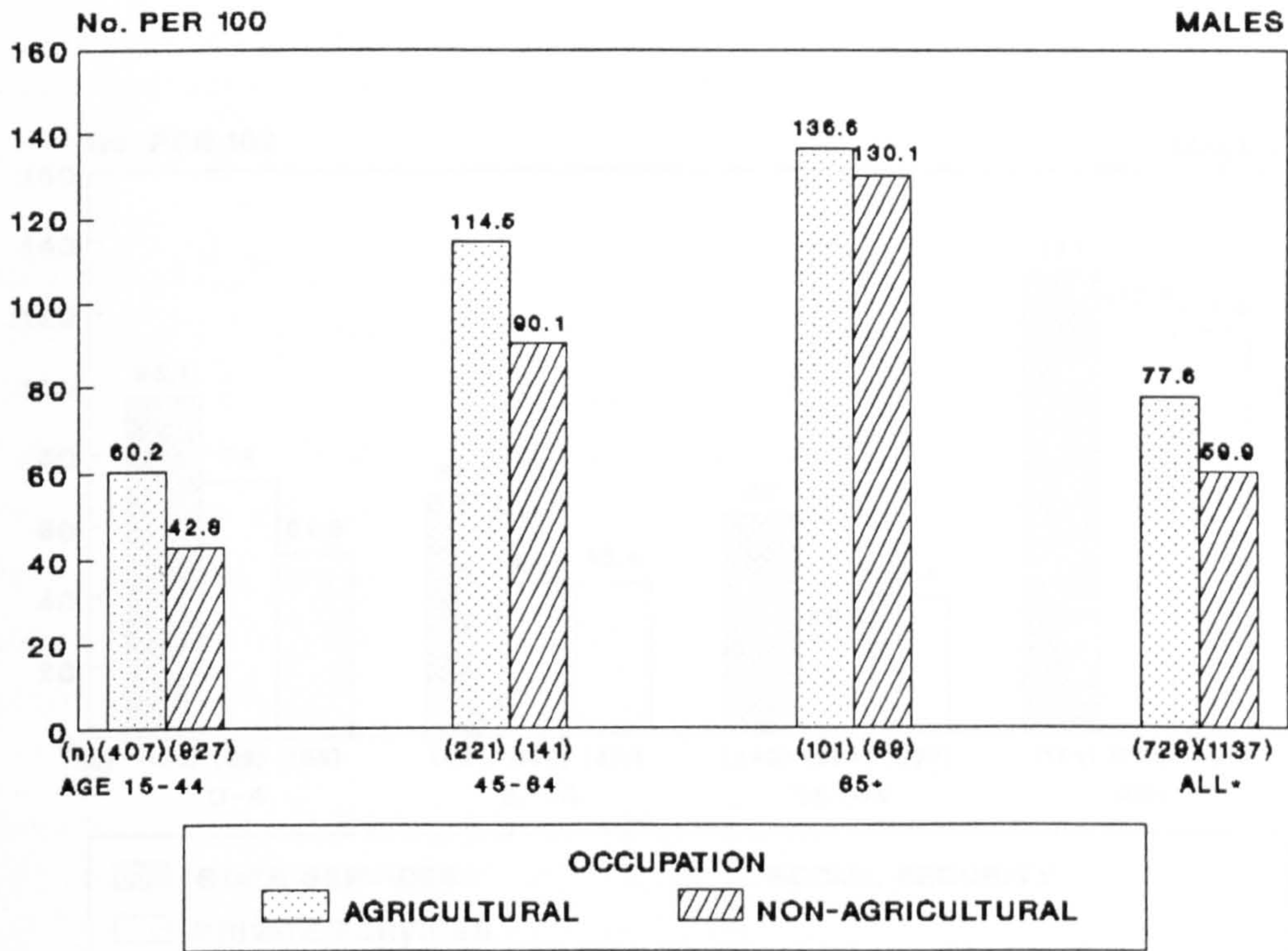
the household reported a greater number of symptoms than males with a non-agricultural occupation and females with an occupation outside the household. These gradients persisted when allowance was made to the fact that there were more older males and females in agricultural and housework occupations. Males aged 15-44 years and 45 years and over in agricultural occupations had 1.4 and 1.3 greater numbers respectively than their counterparts in non-agricultural occupations (Figure VII.11). Among agricultural occupations, waged labourers (aged  $\geq 15$  years) had a greater number of symptoms (105 per 100 respondents and 2.8 per person reporting symptoms) than peasants landholders (87 and 2.3 respectively). Differences were particularly marked in the 45-64 age group. For instance, the number of symptoms reported by waged labourers aged 45-64 was 1.8 times higher than that for peasants landholders (183 and 100 per 100 respondents, respectively). Females aged 15-44 years in household occupations had numbers 1.6 times greater than females in occupations outside the household. The same was also true for females aged 45 years and over but the difference was small (1.1).

Number of symptoms by entitlement to social security. The numbers of reported symptoms were greater in the non-insured population (data not shown). Disparities were observed to be small, as they were when prevalence rates of overall morbidity were used. Insured females 45 years and over reported a larger number of symptoms than non-insured females (ratio: 1.7).

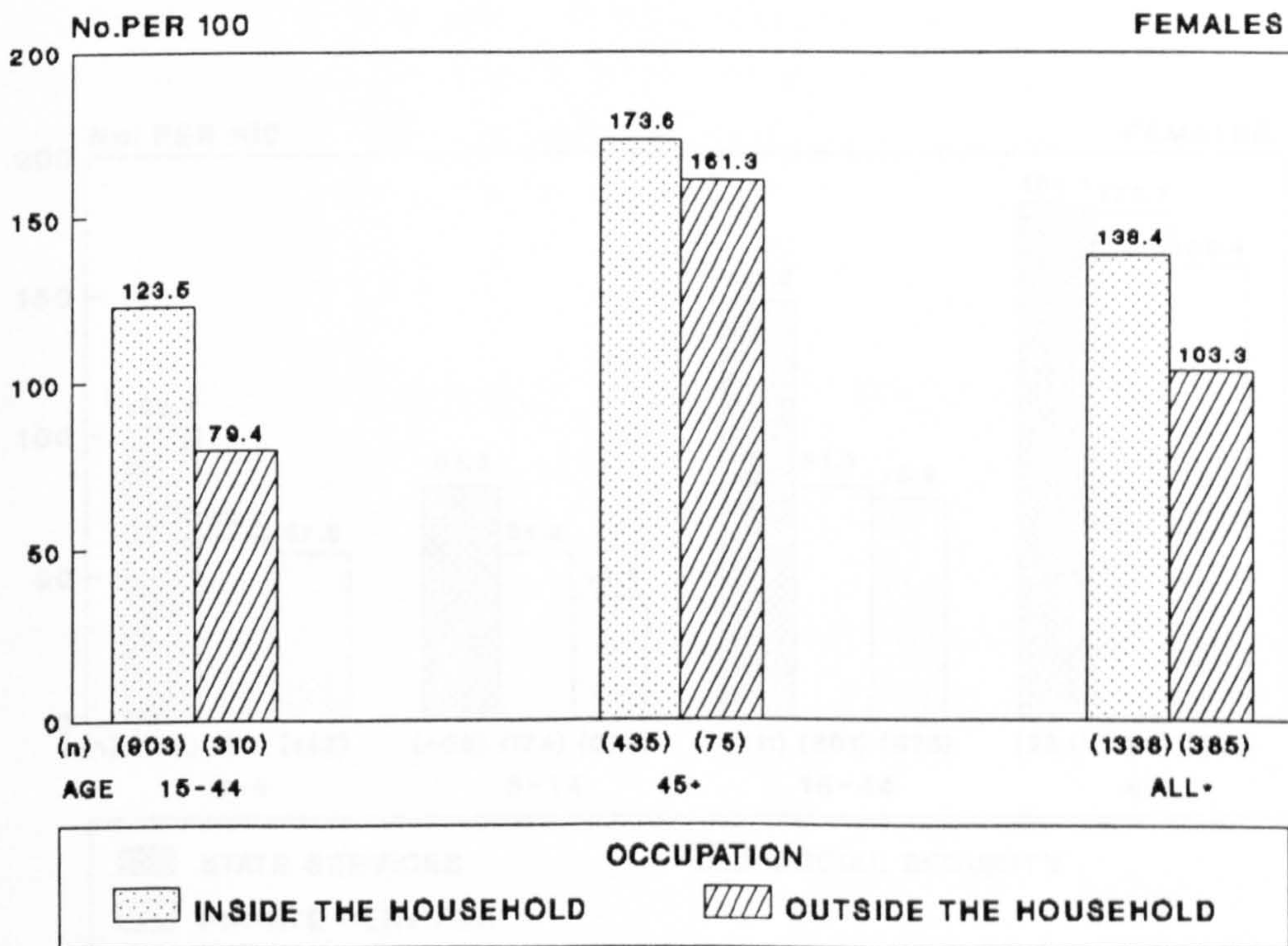
Number of symptoms by source of medical care. Figure VII.12 presents the number of reported symptoms by habitual source of medical care by age and sex. The highest numbers were seen among people whose regular source of care was the State (government) services. The lowest numbers were observed among those who utilized private services, followed by those who used social security services as the main source of care, except in the case of males aged 5-14 and 15-44. Steeper gradients were seen in the 15-44 age group, for females.



**FIGURE VII.11 NUMBER OF SYMPTOMS  
REPORTED FOR AGE GROUPS  
BY OCCUPATION**



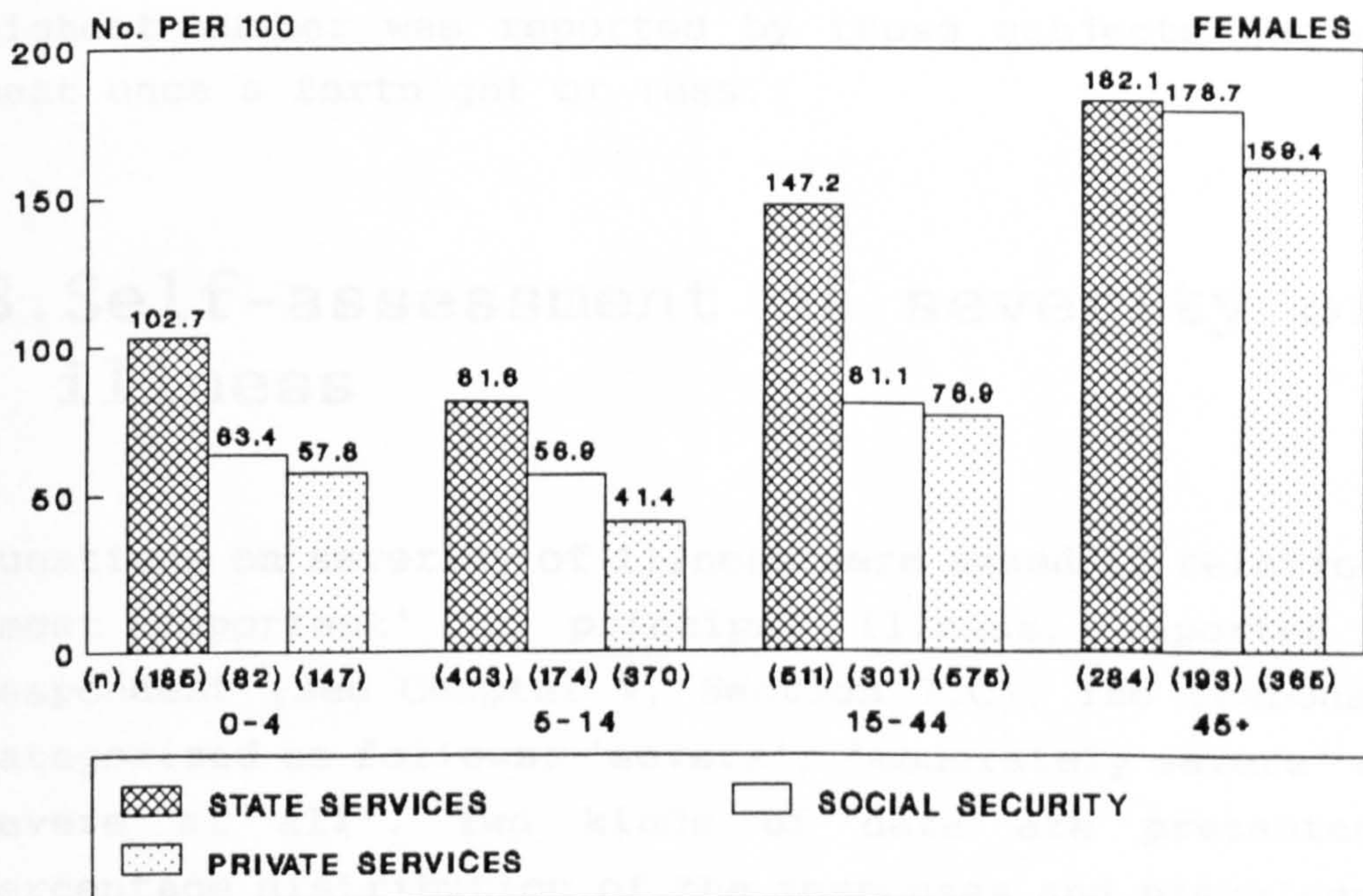
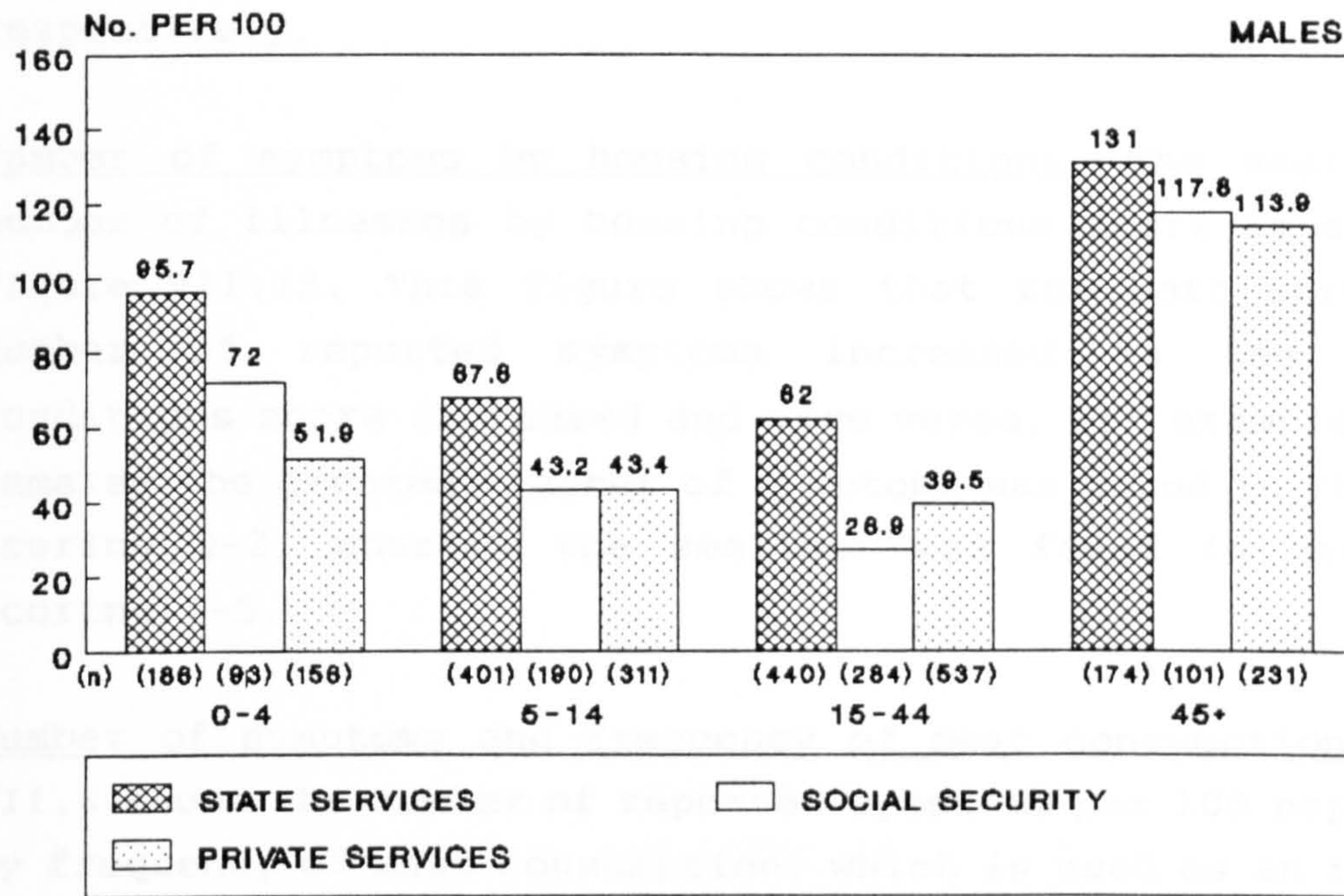
\* Age standardized



\* Age standardized



**FIGURE VII.12 NUMBER OF SYMPTOMS REPORTED FOR AGE GROUP BY SOURCE OF MEDICAL CARE**





The number of symptoms reported by males aged 15-44 years using the government services was more than 2.0 times as high as that for those utilizing social security services, and 1.6 times as high as that for males using private services. Among females in the same age group, these ratios were 1.8 and 1.9 respectively.

Number of symptoms by housing conditions. The analysis of number of illnesses by housing conditions score is shown in Figure VII.13. This figure shows that for both sexes, the number of reported symptoms increased as the housing conditions score decreased and vice versa. For example, among females the greatest number of symptoms was found in the group scoring 0-2, whereas the smallest was found in the group scoring 4-5.

Number of symptoms and frequency of meat consumption. Table VII.6 shows the number of reported symptoms per 100 population by frequency of meat consumption, which is used as an indirect indicator of income and socio-economic status. For both sexes in every age group the lowest number was reported among those respondents who consumed meat once or more a week, whereas the highest number was reported by those subjects who consumed meat once a fortnight or less.

### **3. Self-assessment of severity of illness**

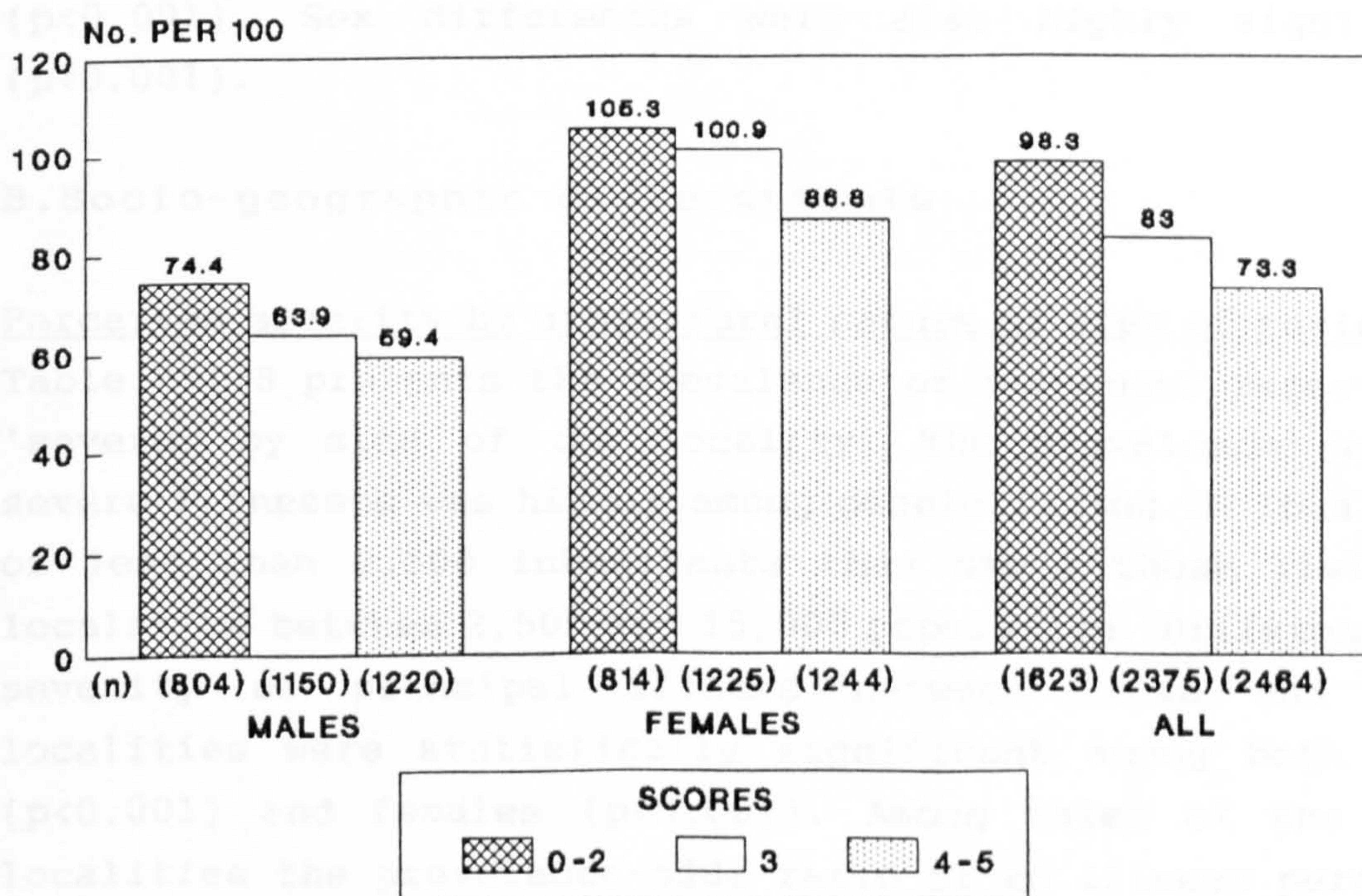
Questions on severity of illness were asked in relation to the 'most important' or principal illness, reported by the respondent (see Chapter V, Section 7.C). The responses were categorized as follows: 'severe', 'moderately severe' and 'not severe at all'. Two kinds of data are presented here: percentage distribution of the responses and prevalence rates of illnesses reported as severe. Prevalence-odds ratios for



**TABLE VII.6 NUMBER OF SYMPTOMS REPORTED PER 100 RESPONDENTS BY FREQUENCY OF MEAT CONSUMPTION**

Age group	Males		Females	
	Once or more a week	Once or less a fortnight	Once or more a week	Once or less a fortnight
0-14	58.4 (1179)	75.1 (89)	62.6 (1174)	72.6 (212)
15-44	45.1 (1147)	66.5 (188)	98.6 (1248)	132.6 (178)
≥ 45	111.8 (432)	144.0 (100)	155.9 (413)	225.7 (105)
All	61.1 (2758)	86.2 (477)	91.6 (2835)	126.7 (495)

**FIGURE VII.13 NUMBER OF SYMPTOMS REPORTED BY INDEX SCORE OF HOUSING CONDITIONS**





illnesses perceived as severe were also calculated for population groups.

#### **A. Demographic differentials**

The distribution of self-assessment of severity of the principal illness is displayed in Figure VII.14. For both sexes, the percentage of persons reporting a severe illness increases with age, with the reverse being seen for reporting of non-severe illnesses. Differences in responses among the age-groups were statistically significant for both sexes ( $p < 0.05$ )<sup>10</sup>. The majority of the reported illnesses were assessed as 'moderately severe'.

Table VII.7 presents the prevalence rates of principal illnesses reported as severe, by age and sex. The same tendency emerges. The highest rates of severe illness were reported among the young children (aged 0-4) and the older age groups (45-64 and  $\geq 65$ ). Again, the lowest rates were observed among the school children (5-14). Age-group differences were statistically significant among males ( $p < 0.001$ ) and females ( $p < 0.001$ ). Sex differences were also highly significant ( $p < 0.001$ ).

#### **B. Socio-geographic differentials**

##### Perceived severity by urban/rural nature of area of residence.

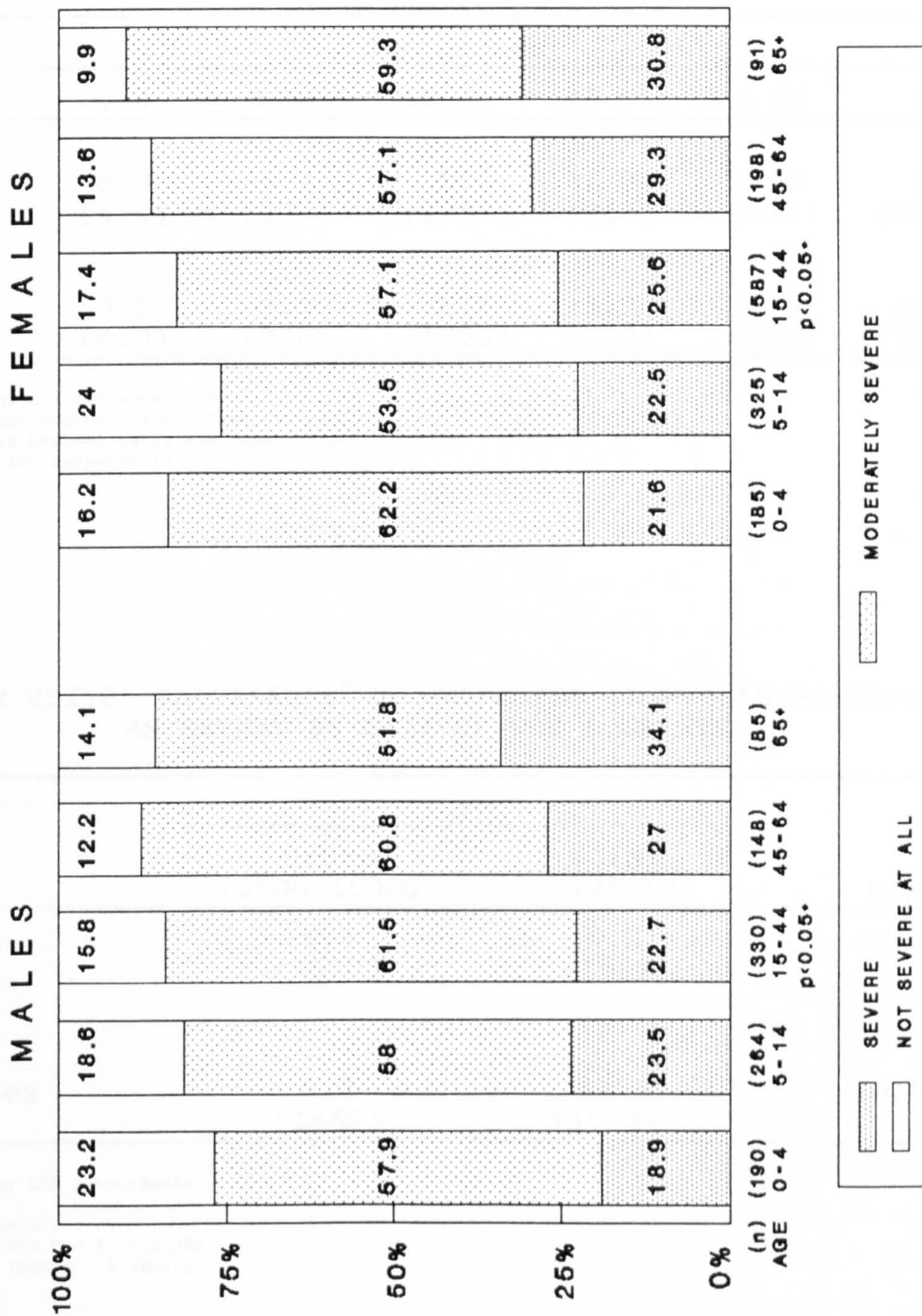
Table VII.8 presents the prevalence of illnesses reported as 'severe' by size of the locality. The prevalence rate of severe illnesses was higher among people living in localities of less than 2,500 inhabitants than among those living in localities between 2,500 and 15,000 population. Differences in severity of principal illness between urban and rural localities were statistically significant among both males ( $p < 0.001$ ) and females ( $p < 0.001$ ). Among males of the rural localities the prevalence-odds ratio of an illness perceived

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<sup>10</sup>Based on the chi-square test for trend.



**FIGURE VII.14 SELF-ASSESSMENT OF SEVERITY OF PRINCIPAL ILLNESS BY AGE GROUPS**





**TABLE VII.7 PREVALENCE\* OF PRINCIPAL ILLNESSES  
REPORTED AS SEVERE BY AGE AND SEX**

	Age groups					All
	0-4	5-14	15-44	45-64	≥ 65	
M (n)	8.0 (452)	6.7 (927)	5.6 (1341)	11.0 (363)	17.0 (171)	7.4 (3254)
F (n)	9.5 (423)	7.5 (970)	10.5 (1429)	15.7 (370)	18.4 (152)	10.4 (3344)

Statistical significance ( $\chi^2$ )  
Among males:  $p < 0.001$ ; Among females:  $p < 0.001$   
Differences between males and females:  $p < 0.001$   
\*Rate per 100 respondents

**TABLE VII.8 PREVALENCE\* OF PRINCIPAL ILLNESSES REPORTED  
AS SEVERE BY SIZE OF THE LOCALITY**

	Area		p( $\chi^2$ )
	Urban (2500-15000)	Rural (<2500)	
Males (n)	5.4 (1577)	9.3 (1687)	<0.001
Females (n)	7.8 (1657)	12.9 (1701)	<0.001

\* Rates per 100 respondents

OR rural/urban:  
(m) = 1.8 (95% CL: 1.36-2.39)  
(f) = 1.75 (95% CL: 1.38-2.22)  
(Urban=1)

as severe compared with that of urban localities was 1.80 (95% CL:1.36-2.39). The odds ratio of a severe illness for females of rural areas was 1.75 (95% CL:1.38-2.22).

Perceived severity and living conditions of the locality.

Figure VII.15 reveals that differences in the prevalence of illnesses assessed as severe between the distinct socio-economic strata were more marked in the rural than in the urban areas. For example, the rate of illnesses reported as severe among females of the lower rural stratum, was over two times higher than that of females from the upper rural stratum, whereas the equivalent ratio in the urban strata was only 1.2. The prevalence-odds ratio of illnesses perceived as severe for females from the lower rural stratum compared with those of the upper rural stratum was 2.44 (95% CL:1.71-3.49); for males the equivalent odds ratio was 1.47 (95% CL:0.97-2.22). Differences among males of distinct strata were similar, but less marked, to those seen among females. Disparities between the different socio-economic strata in both areas were statistically significant for both sexes only among the rural strata (males:  $p=0.05$ ; females:  $p<0.001$ ).

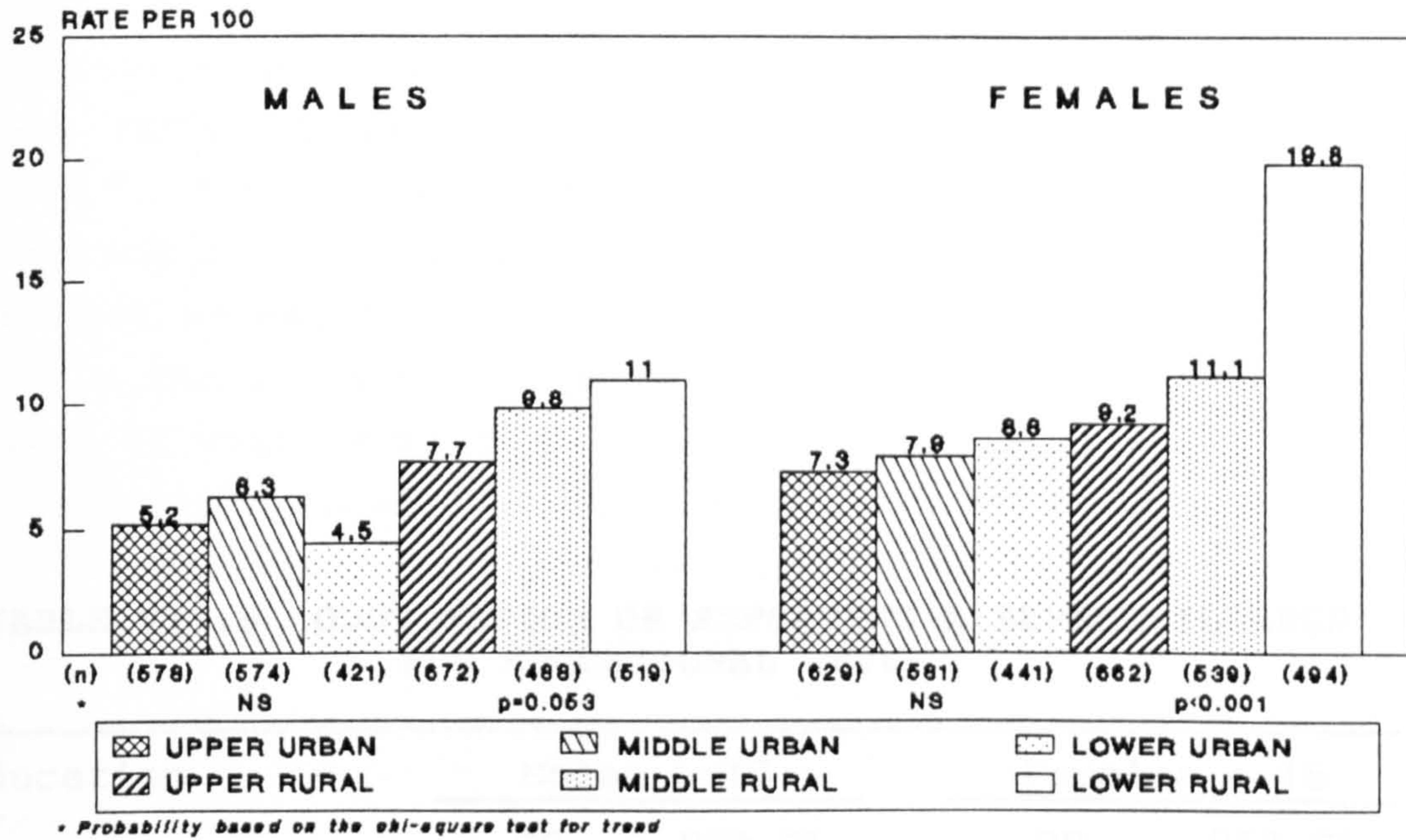
**C. Socio-economic differentials**

Perceived severity and educational level

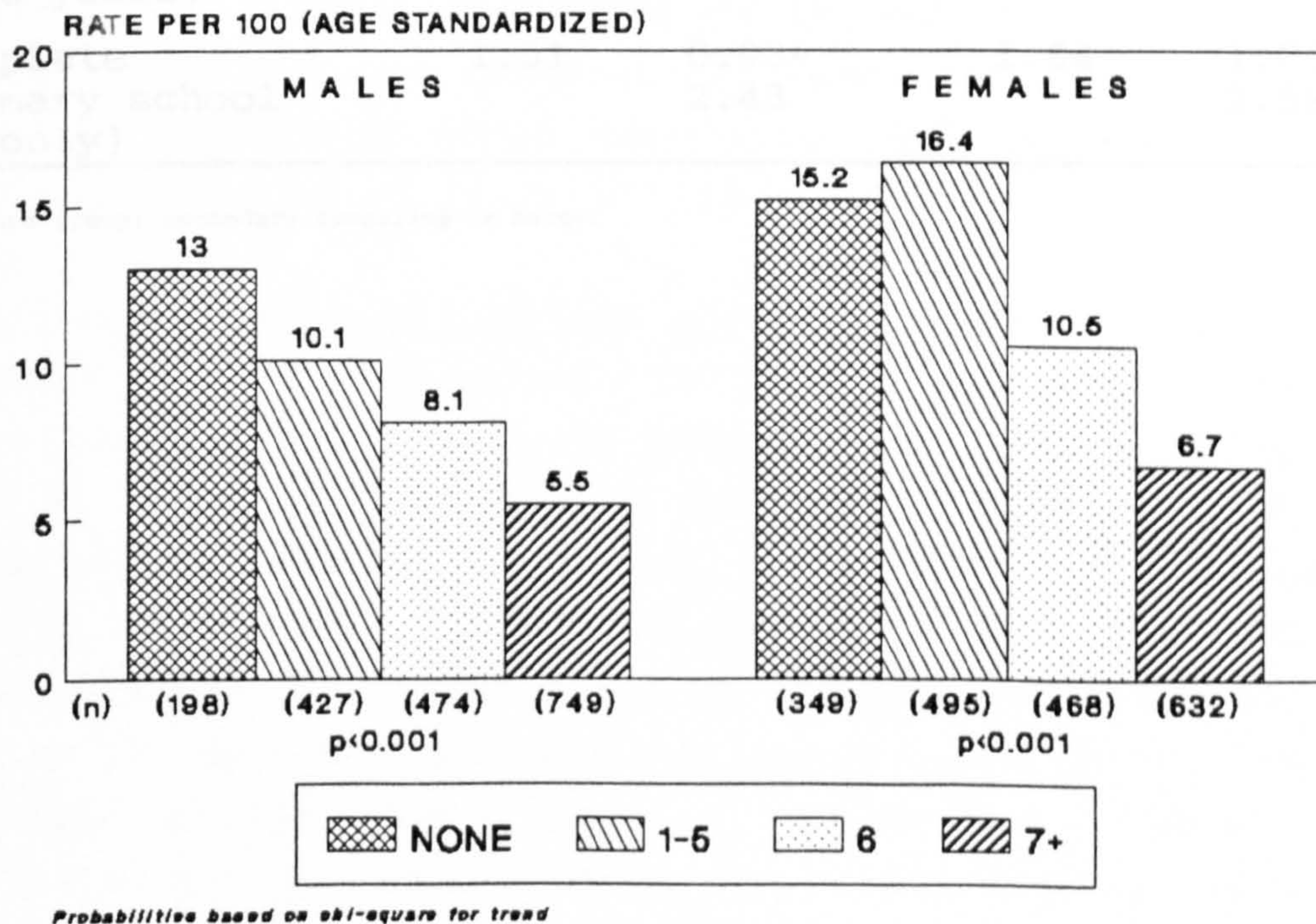
The analysis of the prevalence rates of severe illnesses presented in Figure VII.16 displayed steep differences between the various educational groups. The odds ratios of illnesses perceived as severe for different educational levels, with secondary school or more as the reference category, are presented in Table VII.9. For example, the odds ratios for males and females without schooling were 2.61 (95% CL:1.50-4.52) and 2.52 (95% CL:1.60-3.95) respectively. It is interesting to see that a small increase in education is associated with a difference in terms of the probability of perceiving an illness as severe.



**FIGURE VII.15 PREVALENCE OF PRINCIPAL ILLNESSES REPORTED AS SEVERE BY SOCIO-ECONOMIC STRATUM OF THE LOCALITY**



**FIGURE VII.16 PREVALENCE OF ILLNESSES REPORTED AS SEVERE BY EDUCATION**





**TABLE VII.9 ODDS RATIOS OF REPORTING A SEVERE ILLNESS  
FOR EDUCATIONAL LEVEL**

Education	Males ≥ 15		Females ≥ 15	
	OR	95% CL	OR	95% CL
None	2.61	1.50- 4.52	2.52	1.60- 3.95
Incomplete primary school (1-5 years)	1.93	1.21- 3.09	2.75 <sup>t</sup>	1.82- 4.15
Complete primary school (6 only)	1.51	0.93- 2.43	1.64	1.05- 2.58

Reference group: secondary schooling or more=1



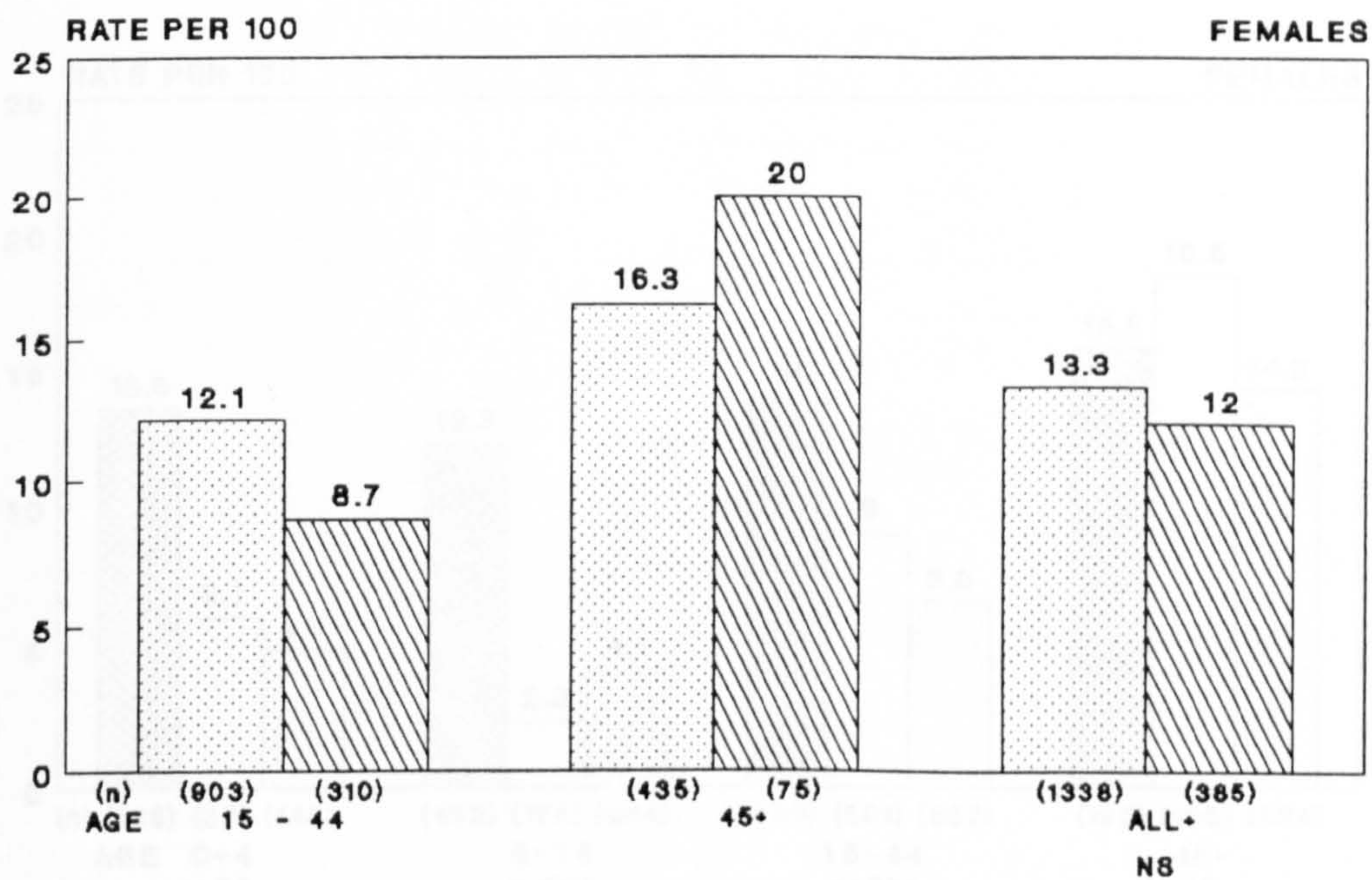
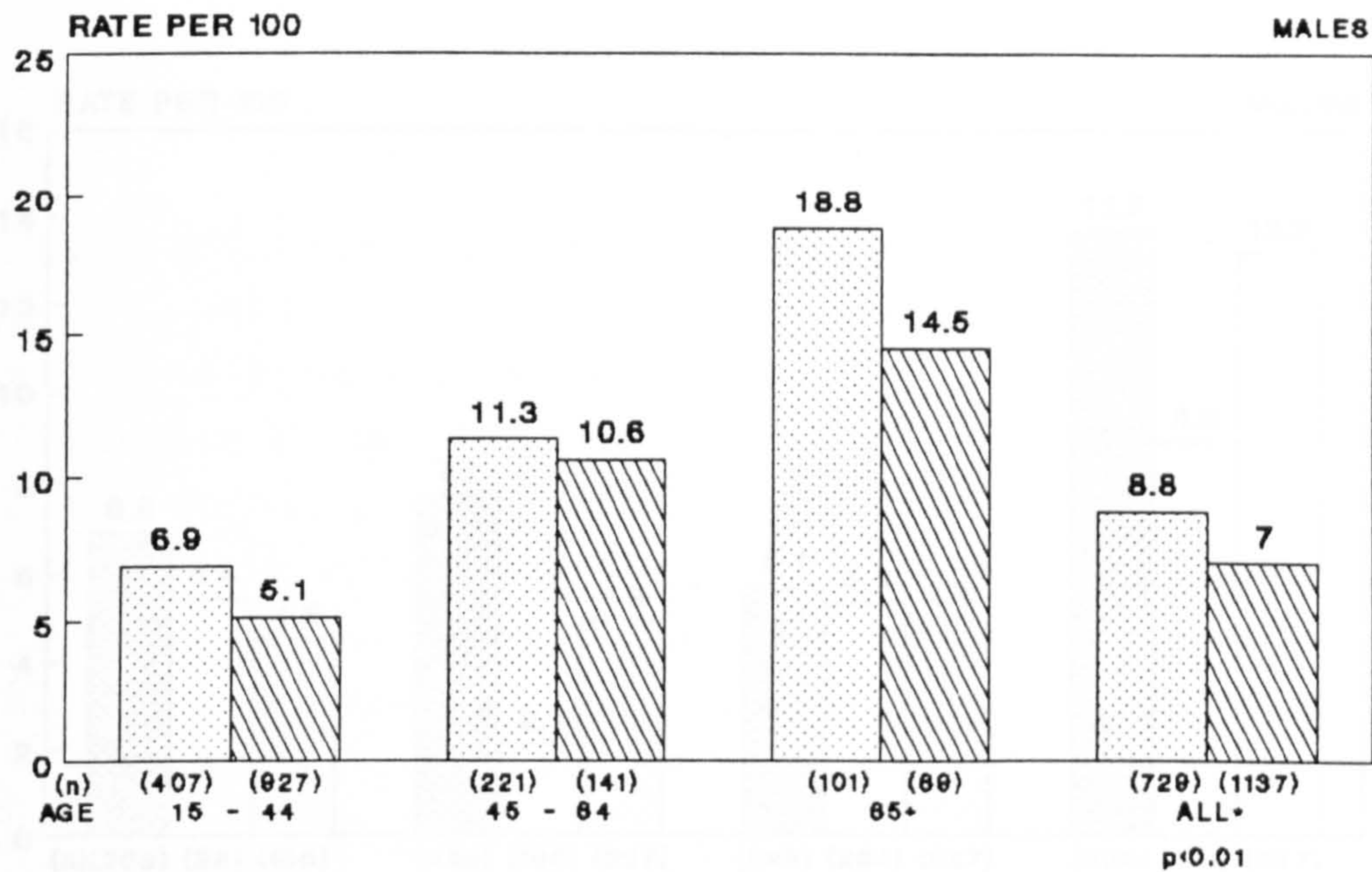
Perceived severity and occupation. The analysis of the prevalence rate of illnesses perceived as severe showed significant disparities between occupational groups (Figure VII.17). Among males, the gradients were sharper in the 15-44 age group. Among agricultural occupations, waged labourers had higher rates of perceived morbidity of high severity than peasants land-holders and differences increased with increasing age. For example, the rate of illnesses perceived as severe by waged labourers aged 15-44 years (9.4 per 100) was 1.6 times that of peasant land-holders (6 per 100), whereas it was almost twice (18.9) as high as that for their counterparts aged 45-64 (9.8). Once again, females aged 15-44 years working inside the homes appeared to be disadvantaged compared to those working outside their homes.

Perceived severity and entitlement to social security. A higher proportion of non-insured males and females (25% and 27% respectively) than insured males and females (22% and 21% respectively) considered their illnesses as 'severe'. The association between self-assessment of severity of illness and entitlement to social security condition was found to be statistically significant among males and females ( $p < 0.05$ ). The highest prevalence rates of illnesses perceived as severe were seen among the older population groups, particularly among uninsured males (data not shown).

Perceived severity and habitual source of medical care. Figure VII.18 presents the prevalence rates of illnesses reported as severe by habitual source of medical care. Males using the state services as their main source of care reported the highest rates in every age group. Males who used the social security services as their main source of care reported the lowest rates in the 5-14 and  $\geq 45$  age groups, whereas those who used the private services had the lowest rates in the 0-4 and 15-44 age groups. Among females, a similar tendency was observed except in the  $\geq 45$  age group, since in this age those using the social security had the greatest rate (18.5/100), which was over two times higher than that for males (8.9/100).

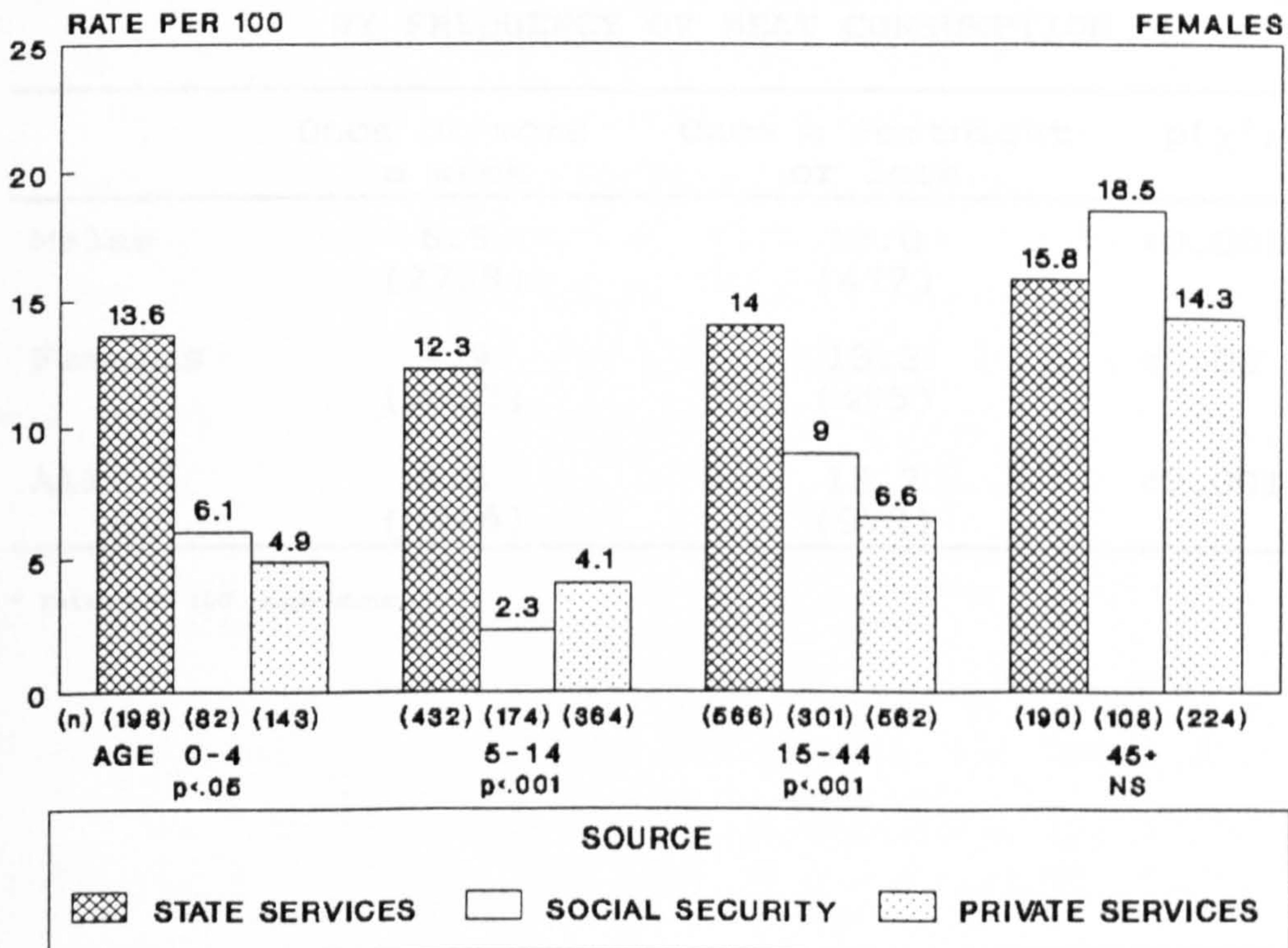
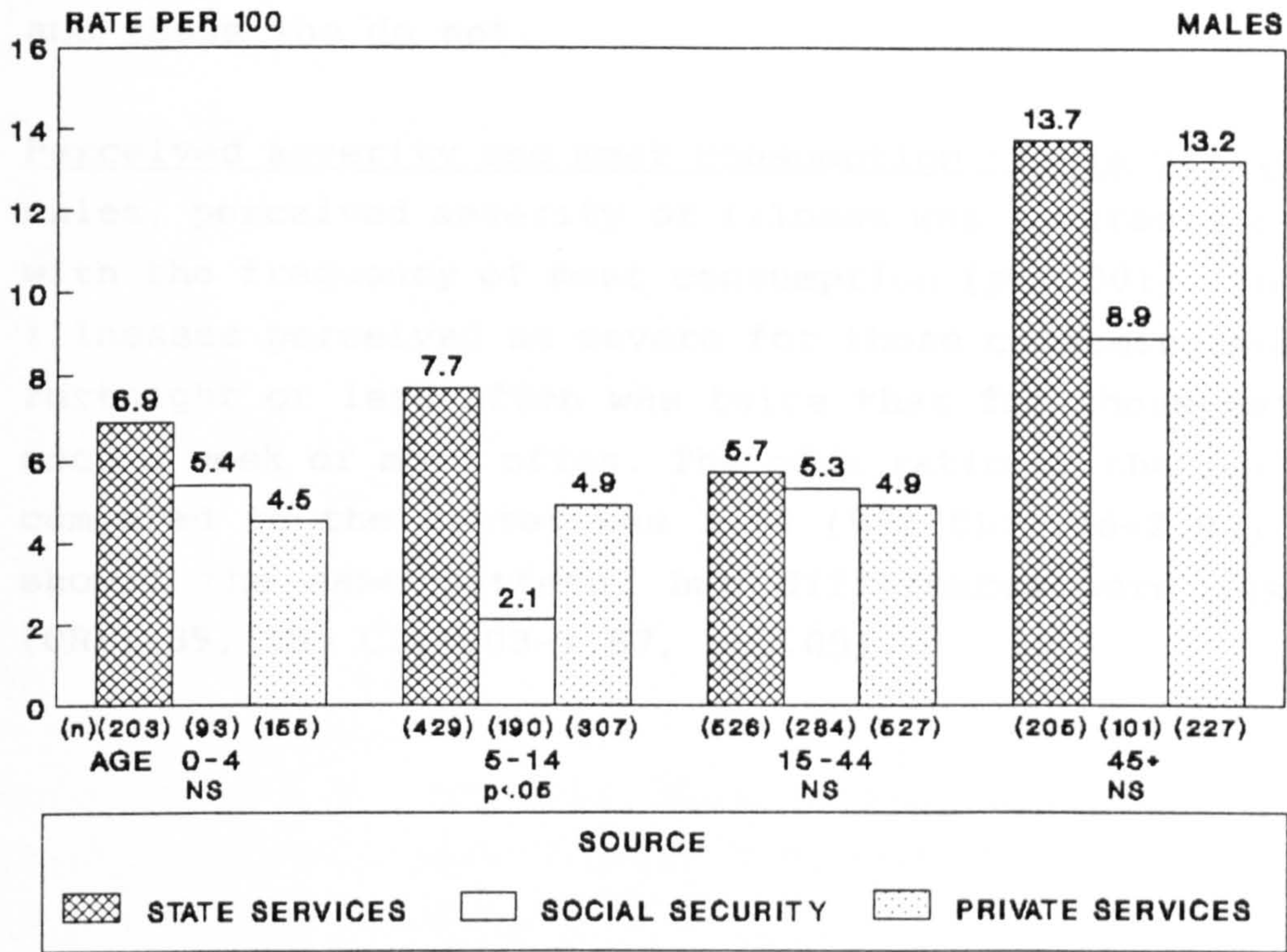


**FIGURE VII.17 PREVALENCE OF PRINCIPAL ILLNESSES REPORTED AS SEVERE FOR AGE GROUPS BY OCCUPATION**





**FIGURE VII.18 PREVALENCE OF ILLNESSES REPORTED AS SEVERE BY HABITUAL SOURCE OF MEDICAL CARE**





Perceived severity and land tenure. Distribution of responses of males according to land ownership were consistent with those analysed in Section 1.C. No significant differences in perceived severity were found between males possessing land and those who do not.

Perceived severity and meat consumption (Table VII.10). Among males, perceived severity of illness was inversely associated with the frequency of meat consumption ( $p < 0.001$ ). The rate of illnesses perceived as severe for those consuming meat once a fortnight or less often was twice that for those eating meat once a week or more often. The odds ratio of the former group compared to the latter was 2.14 (95% CL:1.56-2.94). Females showed the same pattern, but differences were less marked (OR:1.39, 95% CL:1.03-1.87,  $p < 0.05$ ).

**TABLE VII.10 PREVALENCE\* OF ILLNESSES REPORTED AS SEVERE BY FREQUENCY OF MEAT CONSUMPTION**

	Once or more a week	Once a fortnight or less	$p(\chi^2)$
Males	6.5 (2758)	13.0 (477)	<0.001
Females	9.9 (2835)	13.3 (495)	<0.05
All	8.2 (5616)	13.2 (973)	<0.001

\* Rates per 100 respondents



## 4. Type of illness reported

As it was mentioned in Chapter V, Section 7.C., that an illness checklist was used to collect the information on morbidity and accidents. This allowed the identification of specific types of ill-health problems as understood and defined by the population. Three classes of analysis have been performed (1) The prevalence of the 'most important' or 'principal' illness as defined by the respondents (see Chapter V). This indicates the illness episode that worried the respondents most<sup>11</sup>. (2) Another measure used in this section is based on the number of persons who reported a specific illness or problem, regardless of whether this had been defined as the 'most important' illness by the respondents. (3) Further frequency measure is based on the number of specific symptoms and problems per 100 respondents. Unlike the measure (1) based on the 'most important' illness which indicates illness episodes, this measure reflects frequency of symptoms since a person might have reported several symptoms of the same illness episode.<sup>12</sup>

The specific illnesses and problems were grouped into 10 categories: acute respiratory infections (ARI); nervous system and mental problems; chronic illnesses; trauma, pain and illness of the musculoskeletal system; infectious and parasitic gastrointestinal illnesses; gynaecological and obstetric problems (G&O); skin problems; unspecified infectious illnesses; oral and dental problems; and other morbid states and health problems.<sup>13</sup>

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<sup>11</sup>However, relatively infrequent illnesses might have been considered as the 'most important' illnesses by some respondents, as has been reported elsewhere (López and Kroeger, 1990)

<sup>12</sup>For example, data presented in Figure VII.19 are based on the measure described in (1), Figure VII.20 on (2) and Table VII.11 on (3).

<sup>13</sup>The International Classification of Health Problems in Primary Care (ICHPPC-2, WONCA, 1979) was used with some minor modifications to categorize the reported illnesses and problems.

Period (two weeks prior to the interview) prevalence per 100 respondents was used for the analysis of such types of illnesses reported.

#### A. Demographic differentials

Table VII.11 shows the number of illnesses reported by type, age and sex. In general, the diagnostic pattern of morbidity reported by males and females revealed that females, in general, had higher numbers of symptoms and problems (per 100 respondents) than males in all the illness categories. For specific age-group, however, males had higher numbers in oral and dental problems and 'other' categories in the 0-4 and 5-14 age-groups, and in nervous and mental problems in the 5-14 age-group. The number of unspecified infections and skin problems per 100 respondents were also higher among older males ( $\geq 45$ ).

Figure VII.19 shows the prevalence of the specific groups of illnesses reported as 'most important' according to age-group and sex. As expected, for both sexes the respiratory and gastrointestinal diseases were predominant among young children. For example, for 0-4 years these two groups of illnesses represented 71% of the total illnesses reported among males and 63% among females (percentages not shown in the figure).

Skin problems were frequently reported by young persons, particularly from rural areas (see next sub-section). By contrast, nervous system and mental problems, as well as chronic illnesses and musculoskeletal problems mainly affected the older age groups. For those aged 65 years or more, these three illness groups comprised 76% and 69% of all principal problems reported by males and females respectively (percentages not shown in the figure).

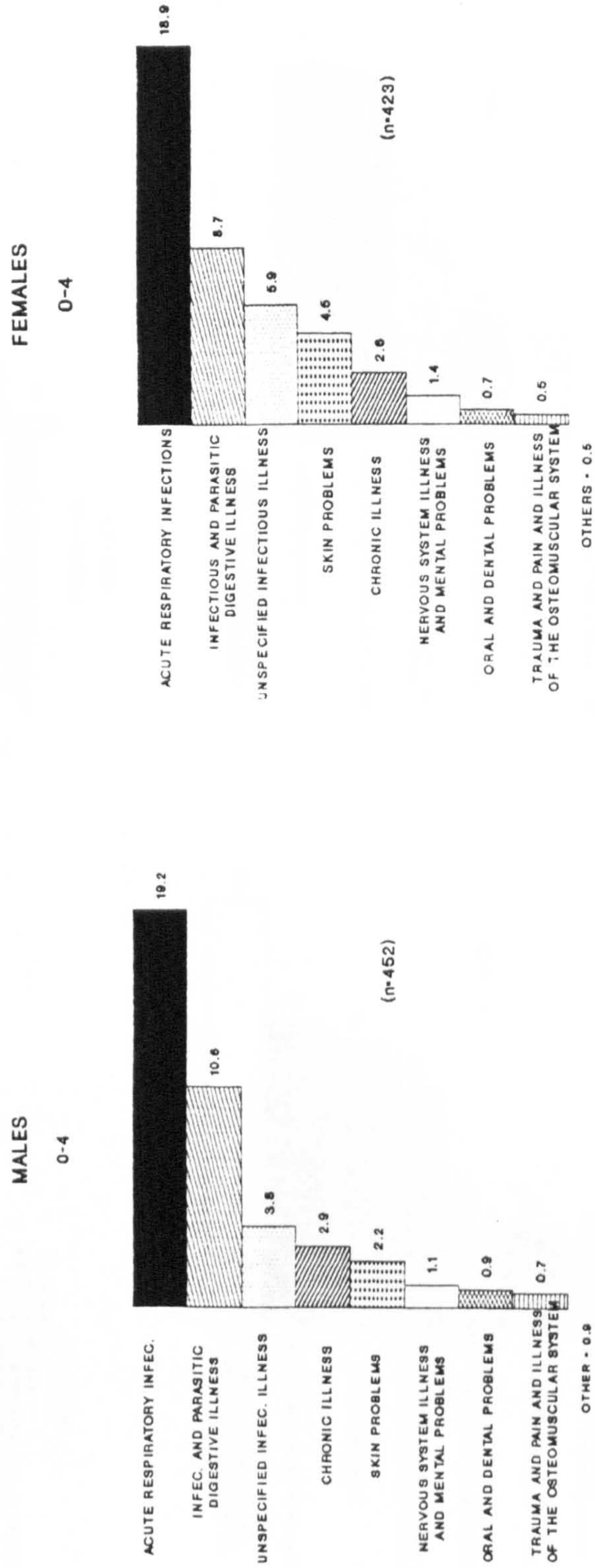


**TABLE VII. 11 NUMBER OF SYMPTOMS PER 100 RESPONDENTS BY TYPE OF ILLNESS BY AGE AND SEX**

Type of illness reported		Age (years)					All
		0-4	5-14	15-44	45-64	≥65	
A R I	M	45.8	21.1	11.8	14.0	16.4	19.6
	F	48.9	30.0	19.0	21.1	24.3	26.4
Nervous & mental	M	4.2	9.2	14.4	36.1	51.5	15.9
	F	4.3	7.9	31.4	65.9	68.4	26.7
Gastro-intestinal	M	38.9	14.8	8.1	16.0	15.8	15.6
	F	43.7	22.5	13.9	23.0	19.7	21.4
Chronic	M	7.7	4.9	8.1	17.6	30.4	9.4
	F	3.3	6.3	20.5	35.9	42.1	16.9
Musculo-skeletal	M	1.1	1.7	7.9	22.6	35.1	8.3
	F	1.4	1.8	15.0	35.1	55.3	11.1
Non-specified infections	M	13.5	5.0	4.6	10.7	14.0	7.1
	F	17.0	6.0	6.4	7.8	11.2	8.1
Skin	M	5.3	8.6	2.5	3.3	1.8	4.7
	F	8.0	9.7	3.6	1.9	1.3	5.6
Oral & dental	M	1.3	4.0	2.2	3.0	2.9	2.7
	F	1.2	3.4	4.4	5.4	5.9	3.9
G & O	F		1.4	13.5	5.4	2.6	7.9*
Other	M	2.9	3.3	0.9	1.9	2.9	2.1
	F	2.4	1.8	3.7	5.4	4.6	3.2
(n)	M	452	926	1340	363	171	3252
	F	423	970	1431	370	152	3346

\*11.1 for women aged >15

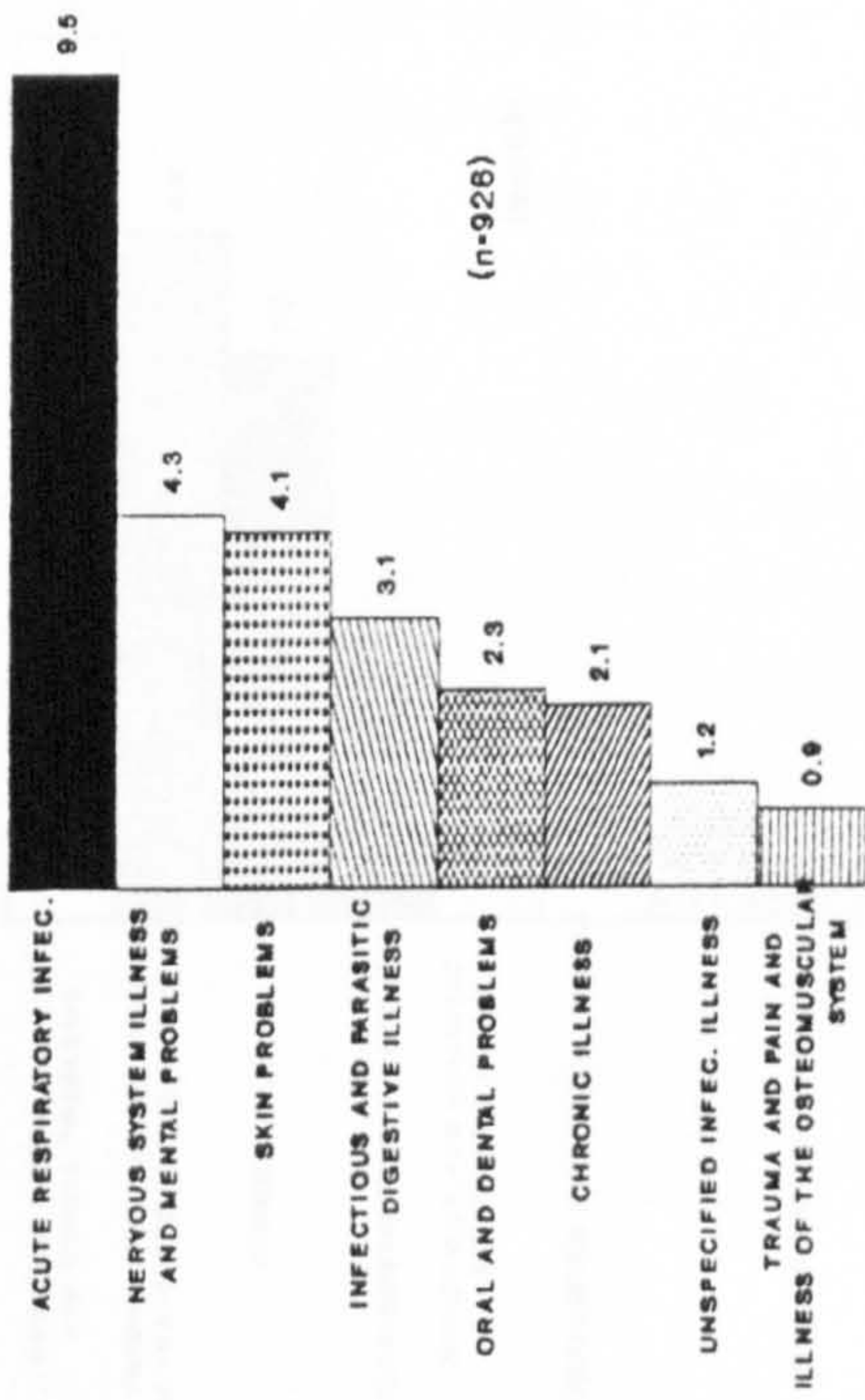
FIGURE VII.19 TYPE OF ILLNESS REPORTED  
AS MOST IMPORTANT BY AGE GROUP  
RATES PER 100





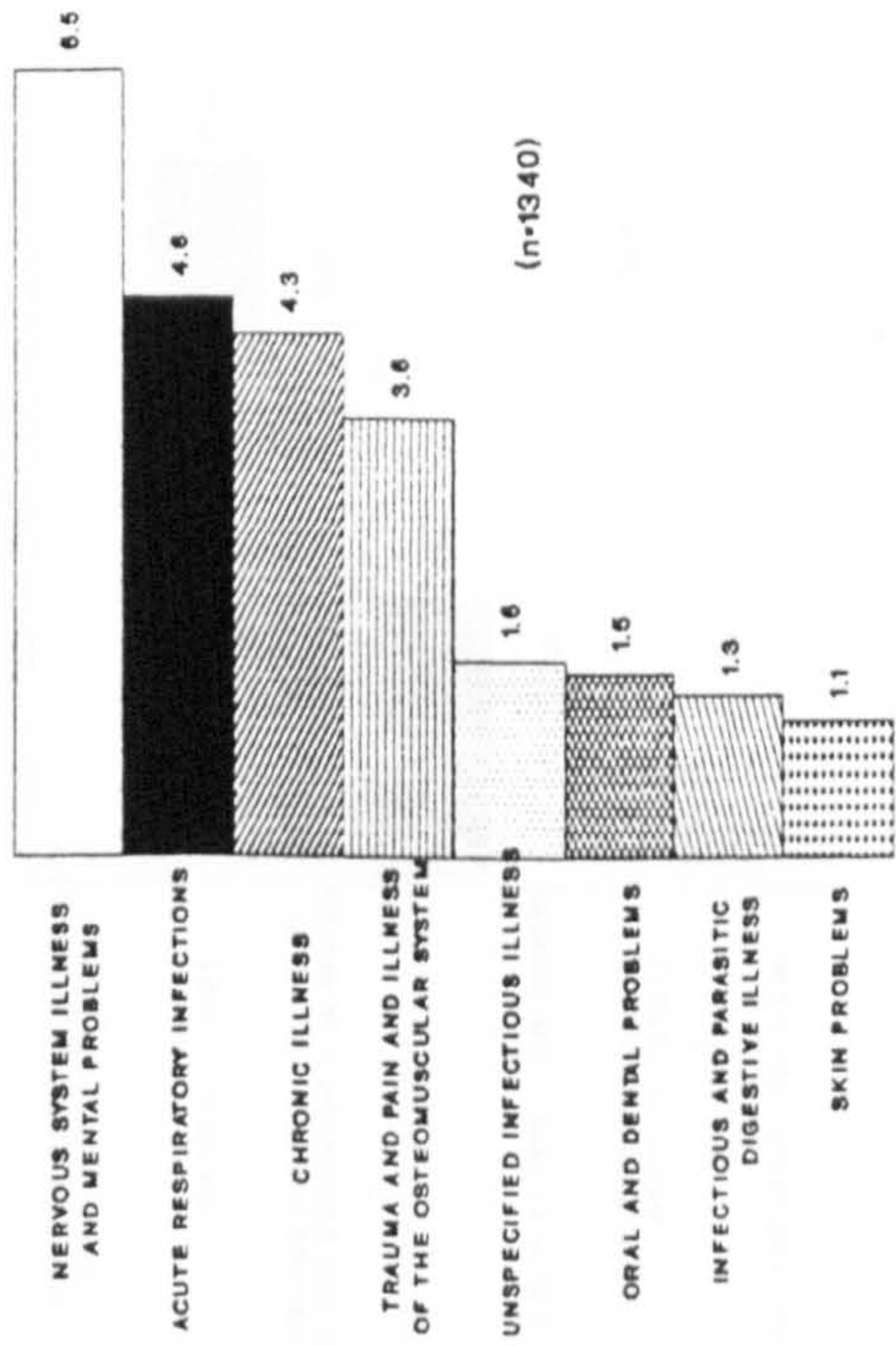
**MALES**

5-14



OTHER • 1.4

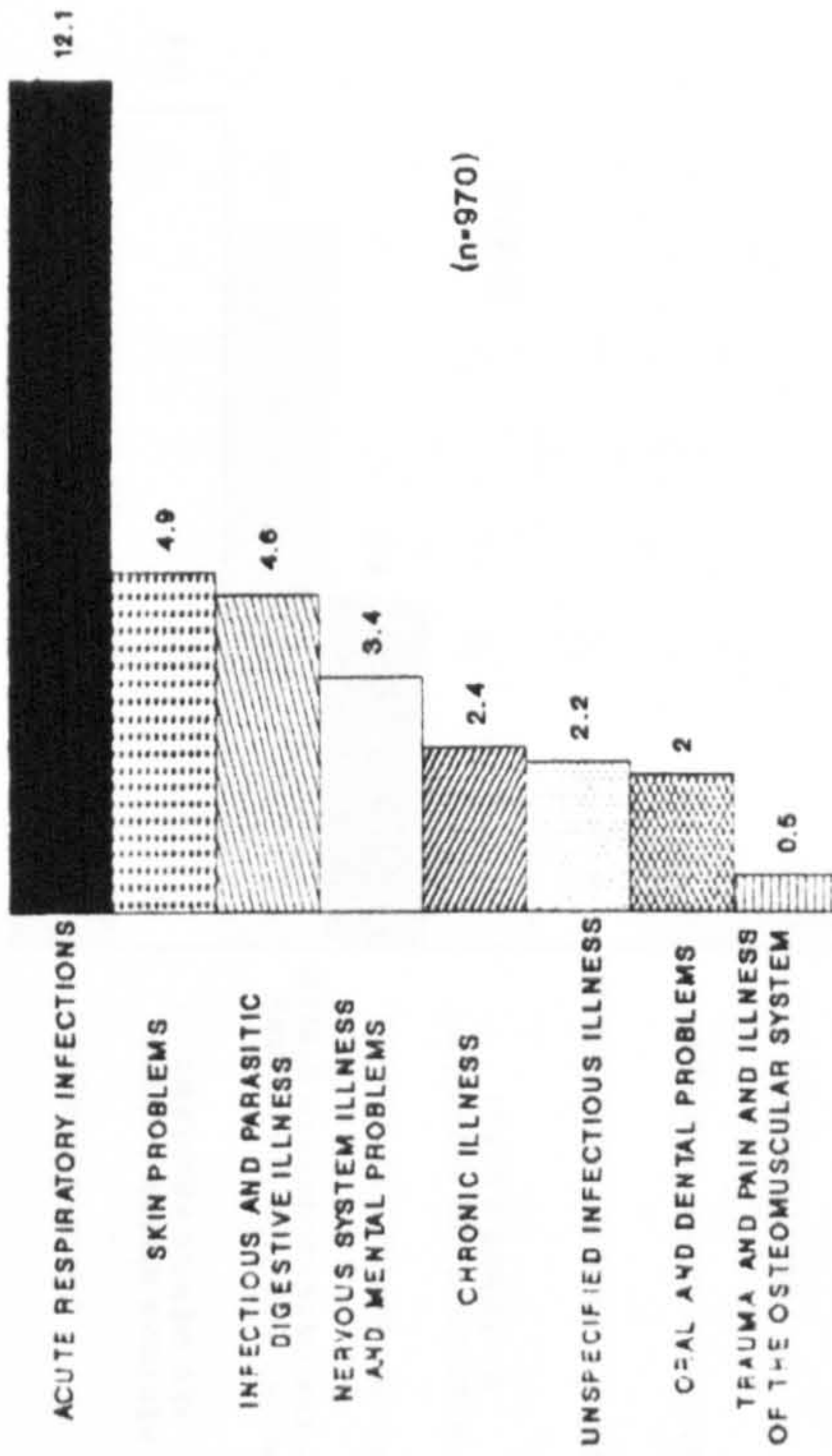
15-44



OTHER • 0.6

**FEMALES**

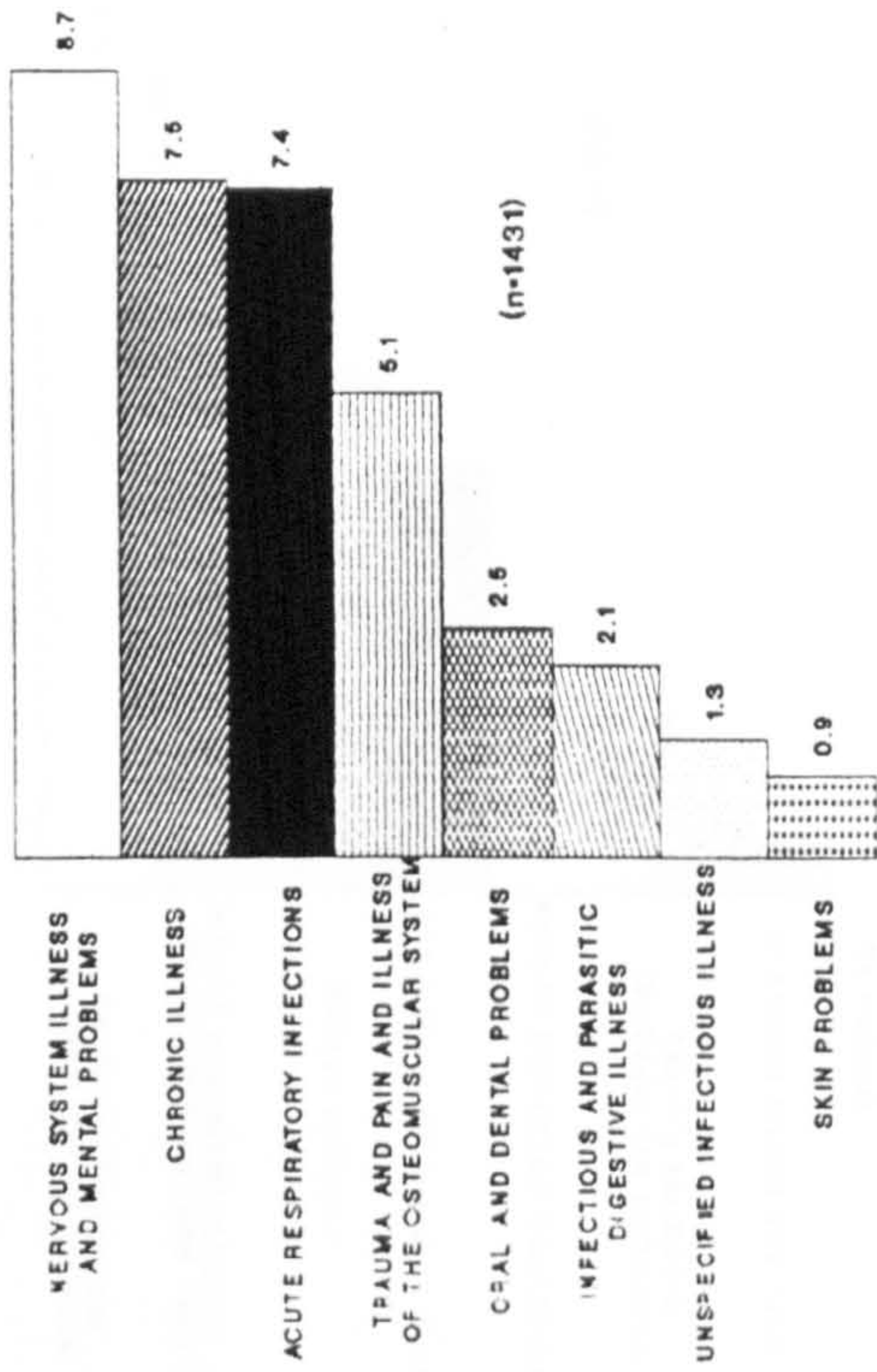
5-14



OTHER • 0.9

G&O • 0.7

15-44



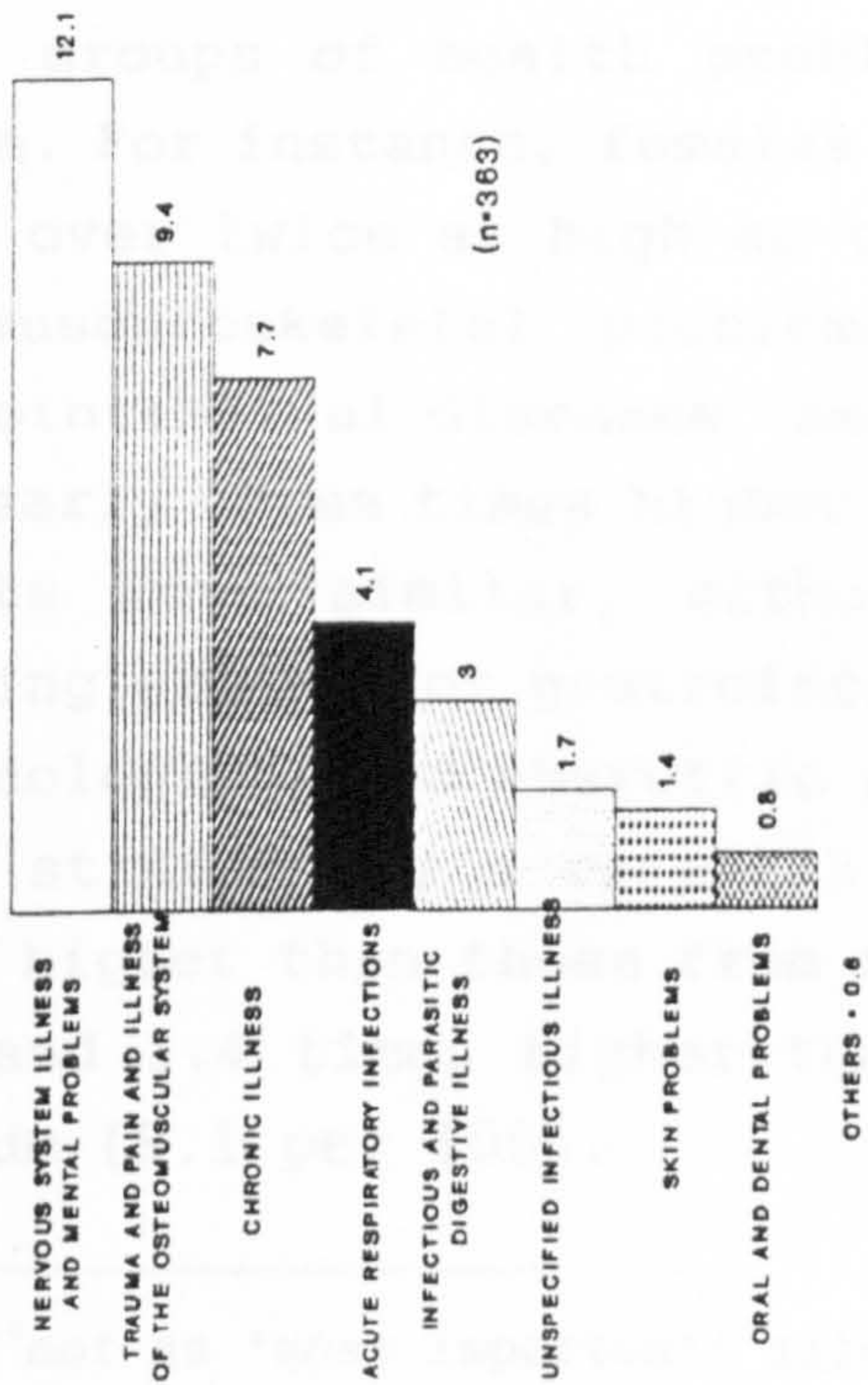
OTHER • 1.0

G&O • 5.0

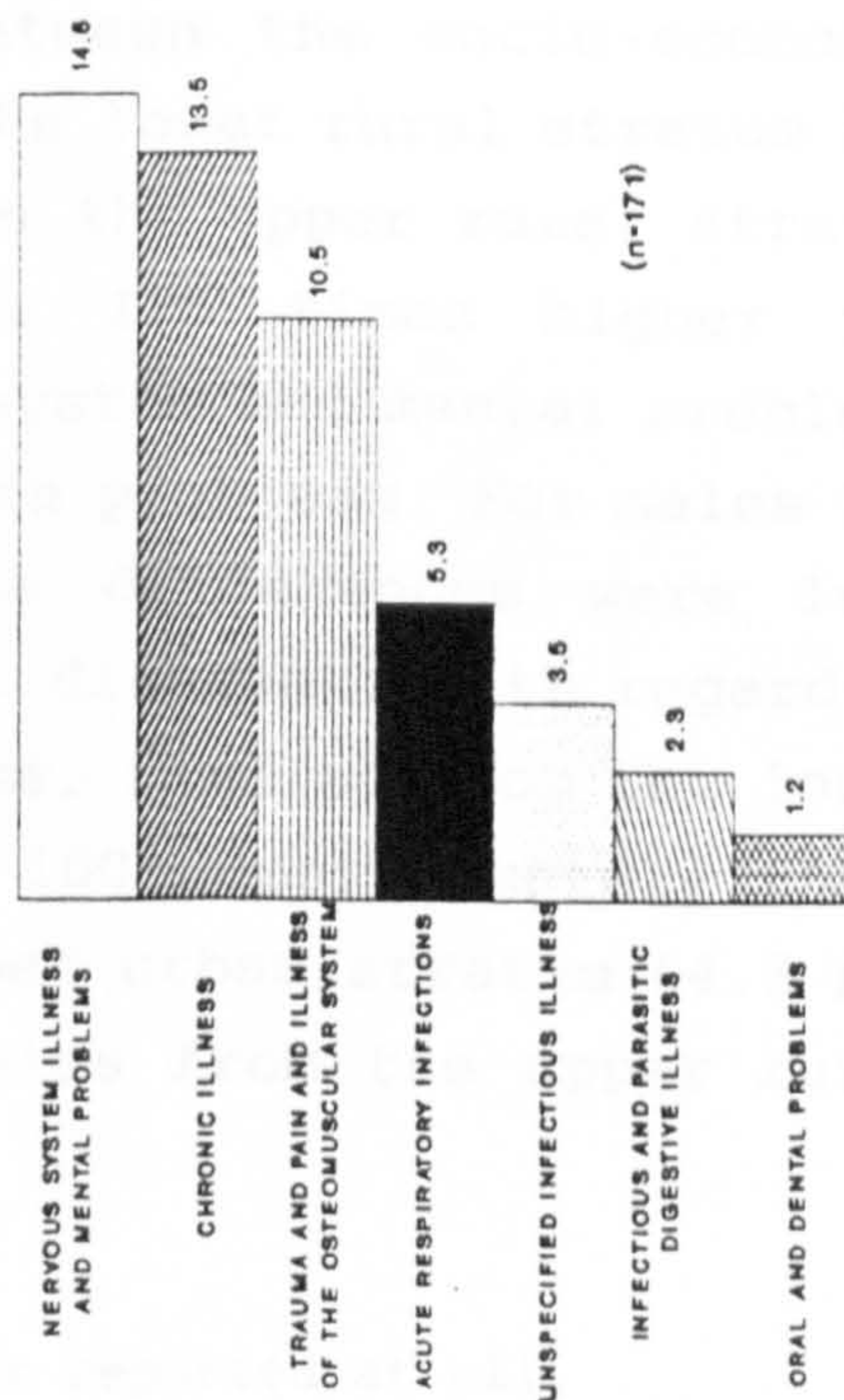


**MALES**

45 - 64

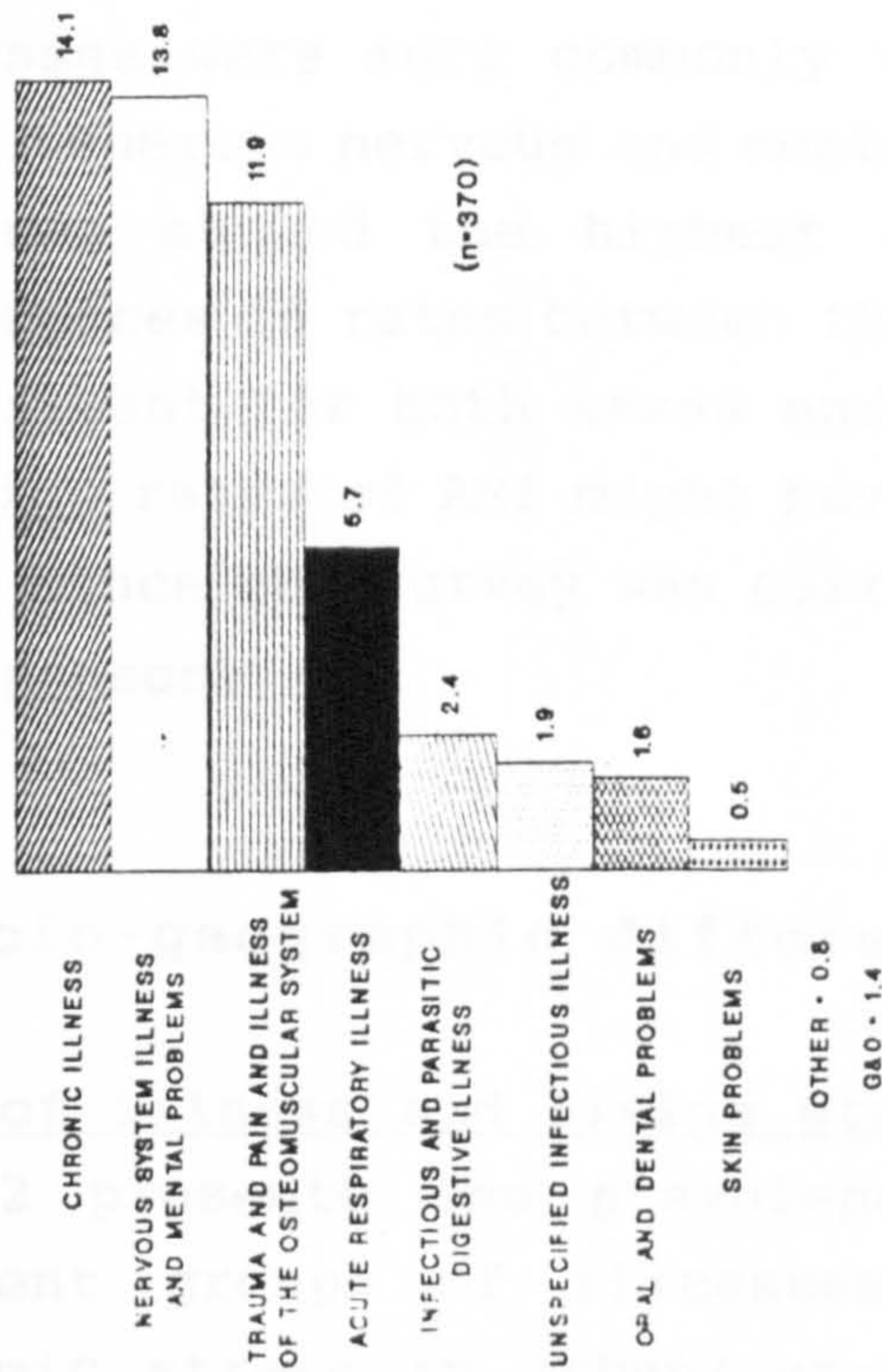


65+

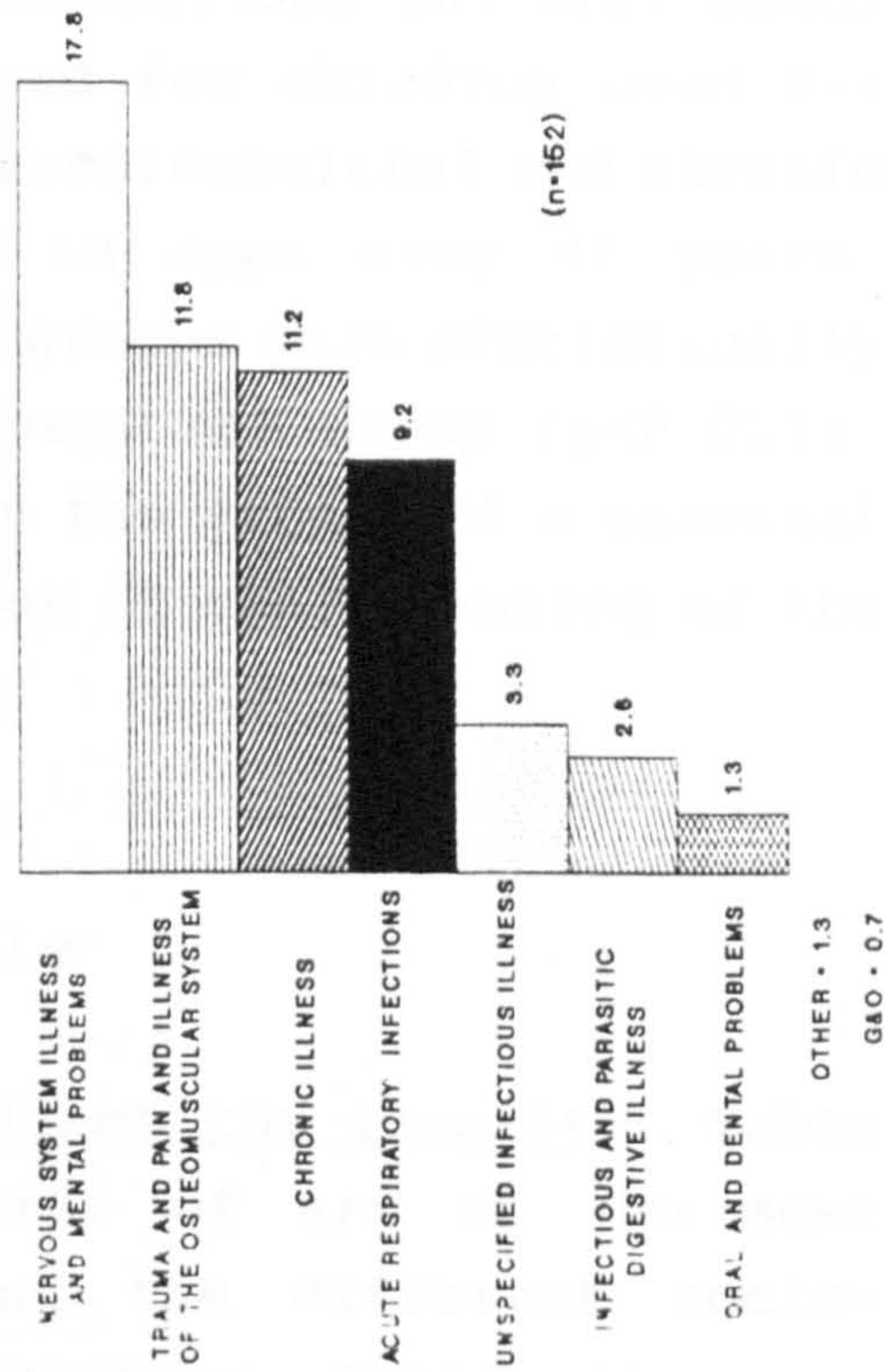


**FEMALES**

45-64



65+





Figures VII.20a-e display the five most frequently reported<sup>14</sup> specific groups of illnesses by age group and sex: ARI, nervous and mental problems, gastrointestinal, chronic and musculoskeletal problems. A similar picture is seen as the one described above: acute respiratory infections and diarrhoeal illnesses were more commonly reported for children aged 0-4 years, whereas nervous and mental, musculoskeletal and chronic problems showed the highest rates in ages over 44 years. Differences in rates between the age groups were statistically significant for both sexes and in every age group ( $p < 0.001$ ). The high rates of ARI might have been the effect of a seasonal peak, since the survey was carried out at the beginning of the cold season.

### **B. Socio-geographic differentials**

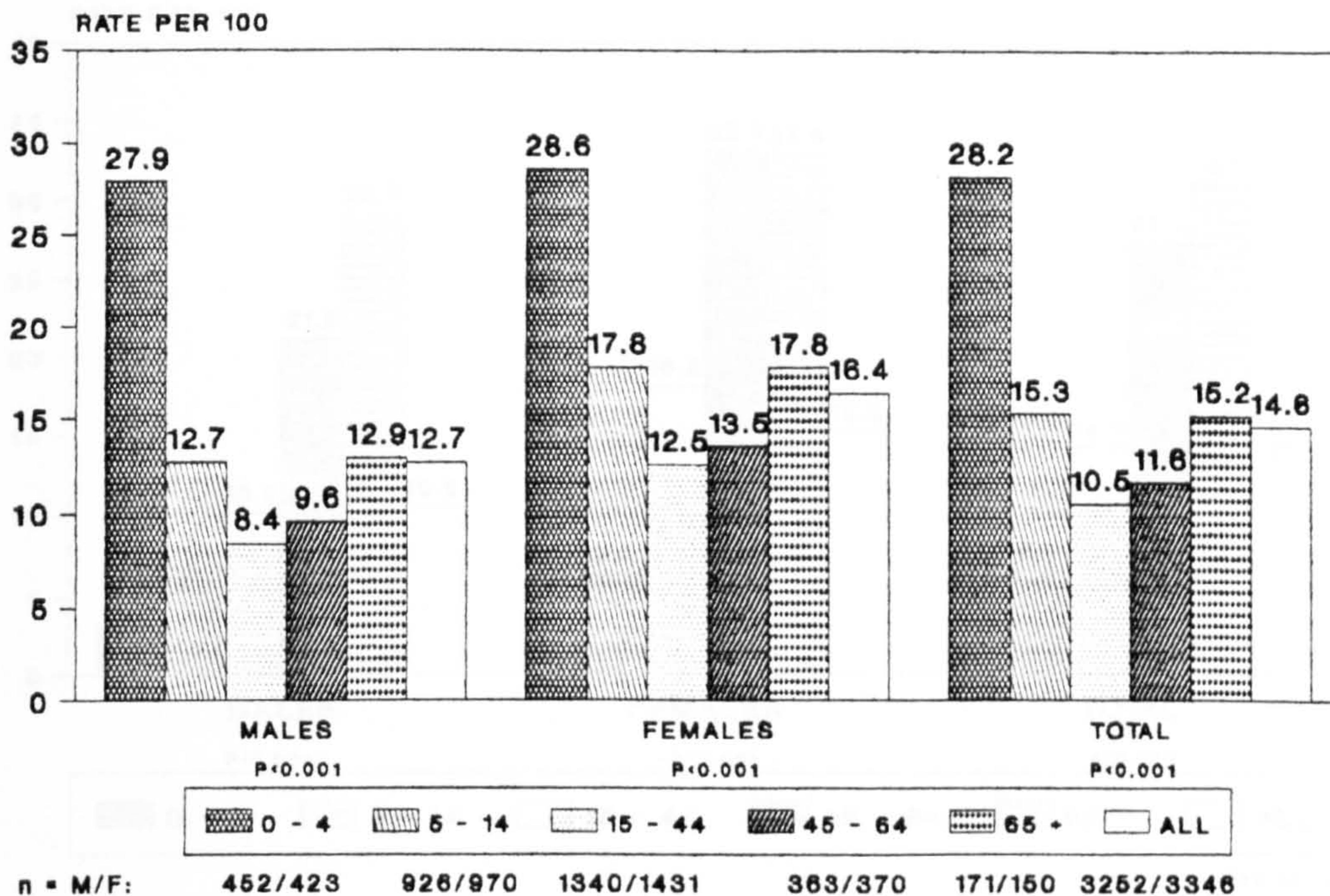
Type of illness and living standards of the locality. Table VII.12 presents the prevalence rates of six of the most frequent groups of illnesses among the different socio-economic strata in urban/rural localities. Again, the same pattern, already described for other morbidity measures in the previous sections, emerges: there are clear differences in these groups of health problems between the socio-economic strata. For instance, females from the lower rural stratum had rates over twice as high as those in the upper rural stratum for musculoskeletal problems; over 1.5 times higher for gastrointestinal diseases, nervous system and mental problems and nearly three times higher for skin problems. For males the results were similar, although the differences were less striking except for gastrointestinal diseases. With regard to gynaecological and obstetric problems, females from the lower rural stratum had a rate (12.8 per 100) approximately three times higher than those from the upper urban stratum (4.3 per 100) and 1.4 times higher than females from the upper rural stratum (9.1 per 100).

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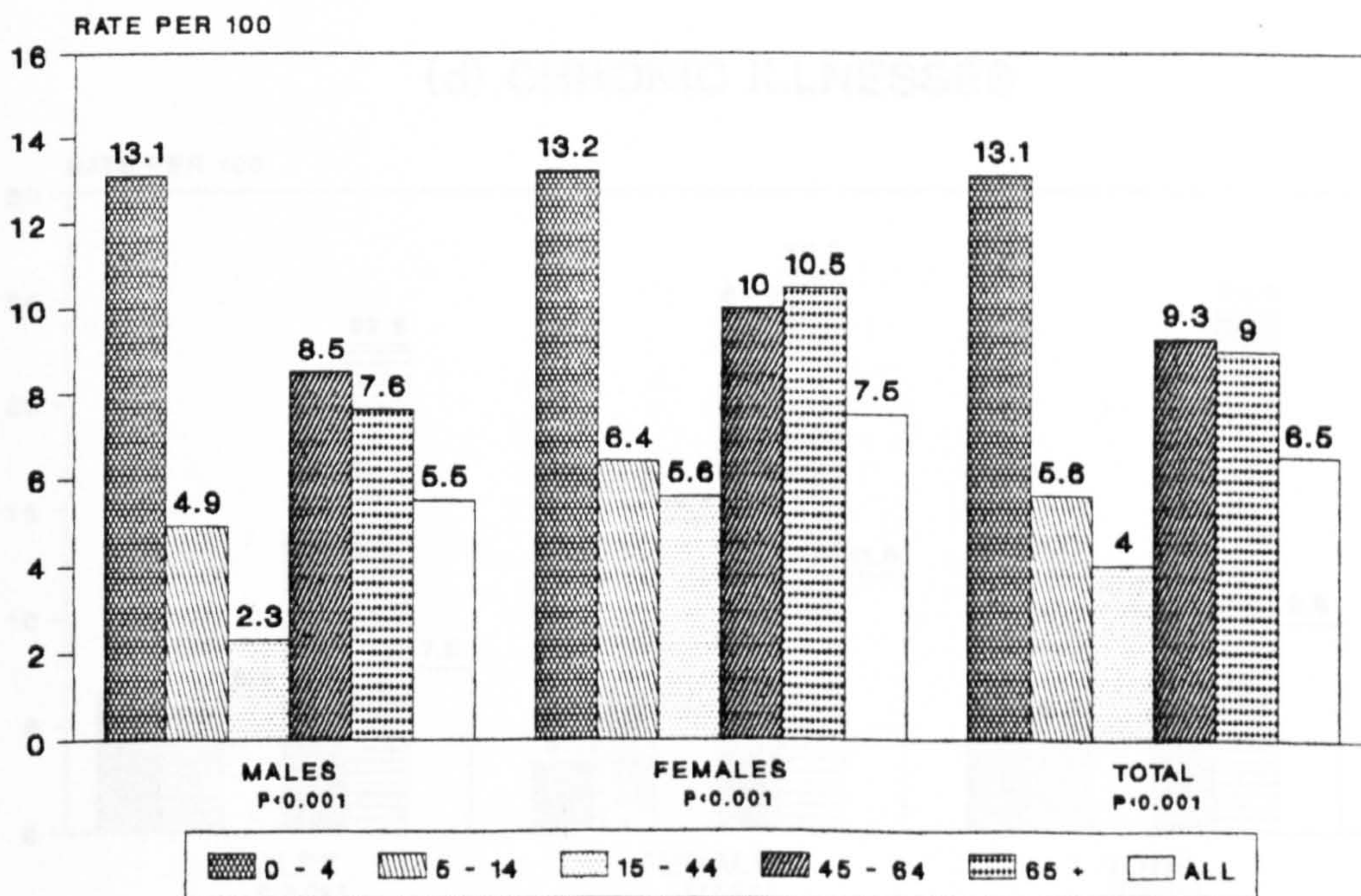
<sup>14</sup>not as 'most important' illness, but reported at all.



**FIGURE VII.20 PREVALENCE RATES OF FIVE MOST FREQUENTLY REPORTED ILLNESSES\***  
**(a) ACUTE RESPIRATORY INFECTIONS**



**(b) GASTROINTESTINAL**

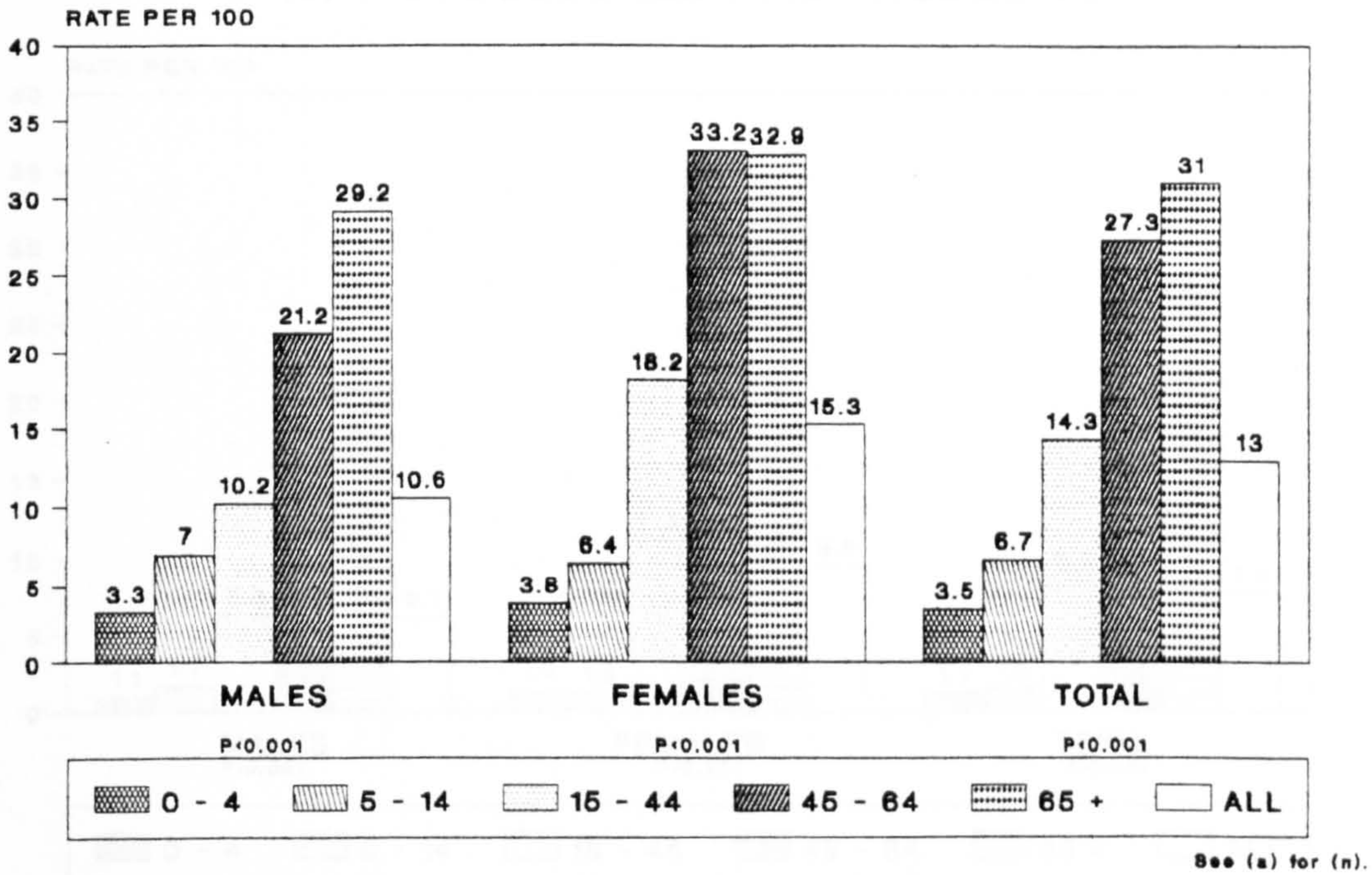


\*NOT AS 'MOST IMPORTANT' ILLNESS, BUT REPORTED AT ALL.

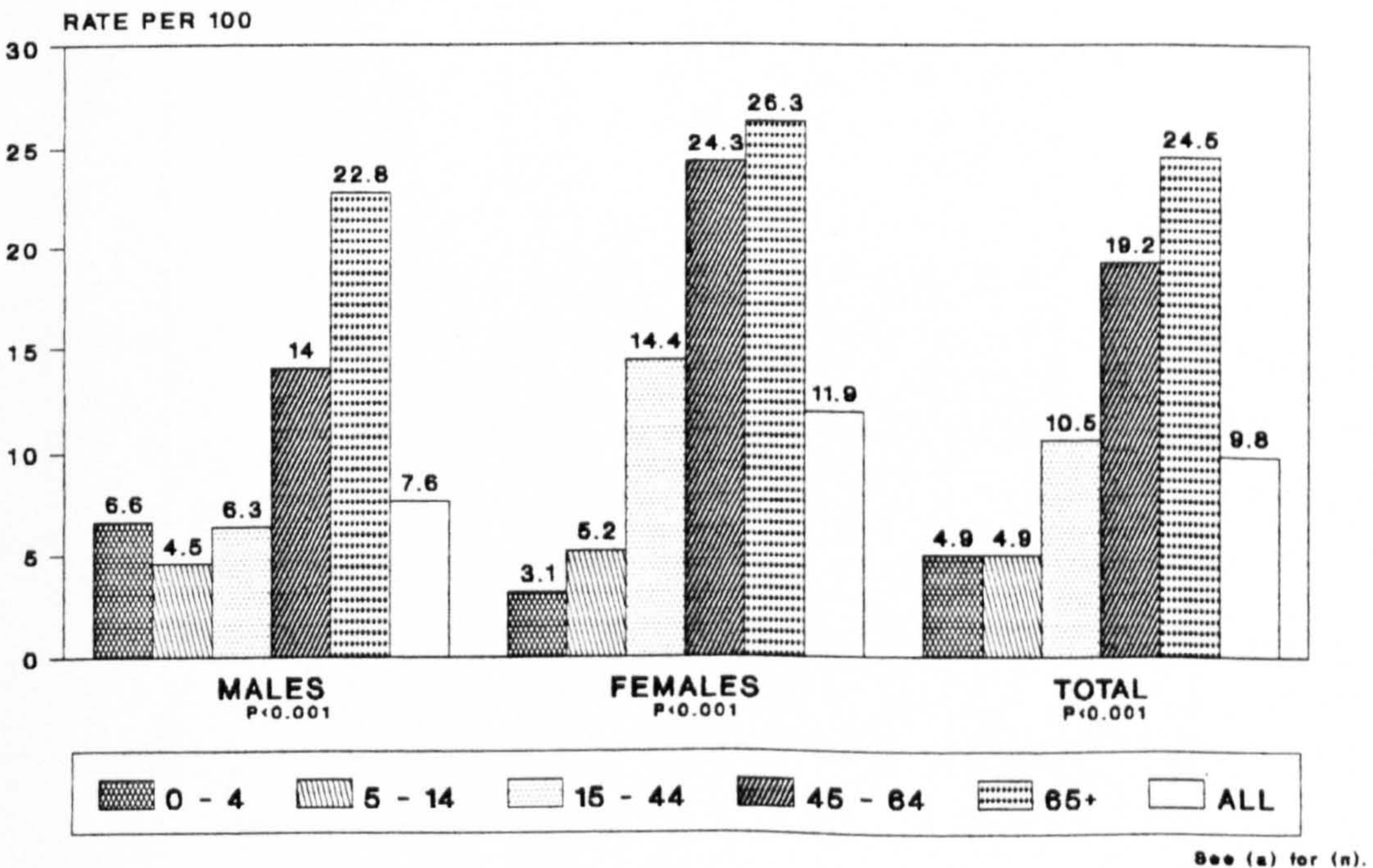
See (a) for (n).



### (c) NERVOUS AND MENTAL PROBLEMS

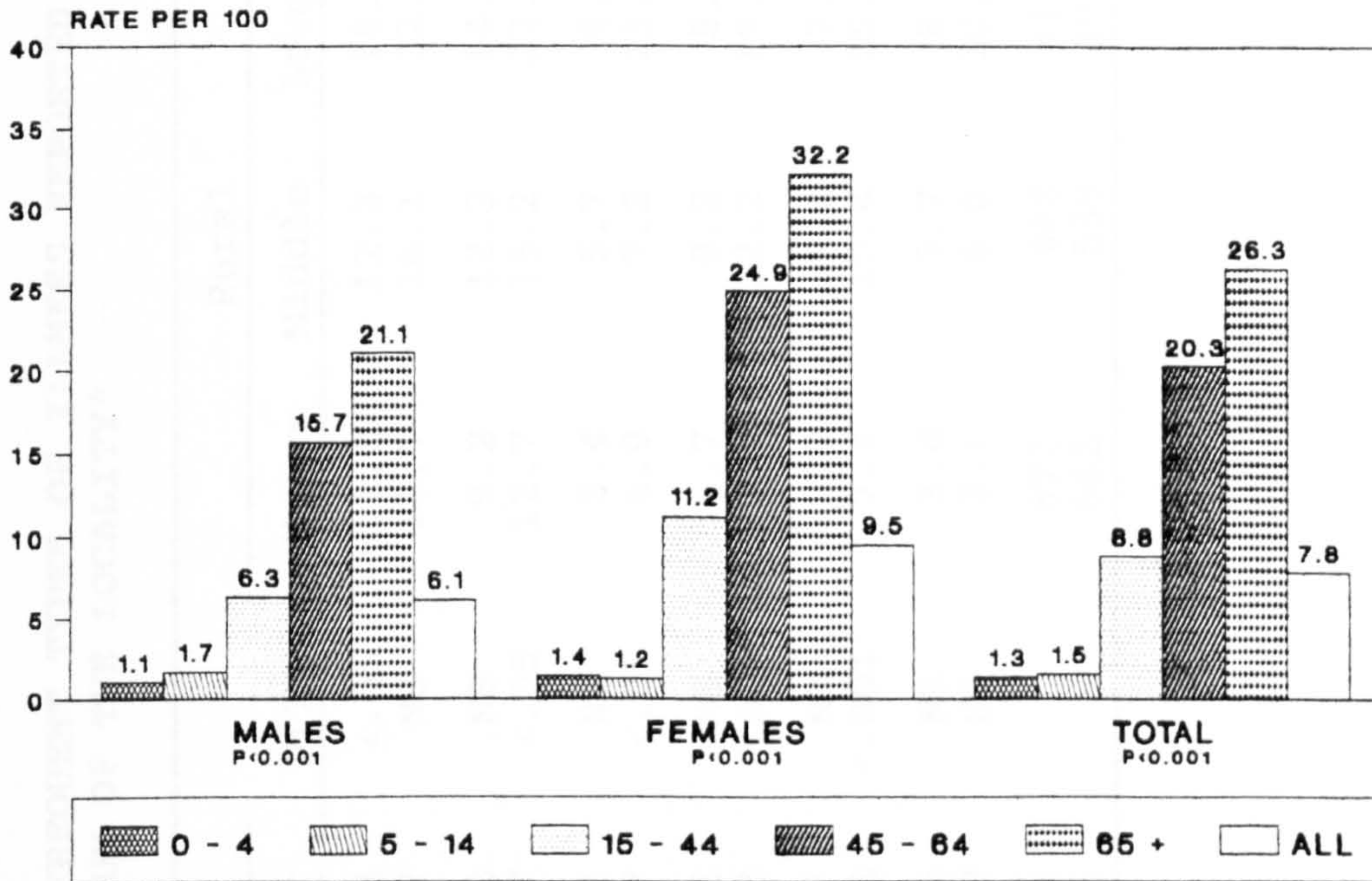


### (d) CHRONIC ILLNESSES





### (e) MUSCULOSKELETAL PROBLEMS



See (a) for (n)s.



TABLE VII.12 PREVALENCE OF SIX MOST FREQUENT TYPES OF ILLNESS REPORTED BY SOCIO-ECONOMIC STRATUM OF THE LOCALITY\*

		Urban			Rural			p( $\chi^2$ )*	p( $\chi^2$ )*
		Upper	Middle	Lower	Upper	Middle	Lower		
A R I	M	13.1	10.3	9.3	11.8	12.3	19.3	<.05	<.001
	F	13.7	13.4	14.7	18.7	16.1	22.3	NS	NS
Nervous & mental	M	7.6	12.0	9.3	9.2	12.3	14.3	NS	<.01
	F	12.2	13.4	17.7	12.7	15.2	22.7	<.05	<.001
Gastrointestinal	M	4.2	6.3	5.5	3.4	5.7	8.7	NS	<.001
	F	4.8	6.0	7.7	6.9	7.2	13.4	<.05	<.001
Chronic	M	7.6	7.5	4.8	6.7	9.2	9.6	NS	NS
	F	8.1	9.8	11.3	12.1	12.2	19.2	NS	<.001
Musculoskeletal	M	4.0	6.4	5.7	5.7	7.4	7.7	NS	NS
	F	6.0	8.3	12.2	7.4	10.4	15.0	<.001	<.001
Skin	M	1.4	4.9	2.6	3.4	3.7	8.7	NS	<.001
	F	3.0	4.8	3.9	3.6	4.6	10.5	NS	<.001
(n)	M	578	574	421	672	488	519		
	F	629	581	441	662	539	494		

\* Percentages reporting illness during the two weeks prior to the interview

\*  $\chi^2$  for trend

## C. Socio-economic differentials

### Type of illness reported and educational level

The same picture described in Section 1.C is seen when comparing 'most' important illnesses between educational categories (Table VII.13). Pronounced gradients for each of the four illness groups are observed between population groups with different levels of education. The highest rates were observed among persons with lower educational levels. For example, the age-standardized prevalence rate of musculoskeletal problems for males without schooling was nearly five times higher than for those with over six years of schooling, the equivalent ratios were over three times as high for diarrhoeal diseases, and nervous and mental problems.

When the analysis was made regarding frequency of illness reporting, differences between educational categories were more marked than those obtained when the measure was based on most important illness, for gastrointestinal diseases, nervous system and mental problems, and chronic illness (Figure VII.21).

### Type of illness reported and occupation

Table VII.14a presents the prevalence rates of selected diagnostic groups of illnesses reported by males from agricultural and non-agricultural occupations. The former had rates 1.7 times as high as the latter for musculoskeletal problems, 1.4 times as high for nervous system illnesses and mental problems. These differences were all statistically significant (nervous and mental:  $p < 0.005$ ; musculoskeletal:  $p < 0.001$ ) except for chronic problems.

Similar findings were obtained when the most important illness was examined, although the differentials were less marked in the case of nervous and mental problems (Table VII.14b). Differences in the proportions (per 100 population) reporting musculoskeletal problems as the most important illness between



TABLE VII.13 'MOST IMPORTANT' ILLNESS BY EDUCATIONAL LEVEL, PREVALENCE RATES\*  
PER 100 RESPONDENTS AGED ≥15 YEARS

Type of illness	Males					Females			
	Education					Education			
	None	1-5	6	≥7	p(χ <sup>2</sup> )*	None	1-5	≥6	p(χ <sup>2</sup> )*
Nervous and mental	15.7	9.7	8.6	5.1	<.001	13.2	13.2	6.6	<.001
Musculo-skeletal	14.3	8.3	4.6	3.0	<.001	12.1	9.4	4.3	<.001
Chronic	8.2	6.1	6.7	6.1	NS	8.0	11.7	10.1	NS
Gastro-intestinal (diarrhoeal)	2.6	1.8	1.9	0.7	=.05	4.1	2.3	1.6	<.05
(n)	(198)	(427)	(474)	(749)		(349)	(495)	(1100)	

\* Age standardized

+ χ<sup>2</sup> for trend



**FIGURE VII.21 SELECTED TYPES OF ILLNESSES REPORTED BY EDUCATION MALES AND FEMALES AGED 15+**

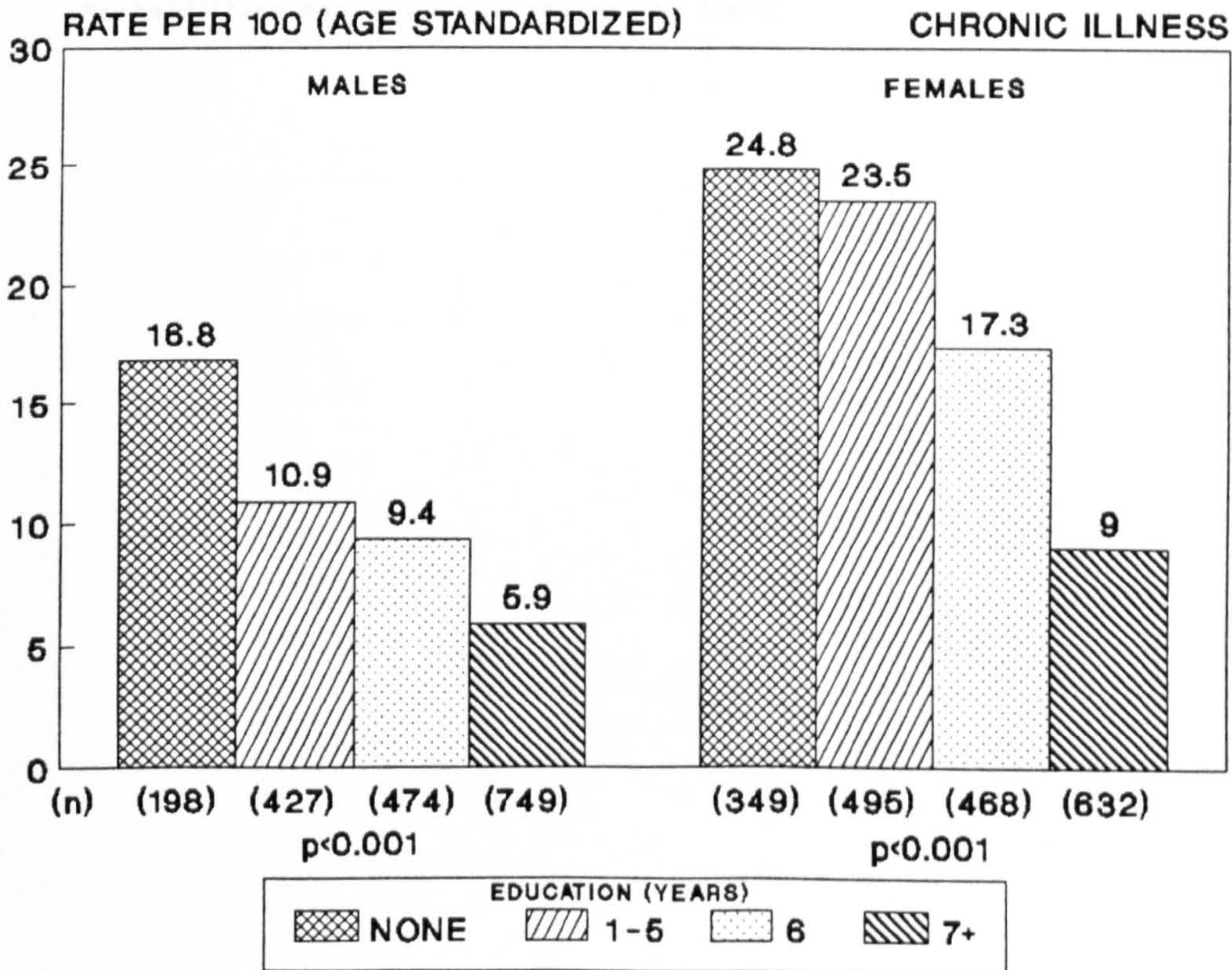
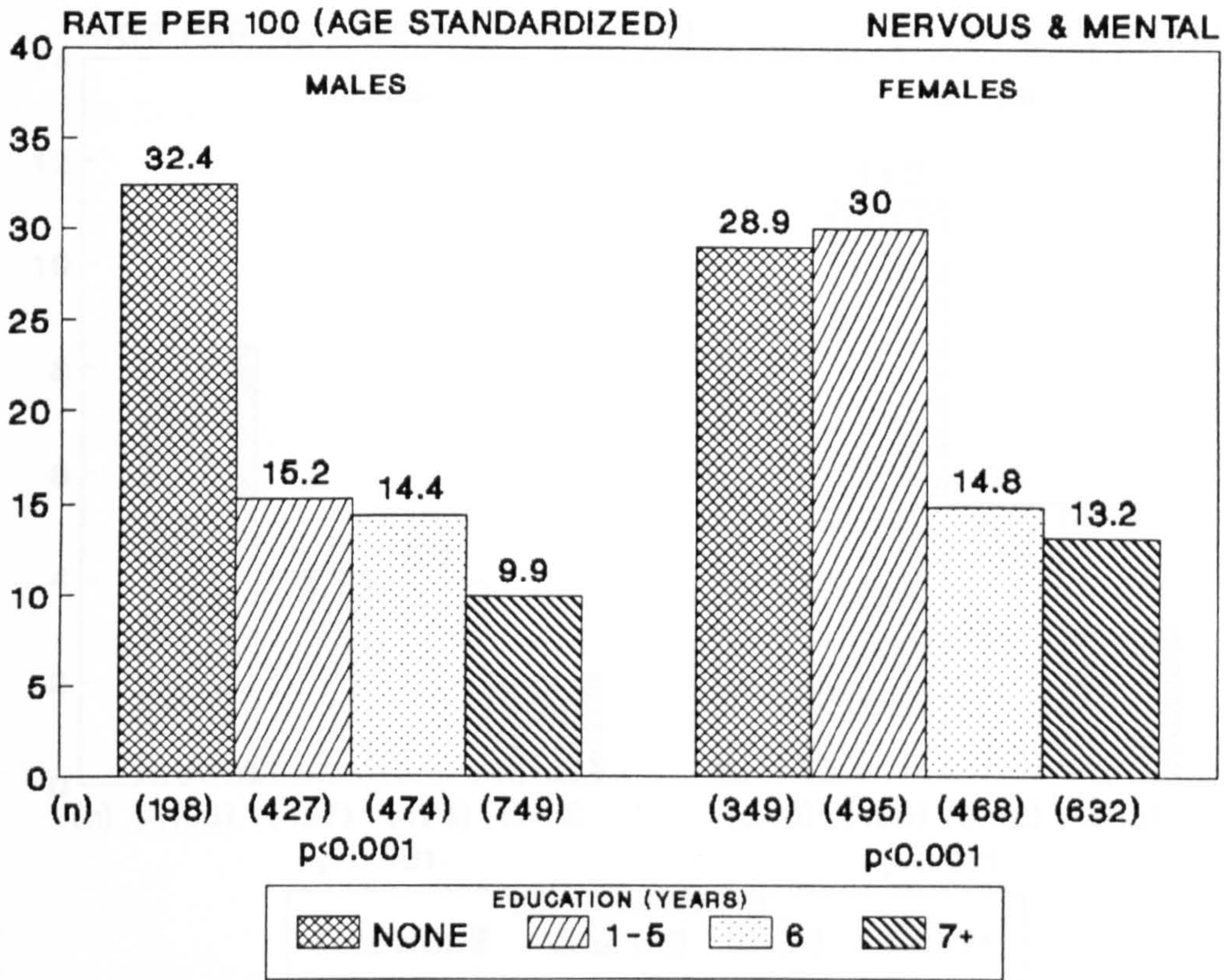
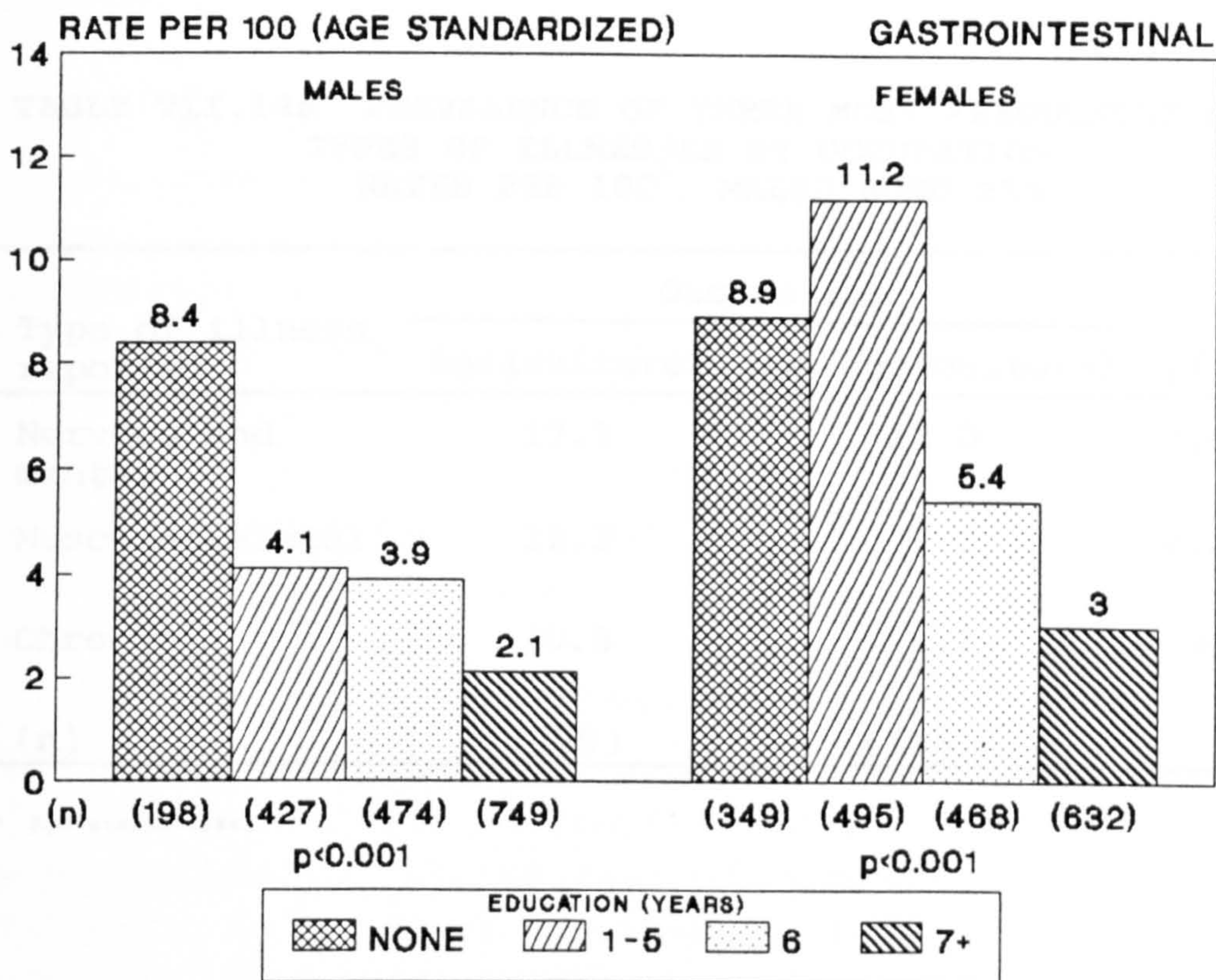




FIGURE VII.21 CONTD.



Probabilities based on chi-square for trend

**TABLE VII.14a PREVALENCE OF THREE MOST FREQUENTLY REPORTED  
TYPES OF ILLNESSES BY OCCUPATION.  
RATES PER 100\*, MALES AGED ≥15**

Type of illness reported	Occupation		p( $\chi^2$ )
	Agricultural	Non-agricultural	
Nervous and mental	17.1	12.0	<.005
Musculoskeletal	12.3	7.3	<.001
Chronic	10.5	9.2	NS
(n)	(729)	(1137)	

\* Age-standardized

**TABLE VII.14b MOST IMPORTANT ILLNESS BY OCCUPATION  
MALES AGED ≥15**

Type of illness reported	Occupation		p( $\chi^2$ )
	Agricultural	Non-agricultural	
Nervous and mental	9.3	8.4	NS
Musculoskeletal	7.6	4.1	<.005
Chronic	6.3	5.1	NS
(n)	(729)	(1137)	



the agricultural and non-agricultural occupations were greater (ratio 1.9) than those obtained when the analysis was based on frequency of illness reporting. The results on both measures showed a greater prevalence of chronic illness among older ( $\geq 65$ ) males from non-agricultural occupations (rate: 18.8%) than from agricultural occupations (rate: 9.9%). These differences were not statistically significant, however.

Prevalence rates of the five most frequently reported illnesses by type of occupation of females are shown in Table VII.15. Amongst females aged 15-44 years, the higher rates for every one of the five different types of illnesses were associated with having a household occupation (housewives and domestic workers). Women working inside the household had rates 2.8 times as high as women working outside the household for gastrointestinal illnesses, 2.0 times as high for gynaecological and obstetric problems, 1.8 times as high for nervous and mental problems, 1.7 times as high for musculoskeletal illness and 1.6 times as high for chronic illness. Differences in every type of illness were statistically significant ( $p < 0.01$ ). Among those aged  $\geq 45$ , differences persisted, but were less marked and not statistically significant, except for musculoskeletal problems ( $p < 0.05$ ), for which a higher rate among women working outside the household was found. A similar pattern was observed when the the most important illness was examined, although differences were less marked and there were fewer significant differences between occupational groups (data not shown).

Type of illness and entitlement to social security. There were few significant differences in rates of specific morbidity of both most important and of overall frequency of illness between the uninsured population and the insured population. Skin problems, gastrointestinal diseases, musculoskeletal problems and G&O problems were more frequently reported among the non-insured persons, whereas chronic illnesses were more often reported among the insured persons. The greatest differences were observed in the case of skin problems.

**TABLE VII.15 PREVALENCE OF FIVE MOST FREQUENTLY REPORTED  
TYPES OF ILLNESSES BY OCCUPATION OF FEMALES.  
RATES PER 100**

Age group	Type of illness reported	Type of occupation		p( $\chi^2$ )
		Inside the household	Outside the household	
15-44	Nervous and mental	22.3	12.4	<.001
	Chronic	18.3	11.6	<.01
	Musculoskeletal	14.0	8.1	<.01
	G & O	12.4	6.1	<.01
	Gastrointestinal	7.4	2.6	<.01
	(n)	(903)	(310)	
≥ 45	Nervous and mental	34.3	29.3	NS
	Chronic	25.7	22.7	NS
	Musculoskeletal	25.5	37.3	<.05
	G & O	4.6	2.7	NS
	Gastrointestinal	9.7	13.3	NS
	(n)	(435)	(75)	



Type of illness and habitual source of medical care. Use of this indicator revealed clearer differentials than the use of entitlement to social security indicator. This is expected, since the former indicator revealed greater differentials in terms of overall morbidity than the latter indicator. Significant gradients in specific groups of illnesses were observed between population groups using different sources of medical care (Table VII.16). The highest rates of overall frequency of illnesses were found among those who utilized the government health services followed by those using the social security scheme. The lowest rates were seen among those who used the private sector as their main source of care.

The largest differentials were found for skin problems, unspecified infections, gastrointestinal diseases, chronic illnesses, oral and dental problems. The rate for people who mainly used the government services was 2.5 times as high as that for those who used the private sector for skin problems; 1.8 times as high for unspecified infections; 1.7 times as high for diarrhoeal diseases; and 1.6 times as high for oral and dental problems and chronic illnesses (Table VII.16).

Among women aged 15-44 differences in rates of gynaecological and obstetric problems were most marked ( $p < 0.001$ ). The rate for women using the government scheme (13.5%) as the main source of care was twice as high as for women using the private sector (6.8%) and 1.8 times as high as for those using the social security scheme (7.3%). A similar result was observed using the measure based on most important illness (rates: 6.5%, 4.2% and 2.7% respectively,  $p < 0.05$ ).

Among children aged 0-4, those using the government scheme had the highest rates of acute respiratory infections and other infectious illnesses, whereas those using the private sector had the lowest rates (Table VII.17).

**TABLE VII.16 PREVALENCE OF MOST FREQUENTLY REPORTED  
ILLNESSES BY HABITUAL SOURCE OF MEDICAL CARE.  
RATES PER 100**

Type of illness reported (n)	Source of care			p( $\chi^2$ )
	State (2456)	Social security (1333)	Private (2556)	
ARI	17.5	12.9	13.2	<.001
Nervous and mental	15.0	12.4	11.7	<.01
Chronic	12.4	9.7	7.9	<.001
Non-specified infections	9.8	6.2	5.3	<.001
Musculoskeletal	9.3	7.3	6.8	<.01
Gastrointestinal	8.8	5.4	5.1	<.001
Skin	7.2	3.2	2.9	<.001
Oral and dental	4.1	3.6	2.6	<.05
G & O (females aged 15-44)	13.5 (511)	7.3 (301)	6.8 (575)	<.001

**TABLE VII.17 PREVALENCE OF INFECTIOUS ILLNESSES REPORTED  
BY HABITUAL SOURCE OF MEDICAL CARE.  
RATES PER 100 RESPONDENTS AGED 0-4**

Type of illness reported	Source of care			p( $\chi^2$ )
	State	Social security	Private	
ARI	33.2	24.6	24.1	<.05
Other infections	20.2	14.9	8.9	<.01
(n)	(371)	(175)	(303)	



# 5. Inequalities in childhood mortality

## A. Trends in childhood mortality

### Infant mortality

Infant deaths were analysed over a period of 10 years (1976-1985) to give a picture of mortality levels and speed of change. Estimates of infant death rates were calculated by indirect methods<sup>15</sup>. To avoid possible bias in the estimates obtained from the two youngest age groups of women (15-19 and 20-24 years)<sup>16</sup> and from the oldest (45-49 years), the analysis focused on results obtained from the 25-44 year age group of women.

Figure VII.22 illustrates a slow decline in infant mortality (see chapter IX for comparative figures). The percentage reduction in the infant mortality rate was 19% over the 1976-1985 period.

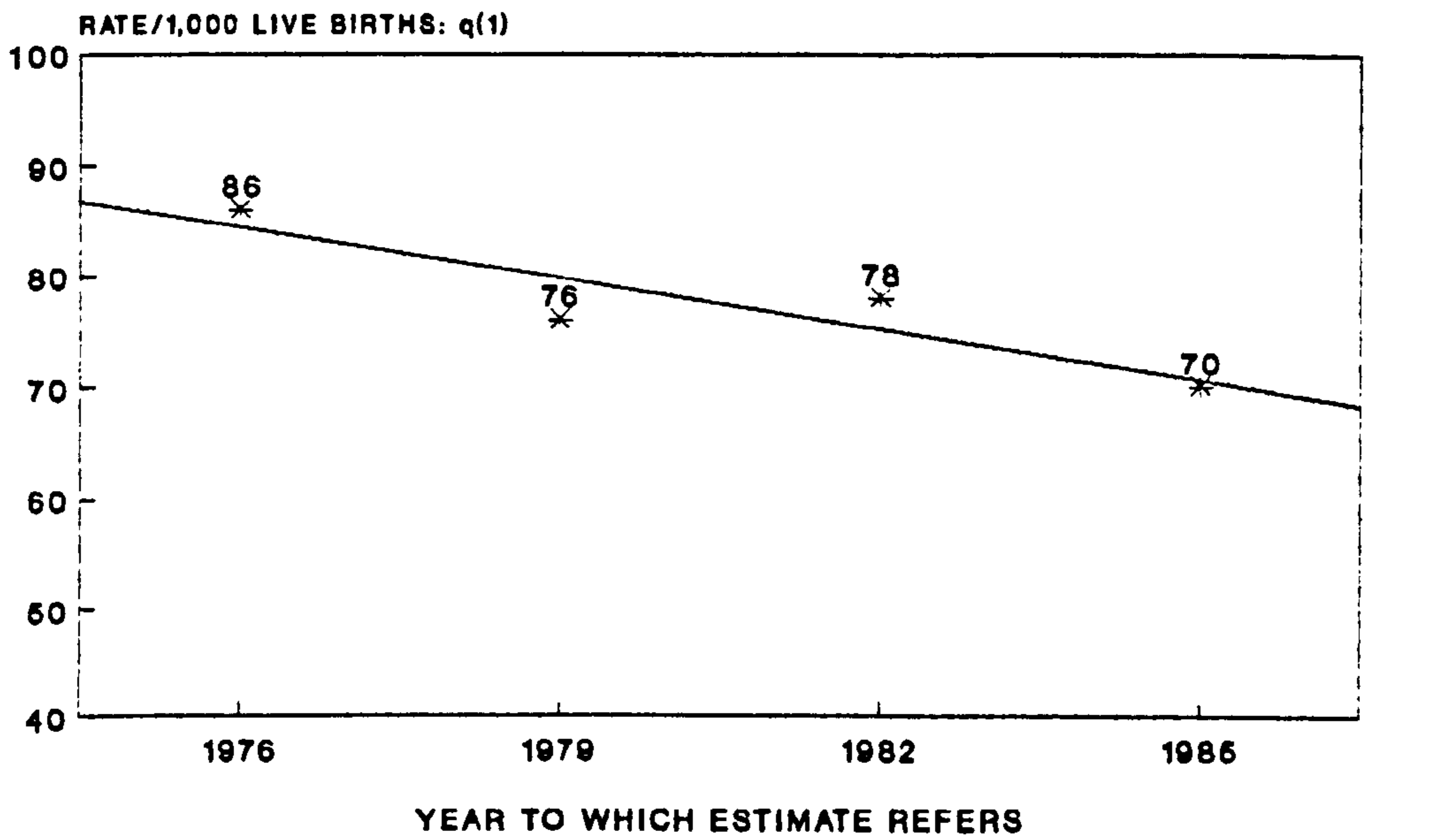
The aforementioned changes are reflected in estimated life expectancy at birth. If a Latin American mortality model is assumed, the increase in life expectancy over the period was

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<sup>15</sup>The child mortality rates were estimated by the CEBCS computing programmes of Mortpak-Lite, developed by the Department of International Economic and Social Affairs of the United Nations (1988). The estimation is based upon data on the number of children ever born and the number of children surviving, born to females of fertile age classified by each five-year age group. The basis of the methods used (Brass-Sullivan-Trussell) (Brass, 1985; Sullivan et al, 1985) is that the proportions of dead children can be converted into estimates of the probability of dying from birth to age  $x$ ;  $q(x)$  (Graham, 1988).

<sup>16</sup>Estimates of mortality based on the values from these younger groups may not reflect the pre-survey most recent trends, since these values are usually associated with bias such as: (1) children born to younger women experience higher mortality levels than those born to older women; (2) children born to younger women are more likely to be first births, who are also likely to have higher mortality; (3) mothers of younger child-bearing age are commonly to be a selected group, e.g lower socio-economic status (David et al, 1990).

**FIGURE VII.22 INFANT MORTALITY TREND  
(1976-1985)**



Age groups of women used for estimates:  
25-29, 30-34, 35-39, 40-44.



4.4 years for both sexes combined (from 58.1 to 62.5 years). Apparently, at the middle of the period, the infant mortality level increased, as the figure for 1982 reveals. From this year, the improvement in the mortality is evident. For instance, the gain in years in life expectancy between 1982 and 1985 was 2.3 years.

#### Under five mortality

Figure VII.23 displays the under five mortality rates during the period extending from 1976 to 1985. The analysis focused on results obtained from the 25-44-year age group of women (see footnote No 16). The same trend seen for infant mortality emerges for under five mortality. Overall, there was a decline in under five mortality during the 1976-1985 period. The U5MR fell by 22% from 131.7 per 1000 live births in 1976 to 102.5 in 1985. The level of under five mortality obtained is comparable with that from other sources (see Chapter IX).

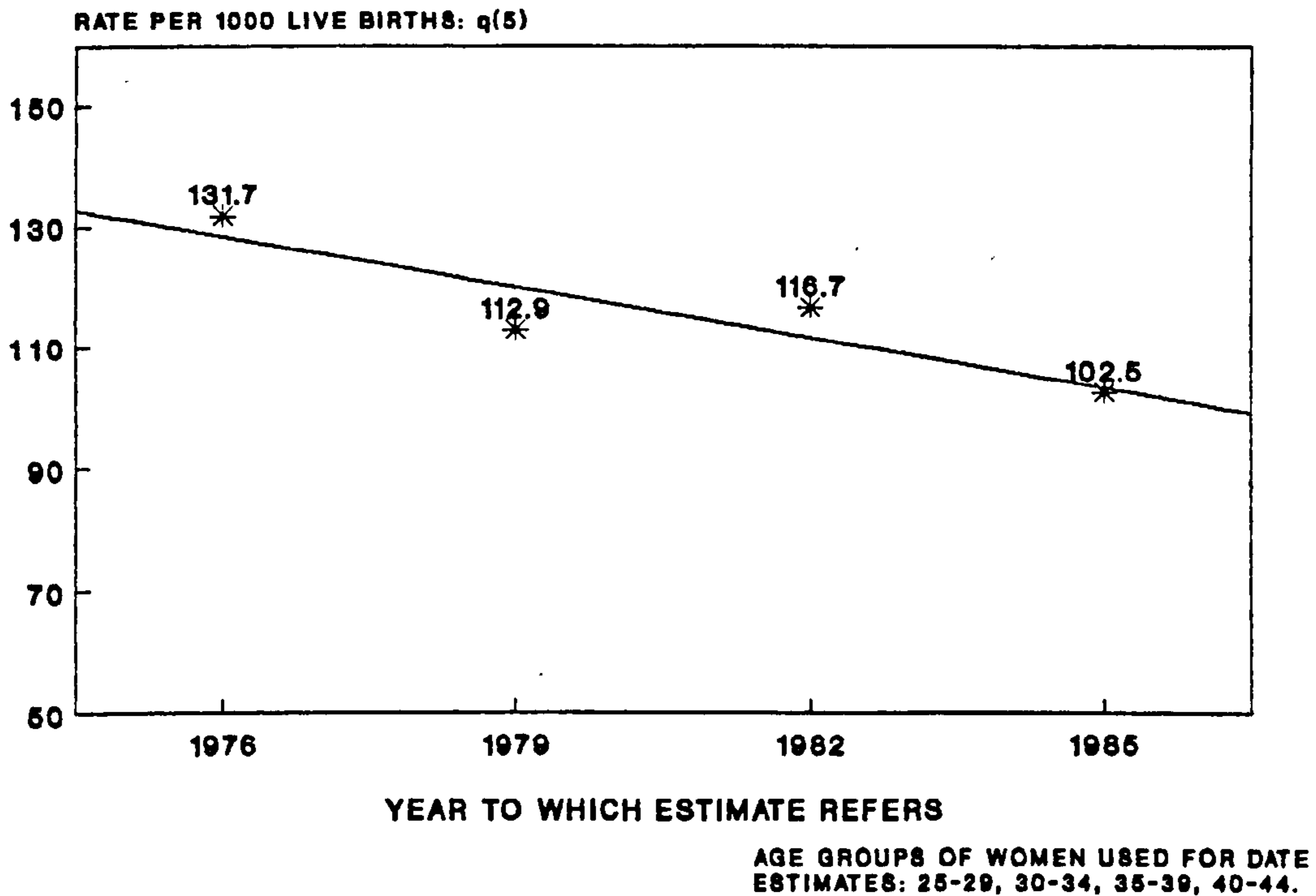
#### **B. Regional and social differentials**

Urban/rural gradients in under five mortality. Figure VII.24 presents the U5MRs by size of the locality of residence from 1976 to 1985. In localities with population of less than 2,500 (rural), the U5MR displayed a falling trend until 1982. In 1985 the U5MR in rural localities showed an increase of 13% over the 1982 figure, whereas the U5MR in 'urban' localities (2,500-15,000 population) showed a sustained decline over the period (15%). Overall, U5MRs in rural localities were higher than in urban localities over the period considered and the gap between them had widened by the end of the period.

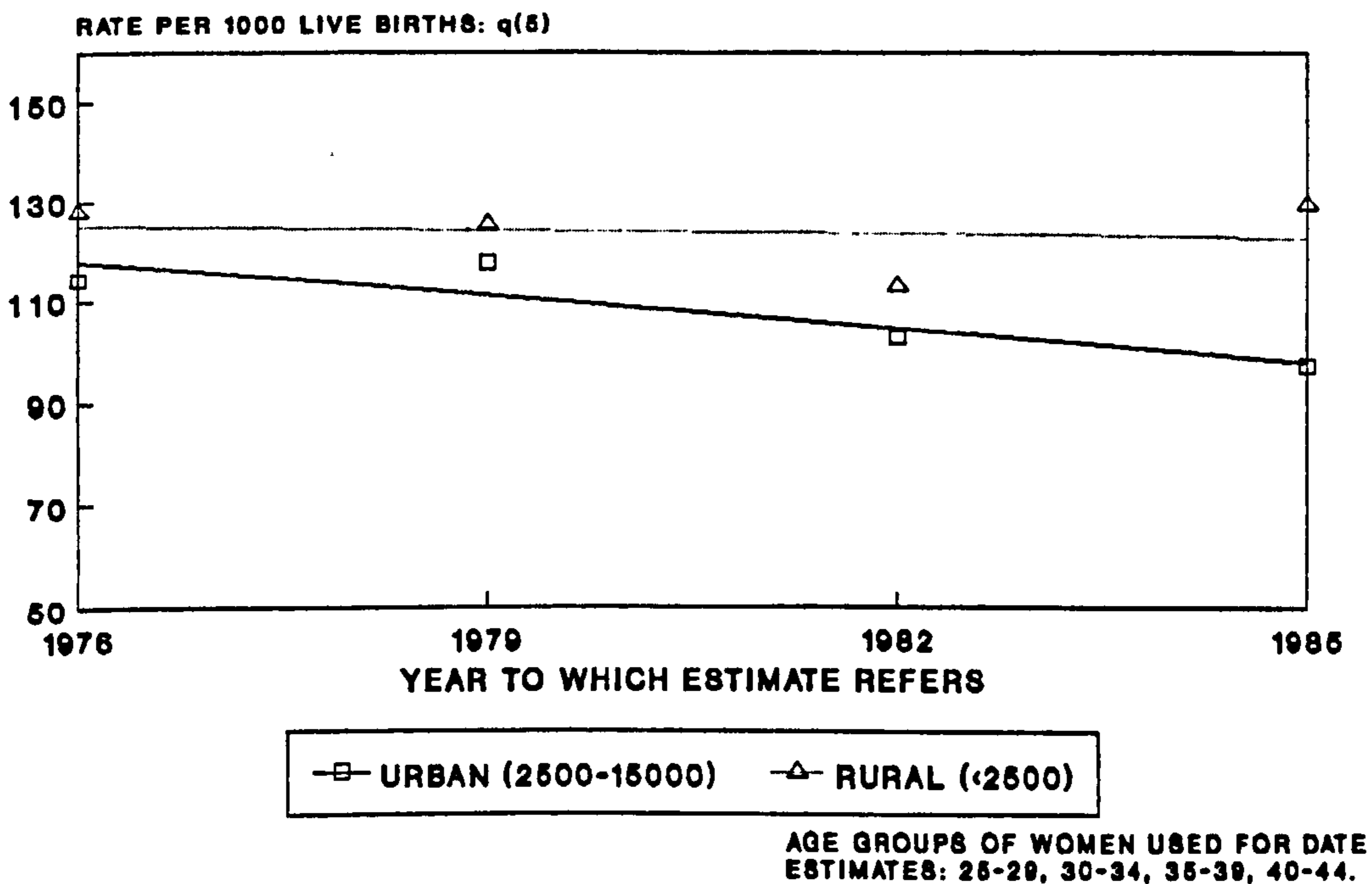
#### Social differentials in infant mortality and under 5 mortality

In Figure VII.25 the two childhood mortality indices, infant mortality and under five mortality, were analysed by selected social measures. To give an enhanced number of events for analysis, average rates over the period 1976-1985 were calculated and are presented in this figure.

**FIGURE VII.23 UNDER FIVE MORTALITY TREND  
(1976-1985)**



**FIGURE VII.24 UNDER FIVE MORTALITY  
BY URBAN/RURAL NATURE OF AREA  
(1976-1985)**





**FIGURE VII.25 CHILDHOOD MORTALITY  
INDIRECT ESTIMATES BY SELECTED SOCIAL  
INDICATORS. MEAN RATES 1976-1985**

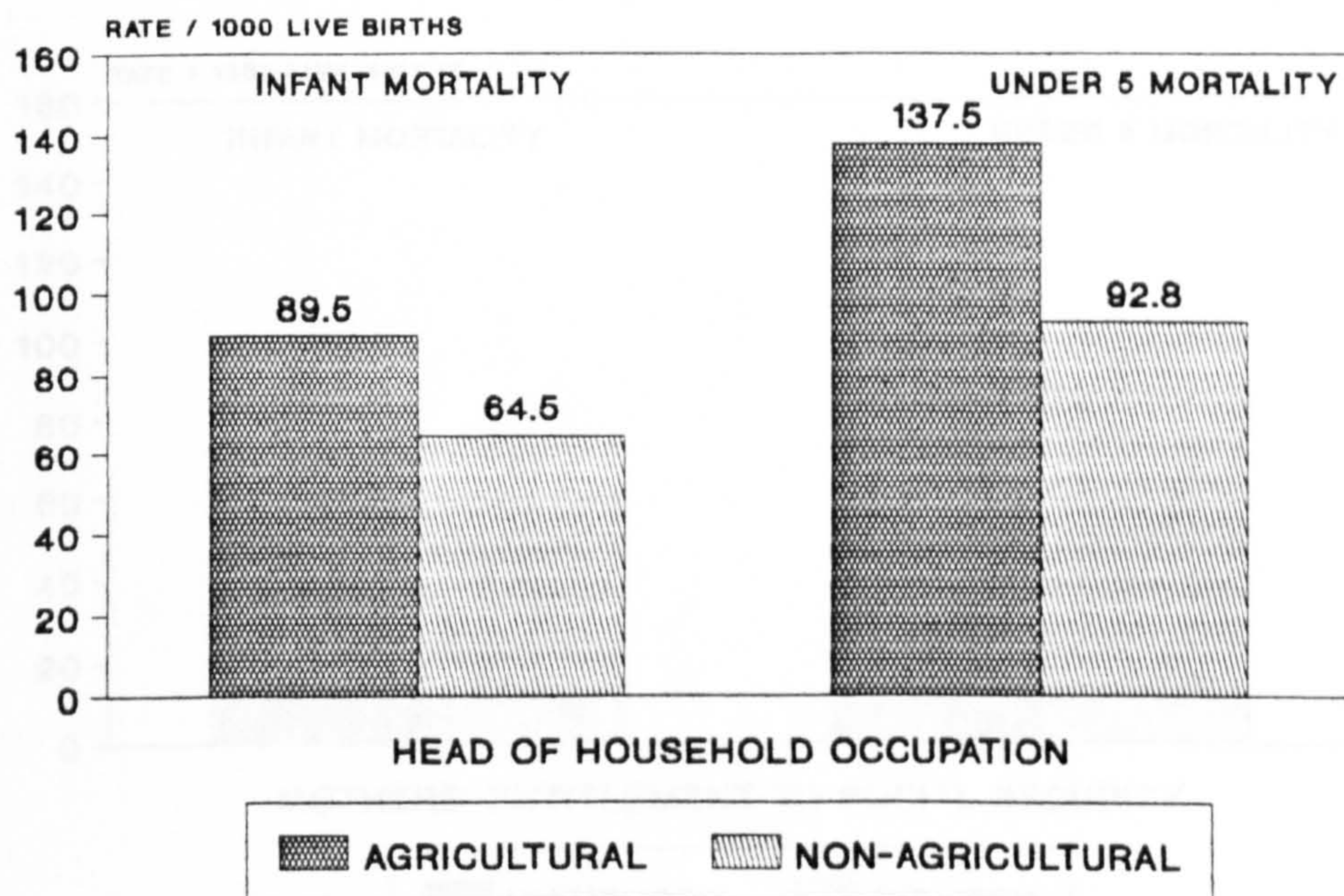
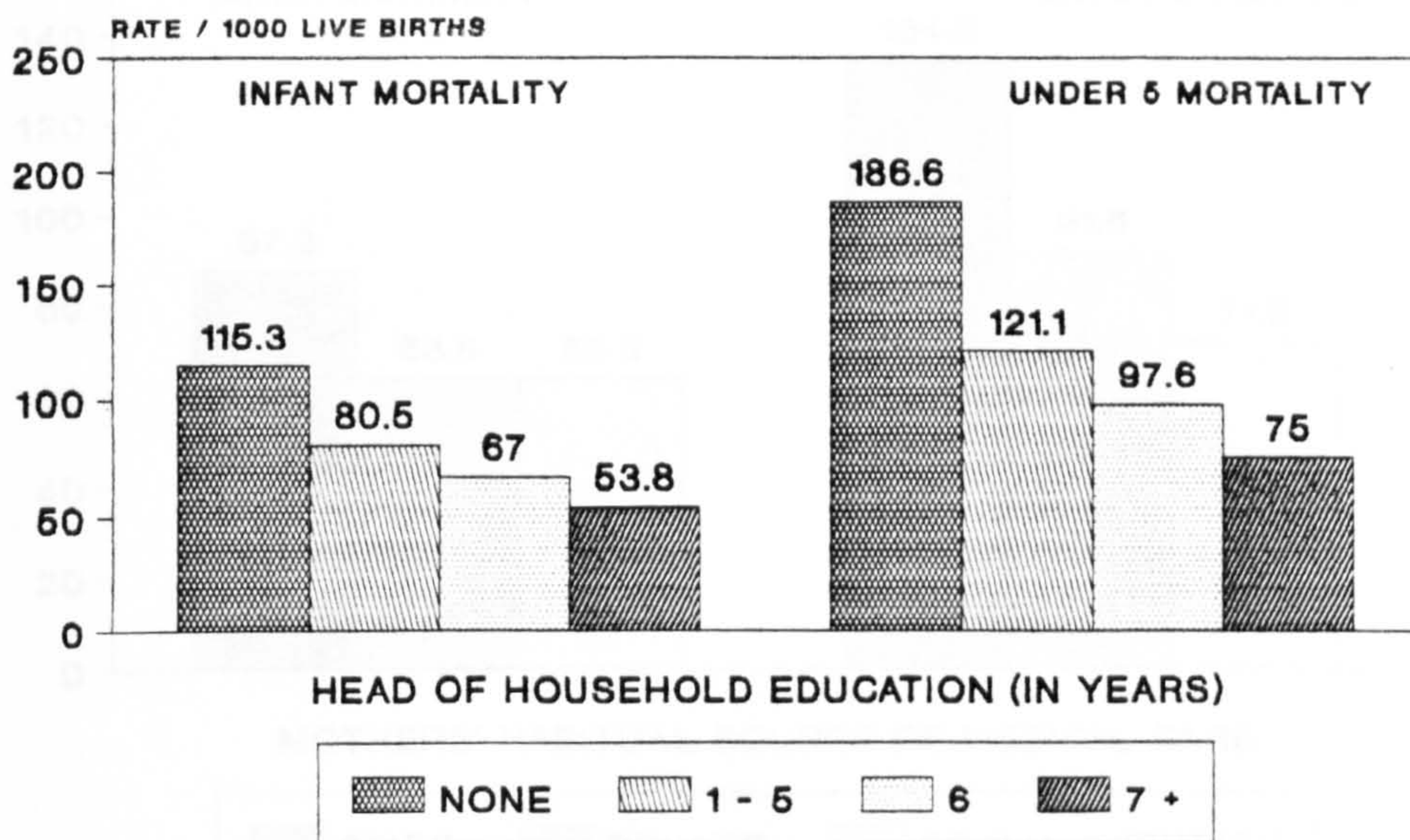




FIGURE VII.25 CONTD.

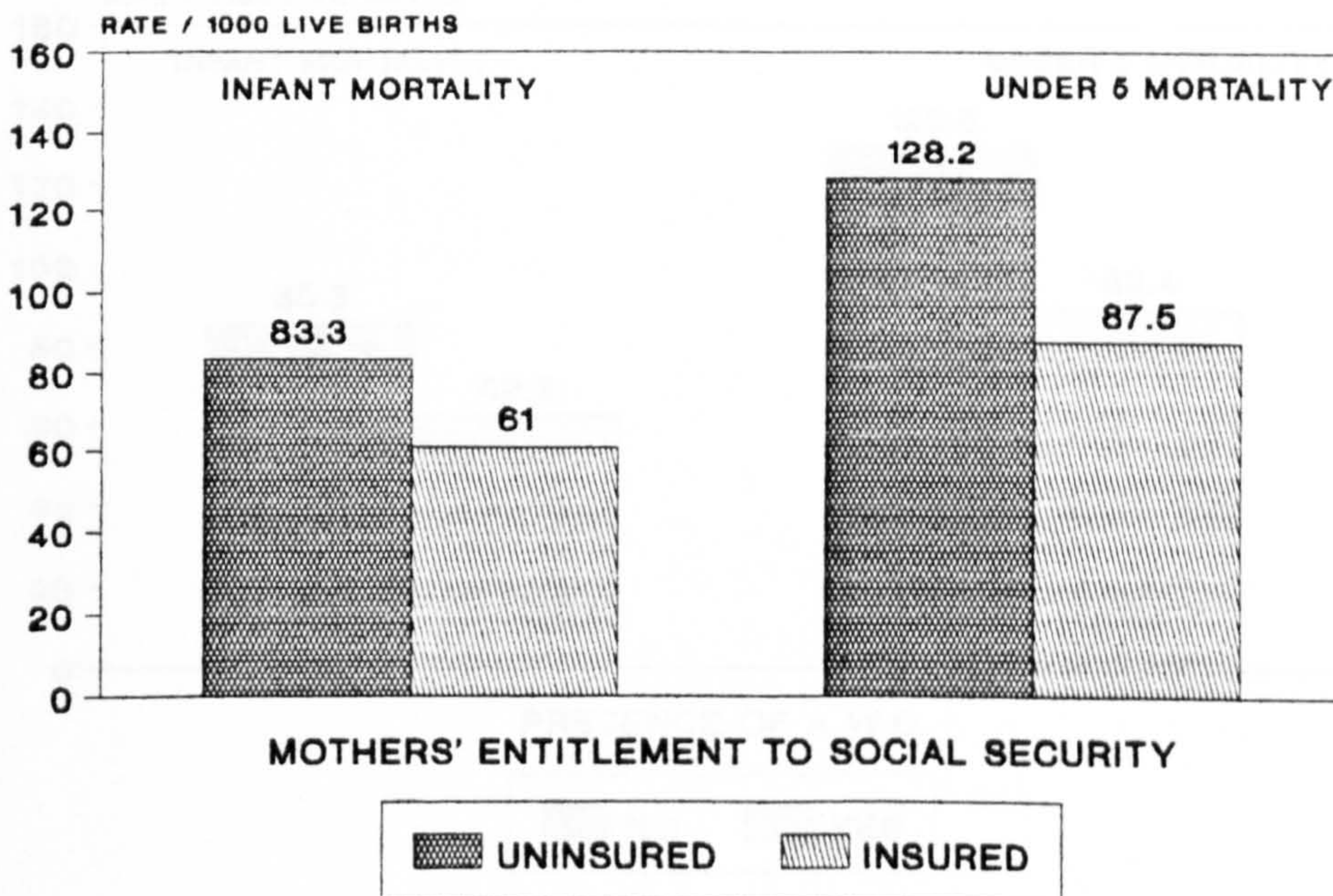
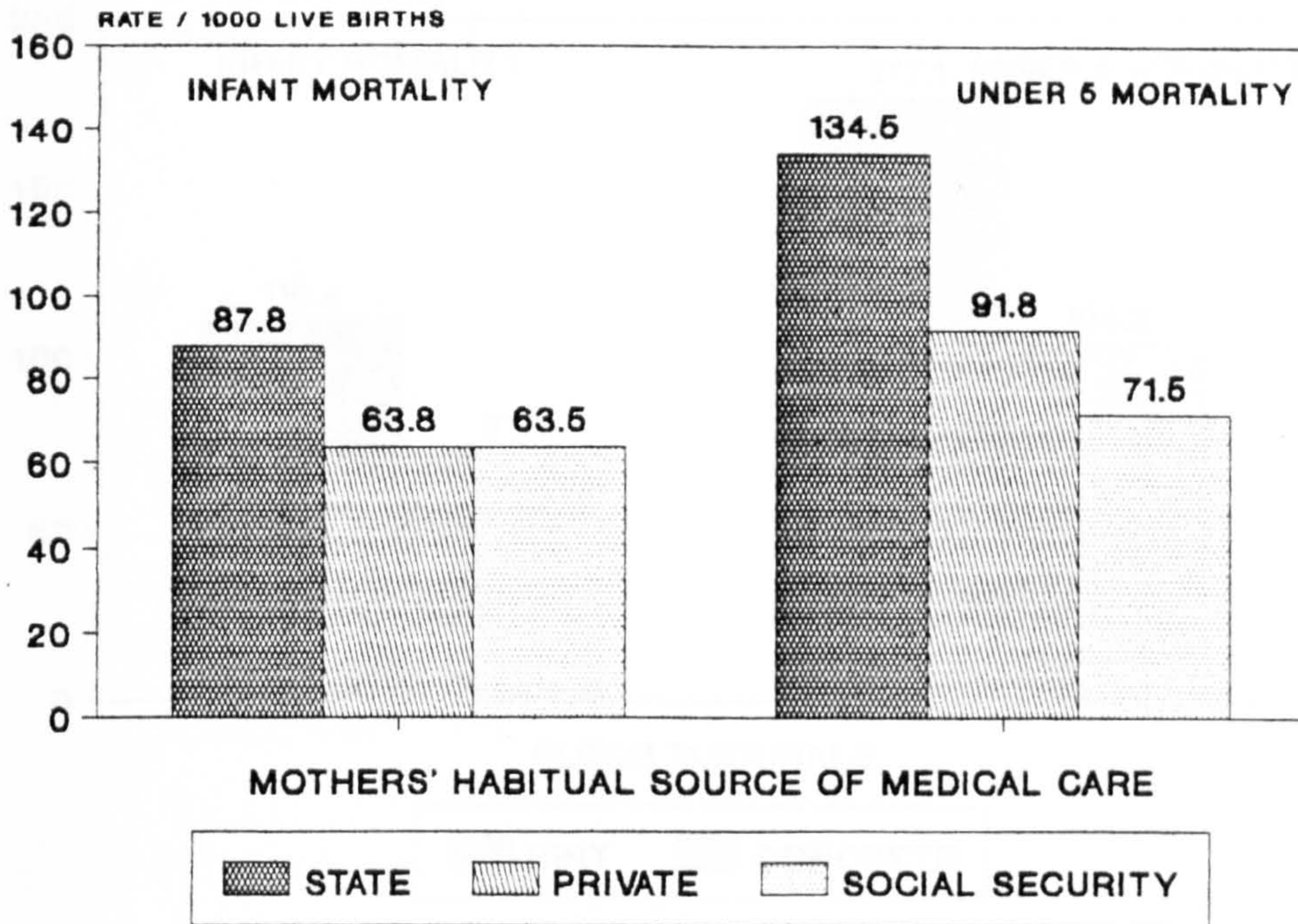




FIGURE VII.25 CONTD.

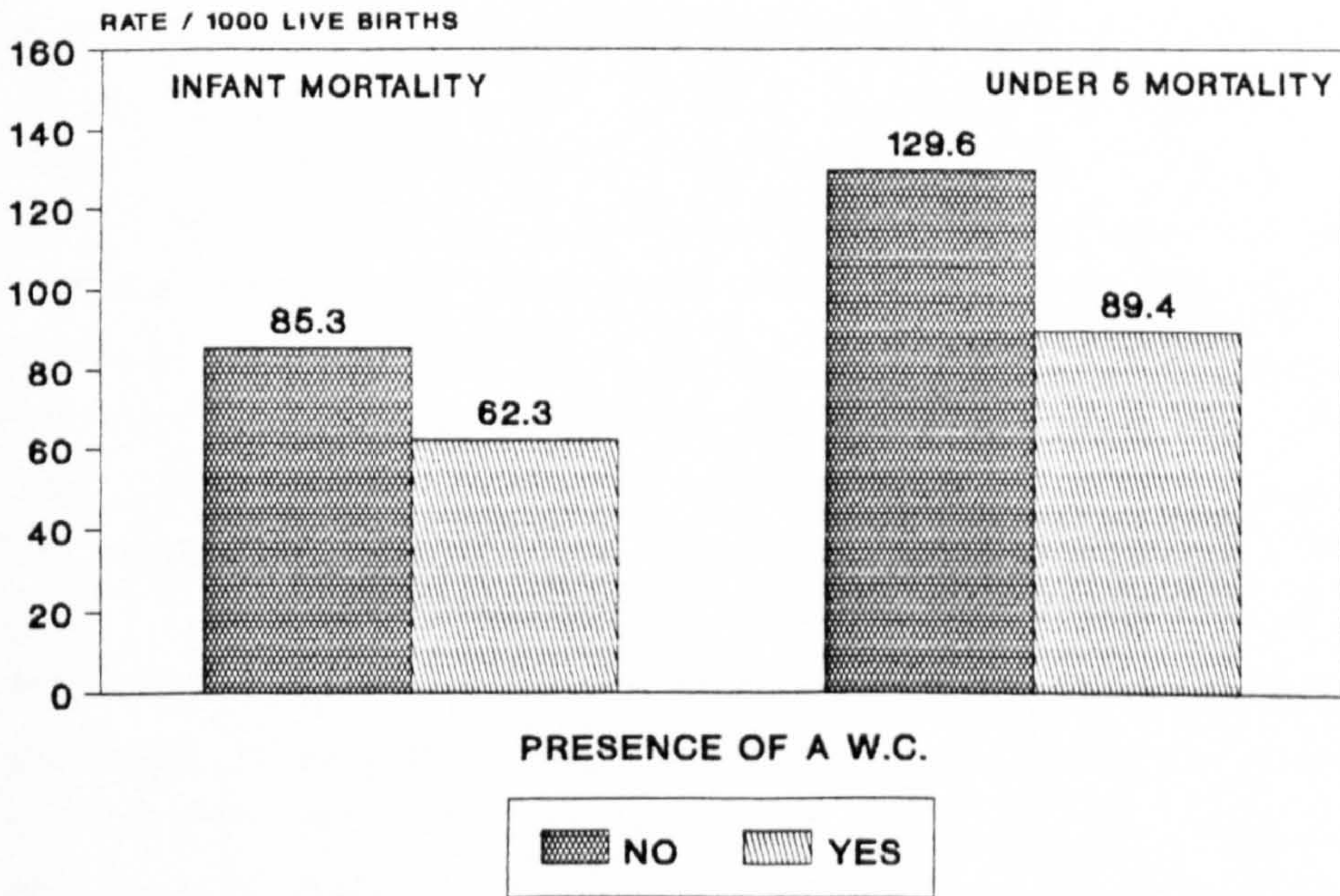
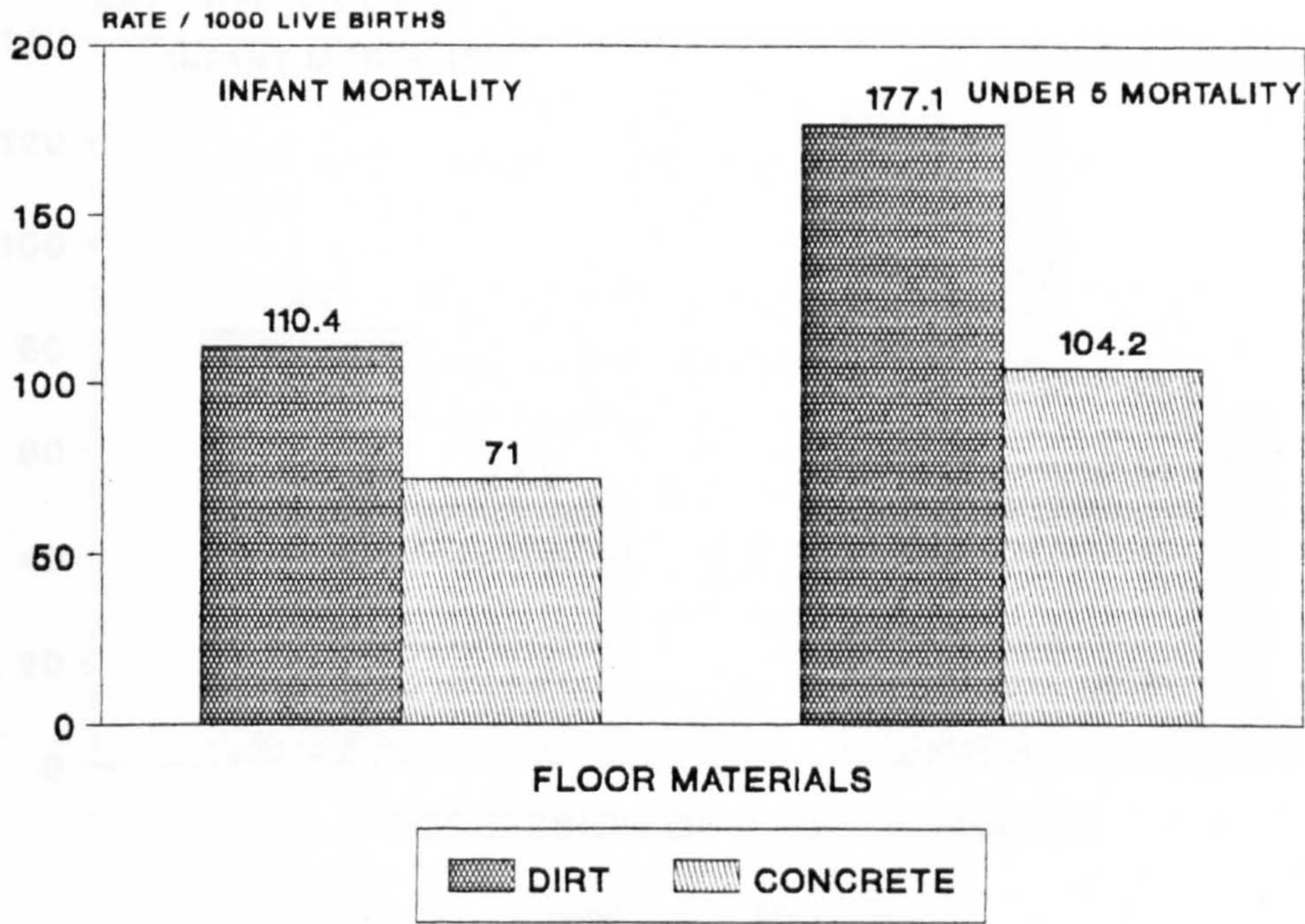
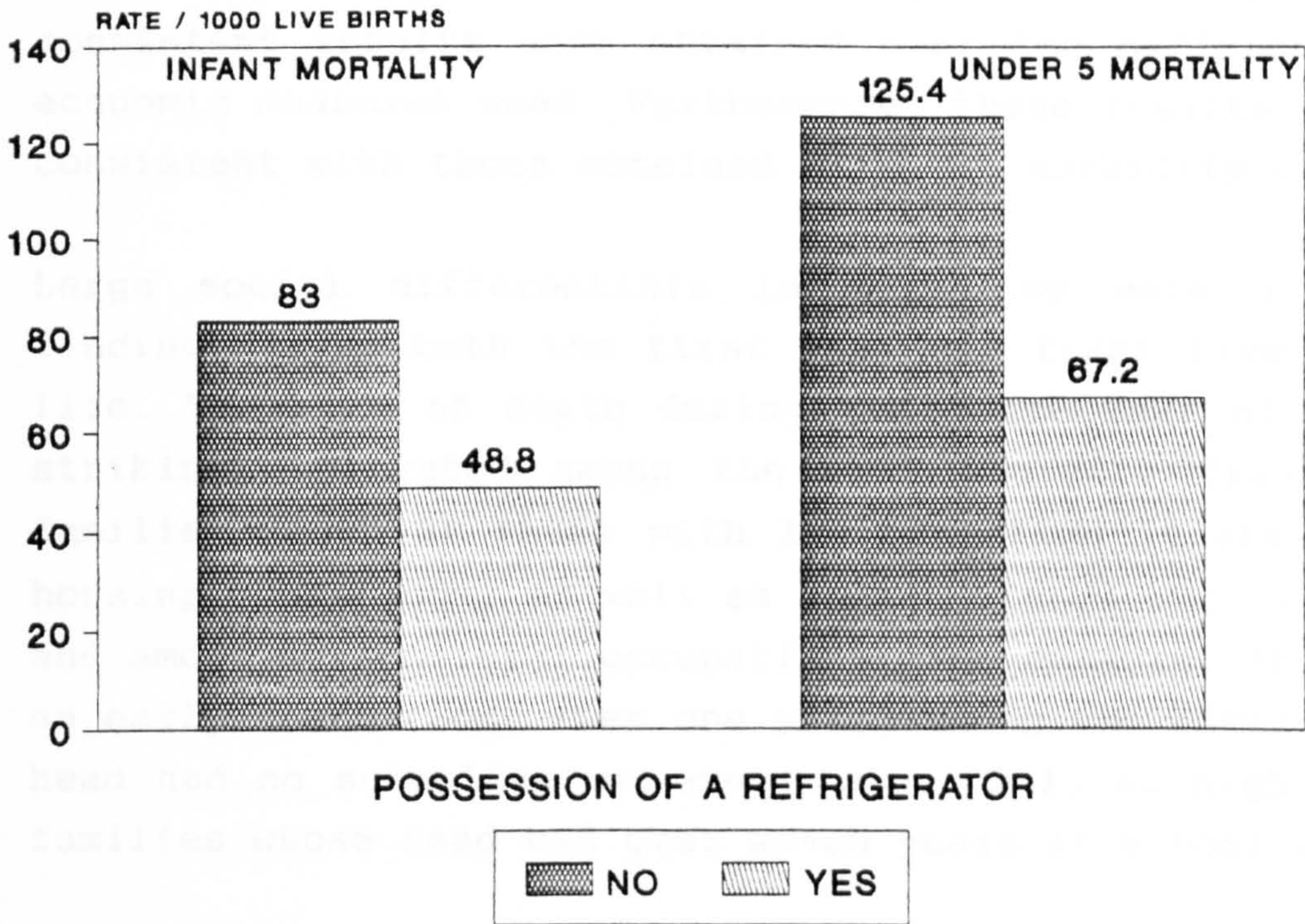




FIGURE VII.25 CONTD.





It should be noted that the numbers in the sample in some categories of the social variables utilized remain small. Hence, mortality levels should be seen cautiously. However, consistent results were obtained over the different socio-economic measures used. Furthermore, these results were also consistent with those obtained with the morbidity measures.

Large social differentials in mortality were a constant finding during both the first year and first five years of life. The risk of death during the first year of life was strikingly elevated among the most socially disadvantaged families, such as those with low education levels and poor housing conditions, as well as those without social security and among agricultural occupations. For example, the risk of an early death (less than one year) among the families whose head had no schooling was over twice (2.1) as high as among families whose head had over seven years of schooling.

The percentage excess in infant mortality rates ranged between 27% and 53%. The social variable that showed the largest differentials was education of the head of the household. This was followed by household conditions, particularly possession of a refrigerator and type of floor materials, occupation of head of the household, entitlement to social security and habitual source of medical care. For example, the percentage excess in IMR of families without a refrigerator over those owning one was 41% and that of families whose household had poor quality floor materials was 38%. The percentage excess in IMR of agricultural occupations over non-agricultural occupations was 28%.

For the under five mortality indicator these differentials are generally larger. The percentage excess in U5MR among the different population subgroups considered ranged between 31% and nearly 60%. Once again, the most marked differentials were found in families with different educational levels, followed by housing conditions (possession of a refrigerator, materials of floors and presence of a W.C.), occupation of the head of

the household, mothers' habitual source of medical care and entitlement to social security. For instance, for each death under five years in a household whose head had more than seven years of schooling, 2.5 deaths were seen in households whose head had no schooling, and over 1.5 deaths in households with a head with less than five years of schooling.

Table VII.18 compares infant mortality and under five mortality rate ratios by selected social measures. For each of the social markers used the U5MR index showed greater rate ratios than the IMR index. For example, the U5MR ratio of families whose head had no schooling over those with a head with over seven years of schooling was 2.5, compared with an IMR ratio of only 2.1. The U5MR ratio for children of households with heads with agricultural occupations over households with heads with non-agricultural occupations was 1.5, whereas the IMR ratio was 1.4.

Finally, it was found that over the ten year period considered, the gap in the U5MRs between the selected subgroups of the population surveyed widened (see Table A.7.1), particularly between those with different educational levels, agricultural and non-agricultural occupations of the household head, mothers' entitlement to social security and housing conditions.

## 6. Self-assessment of health

Self-evaluation of the state of health was used to measure the positive aspect of health of different population subgroups and to supplement the information provided by morbidity and mortality measures. The relationship between self-assessment of health and measures of ill-health was analysed.



TABLE VII.18 INFANT MORTALITY\* AND UNDER FIVE MORTALITY\* BY SELECTED SOCIAL INDICATORS. 1976-1985 RELATIVE MORTALITY (RATE RATIOS)\*\*

Social indicator	IMR ratio	U5MR ratio
Head of household education:		
None / 1-5 years	1.4	1.5
None / 6 years	1.7	1.9
None / >6 years	2.1	2.5
Head of household occupation:		
Agricultural / non-agricultural	1.4	1.5
Mothers' entitlement to social security:		
Uninsured / insured	1.4	1.5
Mothers' habitual source of medical care:		
State / social security	1.4	1.5
State / private	1.4	1.5
Housing conditions and possessions:		
Floors: dirt / concrete	1.6	1.7
W.C.: no / yes	1.4	1.5
Refrigerator: no / yes	1.7	1.9

\* Per 1000 live births

\*\* Ratio of lower to higher group

The respondents were asked to assess their own current health status<sup>17</sup> on a scale with the following categories: 'very healthy'; 'healthy'; 'fair'; 'sick'; 'very sick'.

Table VII.19 shows the percentage distribution of responses on self-assessment of health. The majority of the respondents assessed their state of health as 'healthy' (78%). The category 'fair' accounted for more than 13% of the answers, whereas 'sick' was over 5%. The proportion of respondents assessing their health as 'very healthy' was nearly 3%. Only 0.3% of the respondents defined their health as 'very sick'. Since these two categories accounted for only few responses (3.1%) out of the total answers, it seemed reasonable (for presentation purposes) to collapse the original five-category scale into a three-category scale as follows: 'healthy', 'fair', and 'sick'.

#### **A. Demographic differences**

The age and sex distribution of the self-assessments is shown in Figure VII.26. Females in each age group, with the exception of those aged 40-49 years, were more likely to assess their health as 'sick' than males. Also, a greater proportion of women (except in age 50-59) defined their health as 'fair' than men. It does not seem unreasonable to consider that an assessment labeled as 'fair' is not very far from one labeled as 'sick'. The age distribution of these two assessments ('sick' and 'fair') is 'J' shaped. That is, the proportion of people describing their health as 'sick' or 'fair' increased with age (for both sexes:  $p < 0.001$ ). The reverse is seen for people reporting good health. For both sexes, the 5-14 and 15-19 age groups had the highest proportions of favourable ('healthy') assessments.

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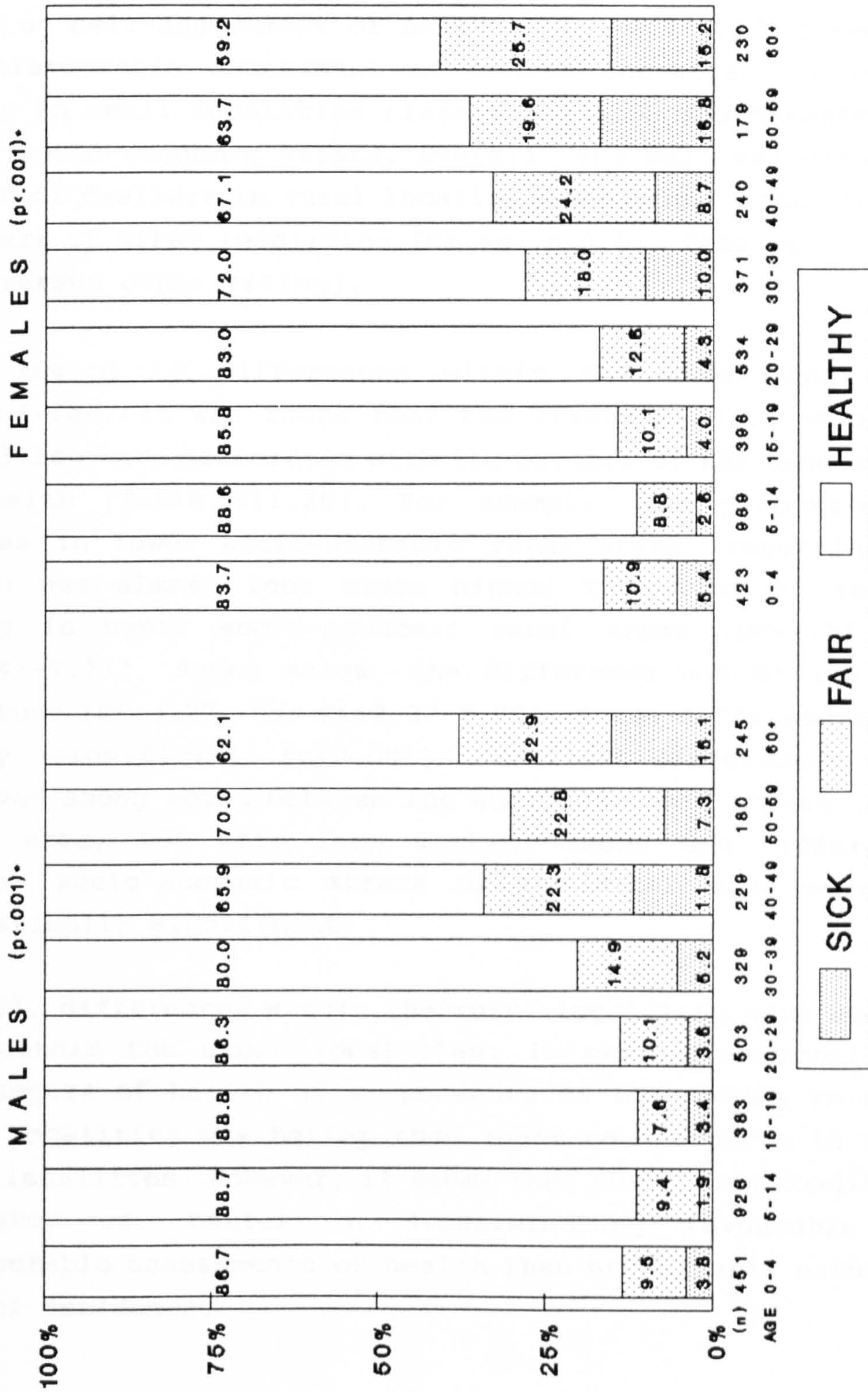
<sup>17</sup>The health status of young children was assessed by their mothers.



**TABLE VII.19 DISTRIBUTION OF SURVEY POPULATION RESPONSE ON SELF-ASSESSMENT OF HEALTH**

Self assessment of health	Number (n)	%
Very healthy	186	2.8
Healthy	5184	78.4
Fair	870	13.1
Sick	355	5.4
Very sick	17	0.3
(n)	6612	100.0

**FIGURE VII.26 SELF-ASSESSMENT OF HEALTH BY SEX AND AGE**



\* Sick vs other ratings (chi-square for trend)



## B. Socio-geographic differentials

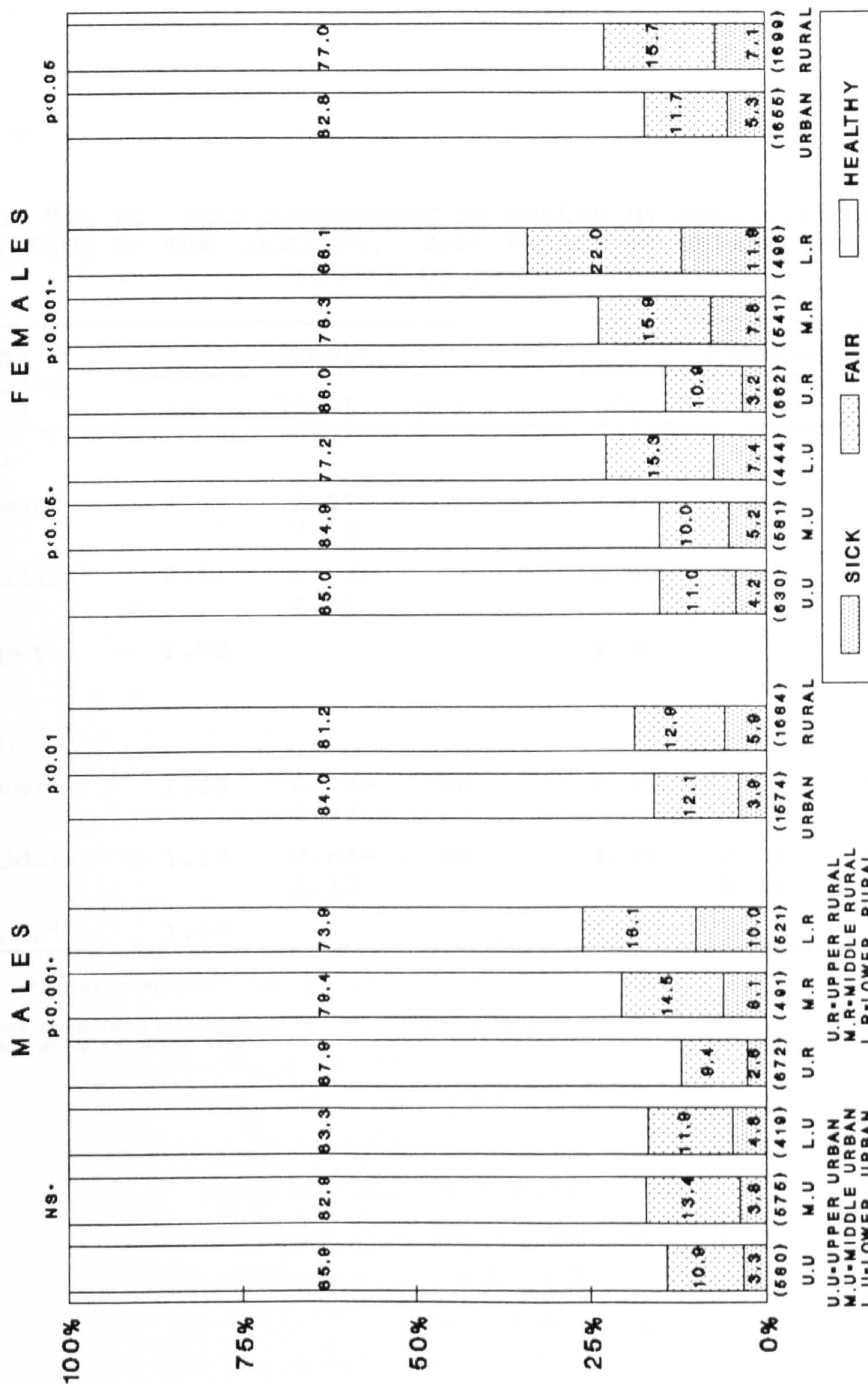
The same picture described for the morbidity measures, particularly severity of illness, is seen for the measure based on self-assessment of health. Figure VII.27 shows that an unfavourable assessment of health characterizes people living in small localities (less than 2,500 inhabitants) and lower socio-economic strata. Overall, the self-assessment of health of dwellers in rural localities was poorer than that of dwellers in urban localities (males:  $p < 0.01$ ; females:  $p < 0.05$ ; sick versus other rating).

With regard to differences within the rural and urban communities, it was found that the living conditions of the localities were associated with the pattern of the assessments of health (Table VII.20). For example, the proportion of females in lower socio-economic rural areas, reporting ill health was almost four times higher than that of females living in upper socio-economic rural areas (OR=4.12, 95% CL:2.41-7.11). Among males, the difference was of the same magnitude (OR=4.27, 95% CL:2.37-7.78). These differences were highly significant ( $p < 0.001$ ). Similar differences were observed among women between the socio-economic strata of the urban area, but were less marked. Among men differences between socio-economic strata of the urban area were not statistically significant.

Overall, differences within the rural localities were steeper than within the urban localities. It can be observed that assessments of health of respondents of both sexes in upper rural localities was better than their counterparts in upper urban localities. However, it seems that the living conditions indicator was better in discriminating favourable and unfavourable assessments of health than urban/rural nature of area of residence.



FIGURE VII.27 SELF-ASSESSMENT OF HEALTH BY SOCIO-ECONOMIC STRATUM OF THE LOCALITY



\*Based on the chi-square test for trend (sick vs fair & healthy)



**TABLE VII.20 SELF-ASSESSMENT OF HEALTH BY SOCIO-ECONOMIC STRATUM OF THE LOCALITY. ODDS RATIOS OF UNFAVOURABLE RATINGS OF HEALTH**

Socio-economic strata	Males			Females		
	OR	95%CL	p( $\chi^2$ )	OR	95%CL	p( $\chi^2$ )
<b>Rural</b>						
Lower	4.27	2.37-7.78	*	4.12	2.41-7.11	*
Middle	2.51	1.32-4.81	**	2.57	1.46-4.55	*
Upper <sup>1</sup>	1.00	-		1.00	-	
<b>Urban</b>						
Lower	1.48	0.75-2.94	NS	1.87	1.07-3.27	***
Middle	1.17	0.64-2.13	NS	1.26	0.72-2.24	NS
Upper <sup>2</sup>	1.00	-		1.00	-	

\*=p<.001; \*\*=p<.01; \*\*\*=p<.05

1 Reference group for rural strata

2 Reference group for urban strata

## C. Socio-economic differentials

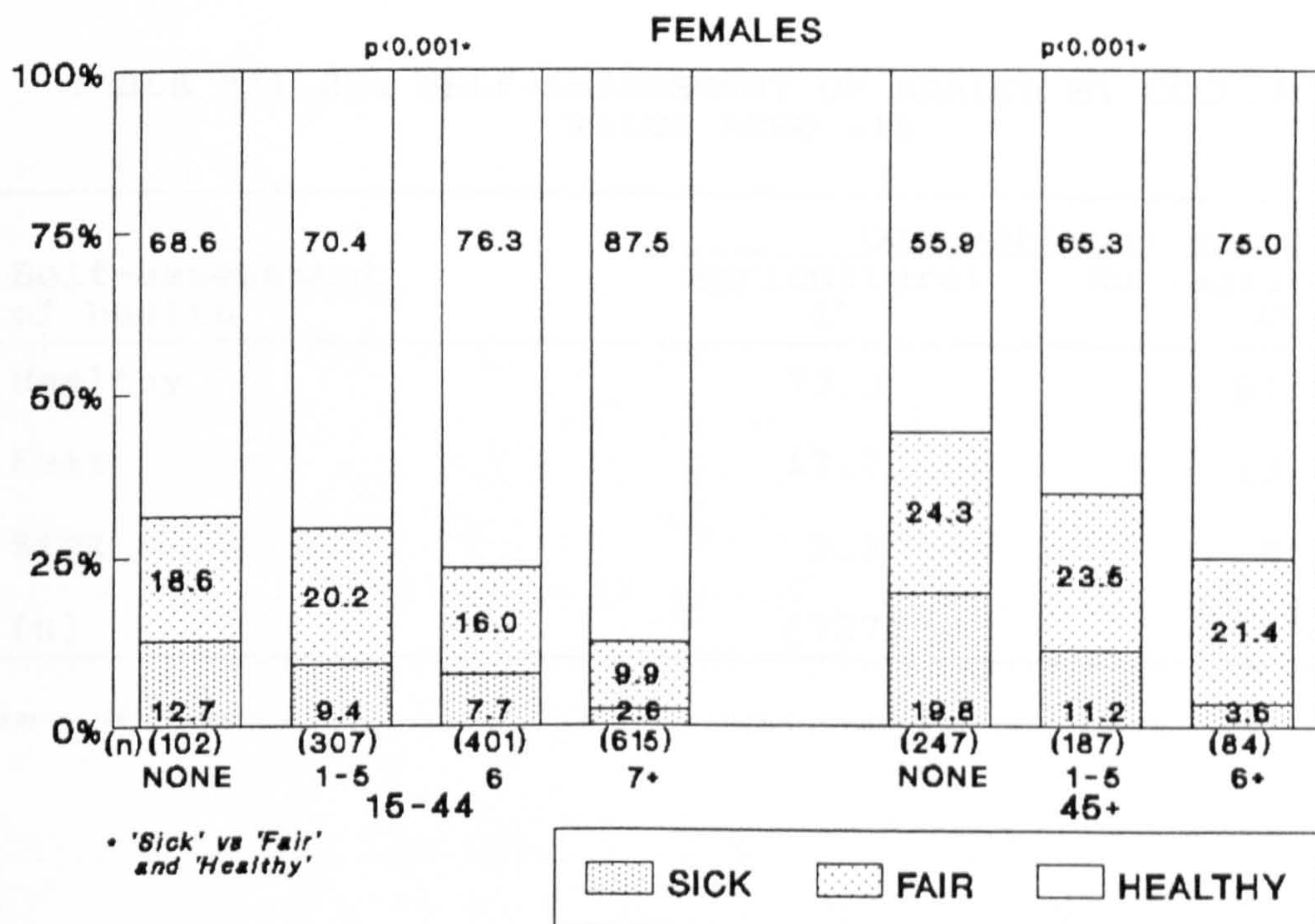
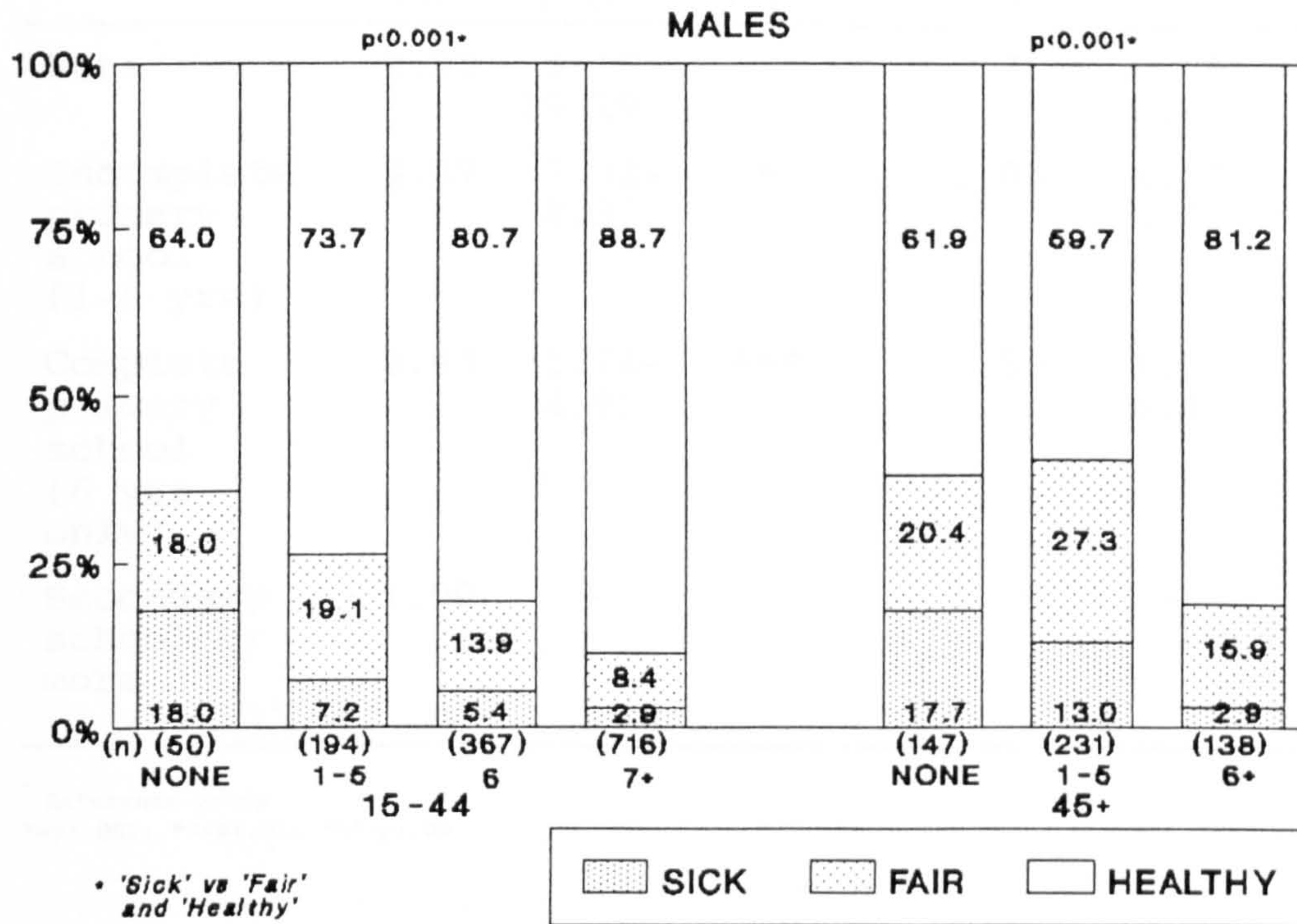
Self-assessment of health and educational level. Figure VII.28 shows that the educational level of the respondents is associated with their assessments of health. For both sexes a 'sick' or a 'fair' assessment was related to a low level of education (for both sexes in every age:  $p < 0.001$ ), whereas a favourable rating was associated to a higher level of education. The proportion of males aged 15-44 years without schooling rating their health as 'sick' and 'fair' was nearly 6.2 times and 2.1 times, respectively, higher than that for males with more than six years of schooling. The equivalent ratios for males aged  $\geq 45$  were 6.1 and 1.3 respectively. Among females differentials between the educational subgroups were less marked.

Table VII.21 presents the odds ratios of unfavourable assessments of health for lower educational levels, compared to secondary school or more. For example, among males with no schooling, the odds ratio of unfavourable ratings of health was nearly ten times higher than among males with seven or more years of schooling. The equivalent odds ratio was over four times higher among males with incomplete primary school and about 2.5 times higher among males with complete primary school than that for subjects with seven or more years of schooling (reference group).

Self-assessment of health and occupation. Table VII.22a shows that the self-assessment of males aged  $\geq 15$  in agricultural occupations was poorer than that of males in non-agricultural occupations ( $p < 0.001$ ). 9% of males in agricultural occupations rated their health as 'sick' compared to only 5% of males in non-agricultural occupations. The odds ratio of a 'sick' perceived health was 1.88 (95% CL:1.29-2.76) for the former occupational group compared to the latter group. While the self-assessment of health among females aged 15-44 years working inside the household was poorer than that of females



**FIGURE VII.28 SELF-ASSESSMENT OF HEALTH BY EDUCATION FOR AGE GROUP**



Probabilities based on chi-square for trend

**TABLE VII.21 SELF-ASSESSMENT OF HEALTH BY EDUCATION, ODDS RATIOS OF UNFAVOURABLE RATINGS OF HEALTH MALES AND FEMALES AGED  $\geq$  15.**

Education	Males			Females		
	OR	95%CL	p( $\chi^2$ )	OR	95%CL	p( $\chi^2$ )
None	9.90	5.15- 19.19	*	4.75	2.75- 8.24	*
Incomplete primary school (1-5 yrs)	4.37	2.32- 8.31	*	3.05	1.77- 5.30	*
Complete primary school (6 yrs only)	2.45	1.24- 4.90	***	1.90	1.05- 3.46	***
Secondary school or more (7 > yrs) <sup>1</sup>	1.00	-		1.00	-	

<sup>1</sup> Reference group  
 \*p<.001; \*\*p<.01; \*\*\*p<.05

**TABLE VII.22a SELF-ASSESSMENT OF HEALTH BY OCCUPATION MALES AGED  $\geq$ 15**

Self-assessment of health	Occupational group	
	Agricultural %*	Non-agricultural %*
Healthy	73.2	81.1
Fair	17.7	13.7
Sick	9.2	5.1
(n)	(727)	(1134)

\*Age-standardized

p<0.001



working outside the household, the reverse was seen among older females ( $\geq 45$ ) (Table VII.22b). However, these differences were only statistically significant among women aged 15-44 years ( $p < 0.05$ ).

Self-assessment of health and access to land. Differences in self-assessment of health state between peasant land-holders and waged labourers were statistically significant only in the 45-64 year age group, although the results obtained in other age groups were in the expected direction: waged labourers tended to rate their health more unfavourably than land-holders (data not shown).

Self-assessment of health and habitual source of medical care. The distribution of self-assessments of health according to habitual source of medical care by age group is presented in Figures VII.29a-b. The same picture described for the morbidity measures is seen here. The self-assessment of health of the respondents using the state services as their main source of care was poorer than that of their counterparts using private or social security services at all ages, except for the 45-64 age group.

Self-assessment of health and meat consumption. For both sexes, the self-assessment of health was associated with the frequency of meat consumption (Figures VII.30a-b). A 'sick' or 'fair' assessment was associated with less frequent consumption of meat (males:  $p < 0.001$ ; females:  $p < 0.001$ ), whereas a favourable evaluation was related to more frequent consumption. For example, the proportion of males consuming meat once a fortnight or less rating their health as 'sick' was almost four times that of males consuming meat every day, and two times that of males eating meat twice a week. Similar, but less marked, differences were found for females.

Self-assessment of health and housing conditions. Respondents of both sexes with poor housing conditions rated their health

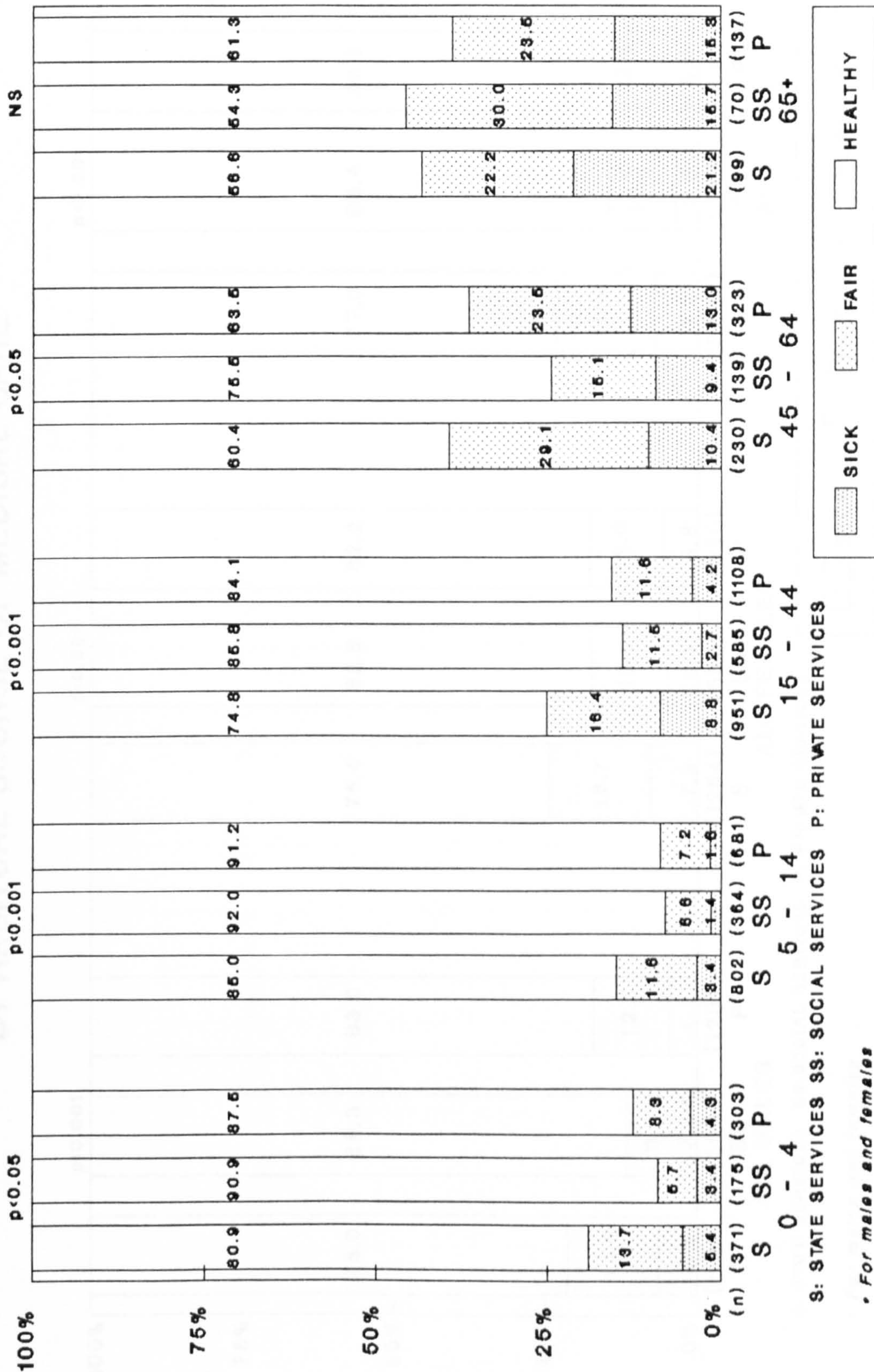
**TABLE VII.22b SELF-ASSESSMENT OF HEALTH FOR AGE GROUP BY OCCUPATION OF FEMALES**

Age group	Assessment of health	Inside the household (%)	*Outside the household (%)
15-44 (p<0.05)	Healthy	76.1	84.2
	Fair	16.6	10.6
	Sick	7.3	5.2
	(n)	(902)	(310)
≥45 (NS)	Healthy	63.2	54.7
	Fair	22.8	29.3
	Sick	14.0	16.0
	(n)	(435)	(75)

\* Does not include students  
Students (15-44): 86.8%; 10.4%; 2.8%; n=212

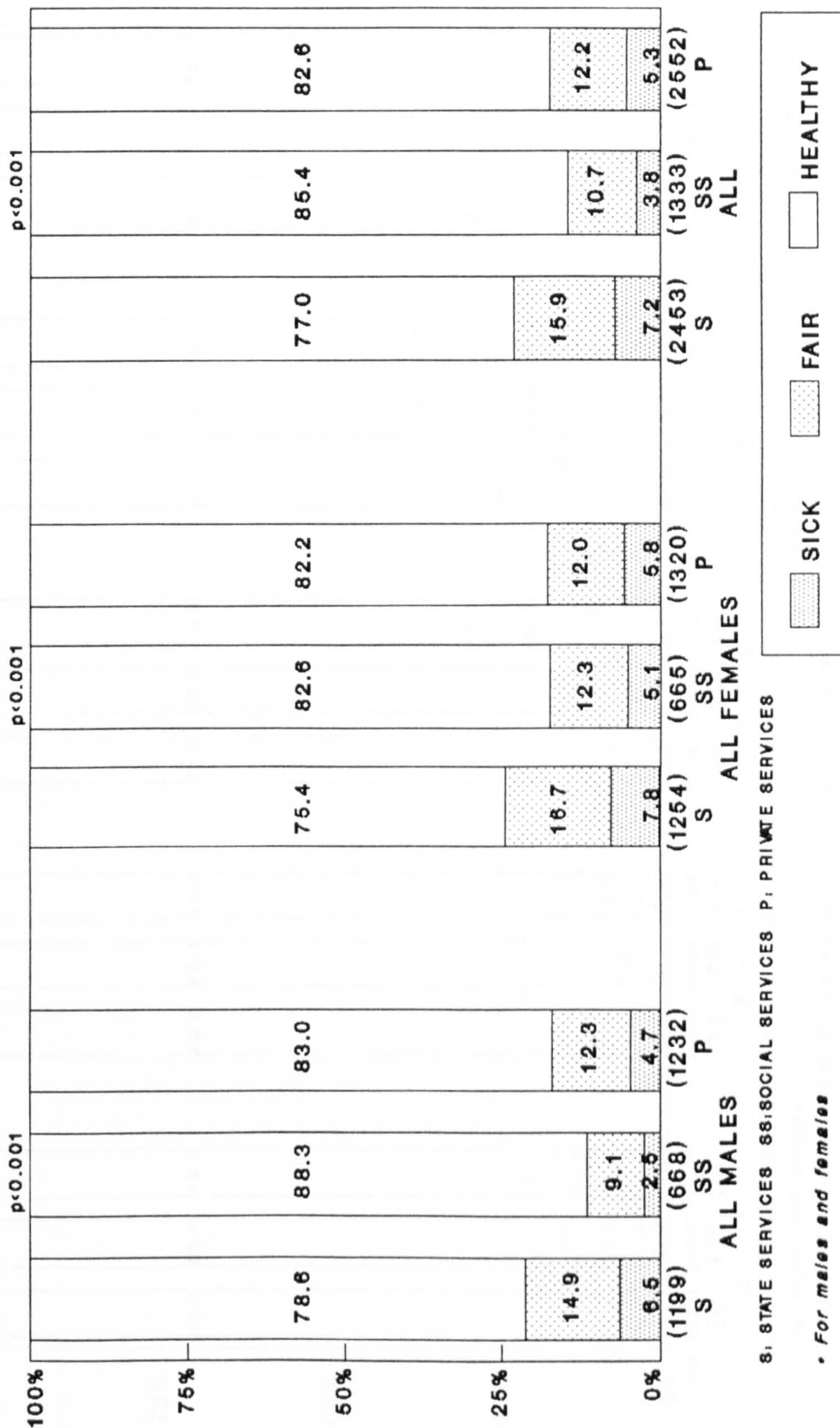


**FIGURE VII.29a SELF-ASSESSMENT OF HEALTH\* BY HABITUAL SOURCE OF MEDICAL CARE**



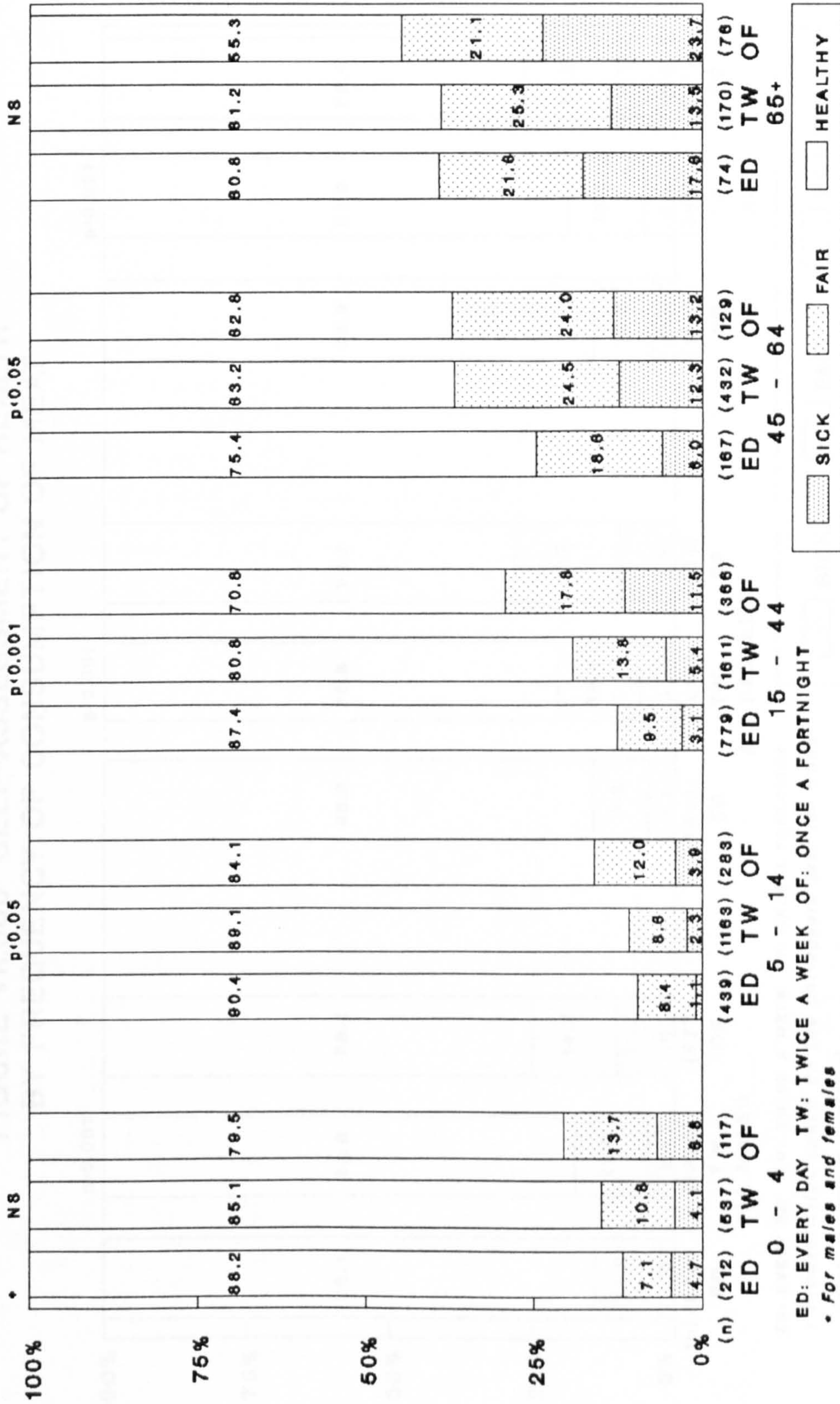


**FIGURE VII.29b SELF-ASSESSMENT OF HEALTH\*  
BY HABITUAL SOURCE OF MEDICAL CARE**





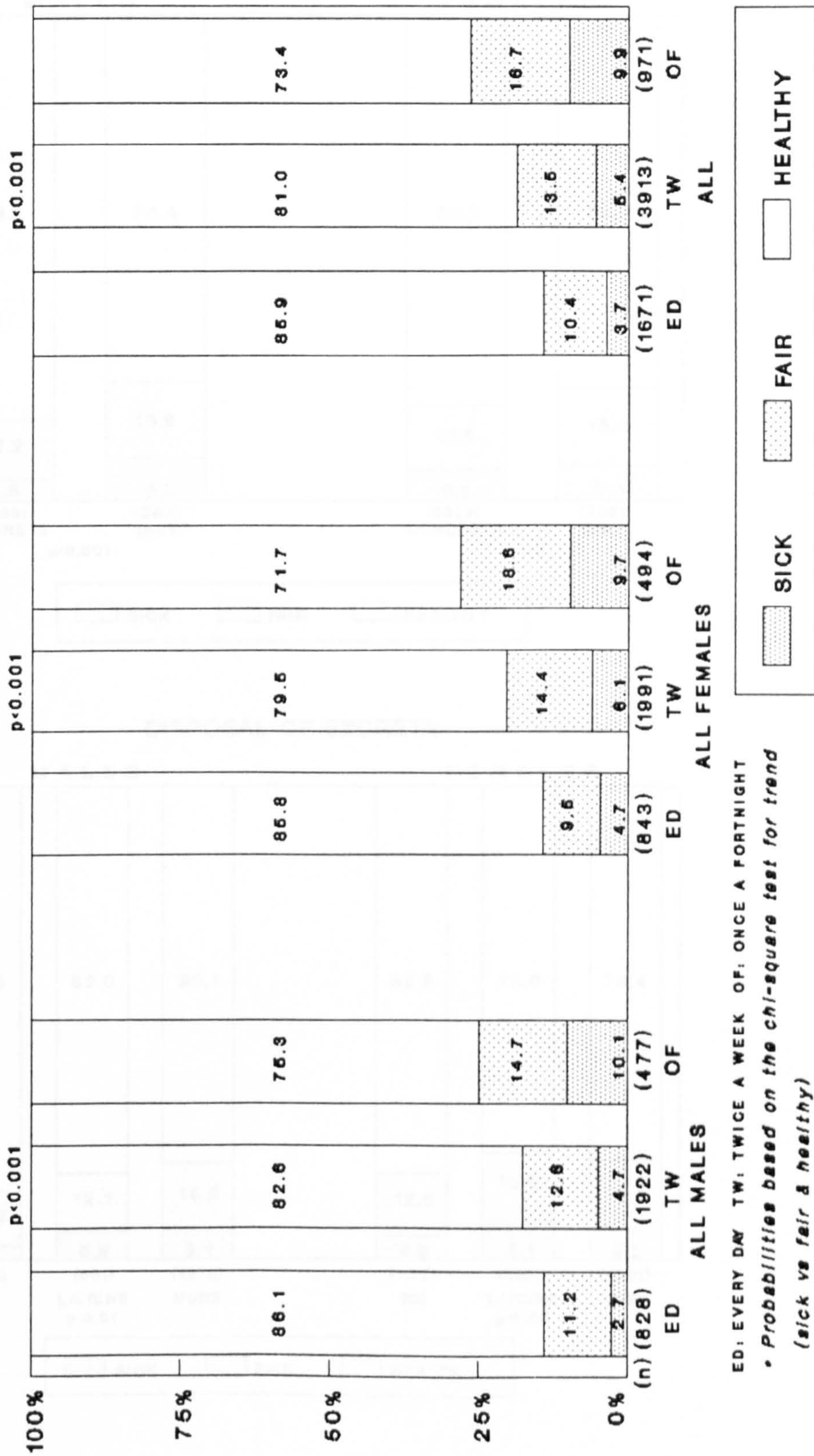
**FIGURE VII.30a SELF-ASSESSMENT OF HEALTH\* BY FREQUENCY OF CONSUMPTION OF MEAT**



ED: EVERY DAY TW: TWICE A WEEK OF: ONCE A FORTNIGHT  
 \* For males and females  
 + Probabilities based on the chi-square test for trend (sick vs fair & healthy)

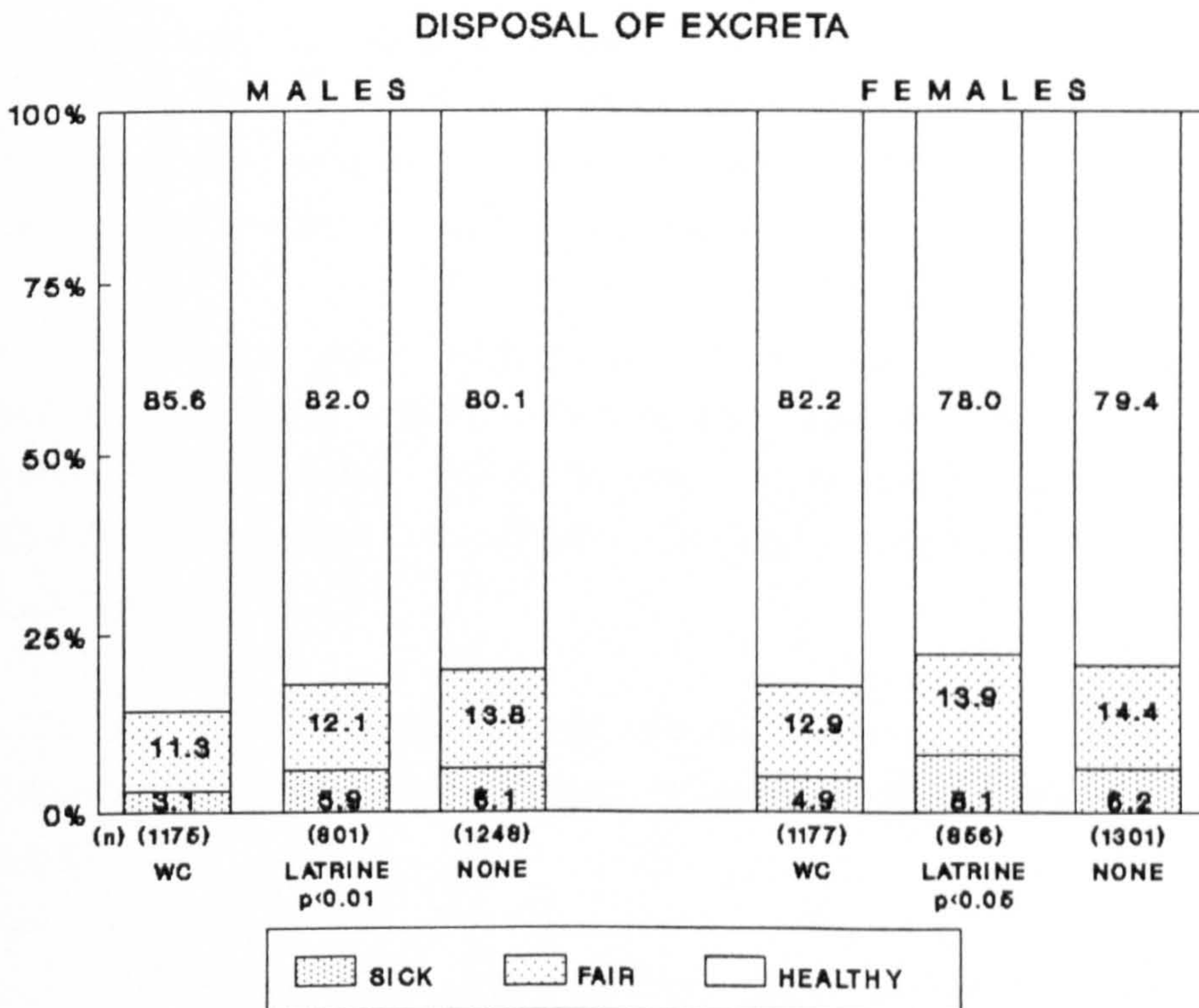
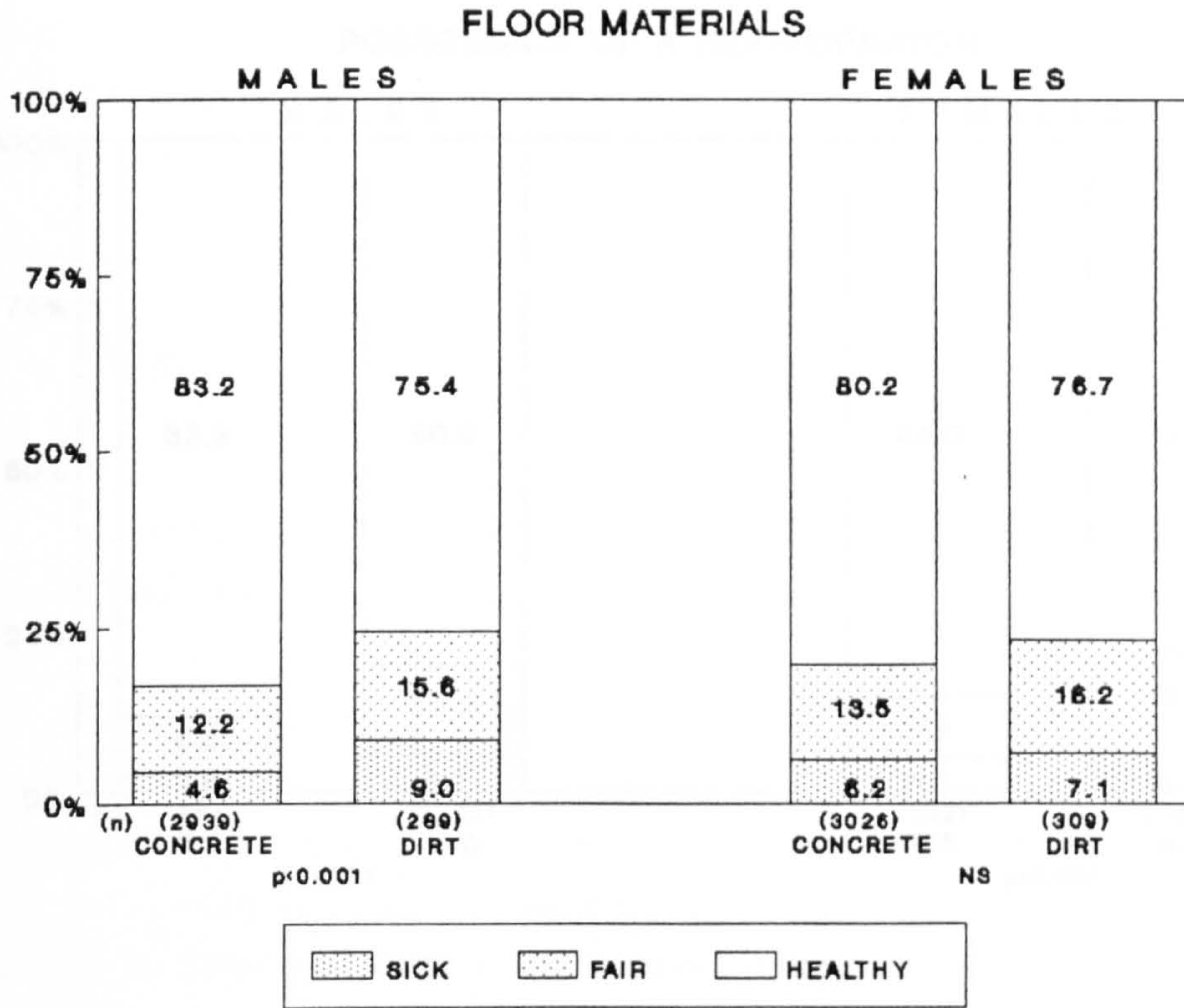


**FIGURE VII.30b SELF-ASSESSMENT OF HEALTH BY FREQUENCY OF CONSUMPTION OF MEAT**





**FIGURE VII.31 SELF-ASSESSMENT OF HEALTH BY HOUSING CONDITIONS**







poorer than respondents with better housing conditions (see Figure VII.31). For instance, an unfavourable assessment of health among males living in households without a W.C., or a refrigerator or with low quality floors, was almost two times higher than among those living in households with a W.C., a refrigerator and concrete floors. Differences among females were less marked than among males.

## 7. Summary of findings

i. In general, women had higher rates than men in morbidity measures and unfavourable ratings of health state.

ii. Among the individual measures, education was the social marker that showed the sharpest differentials across the health measures utilized in this study (morbidity, mortality and self-appraisal of health). Other measures that also showed large differentials were occupation, source of care and meat consumption.

iii. Overall, differences in morbidity measures between educational and occupational groups were more marked among men than among women. Exceptions to this were the overall morbidity measure and occupation.

iv. Males in agricultural occupations had higher morbidity rates and more unfavourable ratings of health than those in non-agricultural occupations. Among the former, waged labourers tended to be more disadvantaged than peasant landholders.

v. Among women aged 15-44 years, those working inside their homes were more disadvantaged than women working outside their homes.

vi. Differences in morbidity were greater among the middle aged (15-44).

vii. Habitual source of medical care more clearly defined groups of high and low morbidity than did social security. The opposite was found with regard to self-appraisal of health state.

viii. Respondents who utilized the government services as their main source of medical care had the highest morbidity rates, whereas those using the private and social security services had the lowest.

ix. As far as housing indicators are concerned, that based on type of floors produced greater differentials in morbidity and unfavourable ratings of health state than did those based on the presence of a W.C. or a refrigerator indicators.

x. Infectious illnesses, both respiratory and gastrointestinal, were predominant among young children. Rates of nervous and mild psychiatric problems, musculoskeletal and chronic health problems were predominant among older people. Nervous and mental problems were more prevalent in the most deprived villages.

xi. Levels of childhood mortality were higher among children in families of lower socio-economic status, as measured by education, occupation, entitlement to social security, housing conditions, size and living conditions of locality of residence of mothers and heads of households.

xii. The under five mortality rate (U5MR) showed wider differentials between social groups than did the equivalent infant mortality rates (IMR).

xiii. Among the area-based measures, the living standards index (socio-economic stratum of the locality of residence) allowed the construction of areas with substantially larger morbidity differentials than urban/rural nature of the locality.



xiv. Intra-rural differences were apparently greater than intra-urban differences in morbidity and unfavourable ratings of health.

xv. Males from the middle stratum reported the highest morbidity rates in the urban areas.

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## VIII. INEQUITIES IN HEALTH CARE

This chapter examines the utilization of health care services of different population sub-groups in relation to their perceived needs. The prevalence of perceived morbidity is utilized as a measure of perceived need and as a major predictor of health care use (see Chapter II). Thus, the distribution of unmet need among the different population sub-groups is analysed. The other issues considered in this chapter are: the predominant pattern of response of the population to the perceived health problems (use of a formal health service, both public and private, versus self-treatment), type of services preferred, the role of the private sector services compared to the public ones (state and social security services) and the demographic and social factors that influence the utilization and choice of health services.

### 1. Health care utilization in response to perceived morbidity

As mentioned in Chapter V, the information on the type of health care utilized during the two weeks prior to interview was collected in relation to the 'most important' illness as perceived and defined by the respondent. This was asked to identify the kind(s) of action(s) that the respondent had taken to alleviate the disturbances caused by such an illness. Two types of measures are utilized to present the results. First, the percentage distribution of the responses to the

main illness; and second, the health care utilization rates among the different demographic and social sub-groups.

#### A. Type of treatment utilized

Figure VIII.1a presents the distribution of the health care actions of all respondents reporting illness in the last two weeks. A great majority of the respondents reported that they did 'nothing' to alleviate the problems caused by their perceived illnesses. Of the nearly 28% utilizing health services, 68% utilized a formal health service as the only action taken, whereas 32% utilized it together with either home remedies or medicines without medical prescription or with both. Among those who reported to have only taken self-treatment actions (31%), those having medicines without prescription represented 15% of all responses, followed by those having home remedies (10%). Those who took both kinds of health care actions (home remedies and medicines without prescription) were in third place within the self-treatment group (6%).

For the sake of clarity in the presentation and analysis of the data, responses were aggregated into three categories: (1) 'self-treatment only' comprising: 'medicine(s) without prescription', 'home remedies', and 'home remedies and medicines without prescription'; (2) 'health service' comprising 'health service only', 'home remedies and health service', 'medicine without prescription and health service', and 'home remedies, medicines without prescription and health service'; and (3) 'none'. Figure VIII.1b shows the resulting proportions for the aggregated responses. It does not seem that 'none' implies a response very different from self-treatment. Although not always recognized or reported during the interview, it is very common that individuals do something (for example, drinking a herbal infusion, resting in bed, stop working or playing) to alleviate their perceived health disturbances (Kroeger et al, 1987; López and Kroeger, 1990).



FIGURE VIII.1a HEALTH CARE ACTIONS OF RESPONDENTS REPORTING ILLNESS DURING THE TWO WEEKS PRECEDING THE INTERVIEW

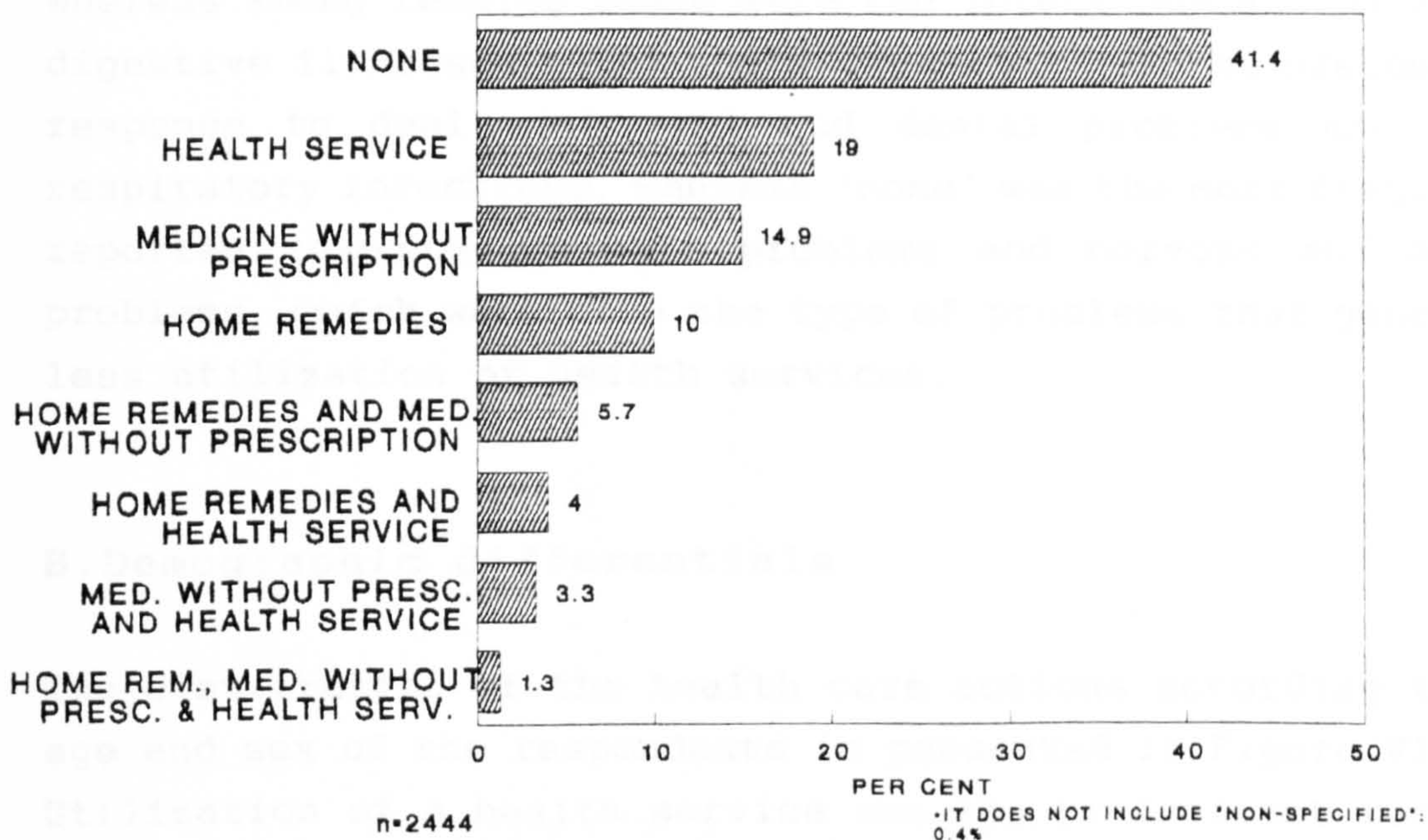
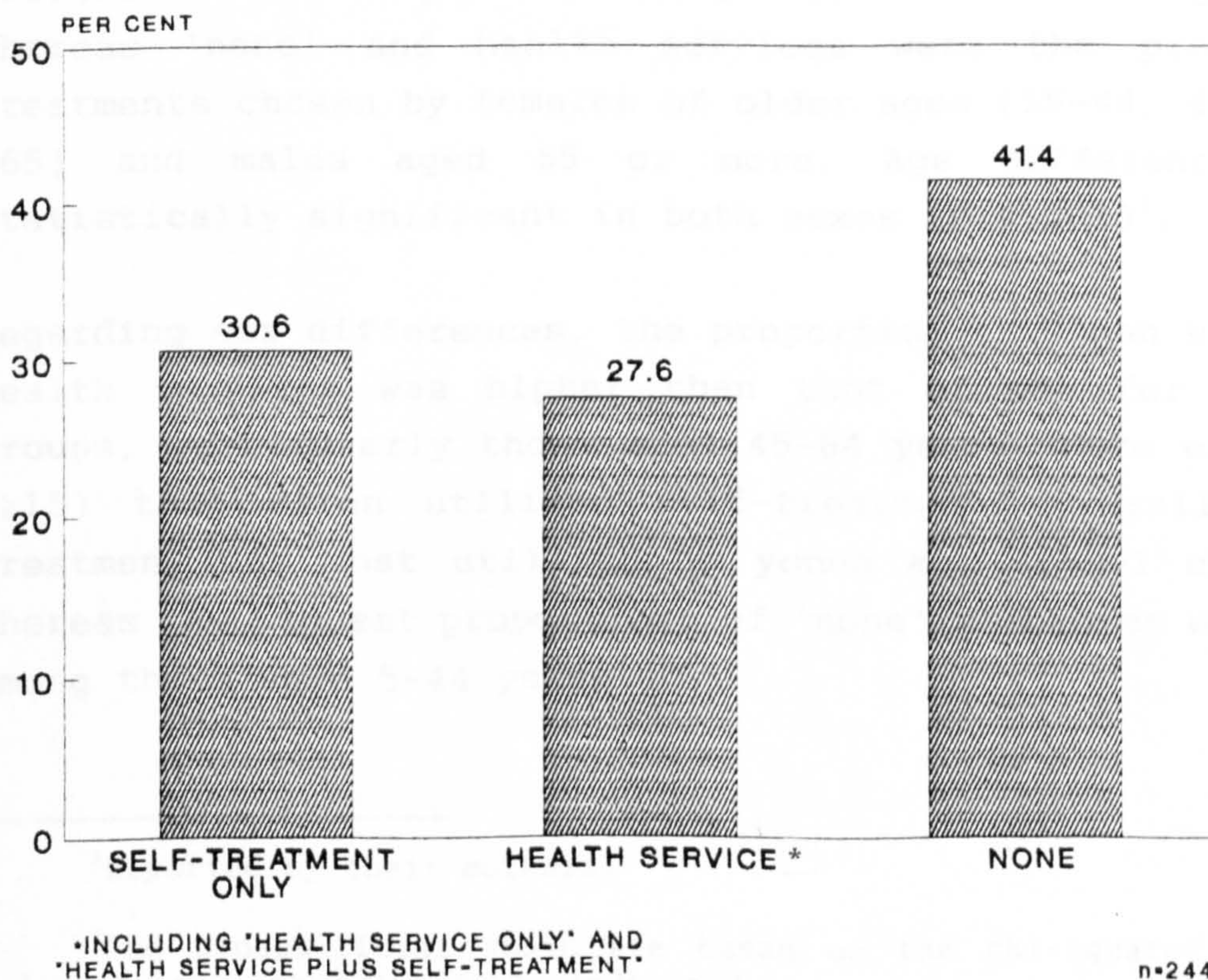


FIGURE VIII.1b MAIN HEALTH CARE ACTIONS





Treatment utilized and type of illness reported. Figure VIII.2 shows that among males, the chronic problems were the ones that caused a greater utilization of health services (33%), whereas among females these were the infectious and parasitic digestive illnesses (38%). Self-treatment was the predominant response to deal with oral and dental problems and acute respiratory infections, whereas 'none' was the most frequently reported response to skin problems and nervous and mental problems, which were also the type of problems that generated less utilization of health services.

### **B. Demographic differentials**

The distribution of the health care actions according to the age and sex of the respondents is presented in Figure VIII.3. Utilization of a health service was the predominant response to perceived morbidity in young children<sup>1</sup> of both sexes, whereas self-treatment and 'none' were the kinds of treatment mostly utilized by males aged 5-64 years. Among females, these treatments were only preferred by those in the 5-14 age group, whereas 'none' and health services were the predominant treatments chosen by females of older ages (15-44, 45-64 and ≥65) and males aged 65 or more. Age differences were statistically significant in both sexes ( $P < 0.001$ )<sup>2</sup>.

Regarding sex differences, the proportion of women utilizing health services was higher than that of men for all age groups, particularly those aged 45-64 years. More older men (≥15) than women utilized self-treatment. Overall, self-treatment was most utilized by young and school children, whereas the highest proportions of 'none' responses were seen among those aged 5-44 years.

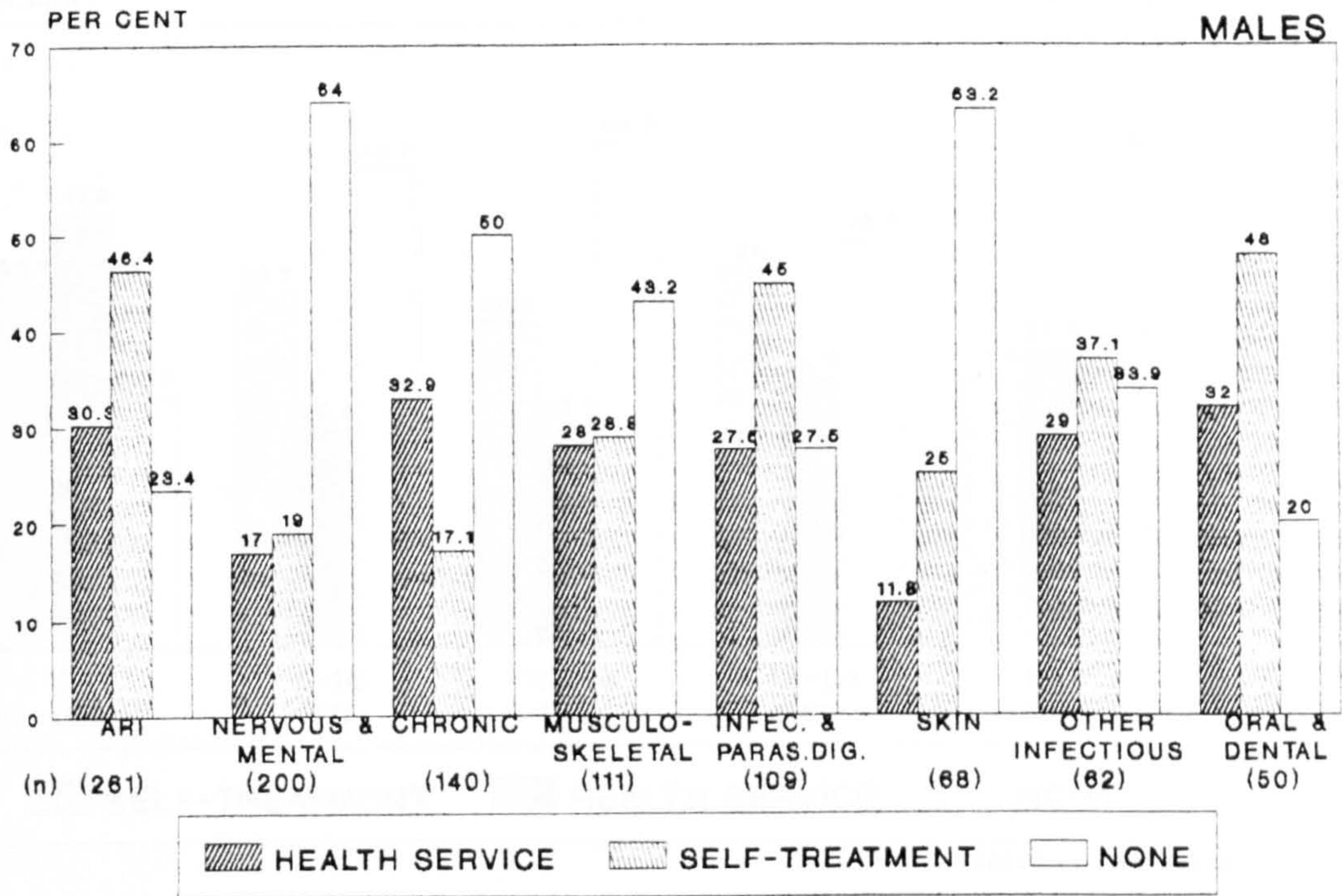
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<sup>1</sup>Reported by their mothers.

<sup>2</sup>The probabilities shown are based on the chi-squared test for independence, otherwise it is indicated.

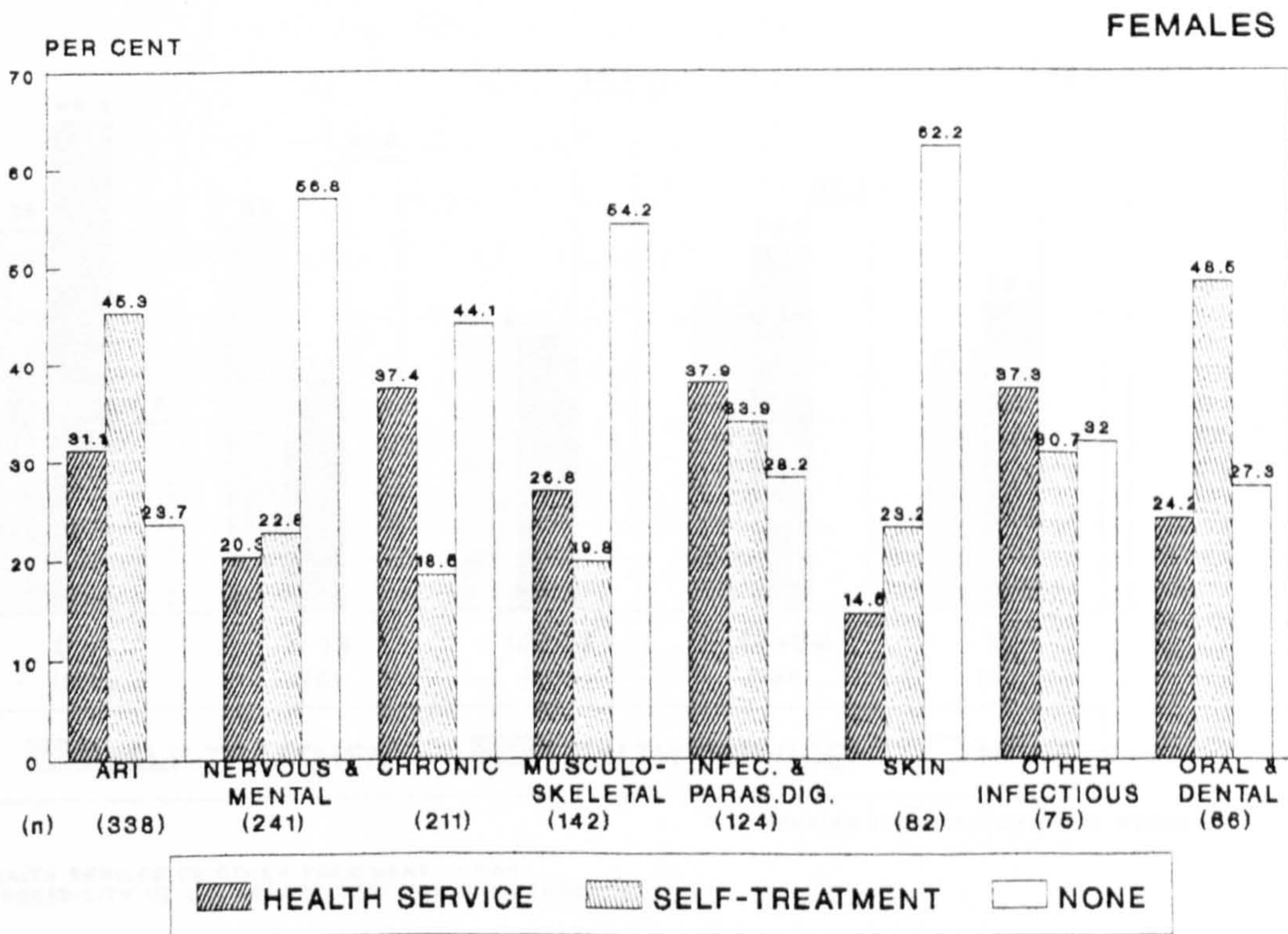


FIGURE VIII.2 TREATMENT UTILIZED BY TYPE OF MAIN ILLNESS REPORTED\*



\*DURING THE TWO WEEKS PRECEDING THE INTERVIEW

HEALTH SERVICE VS OTHER TREAT: P<0.01 (n=1024)

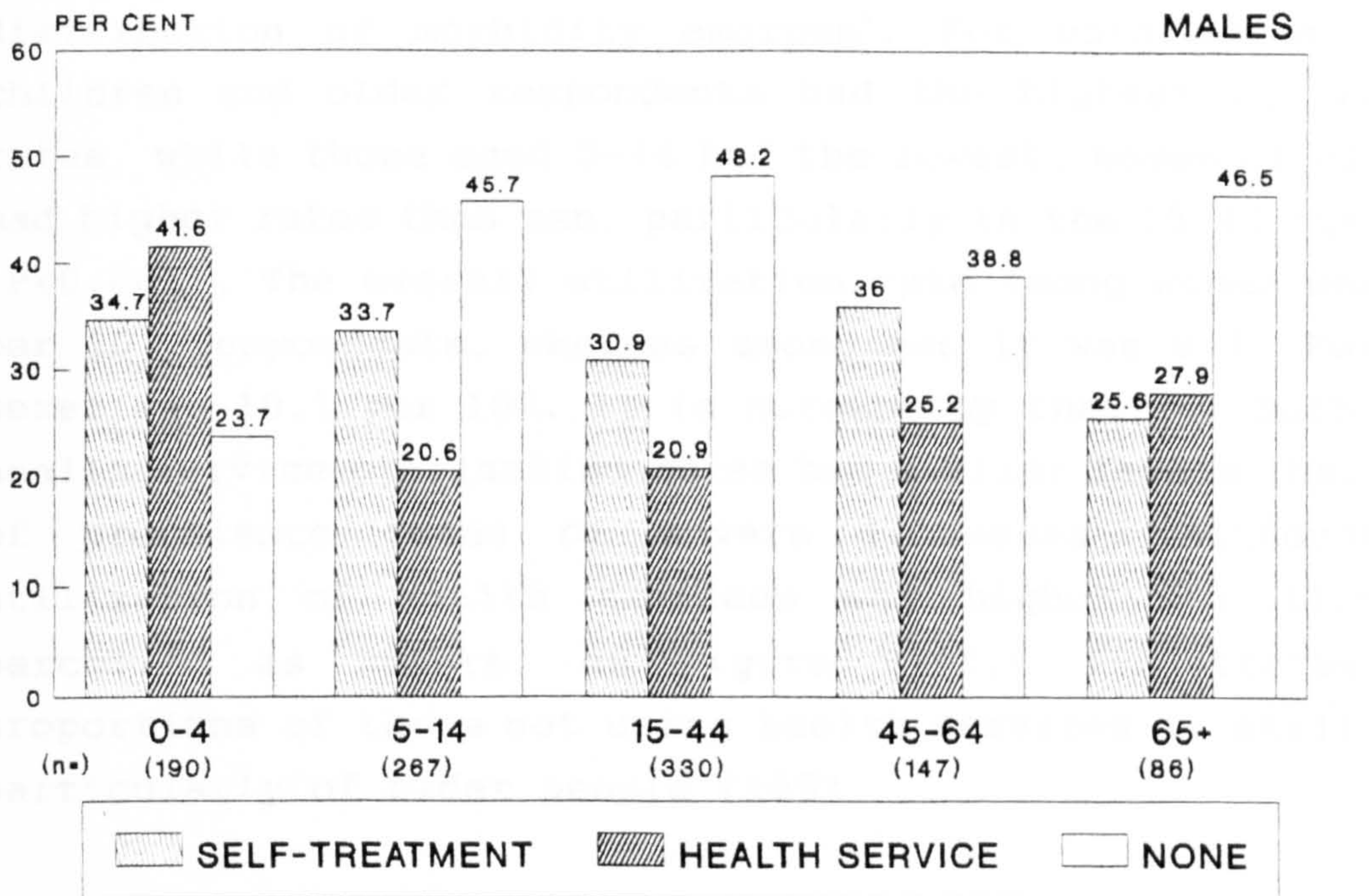


\*DURING THE TWO WEEKS PRECEDING THE INTERVIEW

G&O (n=66): HLTH SERV.(26.6%); SELF-TREAT.(17.4%); NONE(57%)  
HLTH SERV. VS OTHER TREAT:P<0.001 (n=1365)

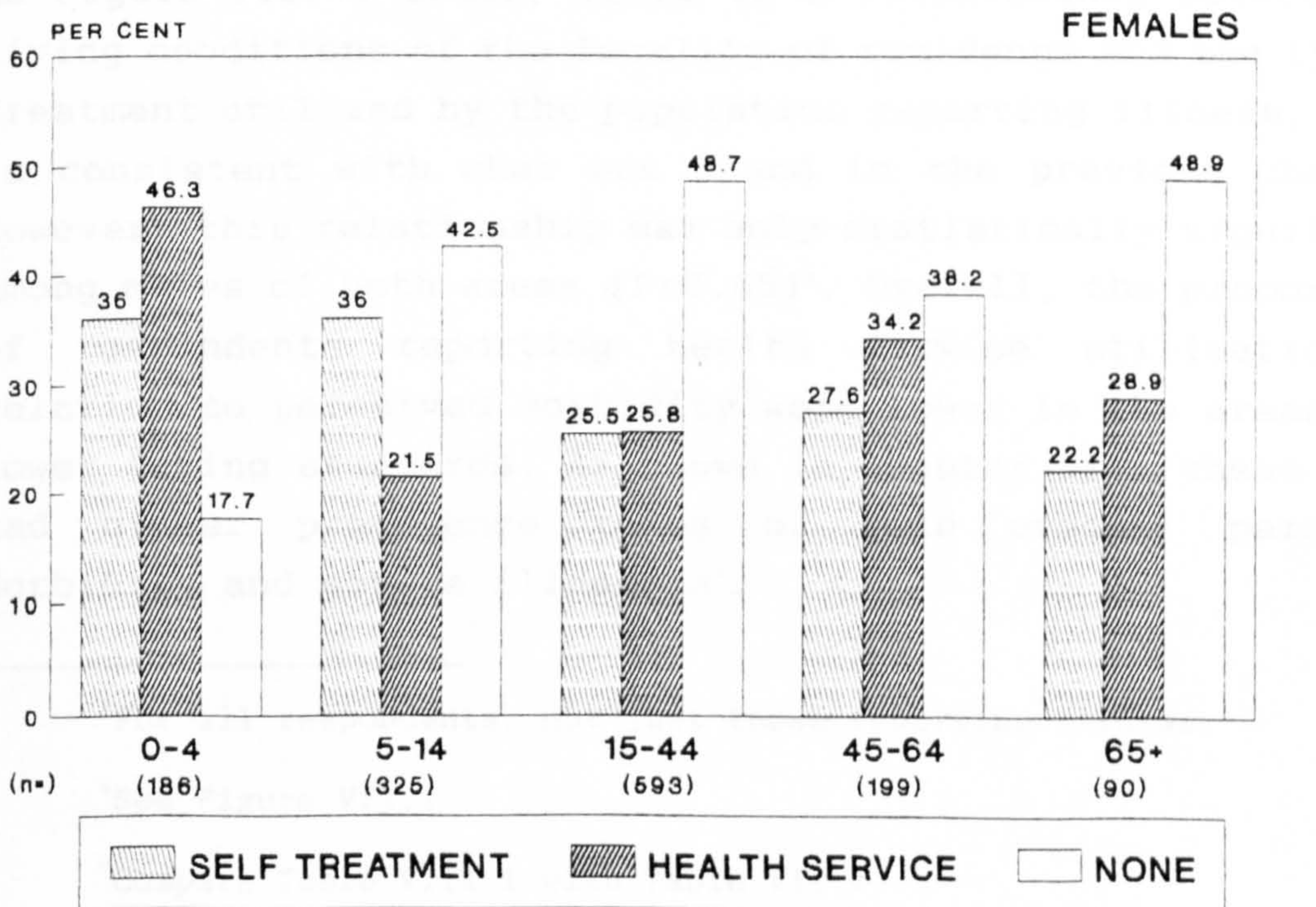


FIGURE VIII.3 TREATMENT UTILIZED BY AGE AND SEX. RESPONDENTS REPORTING ILLNESS\*



\*DURING THE PRECEDING TWO WEEKS

HEALTH SERVICE VS OTHER TREATMENT:  $P < 0.001$   
 PROBABILITY OF CHI-SQUARE TEST FOR INDEPENDENCE



\*DURING THE PRECEDING TWO WEEKS

HEALTH SERVICE VS OTHER TREATMENT:  $P < 0.001$   
 (PROBABILITY OF CHI-SQUARE TEST FOR INDEPENDENCE)



Regarding the health service utilization rates<sup>3</sup> (Table VIII.1), the same picture described for the age/sex distribution of morbidity emerges<sup>4</sup>. For both sexes, young children and older respondents had the highest utilization rates, while those aged 5-44 had the lowest. Women of all ages had higher rates than men, particularly in the 15-44 age group ( $P < 0.001$ ). The overall utilization rate among women was 12.1 per 100 respondents, whereas among men it was 8.1. For both sexes was 10.1 per 100. It is noteworthy that for both sexes health service utilization rates had similar levels than those of prevalence rates of severe illnesses<sup>5</sup>. Although the utilization of health services was higher for illnesses perceived as severe, as Figure VIII.4 illustrates, the proportions of those not using health services is still high, particularly of older people ( $\geq 65$ ).

### C. Socio-geographic differentials

#### Treatment utilized and socio-economic stratum of the locality.

As Figure VIII.5 shows, there is a relationship between the living conditions of the locality of residence and the type of treatment utilized by the population reporting illness, which is consistent with what was found in the previous chapter. However, this relationship was only statistically significant among males of both areas ( $P < 0.05$ )<sup>6</sup>. Overall, the proportions of respondents reporting health service utilization in relation to perceived morbidity were lower in the areas with lower living standards. As shown in Chapter VII, these areas had higher prevalence rates of both overall perceived morbidity and severe illnesses<sup>7</sup>.

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<sup>3</sup>For all respondents, not just those reporting illness.

<sup>4</sup>See Figure VII.1

<sup>5</sup>Compare Table VIII.1 with Table VII.7

<sup>6</sup>Probability based on the chi-square test for trend within each area (health service use versus other treatments).

<sup>7</sup>See Figures VII.2 and VII.15



**TABLE VIII.1 HEALTH SERVICE UTILIZATION RATES\* DURING THE TWO WEEKS PRECEDING THE INTERVIEW BY AGE AND SEX**

Age	Males		Females		p( $\chi^2$ )
	Rate per 100	(n)	Rate per 100	(n)	
0-4	17.5	(452)	20.4	(423)	NS
5-14	5.9	(927)	7.2	(970)	NS
15-44	5.1	(1341)	10.7	(1429)	<.001
45-64	10.2	(363)	18.4	(370)	<.01
≥65	14.0	(171)	17.1	(152)	NS
All	8.1	(3254)	12.1	(3344)	<.001

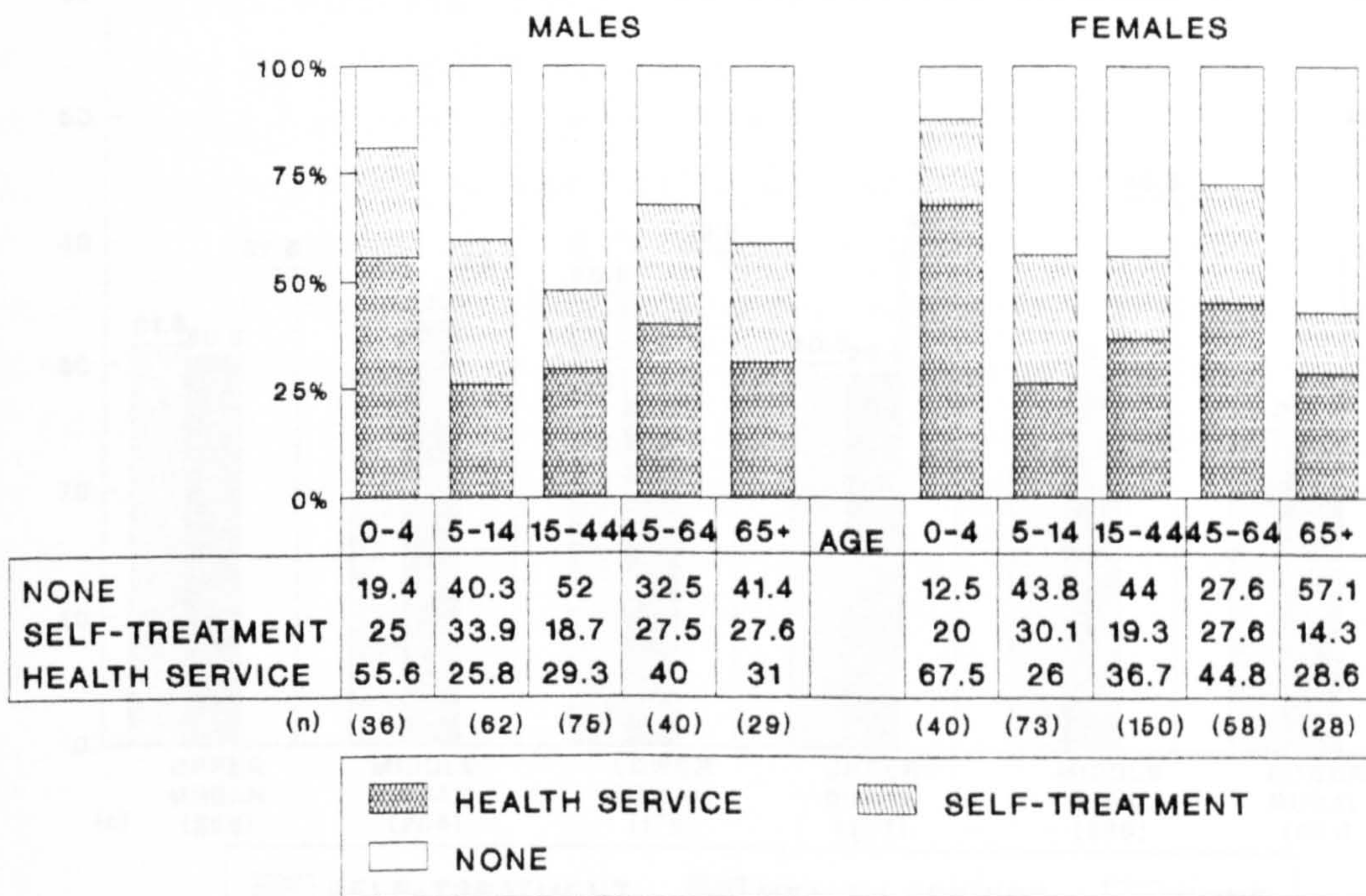
$\chi^2 = 86.18; 4df; p < 0.001$

$\chi^2 = 68.83; 4df; p < 0.001$

Both sexes : 10.1 % (n = 6598)

\* Respondents reporting health service contacts per 100

**FIGURE VIII.4 TREATMENT UTILIZED BY RESPONDENTS REPORTING SEVERE ILLNESSES FOR AGE GROUP\***

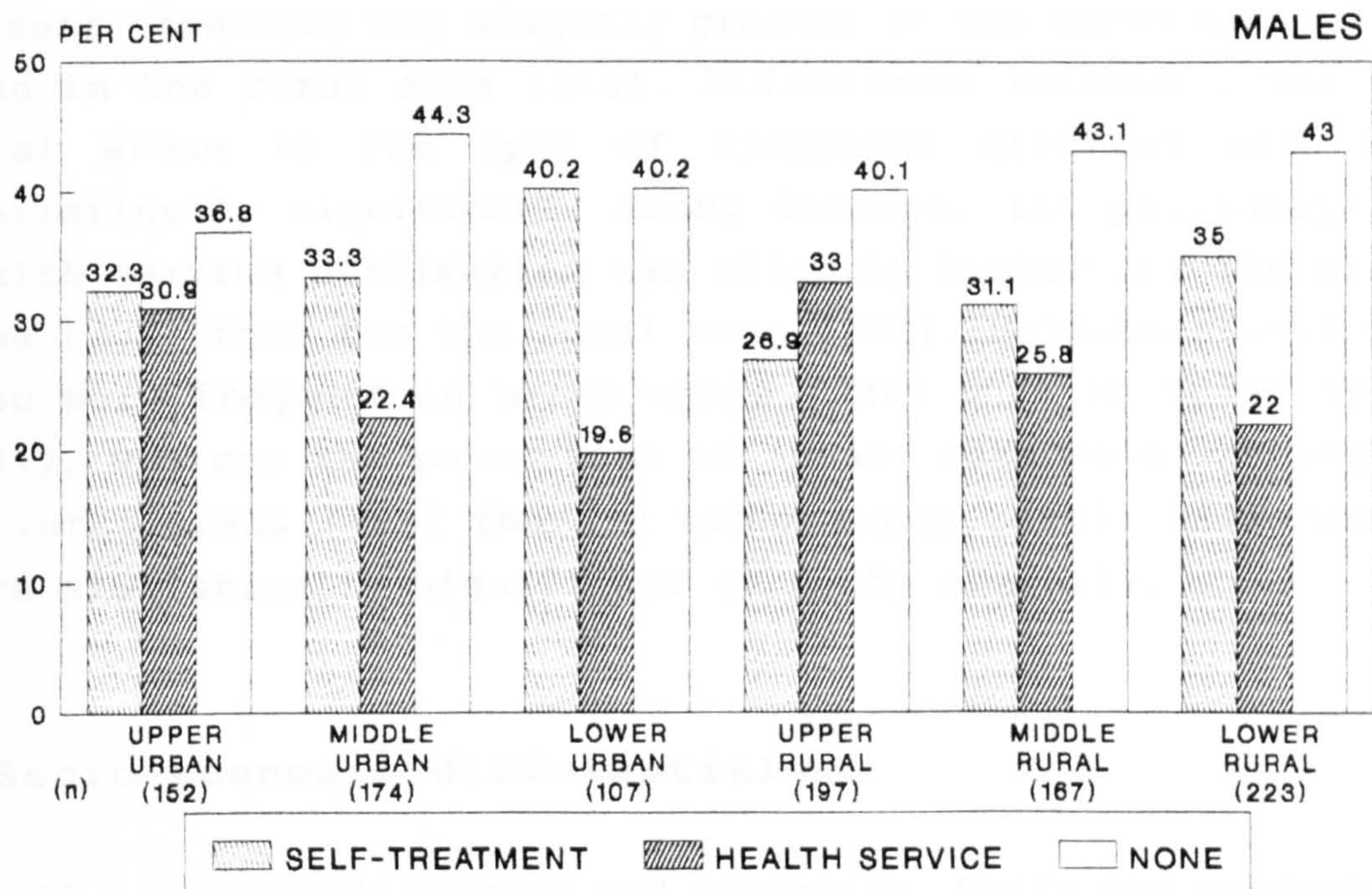


HLTH SERV. VS OTHER TREAT: MALES:P<0.06; FEMALES:P<0.001  
(PROBABILITY OF CHI-SQUARE TEST FOR INDEPENDENCE)

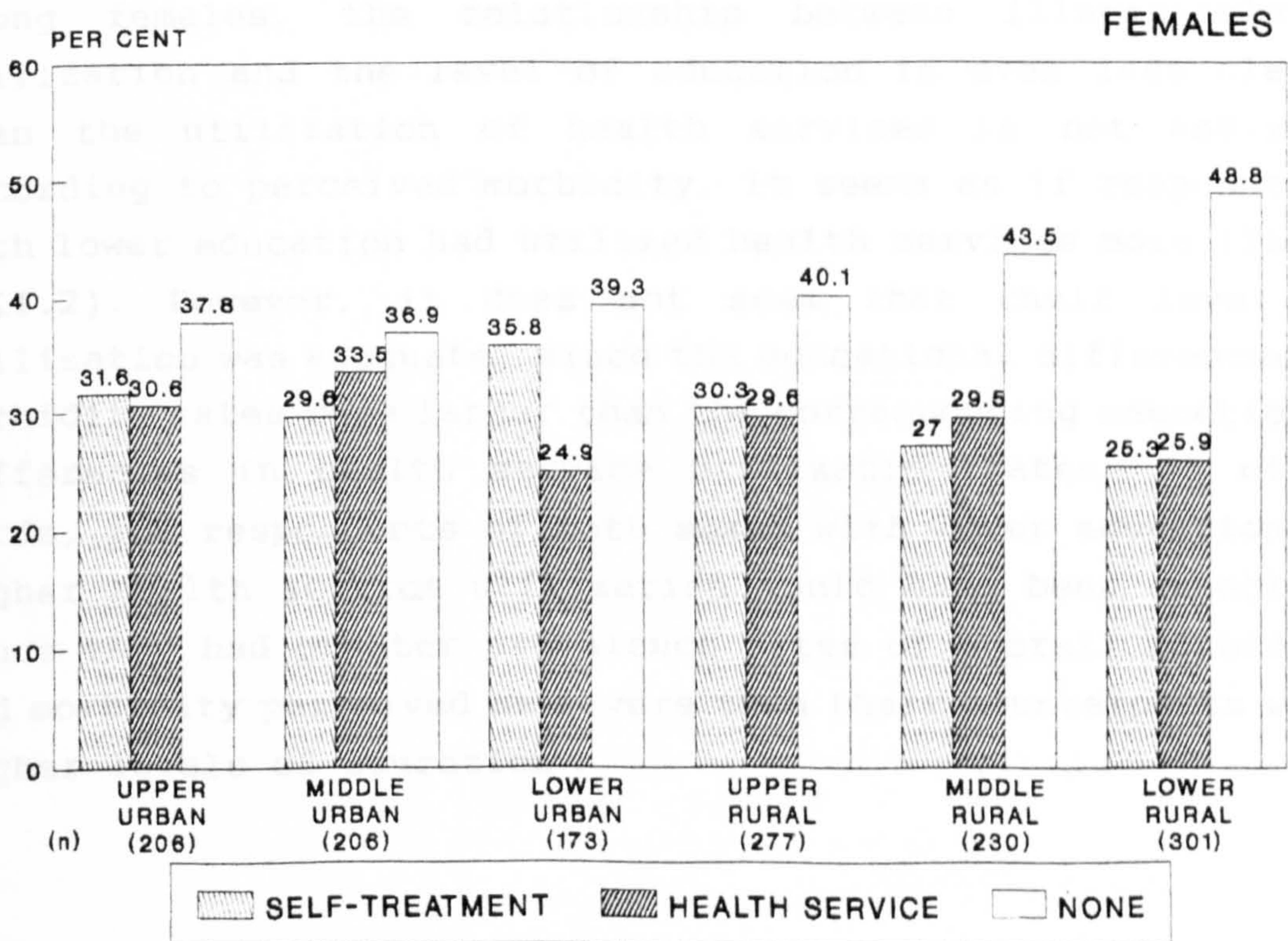
\*DURING THE TWO WEEKS PRECEDING THE INTERVIEW



**FIGURE VIII.5 TREATMENT UTILIZED BY SOCIOECONOMIC STRATUM OF THE LOCALITY RESPONDENTS REPORTING ILLNESS**



HEALTH SERVICE VS OTHER TREAT. (CHI-SQUARE FOR TREND):  
 URBAN STRATA: P<0.05; RURAL STRATA: P<0.05



HEALTH SERVICE VS OTHER TREAT. (CHI-SQUARE TEST FOR TREND):  
 URBAN STRATA: N.B.; RURAL STRATA: N.B.



Urban/rural differences. Among males, while the percentage of illness-related health service utilization was higher for the rural area (27%) than for the urban area (25%), the percentage of self-treatment was slightly greater in the urban area (35%) than in the rural area (31%). Differences between urban and rural areas in the type of treatment utilized were not statistically significant. Among females, the percentage of health service utilization was slightly higher for the urban area (30%) than for the rural area (28%). Self-treatment was also more frequent in urban areas (32%) than in rural areas (28%), whereas the percentage of 'none' responses was bigger in rural areas (44%) than in urban areas (38%). Differences were statistically significant ( $P < 0.05$ , overall).

#### D. Socio-economic differentials

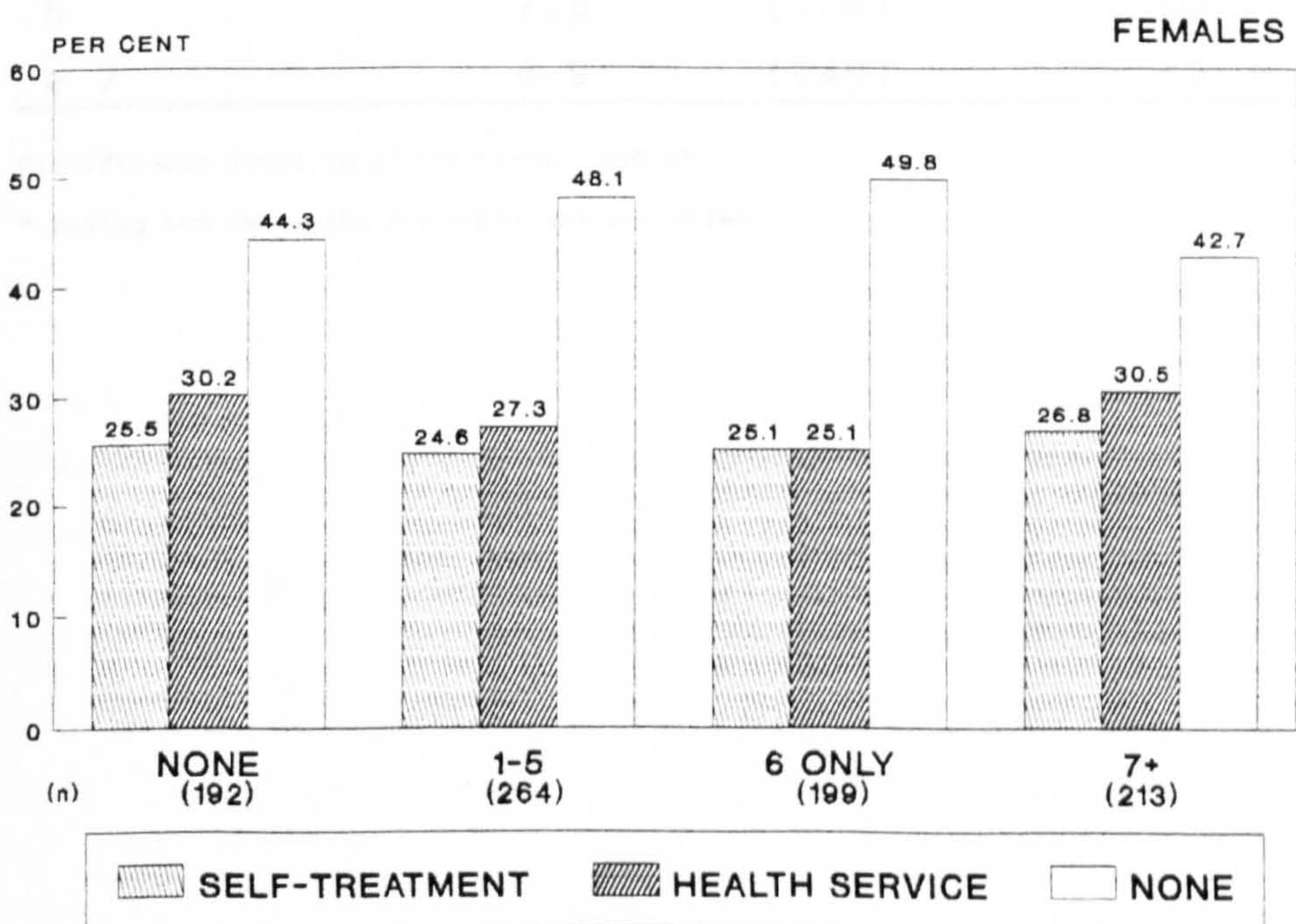
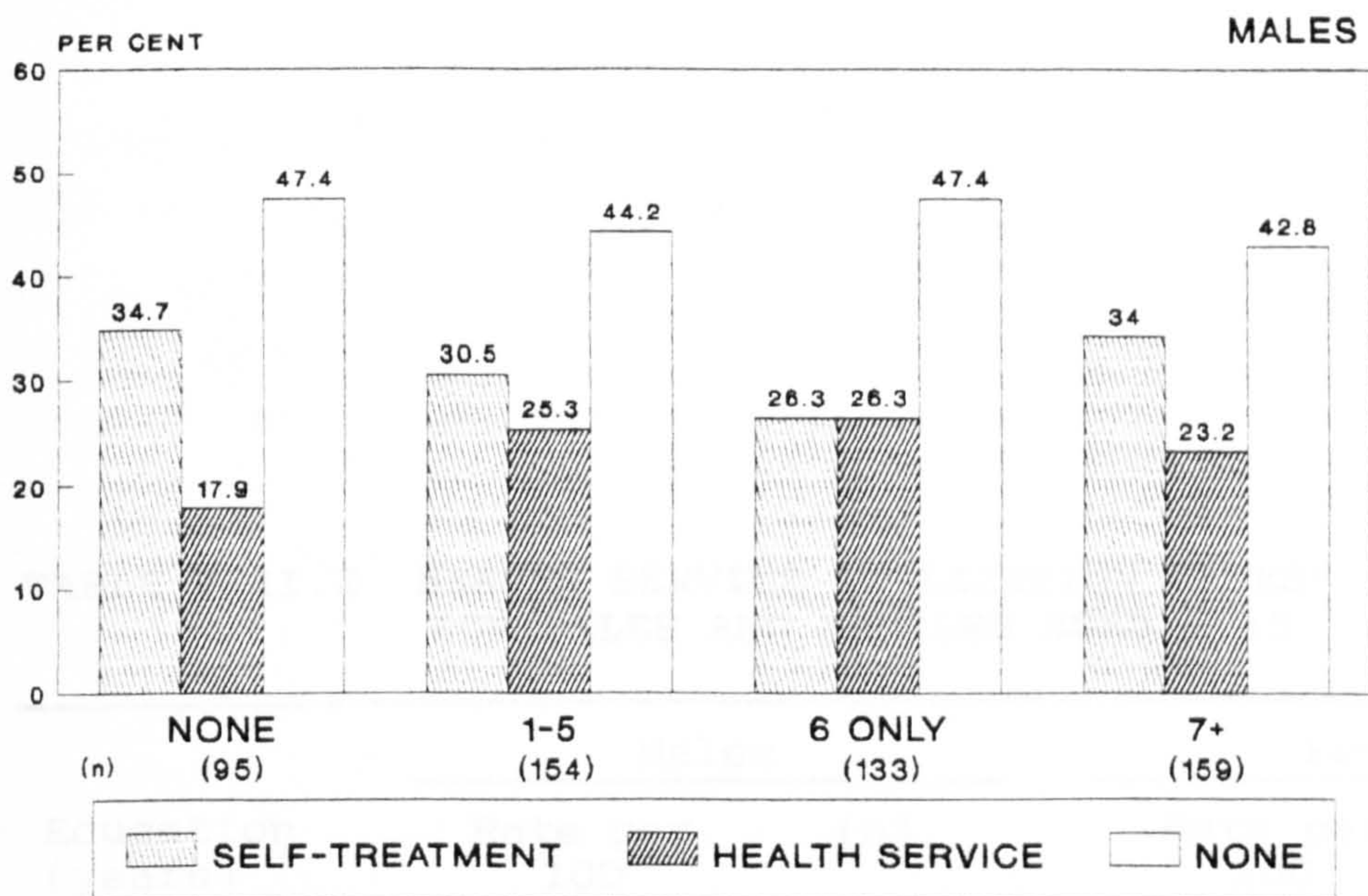
Health service utilization and education. While the percentage of health service utilization among males who reported morbidity was higher for those having more education, the difference was not statistically significant (Figure VIII.6). Among females, the relationship between illness-related utilization and the level of education is even less clear. When the utilization of health services is not analysed according to perceived morbidity, it seems as if respondents with lower education had utilized health services more (Table VIII.2). However, it does not seem that their level of utilization was adequate, since the educational differences in morbidity rates were larger than the corresponding educational differences in health service utilization rates. In other words, for respondents of both sexes with lower education, a higher health service utilization would have been expected, since they had greater prevalence rates of overall morbidity and morbidity perceived as severe than their counterparts with higher levels of education<sup>8</sup>.

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<sup>8</sup>See Figures VII.4 and VII.16, and Table VII.9.



FIGURE VIII.6 TREATMENT UTILIZED BY EDUCATIONAL LEVEL FOR RESPONDENTS AGED 15+ REPORTING ILLNESS\*



\*DURING THE TWO WEEKS PRECEDING THE INTERVIEW

**TABLE VIII.2 HEALTH SERVICE UTILIZATION RATES\* BY EDUCATION FOR MALES AND FEMALES AGED ≥ 15**

Education (years)	Males		Females	
	Rate per 100	(n)	Rate per 100	(n)
None	8.6	(198)	16.6	(349)
1-5	9.1	(427)	14.6	(495)
6	7.4	(474)	10.7	(468)
≥ 7	4.9	(749)	10.3	(632)

Significance level on  $\chi^2$  for trend:  $p < 0.05$

$p < 0.001$

\* During the two weeks preceding the interview



Health service utilization and occupation. Males with an agricultural occupation utilized health services less in response to perceived morbidity than their counterparts with a non-agricultural occupation (Figure VIII.7). Differences between occupations were higher in the 15-44 and  $\geq 65$  age groups. For instance, the proportion of males aged 15-44 years with a non-agricultural occupation using a health service during the two weeks preceding the interview, was almost twice that of their counterparts with an agricultural occupation ( $P < 0.05$ ). As Figure VIII.7 shows, among males with agricultural occupations self-treatment and 'none' were the predominant responses to morbidity. Among agricultural occupations, the proportion of peasant land-holders utilizing health services (20.5%;  $n=215$ ) was 1.6 times that of waged labourers (12.5%;  $n=56$ ).

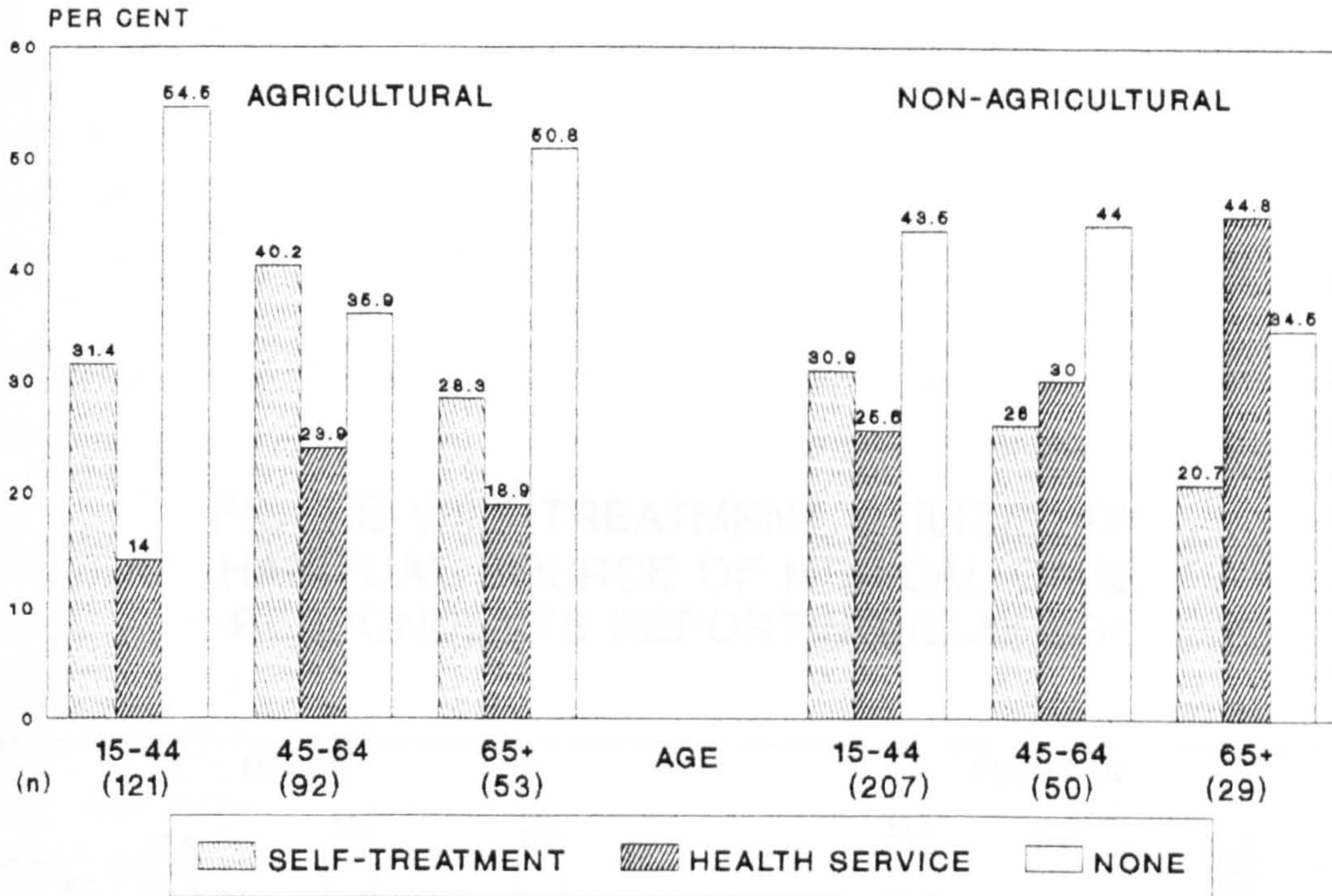
Regarding differences in health service utilization relative to perceived morbidity among females, it was found that women working inside their homes made slightly less use of health services than their counterparts working outside their homes. However these differences were not statistically significant (data not shown).

Health service utilization and entitlement to social security. Figure VIII.8 shows that in proportion to reported illness, the uninsured population made less use of health services than the insured population. For example, among females the proportion of those without social security who utilized health services was 1.7 times lower than those with social security ( $P < 0.001$ ). Among males similar statistically significant differences were found.

Health service utilization and habitual source of medical care. The same picture described above emerges: in proportion to reported illness, the population who usually goes to state's health establishments or to private medical services made less use of health services than the people who usually utilize the social security services (Figure VIII.9).



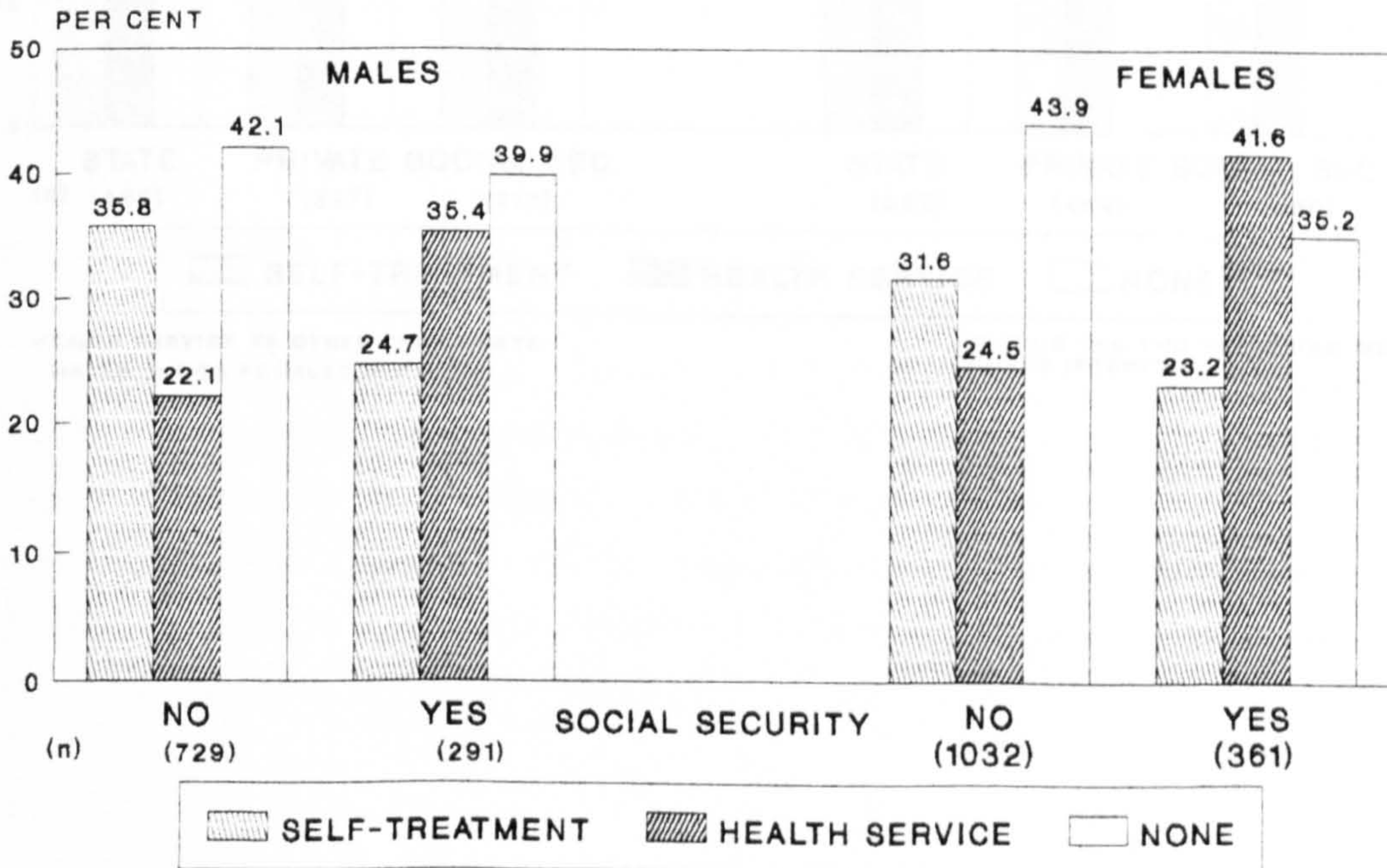
**FIGURE VIII.7 TREATMENT UTILIZED BY OCCUPATION, MALES REPORTING ILLNESS\***



HEALTH SERVICE VS OTHER TREATMENT:  
 P<0.05 (15-44); N.S. (44-65); P<0.05 (65+); P<0.05 (ALL)

\*DURING THE TWO PRECEDING WEEKS TO THE INTERVIEW

**FIGURE VIII.8 TREATMENT UTILIZED BY ENTITLEMENT TO SOCIAL SECURITY RESPONDENTS REPORTING ILLNESS\***

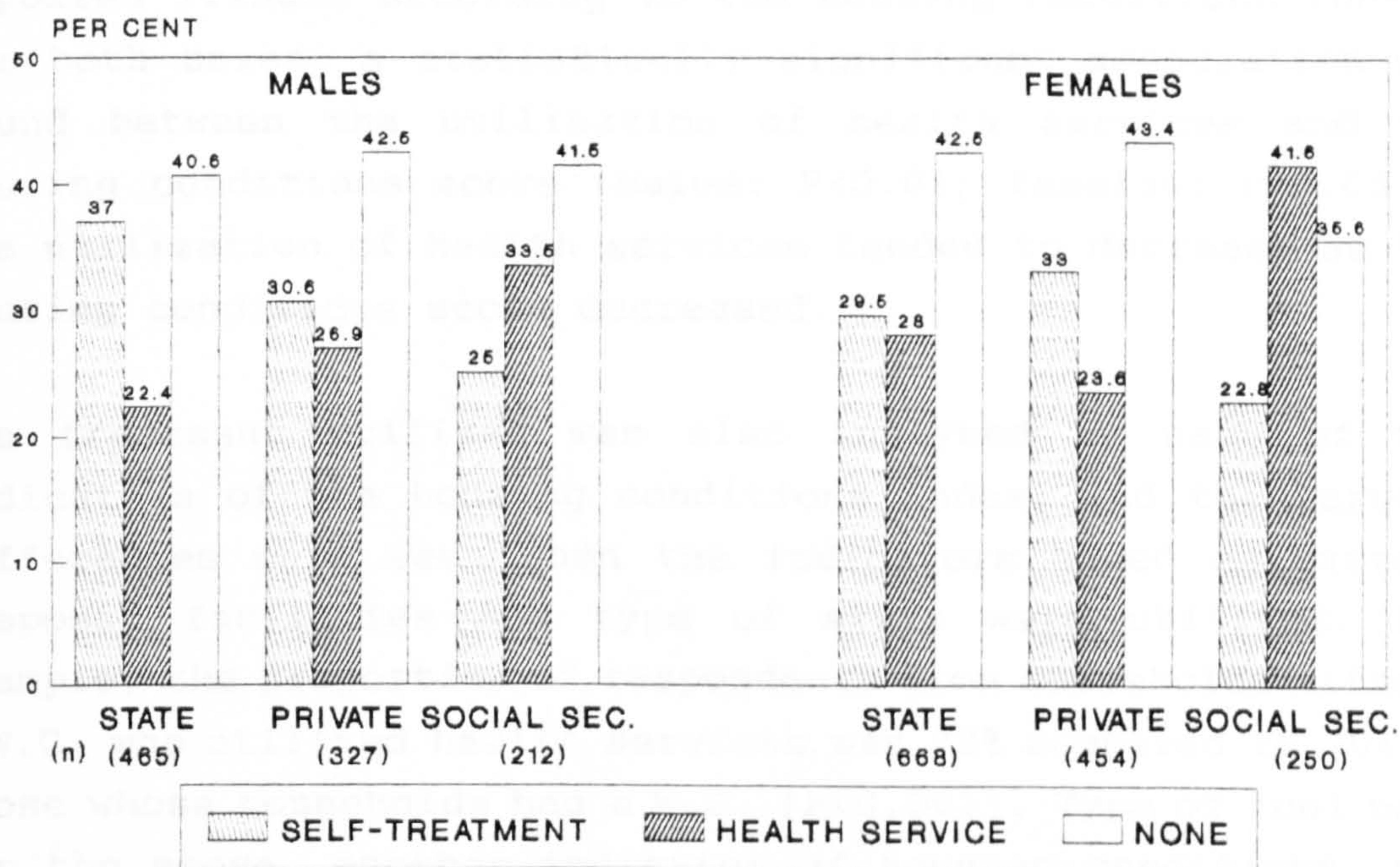


HEALTH SERVICE VS OTHER TREATMENTS:  
 MALES: P<0.001; FEMALES: P<0.001

\*DURING THE TWO PRECEDING WEEKS TO THE INTERVIEW



**FIGURE VIII.9 TREATMENT UTILIZED BY HABITUAL SOURCE OF MEDICAL CARE RESPONDENTS REPORTING ILLNESS\***



HEALTH SERVICE VS OTHER TREATMENTS:  
 MALES: P<0.01; FEMALES: P<0.001

\*DURING THE TWO PRECEDING WEEKS TO THE INTERVIEW



Regarding self-treatment, those using the social security establishments as their main source of care made less use of home remedies and/or medicines without prescription. The relationship between illness-related health service use and habitual source of medical care (health service use versus other treatments) was found to be statistically significant among males ( $P < 0.01$ ) and females ( $P < 0.001$ ).

Health service utilization and housing conditions. The overall pattern observed was that those respondents with poorer housing conditions made less use of health services in relation to perceived morbidity. Figure VIII.10 shows the distribution of the health care actions in relation to reported illness according to the housing conditions index<sup>9</sup>. For both sexes, a statistically significant association was found between the utilization of health services and the housing conditions score (males:  $P < 0.01$ ; females:  $P < 0.05$ )<sup>10</sup>. The utilization of health services tended to decrease as the housing conditions score decreased.

The treatment utilized was also analysed by each of the indicators of the housing conditions index, and the largest differences were seen when the indicators based on excreta disposal facilities and type of stove were utilized. For example, the proportion of respondents from households without a W.C. who utilized health services was 22% compared to 30% of those whose households had a W.C. ( $P < 0.001$ ). Type of fuel used for the stove, another indicator of housing conditions, was also associated to the level of health service usage in relation to perceived morbidity. For instance, the proportion of respondents, whose households did not have a gas stove, who contacted a health service in response to their illnesses was only 16%, whereas the proportion of those whose households had a gas stove, was 27% ( $P < 0.001$ ).

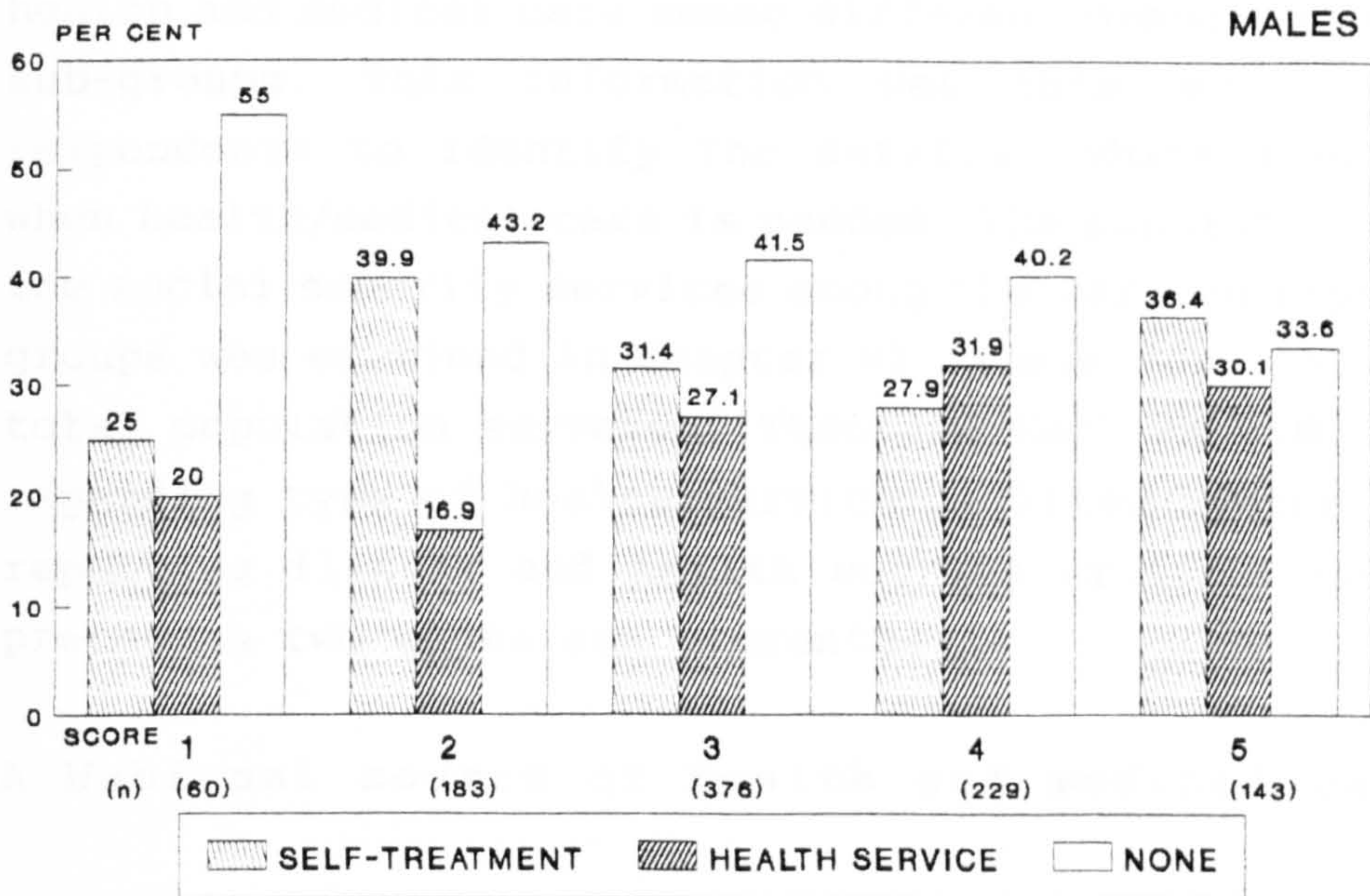
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<sup>9</sup>For description of this index, see Chapter V.

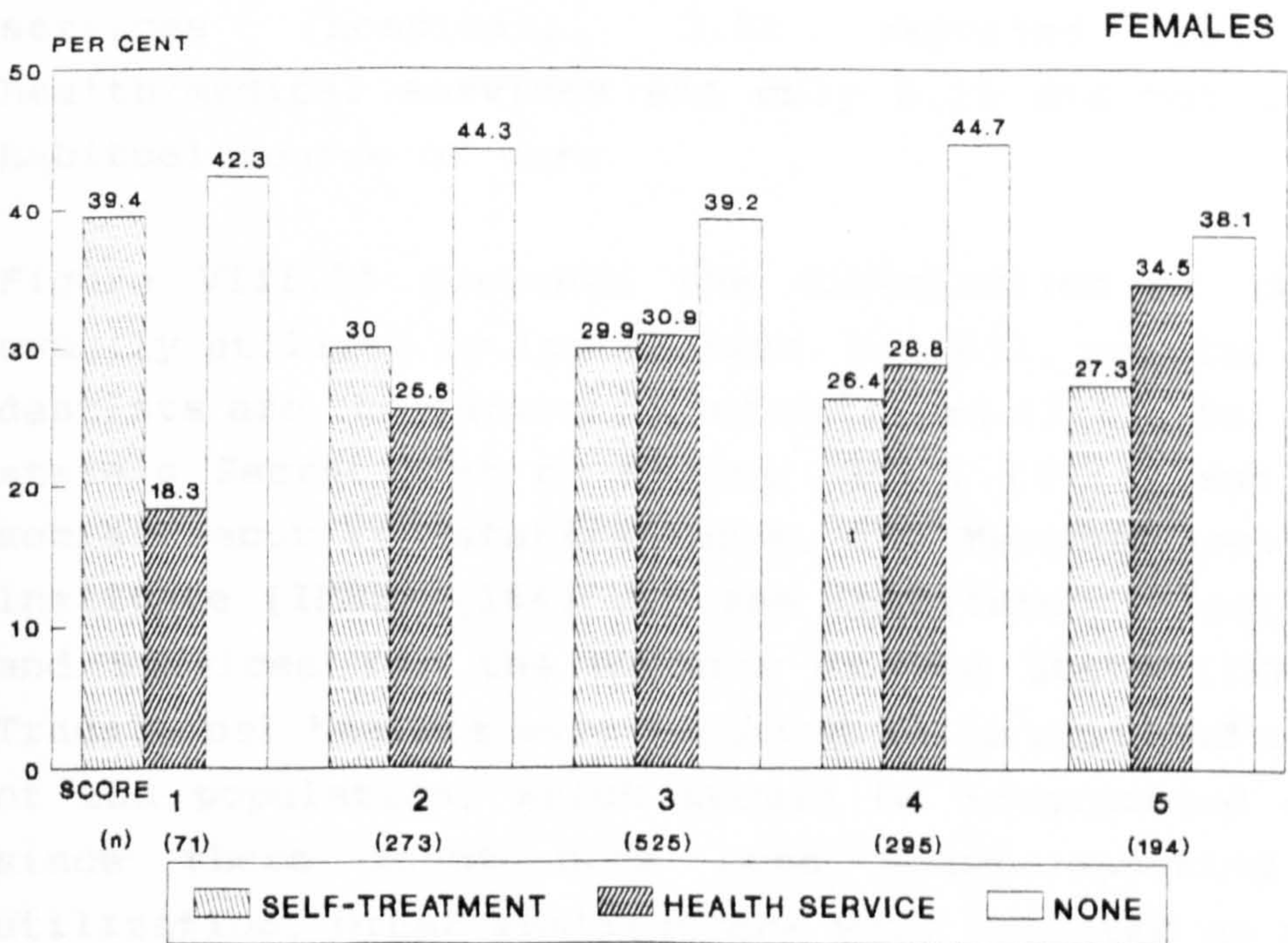
<sup>10</sup>Probabilities based on the chi-square test for trend.



FIGURE VIII.10 TREATMENT UTILIZED BY HOUSING CONDITIONS SCORE, RESPONDENTS REPORTING ILLNESS



HEALTH SERVICES VS SELF-TREAT. & NONE: P<0.01 (CHI-SQUARE TEST FOR TREND).



HEALTH SERVICES VS SELF-TREAT. & NONE: P<0.05 (CHI-SQUARE TEST FOR TREND).



## 2. Type of health services utilized

This section, in first place, analyses the habitual source of health and medical care among different demographic and social sub-groups. This information was obtained by asking the respondents to identify the service<sup>11</sup> where they usually go when health/medical care is needed. The population coverage of the social security services among the various population sub-groups was examined in Chapter VI. These results refer to the total population surveyed. Then, in Section 2.B, the results regarding type of health service utilized by the respondents reporting illness and health service utilization during the preceding two weeks are presented.

### A. Habitual source of health and medical care

Population coverage by level of care and institution. The great majority (94.4%) of the people reported utilization of primary care services. Only 1.7% utilized secondary care services (hospital), 3.8% reported not utilizing health/medical services and only 0.1% did not indicate the habitual source of care.

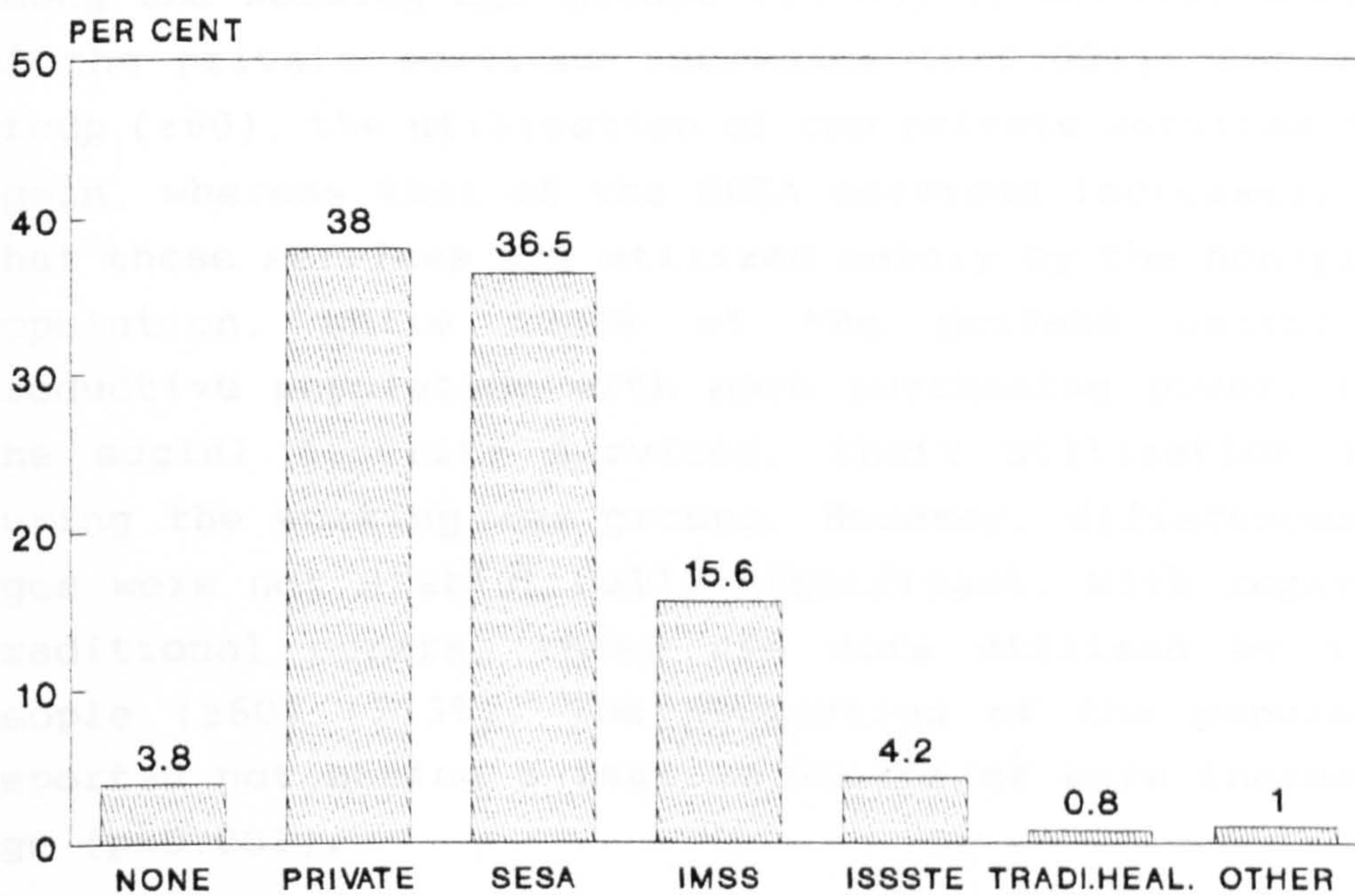
Figure VIII.11 presents the distribution of the services usually utilized by institution. Overall, private doctors and dentists are the services most utilized (38%), followed by the state's Secretariat of Health (SESA) (37%), and the bigger social security establishments, the Mexican Social Security Institute (IMSS) (16%) and the Institute of Social Security and Services for the Workers of the State (ISSSTE) (4%). Traditional healers were reported to be utilized only by 0.8% of the population, which should be interpreted cautiously, since there might have been under-reporting of their utilization. Other institutions were reported as main source

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<sup>11</sup>Including traditional healer, herbalist, 'brujo', 'huesero' (bone-setter), etc.



**FIGURE VIII.11 HABITUAL SOURCE OF HEALTH AND MEDICAL CARE**



(n=6622)

of care by only one per cent of the population. Of the 38% of the population regularly utilizing the SESA services, 96% utilizes the primary health centres of this institution. Of the 20% of the population usually going to the social security institutions, 96% corresponds to the primary care establishments of these institutions. Unimportant differences between sexes were found between the different institutions.

Habitual source of care by age<sup>12</sup>. The private doctor was the principal habitual source of care of the population aged  $\geq 15$ , whereas the SESA was the main source for those aged under 15 years (Figure VIII.12). The use of the SESA services decreases among the working age groups (15-60) ( $P < 0.001$ ), whereas that of the private services increases ( $P < 0.001$ ). For the older group ( $\geq 60$ ), the utilization of the private services decreases again, whereas that of the SESA services increases. It seems that these services are utilized mainly by the non-productive population, while those of the private sector by the productive population with more purchasing power. Regarding the social security services, their utilization increases during the working age groups. However, differences between ages were not statistically significant. With regard to the traditional curers, these are more utilized by the older people ( $\geq 60$ ) (1.3%). The proportion of the population who reported not having a regular source of care increased with age ( $p < 0.001$ ).

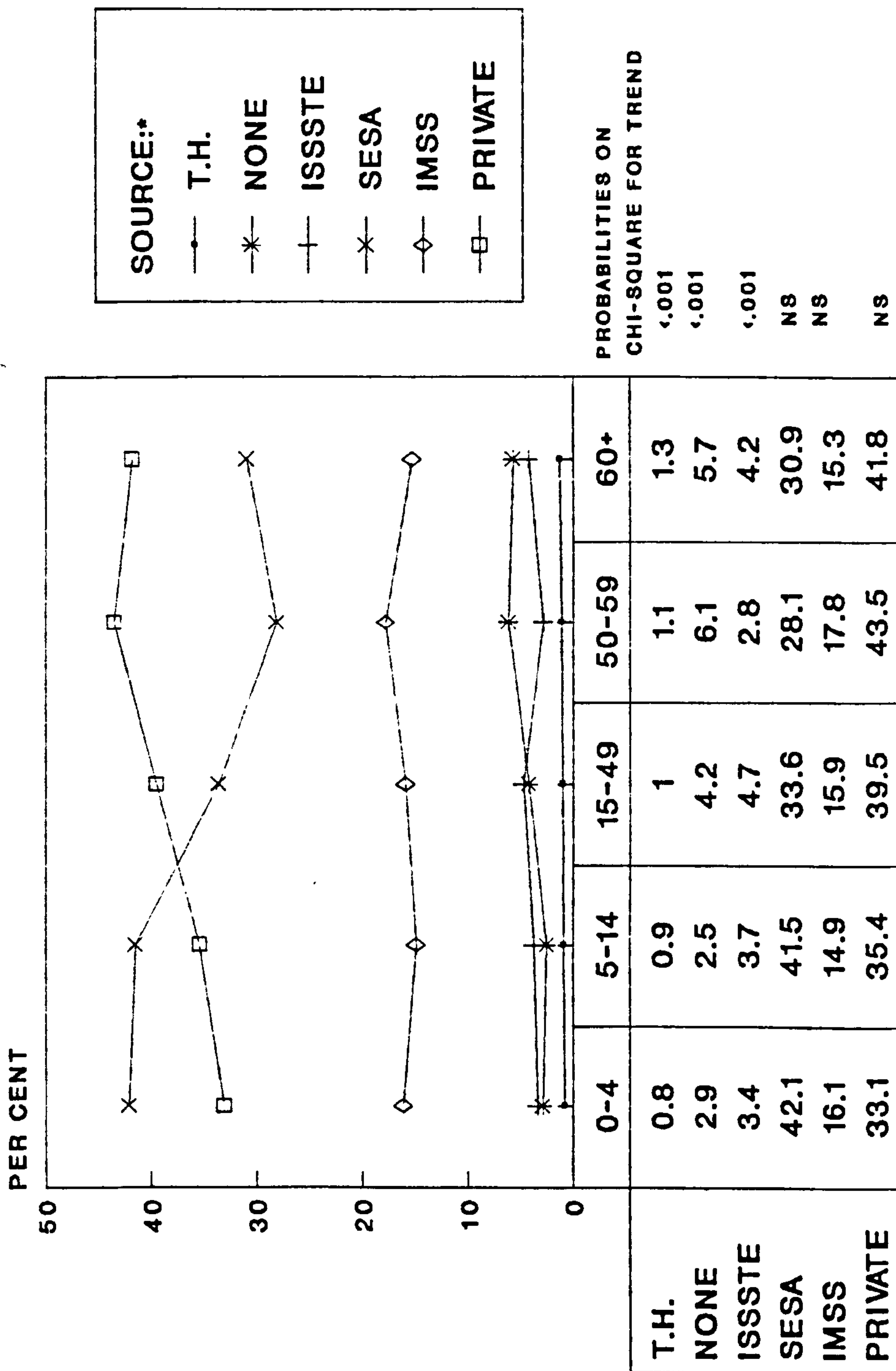
Habitual source of care and living standards of the locality of residence. Figure VIII.13 shows that the habitual source of care was related to the living standards of the area of residence. For instance, the utilization of the SESA services is inversely related to the living conditions of the different areas ( $P < 0.001$ , for both areas), whereas that of the private services and social security services is directly related to the living conditions ( $P < 0.001$ , for both areas). The highest

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<sup>12</sup>The p values given in this sub-section are based on the chi-square test for trend.



**FIGURE VIII.12 HABITUAL SOURCE OF HEALTH AND MEDICAL CARE BY AGE GROUP**

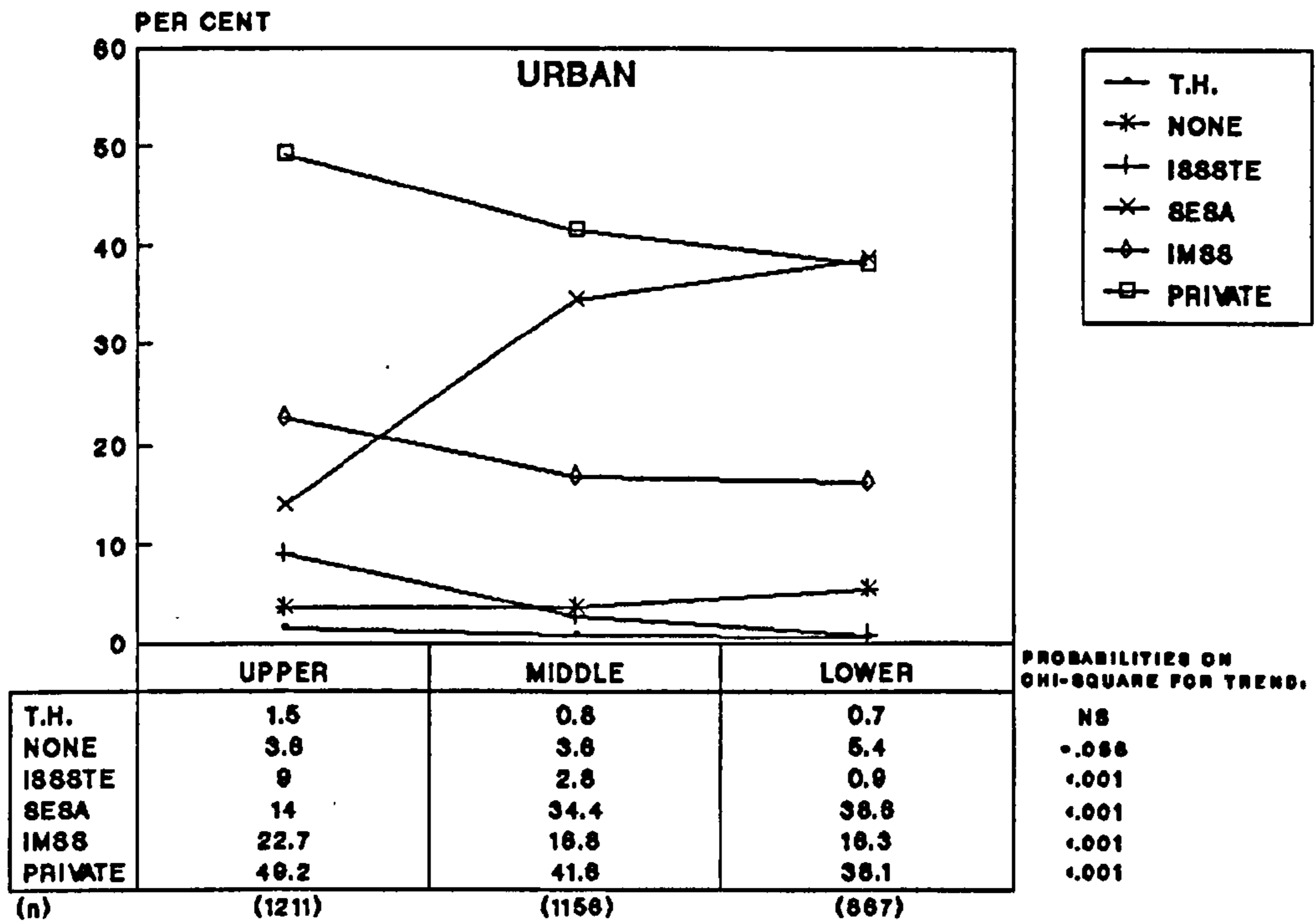


(n) (868) (1893) (2978) (357) (476)

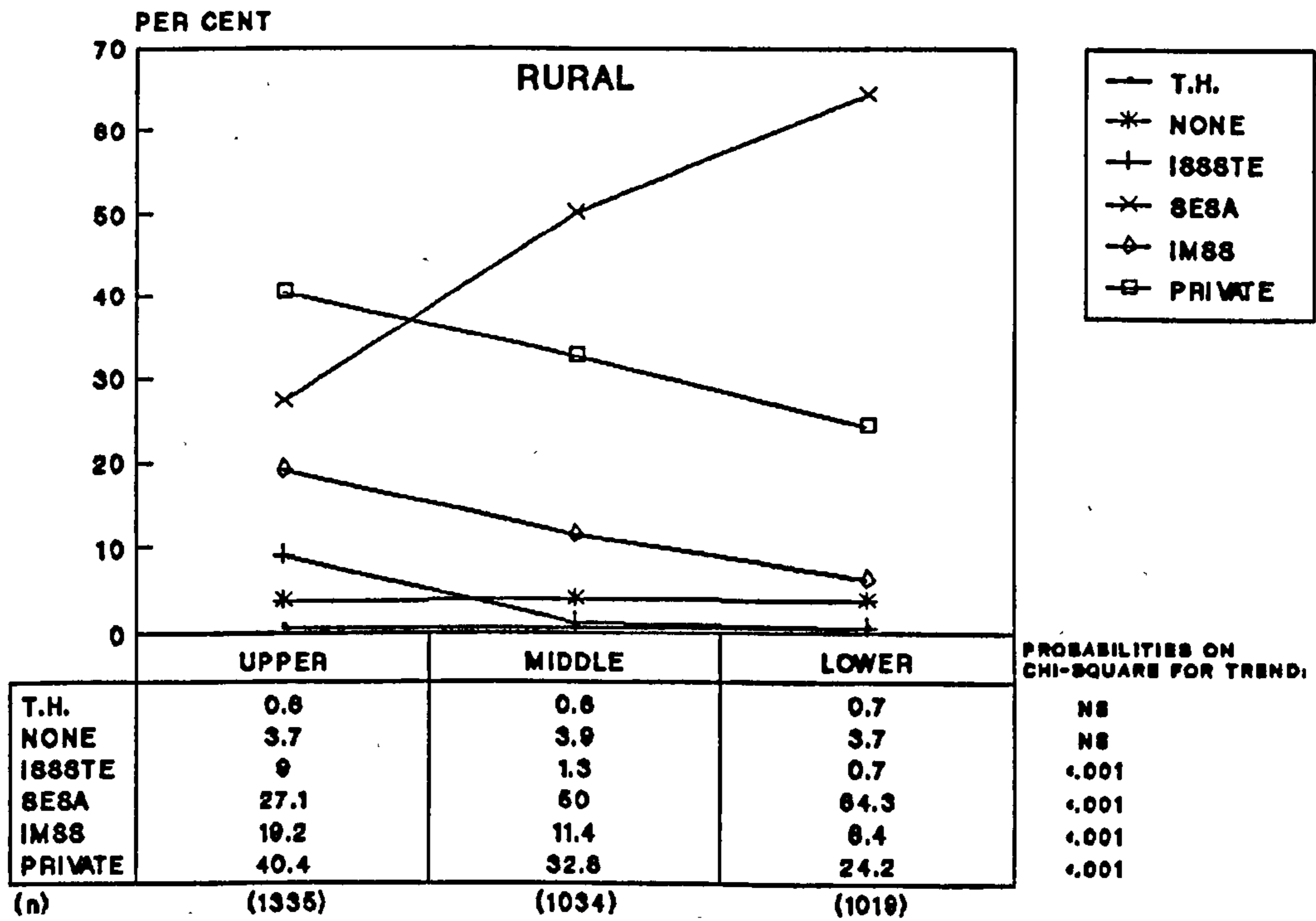
T.H.: TRADITIONAL HEALERS

\*IT DOES NOT INCLUDE 'NON-SPECIFIED'

**FIGURE VIII.13 HABITUAL SOURCE OF CARE BY SOCIO-ECONOMIC STRATUM OF THE LOCALITY**



T.H. = TRADITIONAL HEALERS



T.H. = TRADITIONAL HEALERS



peaks in the utilization of the private and social security services were found in the upper strata, particularly urban, whereas their lowest level were seen in the lower strata. The reverse picture is seen for the utilization of the SESA services.

Habitual source of care and education. The same picture described above emerges (Figure VIII.14). Both the private services and the social security services, particularly the ISSSTE, were sources of care most utilized by higher educational groups, whereas the state's services were mainly utilized by lower educational groups. As the level of education increases, the utilization of SESA services decreases ( $P < 0.001$ , for both sexes combined). For example, the proportion of utilization of SESA services among those with university studies (8%) is five times lower than that of those with 1-5 years of schooling (41%). The difference between the utilization of the private services and SESA services widened with increasing the level of education. For instance, among those with no schooling the absolute difference was only 5%, while it was 46% among those with university education.

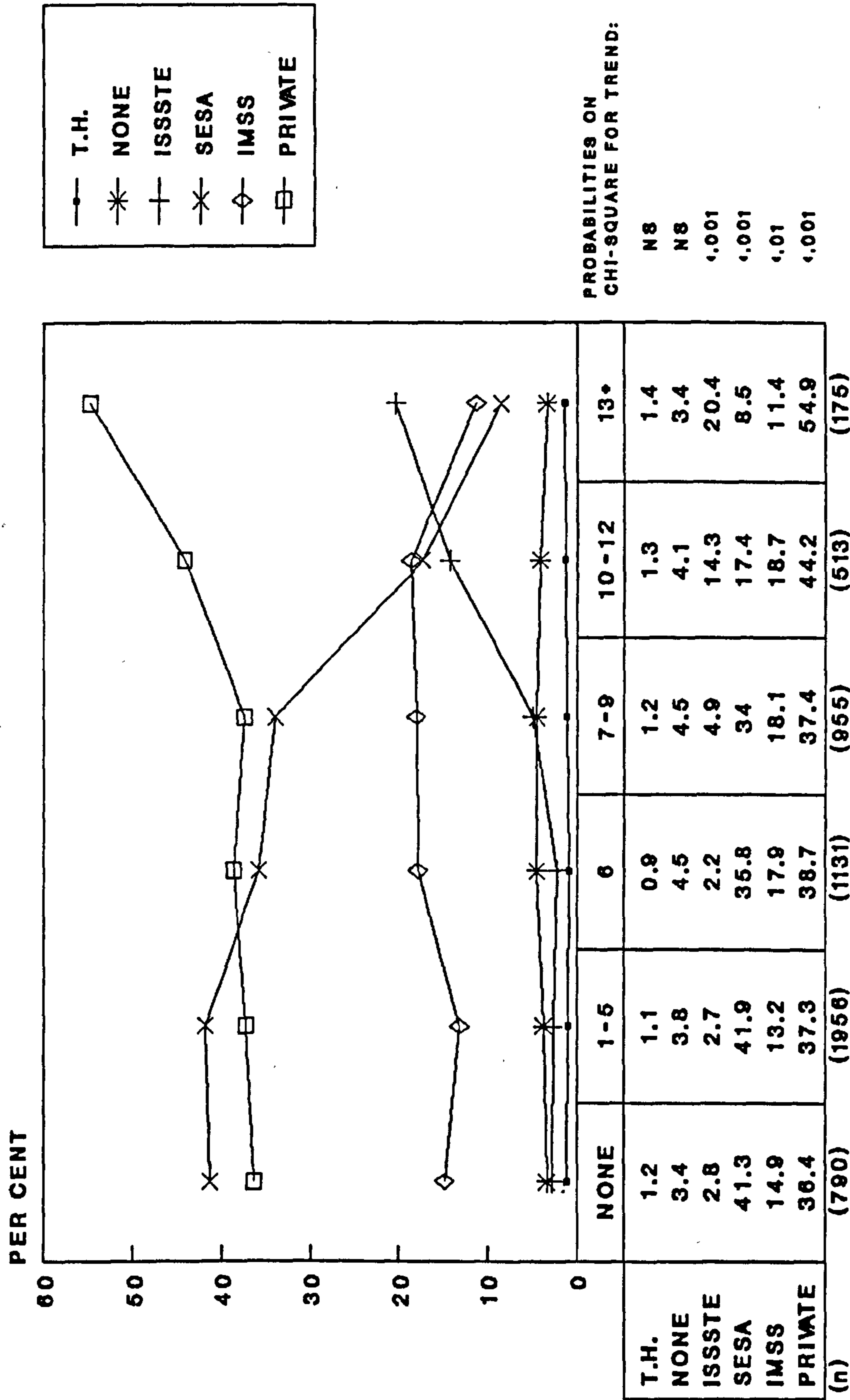
Regarding the social security institutions, steep differences were observed among the various educational categories. For example, the percentage of those utilizing the ISSSTE services among the professional respondents (20%) was over seven times higher than that of those with no schooling (2.8%) ( $P < 0.001$ )<sup>13</sup>.

Habitual source of care and occupation. The results obtained from the survey, show that the habitual source of care is related to the occupation (Figure VIII.15). The private practitioner was the main habitual source of care reported by the majority of the occupations: 70% among craftsmen, 64% among those occupied in trade activities, and between 37% and

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<sup>13</sup>The p values given in this sub-section are based on the chi-square test for trend.

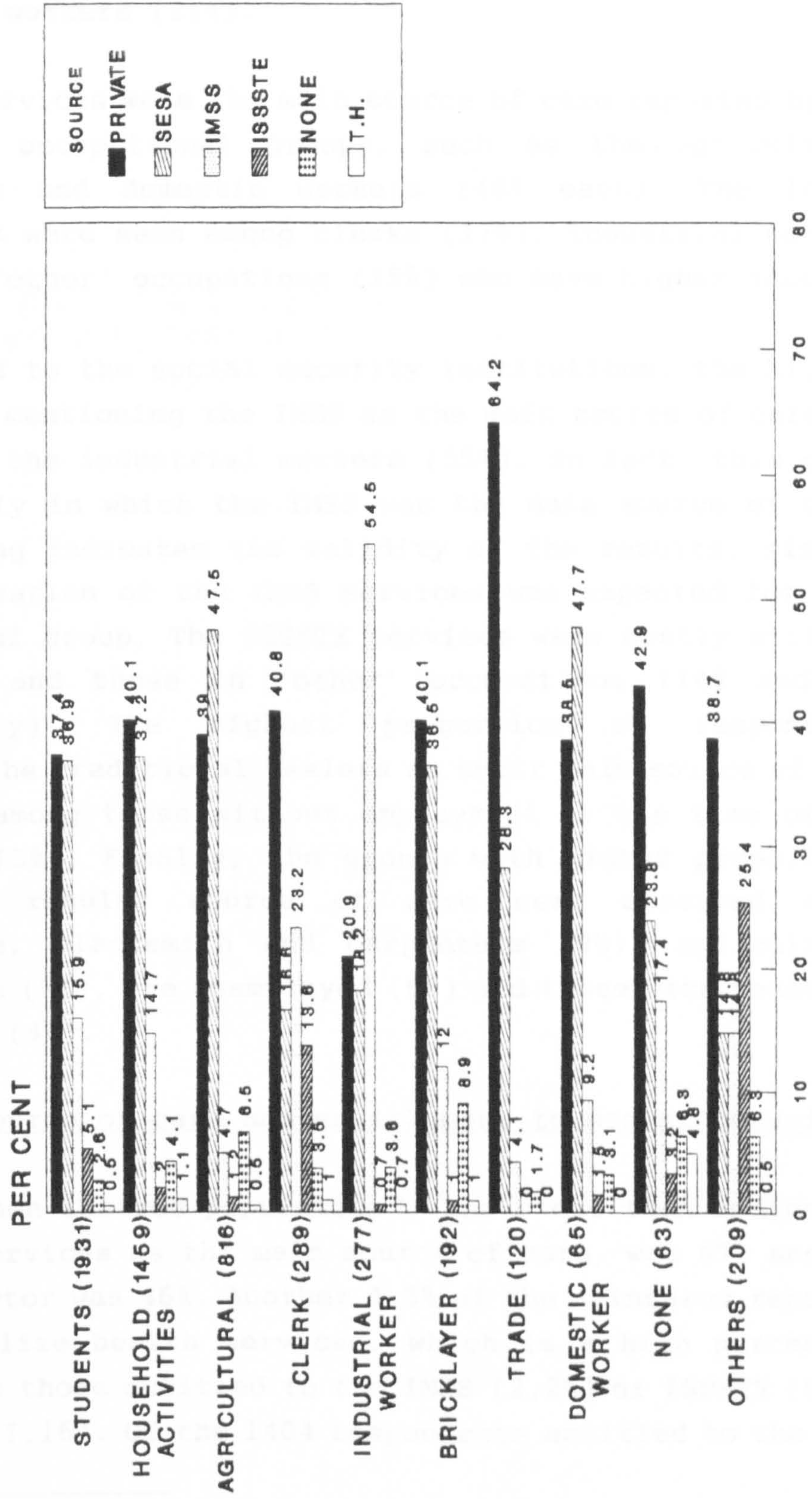
**FIGURE VIII.14 HABITUAL SOURCE OF CARE  
BY EDUCATIONAL LEVEL\***



T.H. - TRADITIONAL HEALERS      \* POPULATION AGED 7+



**FIGURE VIII.15 HABITUAL SOURCE OF MEDICAL CARE  
BY OCCUPATION\***



T.H = TRADITIONAL HEALERS  
 CRAFTSMEN: (n=30) PRIVATE: 70%; SESA: 28.7%; NONE: 3.3%  
 \* POPULATION AGED 7+ YEARS  
 EACH OCCUPATION = 100% (IT DOES NOT INCLUDE NON-SPECIFIED)



43% among students, household activities, clerks, drivers, bricklayers and carpenters, the unemployed, and other occupations. The lowest proportion was seen among the industrial workers (21%).

The SESA services were the main source of care reported by the low-income occupational groups, such as the agricultural occupations and domestic workers (48% each). The lowest percentages were seen among clerks (17%), industrial workers (18%) and 'other' occupations (15%) who have higher incomes.

With regard to the social security institutions, the highest percentage mentioning the IMSS as the main source of care was seen among the industrial workers (55%). In fact, this group was the only in which the IMSS was the main source of care. This finding indicates the validity of the results, since a high utilization of the IMSS services was expected for this occupational group. The ISSSTE services were mostly utilized by clerks and those in 'other' occupations (14% and 25% respectively). The highest proportion of respondents reporting the traditional healers as their main source of care was found among those without employment at the time of the interview (5%). Finally, the groups with higher proportions without a regular source of care were observed among bricklayers, blacksmith and carpenters (9%), agricultural occupations (7%), the unemployed (6%) and those with household activities (4%).

#### Habitual source of care and entitlement to social security.

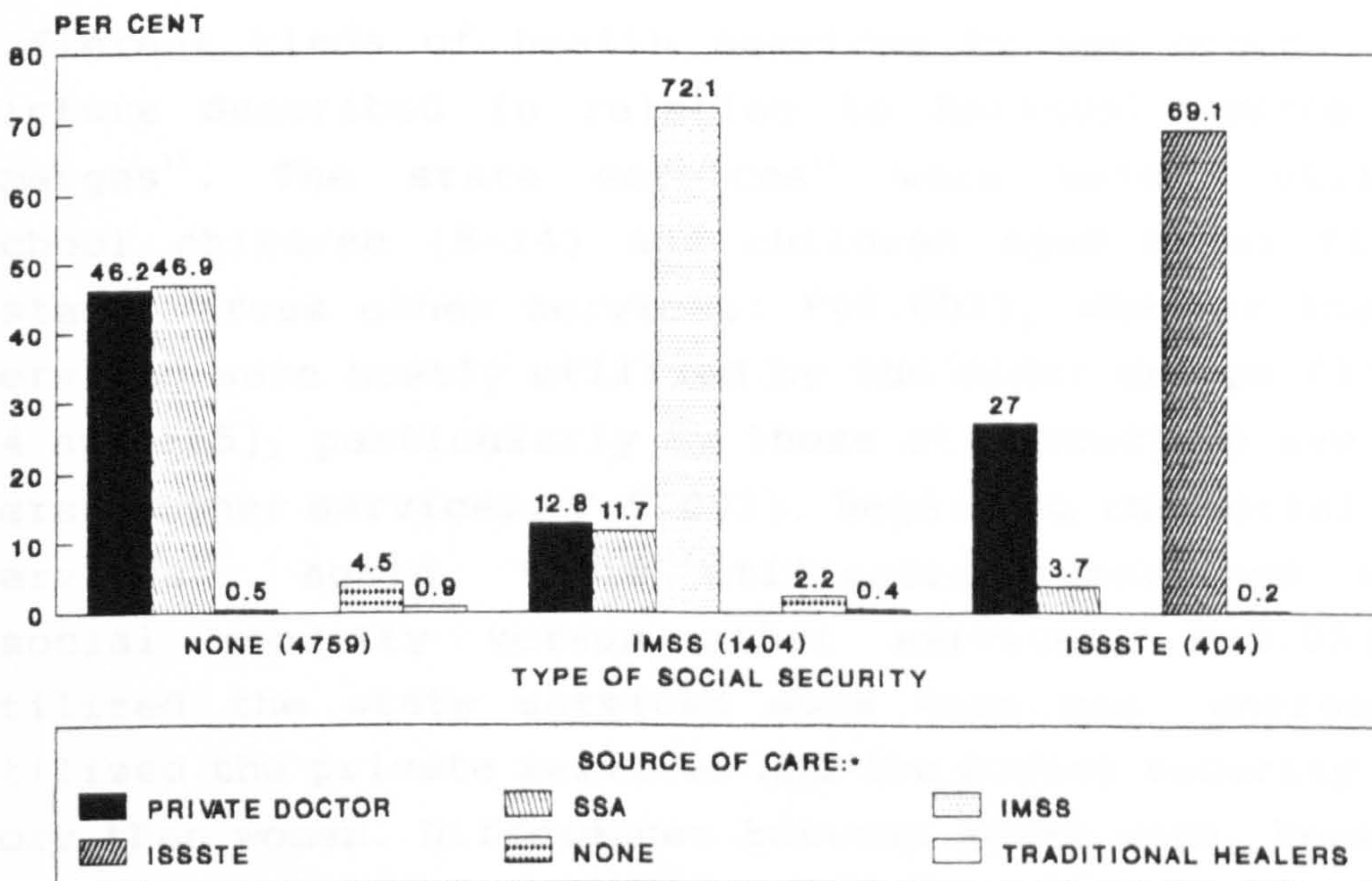
Among the non-insured population<sup>14</sup>, the proportion indicating the SESA services as the main source of care, was 47% and the private doctor was 46%. Another 4.5% of the uninsured reported not to utilize health services, which is a high percentage compared to those entitled to the IMSS (2.2%) or ISSSTE (0.2%) (Figure VIII.16). Of the 1404 respondents entitled to the IMSS

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<sup>14</sup>72% of the total population (see Chapter VI, Section 2.D).



**FIGURE VIII.16 HABITUAL SOURCE OF MEDICAL CARE BY ENTITLEMENT TO SOCIAL SECURITY**



\* IT DOES NOT INCLUDE 'NON-SPECIFIED'

(21% of the total survey population), 72% utilizes the IMSS services as their regular source of care. The remaining 28% are mainly distributed between the private (13%) and the SESA services (12%). Among those entitled to the ISSSTE (6% of the total survey population), who reported not to utilize their own services (31%), preferences were oriented towards the private services (27%), whereas the SESA was preferred by only 4% of the population entitled to the ISSSTE.

## **B. Health service utilized for perceived morbidity**

Age and sex differentials. Figure VIII.17 shows the proportions of respondents reporting illness who utilized different kinds of health services by age group. The same picture described in relation to habitual source of care emerges<sup>15</sup>. The state services<sup>16</sup> were mainly utilized by school children (5-14) and children aged under five years (state versus other services:  $P < 0.001$ ), whereas the private services were mostly utilized by the older groups (15-44, 45-64 and  $\geq 65$ ), particularly by those at productive age (private versus other services:  $P < 0.001$ ). Regarding the social security services<sup>17</sup>, again, their utilization increased with age (social security versus other services:  $P < 0.05$ ). Women utilized the state services more than men, whereas, these utilized the private services and the social security services more than women. Differences between sexes were, however, not statistically significant.

### Socio-geographic differentials

Health service utilized and urban/rural nature of area of residence. Table VIII.3 shows the results of the comparison of

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<sup>15</sup>See Figure VIII.12.

<sup>16</sup>Including the SESA services and other health services for the non-insured population.

<sup>17</sup>Including the IMSS and ISSSTE services altogether.



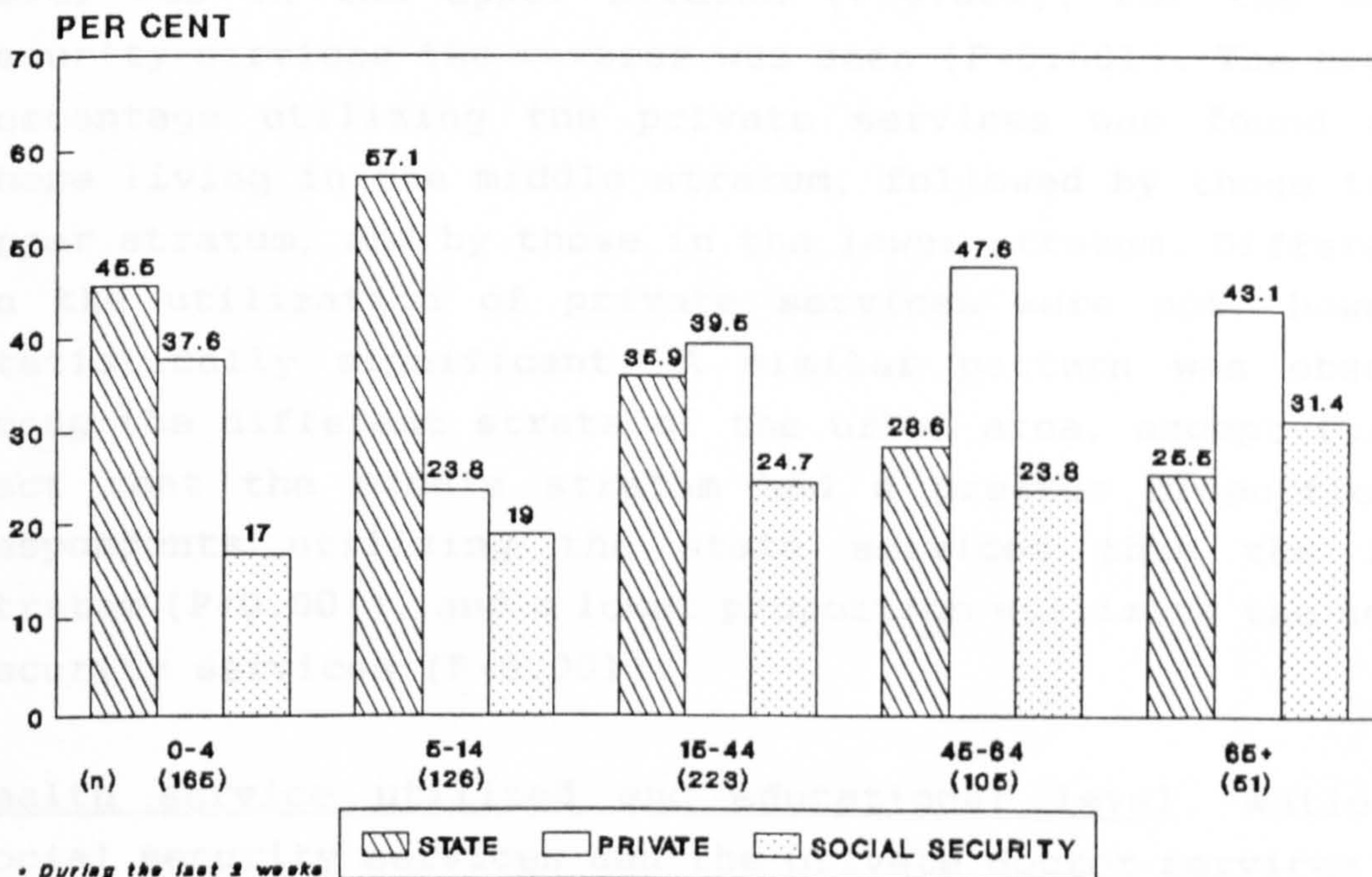
**TABLE VIII.3 HEALTH SERVICE UTILIZED BY URBAN/RURAL\* NATURE OF AREA OF RESIDENCE**

Health service	Urban	Rural
	%	%
State	33.8	45.0
Private	39.4	36.3
Social security	26.8	18.7
(n)	(284)	(386)

State vs other services : p<0.01  
 Private vs other services : NS  
 Social security vs other services : p<0.05  
 Overall : p<0.01

\*Urban = localities of 2,500 - 15,000 population  
 Rural = localities of <2,500 population

**FIGURE VIII.17 HEALTH SERVICE UTILIZED BY AGE GROUP, RESPONDENTS REPORTING ILLNESS\***



\* During the last 3 weeks  
 STATE VS OTHER SERV: p<.001; PRIVATE VS OTHER SERV: p<.01; SOC.SEC: p<.05  
 (CHI-SQUARE FOR TREND)



health services utilized between the urban and rural area. The proportion of respondents who contacted the state services was greater in the rural than in the urban area. Conversely, in the urban localities the proportions of users of both the private and the social security services were higher than those in the rural localities. Statistically significant differences were found for state versus other services ( $P < 0.01$ ), and for social security versus other services ( $P < 0.05$ ).

Health service utilized and living conditions of the locality of residence. Overall, the same pattern observed for habitual source of care<sup>18</sup> is also seen in Figure VIII.18 for health service utilized for perceived illness. The type of service utilized in response to perceived morbidity is statistically related to the living conditions of the area of residence (indicated by the socio-economic stratum of the locality). For the rural area the peak in the utilization of the state services was found in the lower stratum, whereas, the lowest level was in the upper stratum ( $P < 0.001$ ). For the social security services the reverse was seen ( $P < 0.001$ ). The highest percentage utilizing the private services was found among those living in the middle stratum, followed by those in the upper stratum, and by those in the lower stratum. Differences in the utilization of private services were not, however, statistically significant. A similar pattern was observed among the different strata of the urban area, except for the fact that the middle stratum had a greater proportion of respondents utilizing the state services than the lower stratum ( $P < 0.001$ ), and a lower proportion utilizing the social security services ( $P < 0.001$ ).

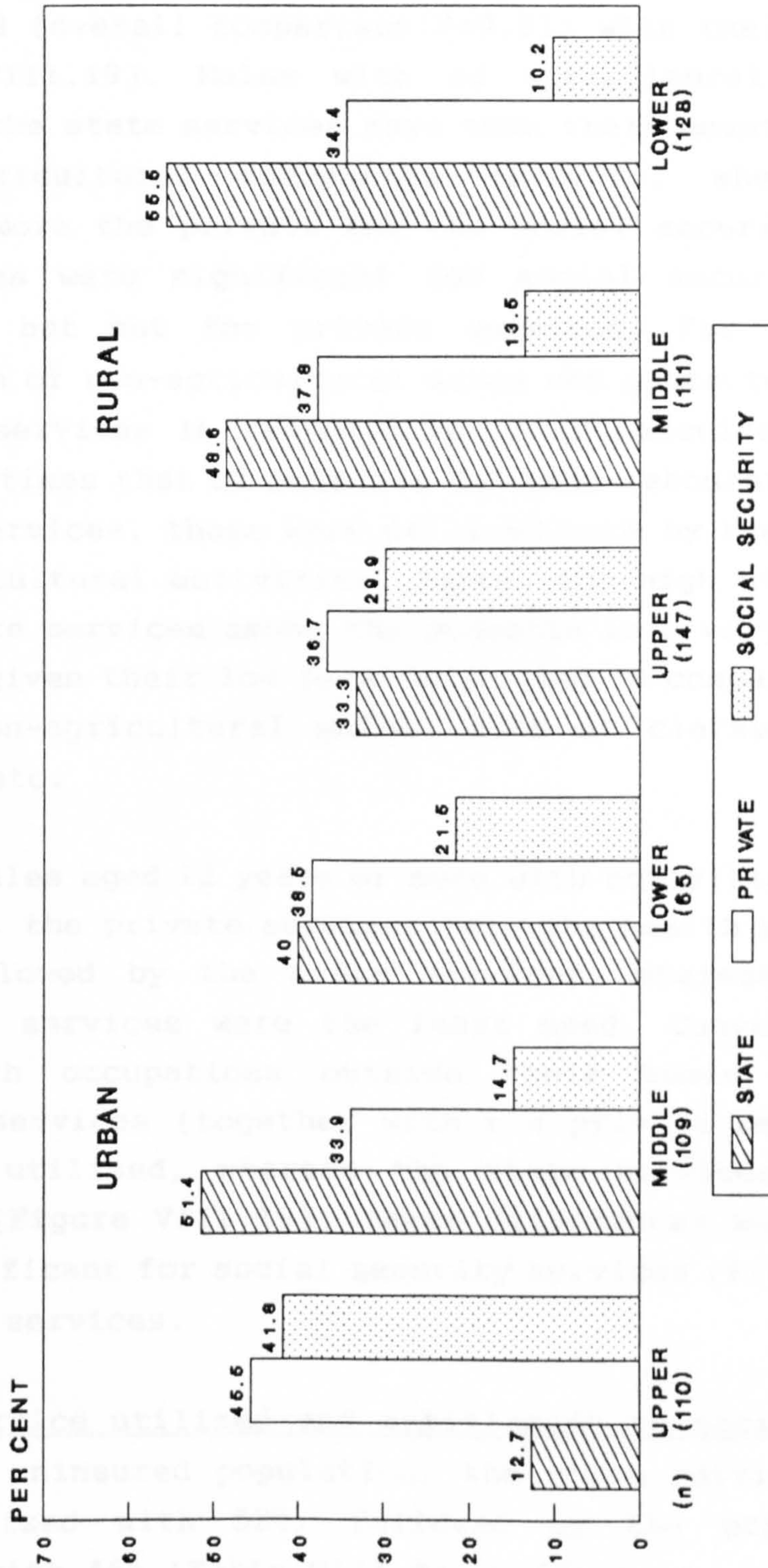
Health service utilized and educational level. While the social security services and the private doctor services were most utilized by the groups with more education, and the state

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<sup>18</sup>See Figure VIII.13.



**FIGURE VIII.18 HEALTH SERVICE UTILIZED  
BY SOCIO-ECONOMIC STRATUM  
OF THE LOCALITY**



• INTRA-URBAN DIFFERENCES:  
STATE VS OTHER SERVS; p<.001  
PRIVATE VS OTHER SERVS; NS  
SOC.SEC.VS OTHER SERVS; p<.001  
OVERALL URBAN; p<.001

• INTRA-RURAL DIFFERENCES:  
STATE VS OTHER SERVS; p<.001  
PRIVATE VS OTHER SERVS; NS  
SOC.SEC.VS OTHER SERVS; p<.001  
OVERALL RURAL; p<.001

\*P\* VALUES BASED ON CHI-SQUARE  
FOR INDEPENDENCE



services by those with less schooling, these differences were not statistically significant.

Health service utilized and occupation. Among males aged 12 years or more, the health service utilized was significantly associated (overall comparison:  $P < 0.01$ ) with their occupation (Figure VIII.19). Males with an agricultural occupation, utilized the state services more than their counterparts with a non-agricultural occupation ( $P = 0.05$ ), whereas these, utilized more the private and the social security services. Differences were significant for social security services ( $P < 0.005$ ) but not for private services. For example, the proportion of non-agricultural males who contacted the social security services in response to their perceived illnesses, was three times that of peasants and wage-labourers. Regarding private services, these were utilized more by the respondents with agricultural activities. Again, the high utilization of the private services among the peasants is a very interesting finding, given their low level of income in comparison to that of the non-agricultural males, such as clerks, industrial workers, etc.

Among females aged 12 years or more with activities within the household, the private services were the health services most used, followed by the state services, whereas the social security services were the least used. Conversely, among women with occupations outside their homes, the social security services (together with the private services) were the most utilized, whereas the state services, the least utilized (Figure VIII.19). These differences were, however, only significant for social security services ( $P < 0.05$ ) but not for other services.

Health service utilized and entitlement to social security. Among the uninsured population, the state services were the most utilized with 52%, followed by the private doctor services with 46% (Table VIII.4). Differences in the type of health service utilized between the uninsured and the insured

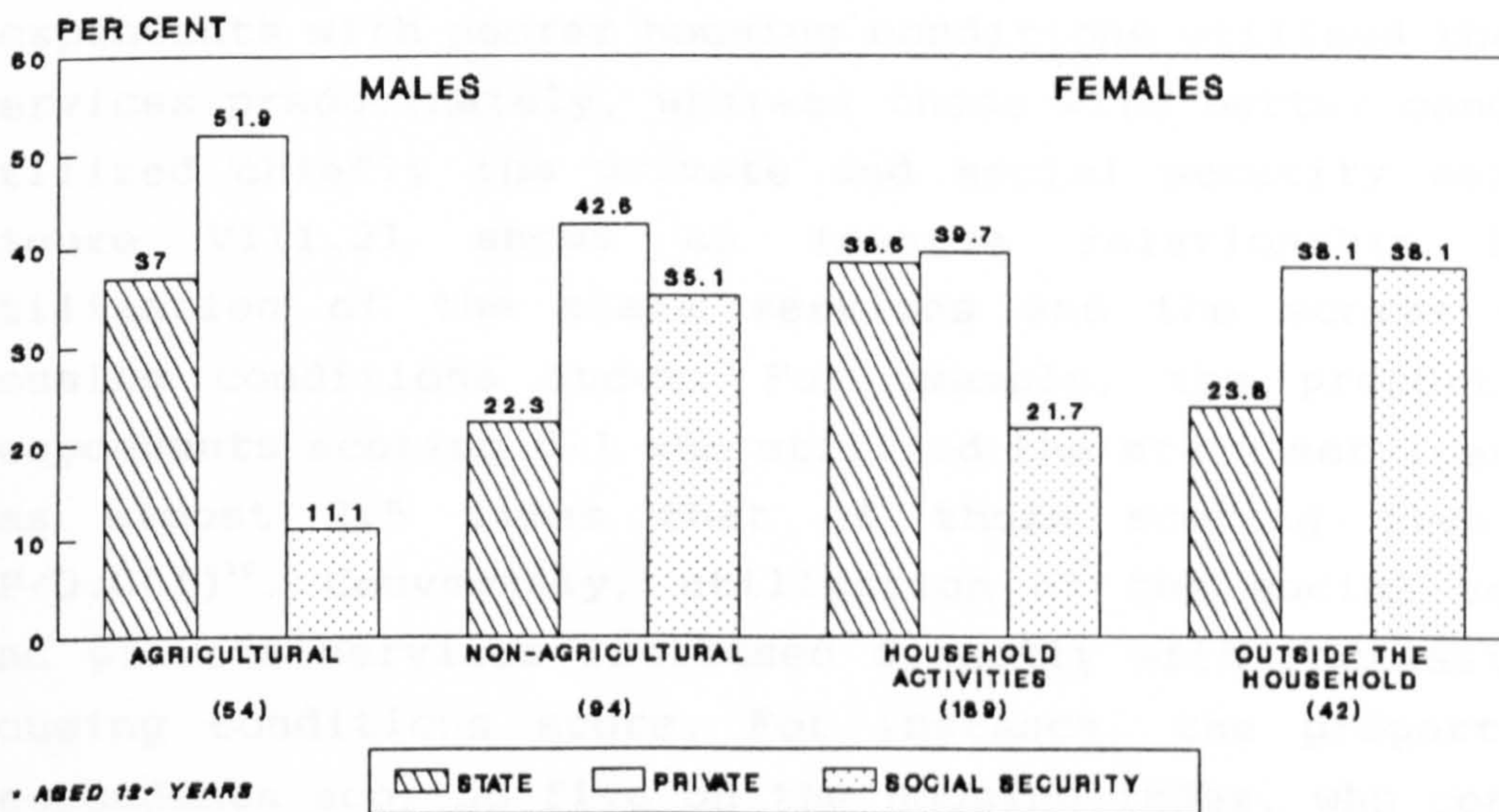


**TABLE VIII.4 HEALTH SERVICE UTILIZED BY ENTITLEMENT TO SOCIAL SECURITY**

Health service utilized	Entitlement to social security		p( $\chi^2$ )
	Yes	No	
State	20.9	52.2	<.001
Private	23.3	46.1	<.001
Social Security	55.7	1.7	<.001
(n)	(253)	(414)	

p<0.001

**FIGURE VIII.19 HEALTH SERVICE UTILIZED BY OCCUPATION: RESPONDENTS\* REPORTING ILLNESS**



**MALES:**  
 STATE VS OTHER SERVS: p<.05  
 PRIVATE VS OTHER SERVS: NS  
 SOC.SEC. VS OTHER SERVS: p<.005  
 OVERALL: p<.01

**FEMALES:**  
 STATE VS OTHER SERVS: NS  
 PRIVATE VS OTHER SERVS: NS  
 SOC.SEC. VS OTHER SERVS: p<.05  
 OVERALL: p<.05



population were statistically significant ( $P < 0.001$ , overall). As expected, the social security services were the preferred services among the insured, however, it is striking that more than 40% of those entitled to the social security scheme did not utilize their own services. The 44% of the insured population who did not utilize the services to which they were entitled were distributed almost evenly between the private services (23%) and the state services (21%). Utilization of the social security establishments by those who were not entitled to the social security was low (1.7%), which shows the validity of the results.

Health service utilized and habitual source of medical care. Figure VIII.20 shows a statistically significant relationship ( $P < 0.001$ ) between the type of health service contacted in the two weeks preceding the interview and the habitual source of medical care, which indicates the high degree of consistency and validity of the results.

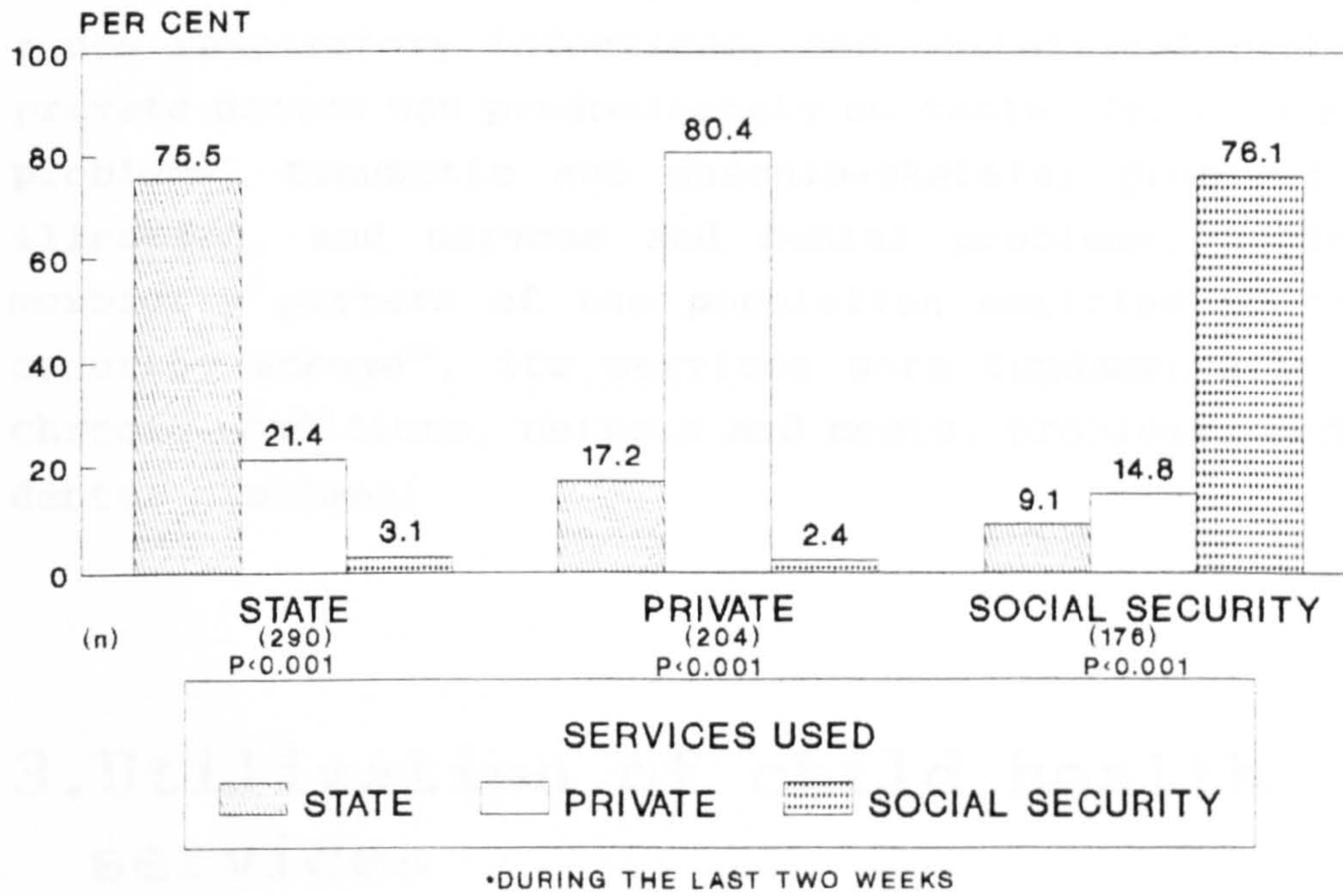
Health service utilized and housing conditions. The respondents with poorer housing conditions utilized the state services predominately, whereas those with better conditions utilized chiefly the private and social security services. Figure VIII.21 shows an inverse relationship between utilization of the state services and the scores on the housing conditions index. For example, the proportion of respondents scoring 0-1 who utilized the state services (57%) was almost 2.5 times that of those scoring five (23%) ( $P < 0.001$ )<sup>19</sup>. Conversely, utilization of the social security and private services increased directly with increasing the housing conditions score. For instance, the proportion of respondents scoring five on the housing index, who contacted the social security system (30%) was over four-fold that of those scoring 0-1 (7%). Differences were significant for both types of services ( $P < 0.01$ ).

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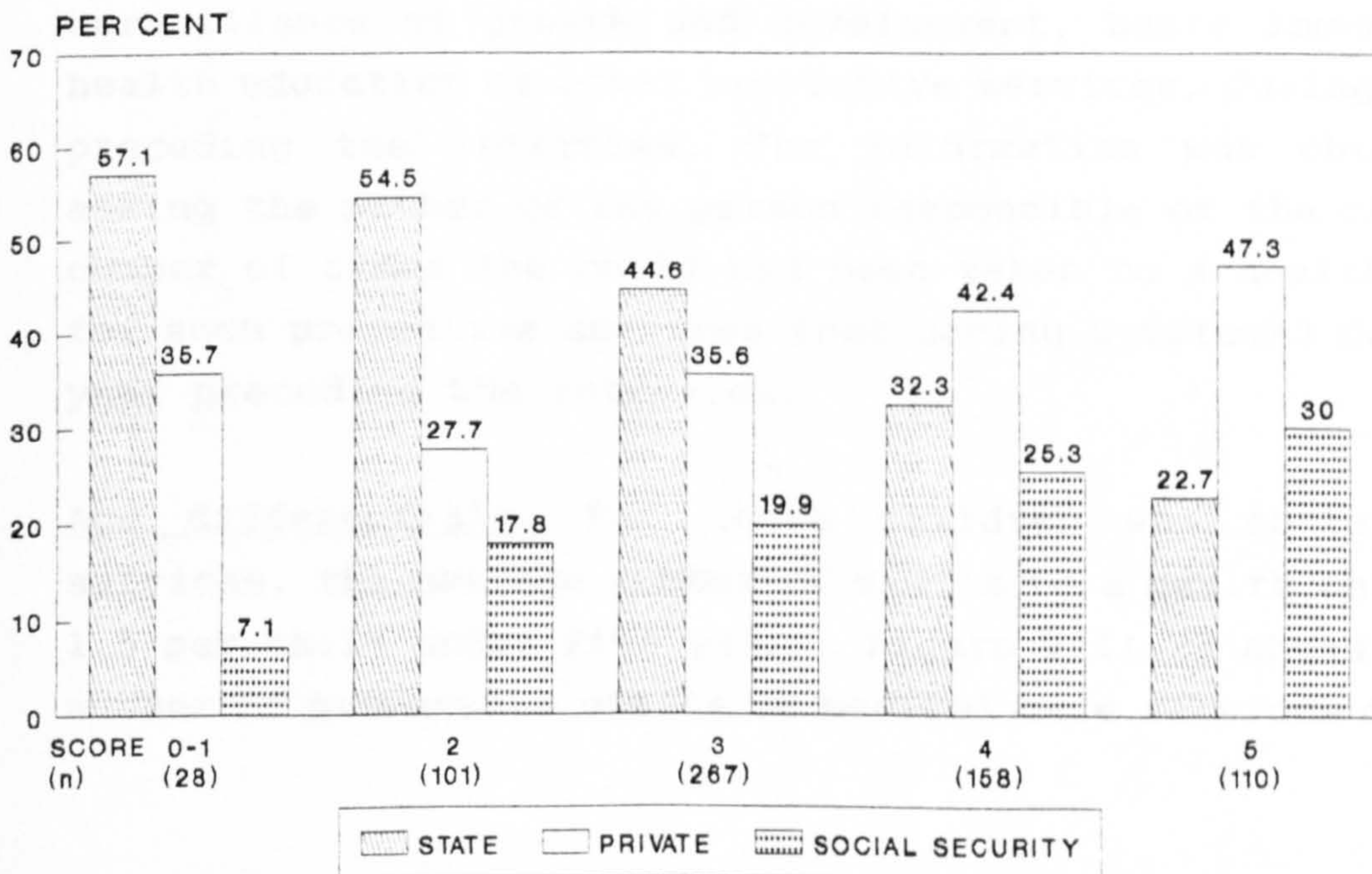
<sup>19</sup>'P' values given in this sub-section are based on the chi-square test for linear trend.



**FIGURE VIII.20 HEALTH SERVICE UTILIZED\* BY HABITUAL SOURCE OF MEDICAL CARE RESPONDENTS REPORTING ILLNESS**



**FIGURE VIII.21 HEALTH SERVICE UTILIZED BY HOUSING CONDITIONS SCORE: RESPONDENTS REPORTING ILLNESS**



STATE VS OTHER SERVS:  $p < .001$ ; PRIVATE VS OTHER SERVS:  $p < .01$ ; SOC.SEC VS OTHER SERVS:  $p < .01$   
(CHI-SQUARE FOR TREND)



Health service utilized and type of illness reported. Figure VIII.22 compares the type of service utilized according to the different kinds of illnesses reported. The state services were mainly utilized for skin problems, gastrointestinal diseases, acute respiratory infections, and obstetrical problems. The private doctor was predominately contacted for oral and dental problems, traumatic and musculo-skeletal problems, chronic illnesses, and nervous and mental problems. Following the morbidity pattern of the population entitled to the social security scheme<sup>20</sup>, its services were fundamentally used for chronic conditions, nervous and mental problems, and oral and dental problems.

### 3. Utilization of child health services

#### A. Preventive visits for under 5 year olds

Population coverage. A high proportion of children (48%) did not contact the formal health services, public or private, for surveillance of growth and development, basic immunization, health education or other preventive services, during the year preceding the interview. The information was obtained by asking the mother or the person responsible of the child, the number of times the child had been taken to a health service for such preventive services (not having symptoms) during the year preceding the interview.

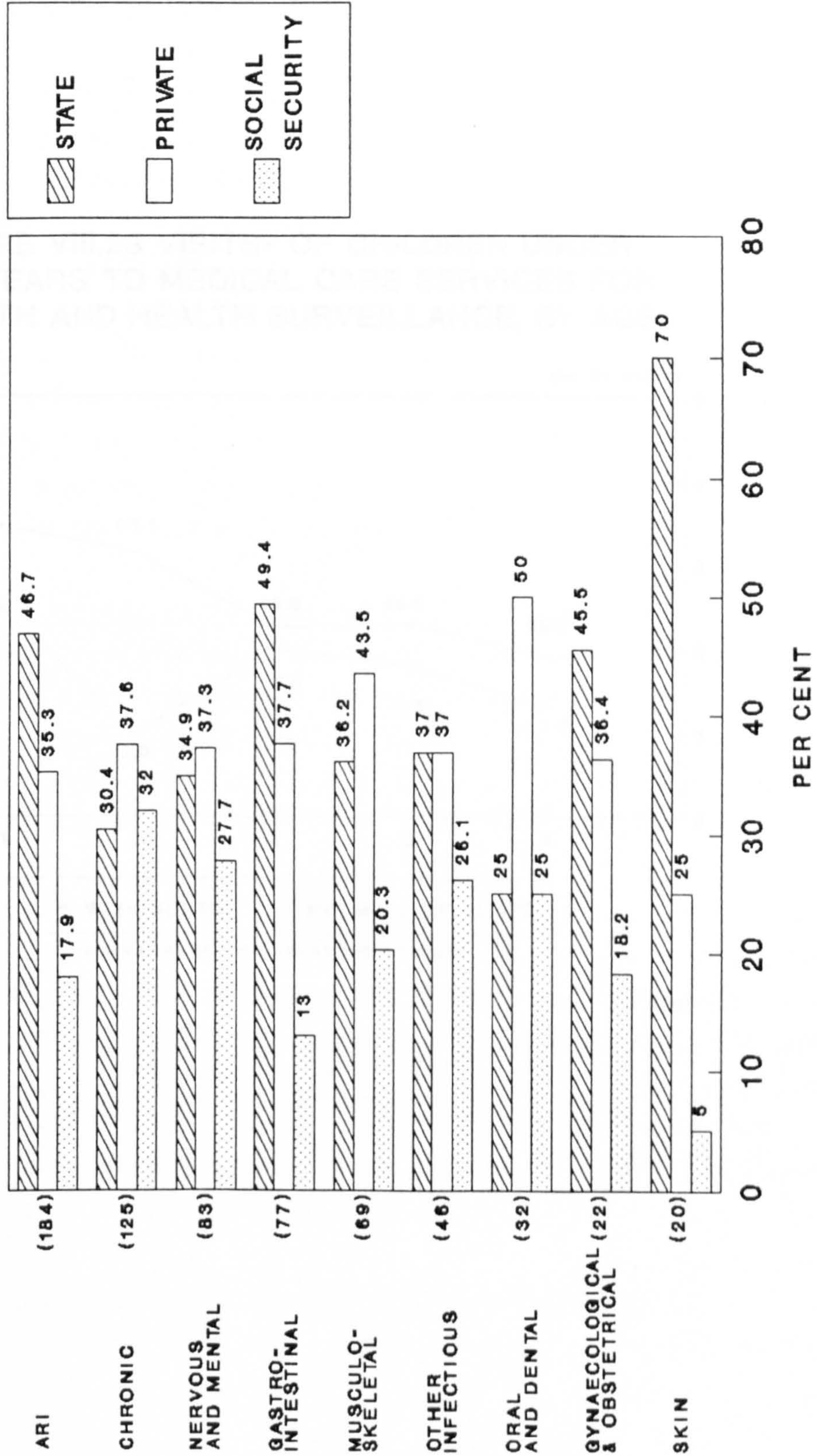
Age differentials. For those children who contacted the services, the average number of visits to a health service was 1.5 per child under five years. Figure VIII.23 shows that the number of preventive visits to medical care services decreases

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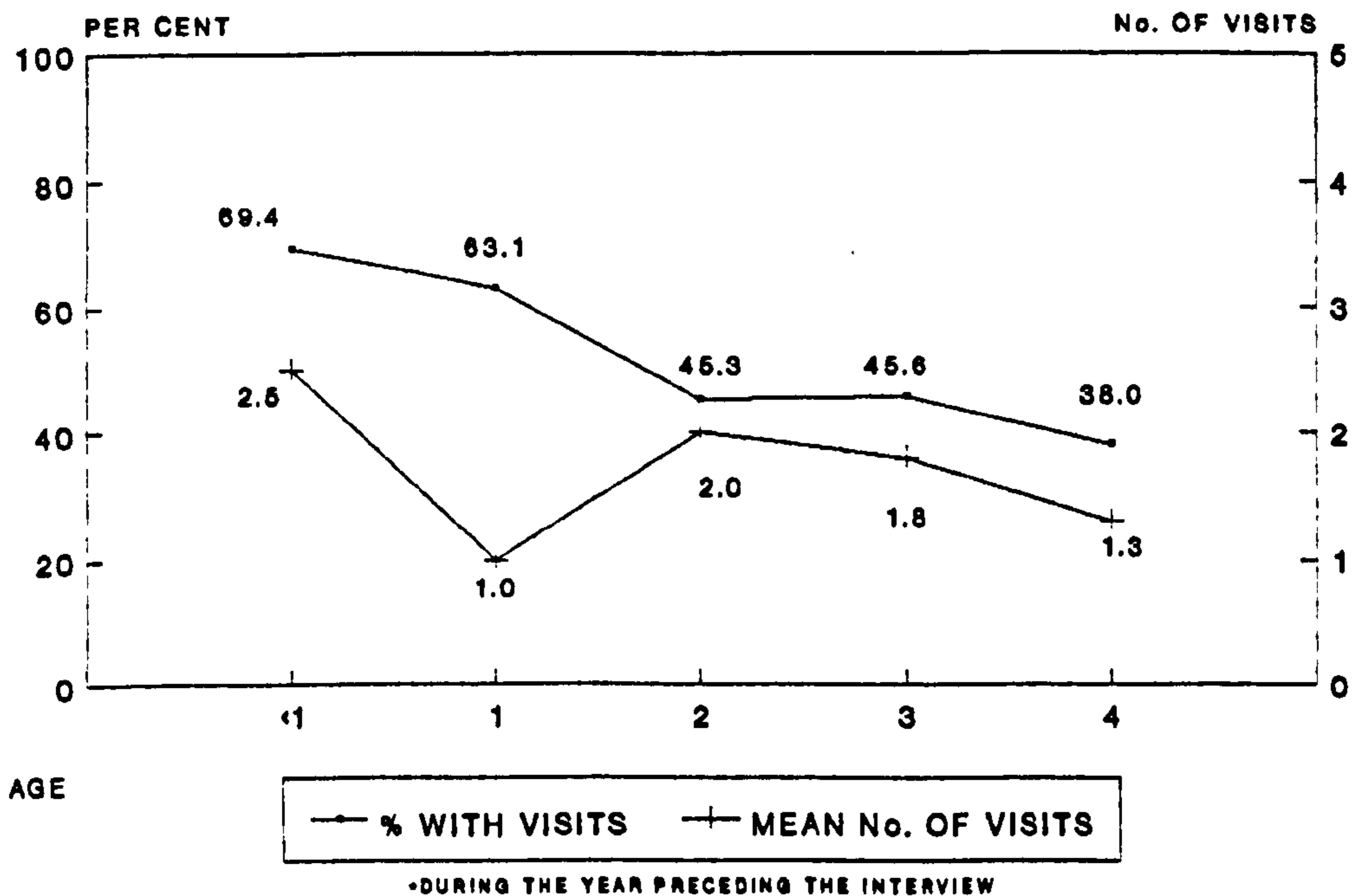
<sup>20</sup>See Chapter VII and Table VII.16.



**FIGURE VIII.22 HEALTH SERVICE UTILIZED  
BY RESPONDENTS REPORTING ILLNESS  
BY TYPE OF ILLNESS REPORTED**



**FIGURE VIII.23 VISITS OF CHILDREN UNDER FIVE YEARS TO MEDICAL CARE SERVICES FOR GROWTH AND HEALTH SURVEILLANCE, BY AGE**



(n= 870)



with the age of the child. Thus, the children under one year had the larger proportion of visits (69%), whereas that of children aged 4-5 years was only 38%. As this figure shows, among children aged four years, the average number of visits (1.3) was almost half that of children under one year (2.5). However, even among the latter the mean number of visits is low, since the minimum number of visits recommended by the health authorities for children of this age was five per annum (SSA, 1986). According to the official standards, children aged 1-4 years were doing better, since they had an overall mean number of visits of 1.3, whereas the recommended rate was two visits per annum. Nevertheless, it should be kept in mind the striking fact that half of the children population did not utilize preventive services at all. The largest proportion of children without visits was seen among the children aged 1-4 years (60%), whereas the lowest proportion was seen among those under one year (31%) (Figure VIII.24).

Health service utilized for preventive visits. SESA's primary health centres were the most utilized services for preventive consultations (57%), followed by IMSS's primary care centres (22%), and private doctors (15%) (Figure VIII.25). Utilization of general hospitals represented only 5% of all establishments contacted for child care.

Preventive visits and mother's age. Children of younger mothers made higher use of preventive health services than those of older mothers (Figure VIII.26). For instance, the proportion of children under five years of mothers aged 30-34 and  $\geq 35$ , not having received care during the previous year were approximately half (53% and 49%, respectively) those of children of mothers aged 15-19 years. These differences were statistically significant ( $P < 0.05$ )<sup>21</sup>.

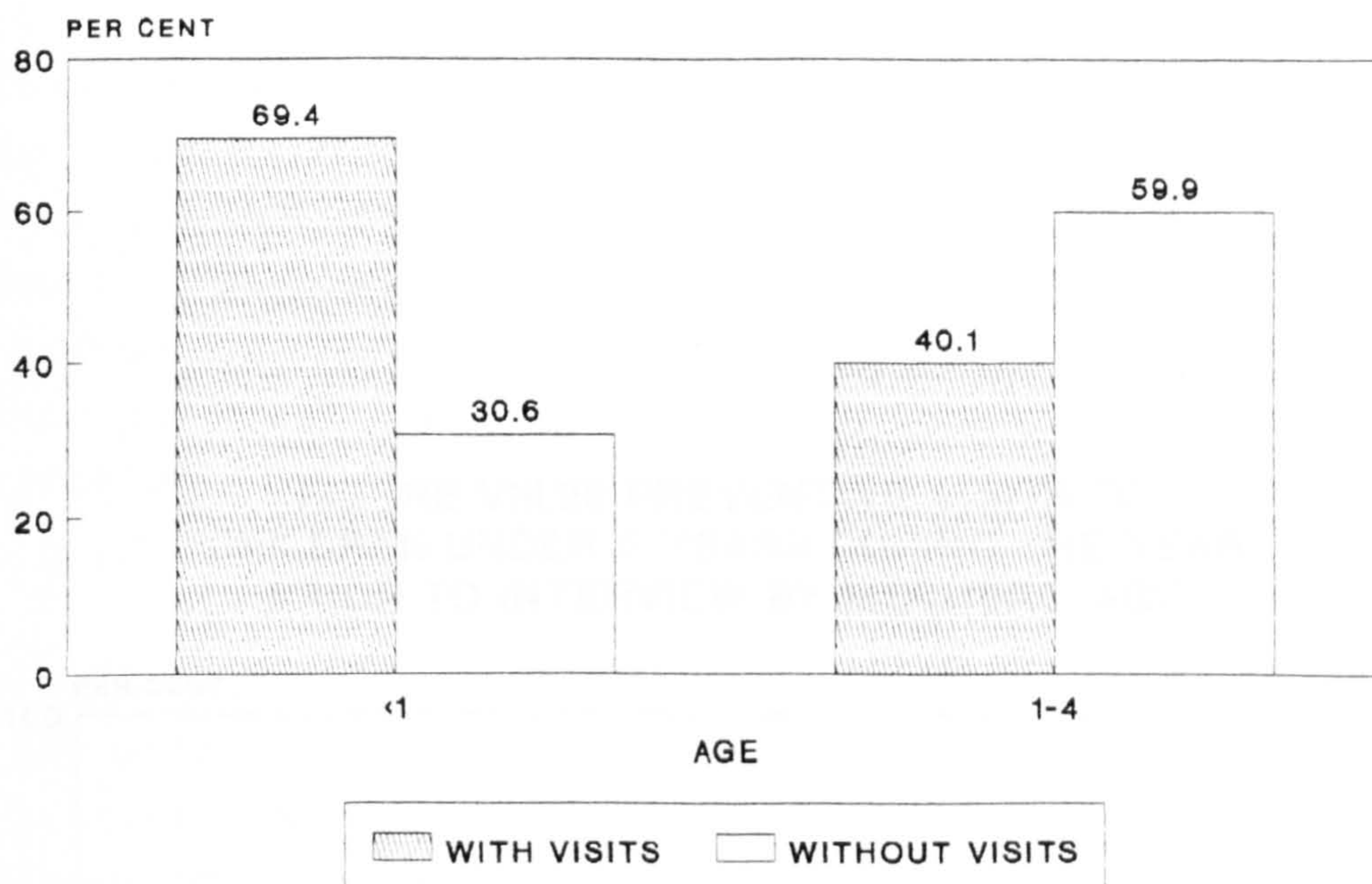
Preventive visits and socio-geographical differences.

While children from rural localities showed a slightly higher

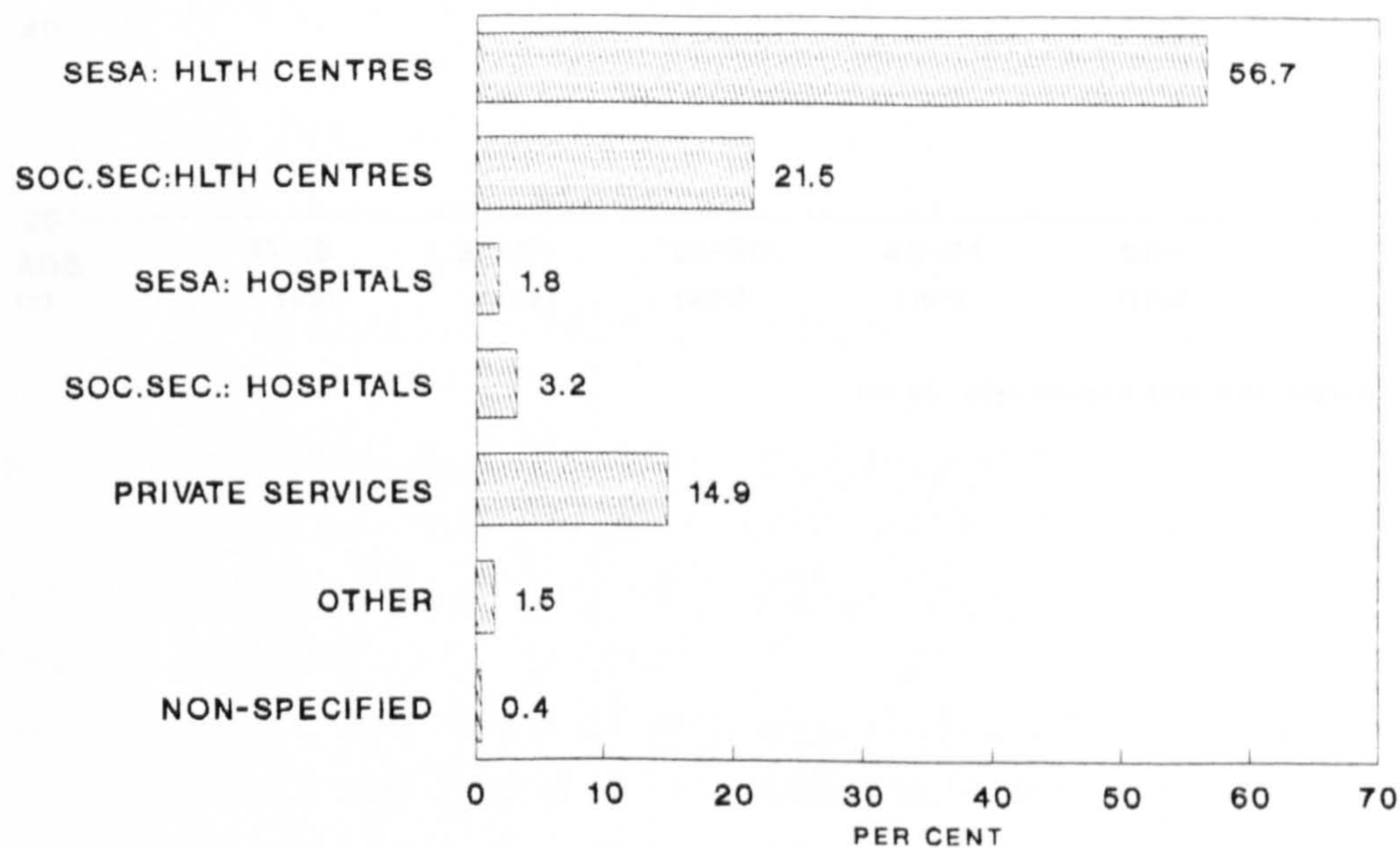
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<sup>21</sup>Based on the chi-square test for trend.

**FIGURE VIII.24 PREVENTIVE VISITS OF CHILDREN UNDER 5 YEARS, DURING THE YEAR PRIOR TO THE INTERVIEW**



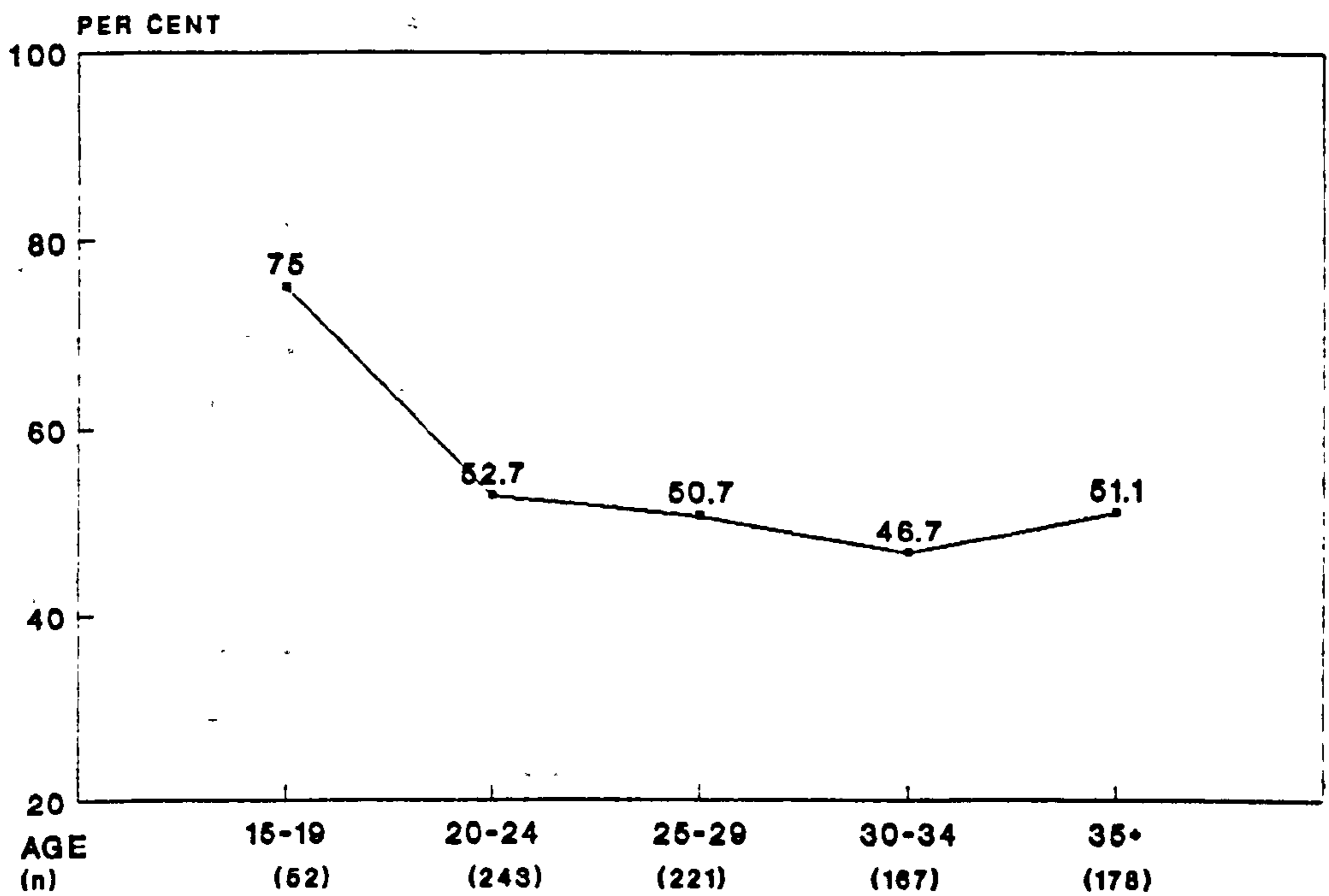
**FIGURE VIII.25 TYPE OF HEALTH FACILITY USED BY UNDER FIVE YEAR OLDS FOR PREVENTIVE VISITS**



(n=455)



**FIGURE VIII.26 PREVENTIVE VISITS OF CHILDREN UNDER 5 YEARS DURING THE YEAR PRIOR TO INTERVIEW BY MOTHERS' AGE**



P<0.05 (CHI-SQUARE TEST FOR TREND)

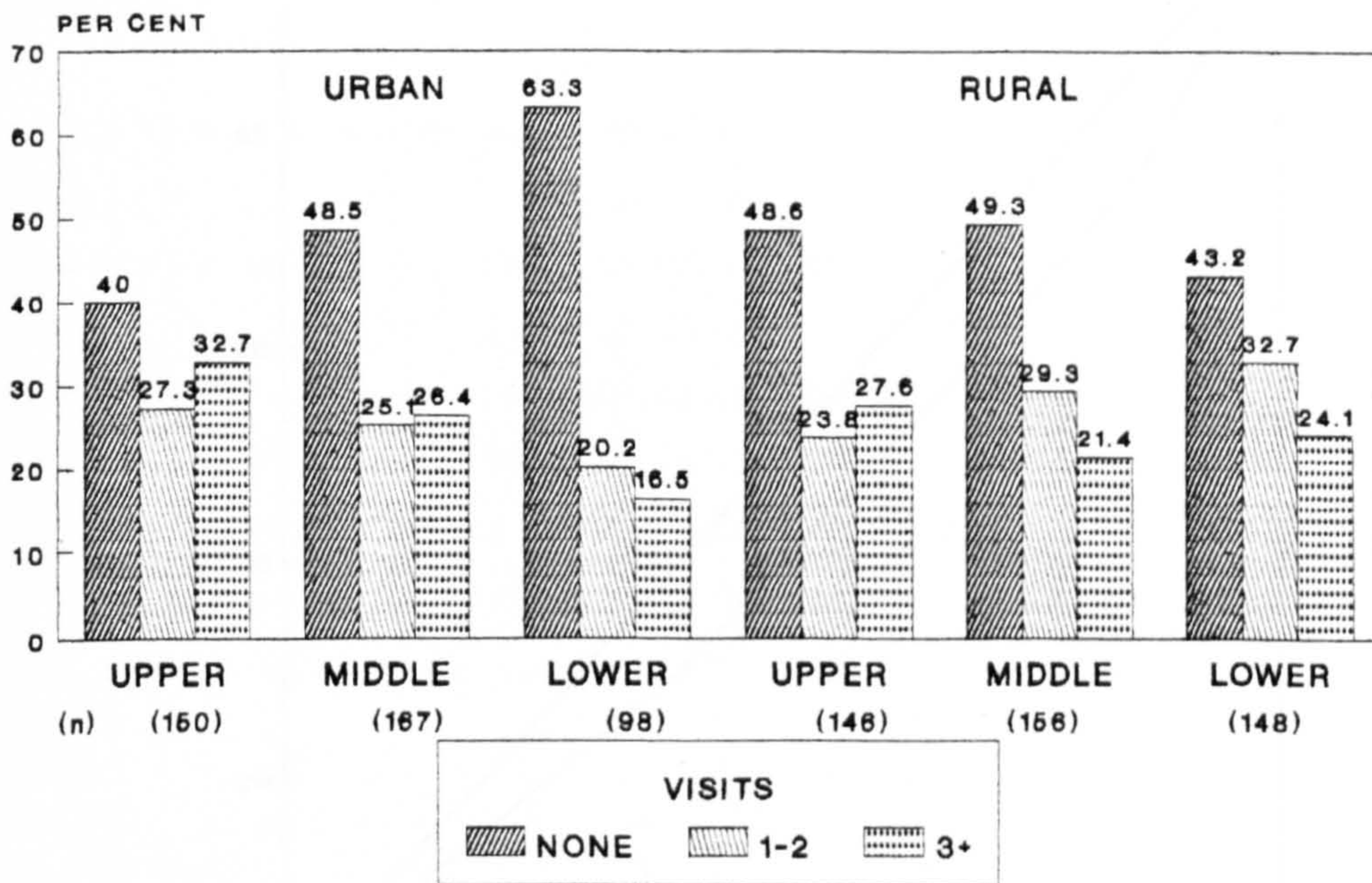
utilization than children from urban localities, no statistically significant disparities in preventive consultations were found between urban and rural areas. Regarding differences according to the living conditions in these areas, it was found that in the urban area, the upper and middle socio-economic strata made a higher use of health services ( $P < 0.05$ ), whereas in the rural area, the opposite was found. A slightly higher proportion of children from the lower stratum had contacts with the health services than children from the middle and upper strata (Figure VIII.27). However, differences observed in the rural area were not statistically significant.

Preventive visits and mother's education. Large disparities in the number of preventive consultations were seen among children whose mothers had different educational levels. Figure VIII.28a shows a direct relationship ( $P < 0.001$ ) between the number of preventive contacts and the educational level of the mothers. For instance, the proportion of children whose mothers had less than five years of schooling, having five and more preventive contacts (6%) was 1.4 times lower than that of children with mothers who had complete primary schooling (8.8%), over two times lower than that of those with mothers who had secondary schooling (14%), and almost three times lower than that of those with mothers who had high schooling (17%). The utilization concentration curve corresponding to these data are shown in Figure VIII.28b, which indicates the extent of inequality among different educational groups.

Preventive visits and mother's occupation. It was found that the utilization of child health services was statistically associated with the type of occupation of the mothers (overall comparison:  $P < 0.01$ ) (Figure VIII.29). A slightly larger proportion of children of mothers working inside the household contacted the services (60%), than children of mothers working outside the household (58%). The former made a more intense use of preventive services than the latter. For example, the proportion of children of mothers with occupations inside the

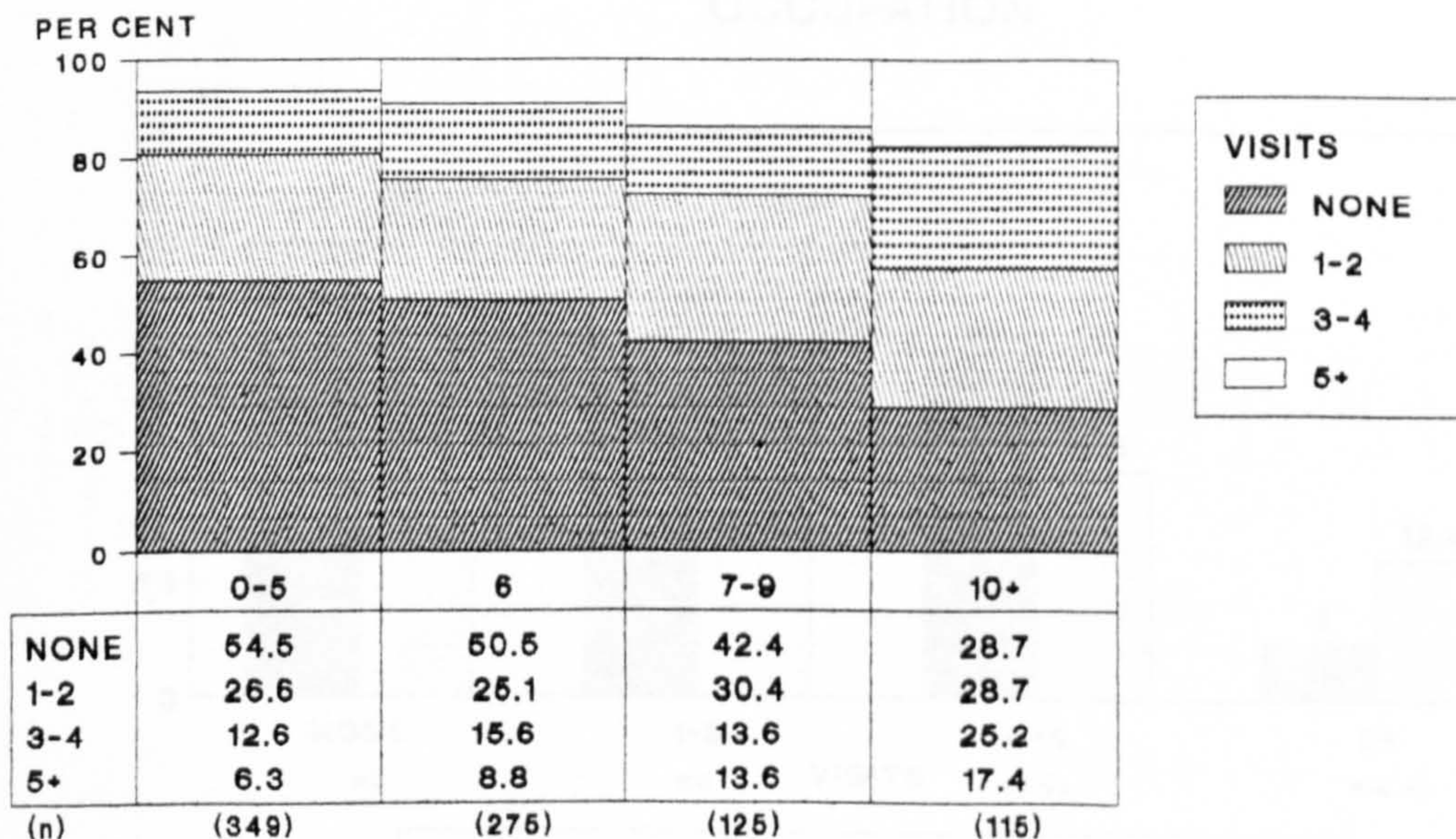


**FIGURE VIII.27 PREVENTIVE VISITS OF UNDER 5 YEAR OLDS BY SOCIO- ECONOMIC STRATUM OF THE LOCALITY**



NONE VS 1+ VISITS (CHI-SQUARE TEST FOR TREND):  
 URBAN STRATA: 0<0.01; RURAL STRATA: NS

**FIGURE VIII.28a PREVENTIVE VISITS OF UNDER 5 YEAR OLDS DURING THE YEAR PRIOR TO INTERVIEW BY MOTHERS' EDUCATION\***

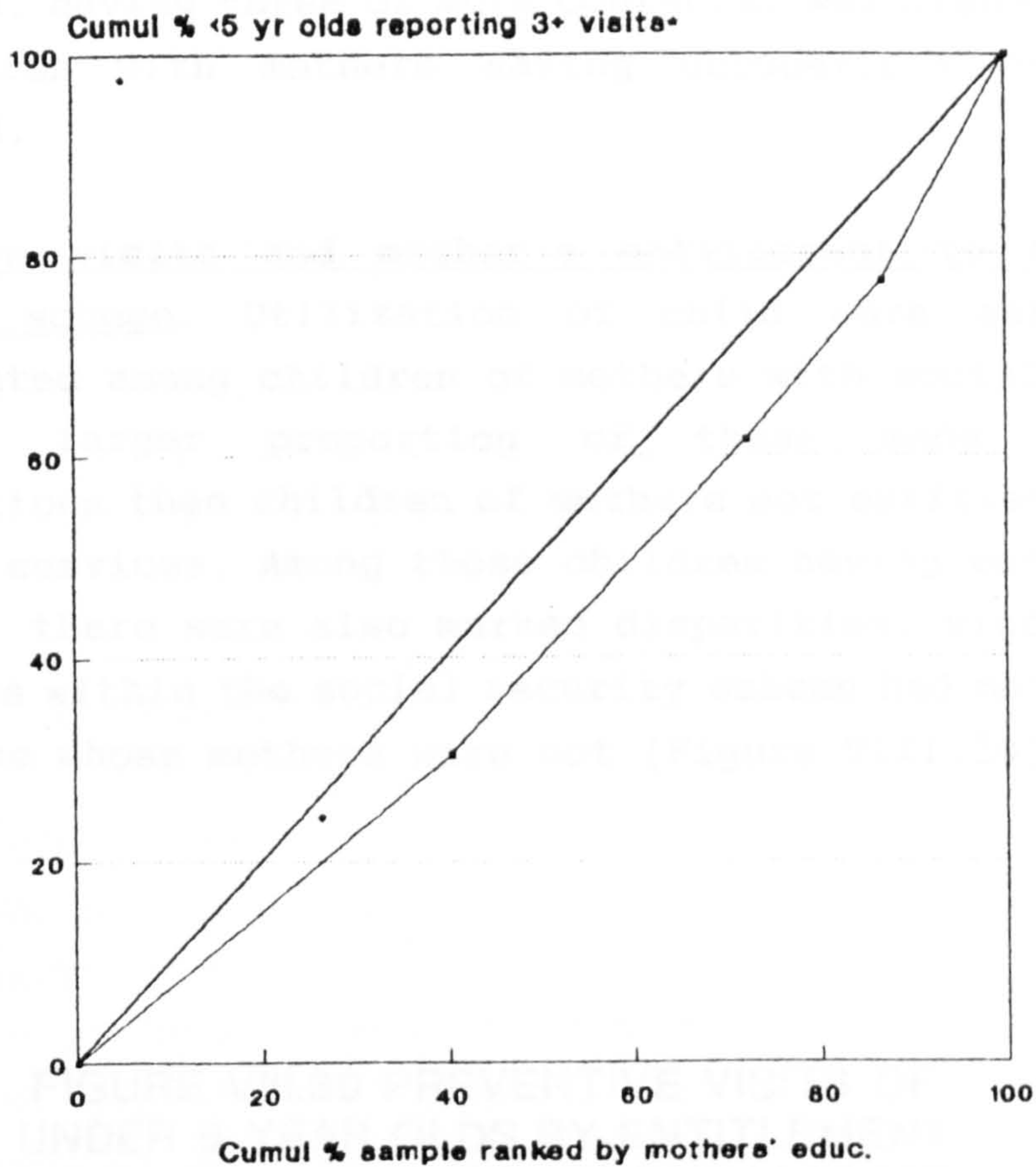


\*YEARS OF SCHOOLING

NONE VS 1+ VISITS (CHI-SQUARE TEST FOR TREND): P<0.001



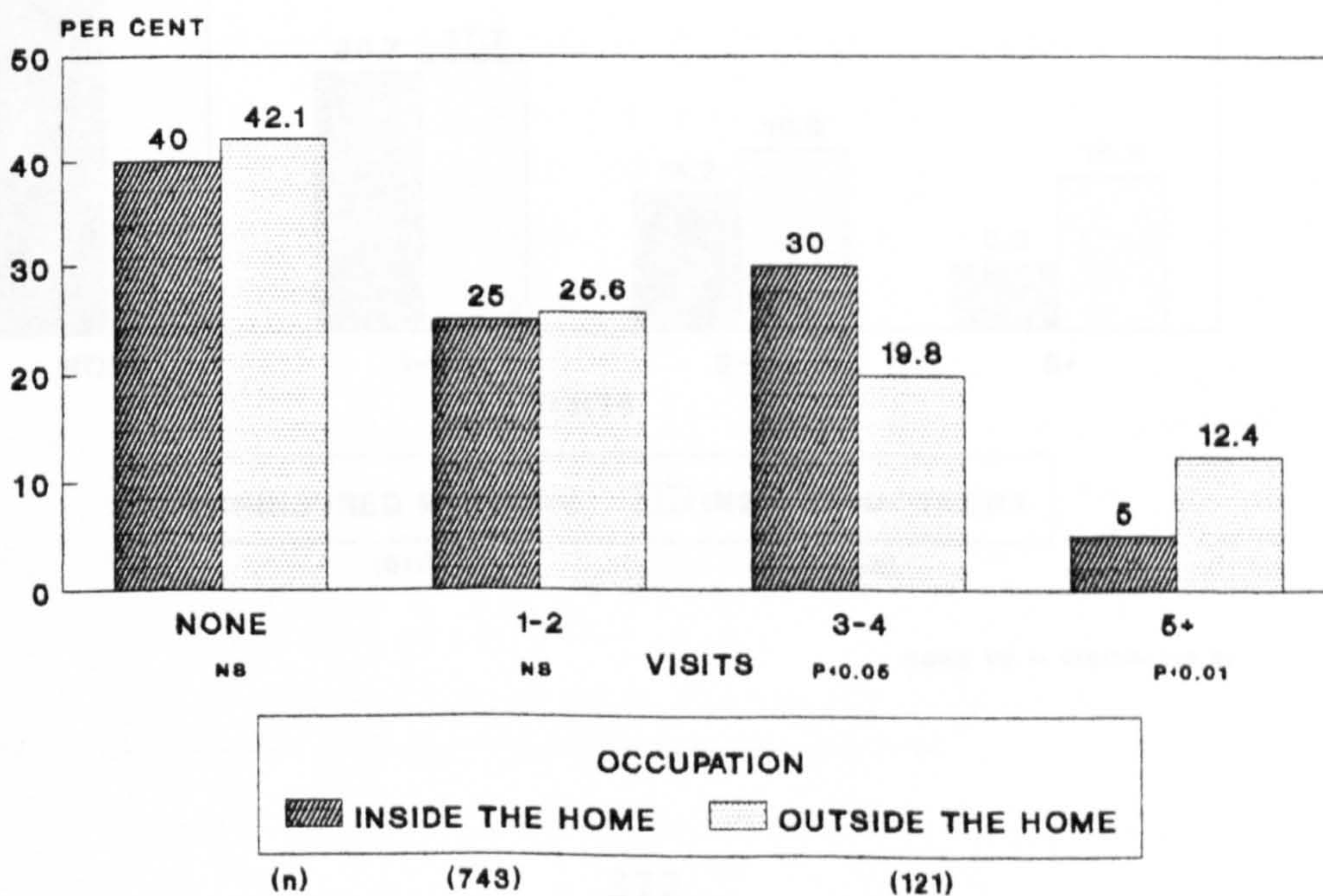
# HEALTH CARE.



EDUCATIONAL LEVEL (YRS):  
 <6; 6; 7-9; 10+

\*During the year prior to interview

FIGURE VIII.29 PREVENTIVE VISITS OF UNDER 5 YEAR OLDS, BY MOTHERS' OCCUPATION

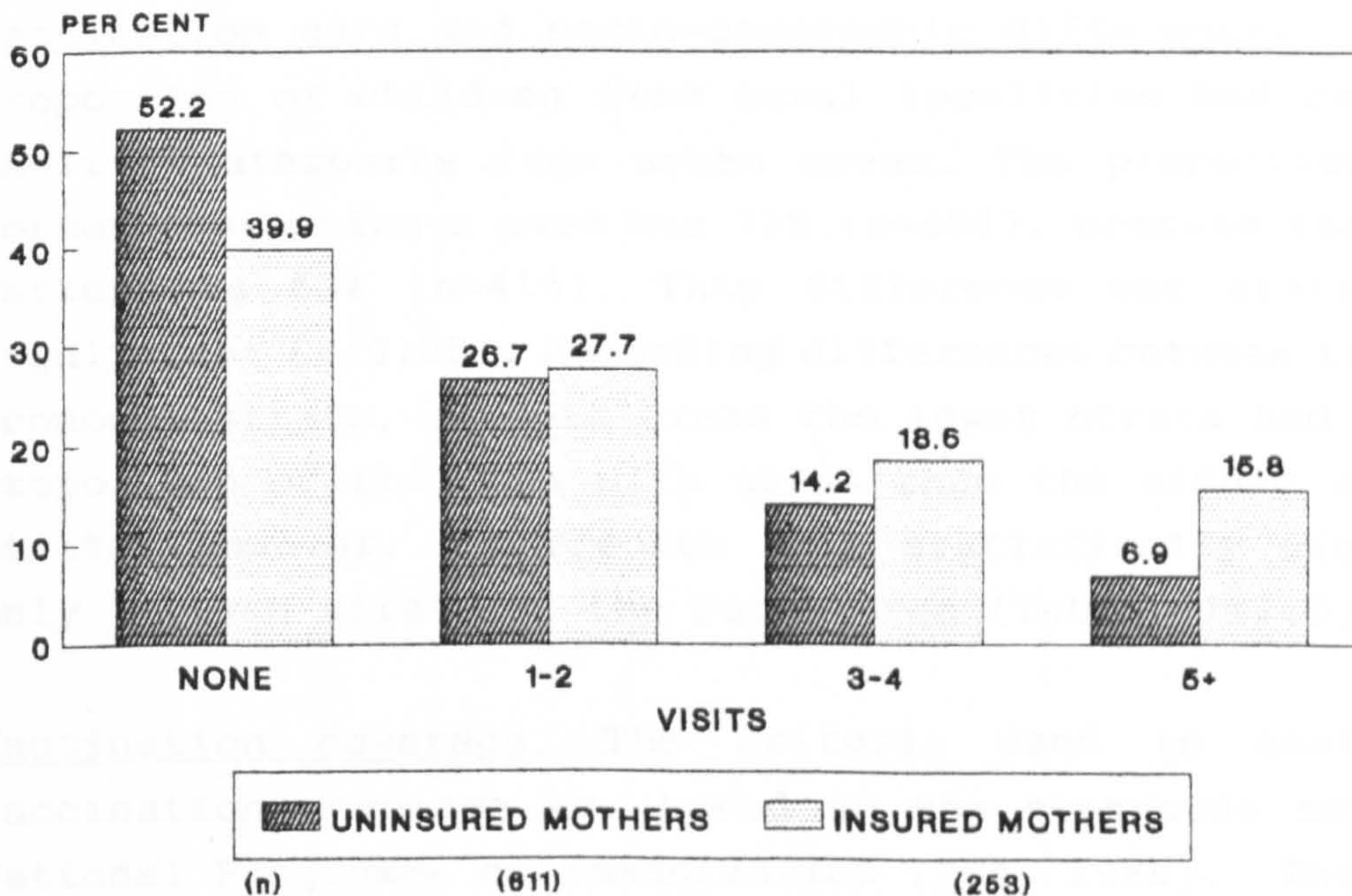




household, having three or more contacts, was higher than that of children with mothers having occupations outside the household.

Preventive visits and mother's entitlement to the social security scheme. Utilization of child care services was concentrated among children of mothers with social security, since a larger proportion of these made preventive consultations than children of mothers not entitled to social security services. Among those children having contacted the services, there were also marked disparities, since children of mothers within the social security scheme had more contacts than those whose mothers were not (Figure VIII.30).

**FIGURE VIII.30 PREVENTIVE VISITS OF UNDER 5 YEAR OLDS BY ENTITLEMENT TO SOCIAL SECURITY OF THE MOTHER**



NONE VS 1+ VISITS: P<0.01



## B. Basic immunization for under five year olds

Data collection procedures. The data on basic immunization were collected directly from the vaccination card<sup>22</sup>, since this method was considered the only one that would give reliable results. Only those children with vaccination cards (67%) were considered for the analysis. A third (33%) of the total children surveyed did not produce their cards. These were excluded from the analysis.

Vaccination card and mother's education. The relationship between the possession of the vaccination card and the education of the mother was analysed. It was found that the proportion of children possessing a vaccination card increased among those with mothers having more schooling. For example, the proportion of children with card whose mothers had incomplete primary school was 63% (n=252), whereas that of children with high school was 78% (n=126). These differences were statistically significant ( $P < 0.01$ ).

Vaccination card and socio-geographic differences. A higher proportion of children from rural localities had cards than their counterparts from urban areas. The proportion of the former possessing a card was 71% (n=454), whereas that of the latter was 63% (n=416). This difference was statistically significant ( $P < 0.05$ ). Regarding differences between the socio-economic strata, in both areas the lower strata had a higher proportion of children with cards than the middle and upper strata. However, differences were statistically significant only between strata of the rural area (Table VIII.5)<sup>23</sup>.

Vaccination coverage. The criteria used to analyse the vaccination coverage was based on the standards set by the National Programme of Immunization (SSA, 1986). The results

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<sup>22</sup>The health authorities require that every child has the vaccination national card. Every vaccine applied is registered on the card.

<sup>23</sup>See Chapter IX for the interpretation of these results.



TABLE VIII.5 POSSESSION OF VACCINATION CARD OF CHILDREN UNDER FIVE YEARS BY SOCIO-ECONOMIC STRATUM OF THE LOCALITY OF THE MOTHER\*

Vaccination card	Urban			Rural		
	Upper %	Middle %	Lower %	Upper %	Middle %	Lower %
Yes	63.3	59.9	68.7	69.4	64.3	78.0
No	36.7	40.1	31.3	30.6	35.7	22.0
Total	100.0 (150)	100.0 (167)	100.0 (99)	100.0 (147)	100.0 (157)	100.0 (150)

NS\*\*

p<0.05 \*\*

\* Or the person responsible for the child

\*\* Based on the chi-square test for independence

are shown in Figure VIII.31. Among the children under five who showed their vaccination card, coverages over 80% were observed for four basic types of vaccines: BCG, DPT, polio, and measles.

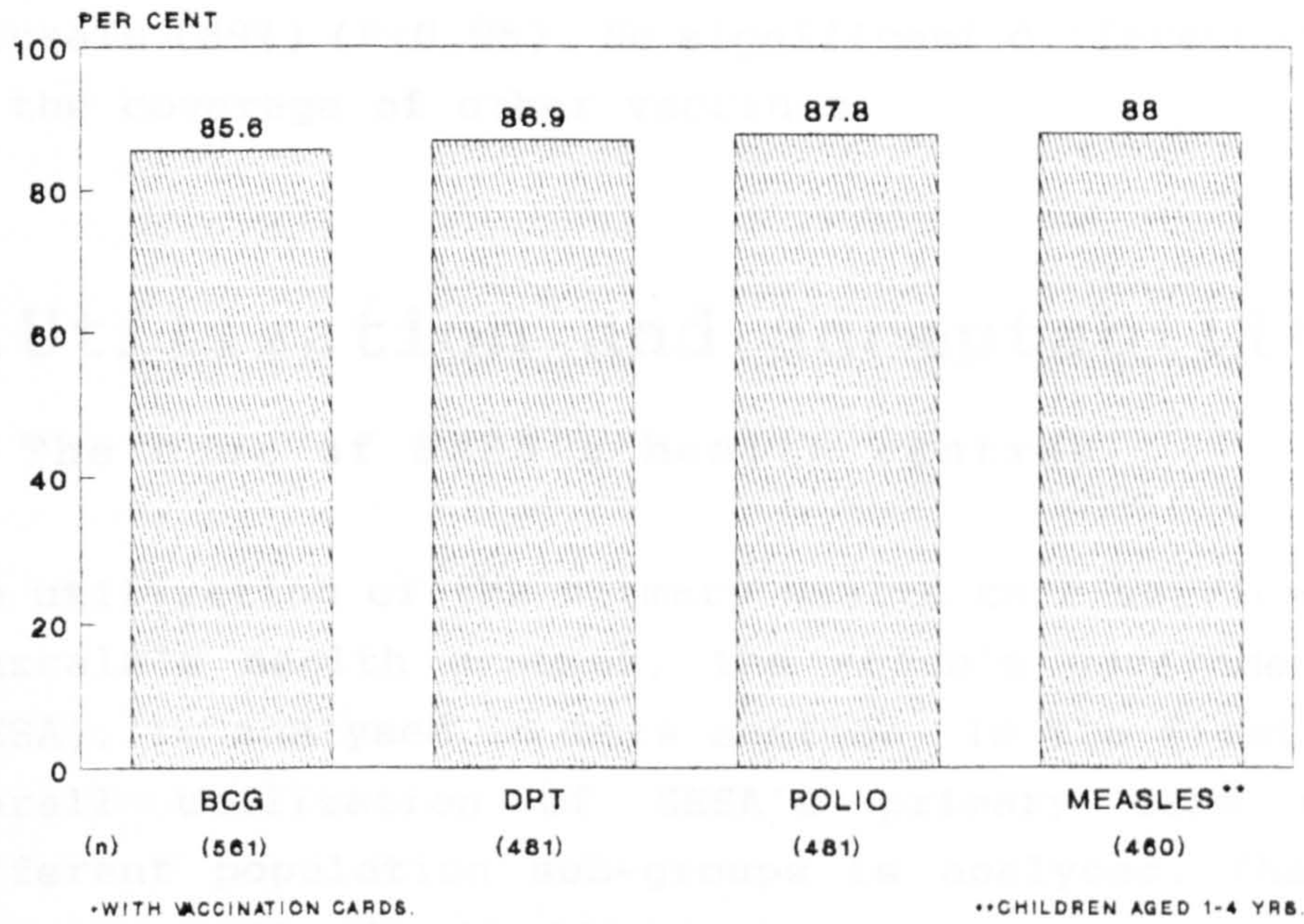
Disparities in vaccination coverage. Overall, no great differences were seen among the various population sub-groups analysed. Only few significant differences were found in the coverage of BCG and measles vaccines. The variables that discriminated better groups with higher and lower vaccination coverage were: mothers' education, socio-economic strata of the locality, and distance to the nearest health centre.

For example, the proportion of children under five years vaccinated with BCG whose mothers had 1-5 schooling was 80% (n=156), compared to 93% (n=71) of those with mothers having high schooling ( $P < 0.05$ ). Lower strata of the rural localities showed a higher coverage in BCG and measles vaccines. For instance, the proportion of children from the lower rural stratum vaccinated with BCG was 95% (n=115), whereas that of children from the middle and upper rural strata was 74% (n=92) and 89% (n=100), respectively ( $P < 0.001$ ). Regarding coverage of the measles vaccine, again the lower rural stratum showed a larger proportion of children vaccinated with 94% (n=94), than the middle stratum with 81% (n=77), and the upper stratum with 88% (n=82). These differences were statistically significant ( $P < 0.05$ ). No significant differences were found between urban and rural localities. No significant association was found between vaccination state of the children and the age of their mothers or the mother's entitlement state to social security.

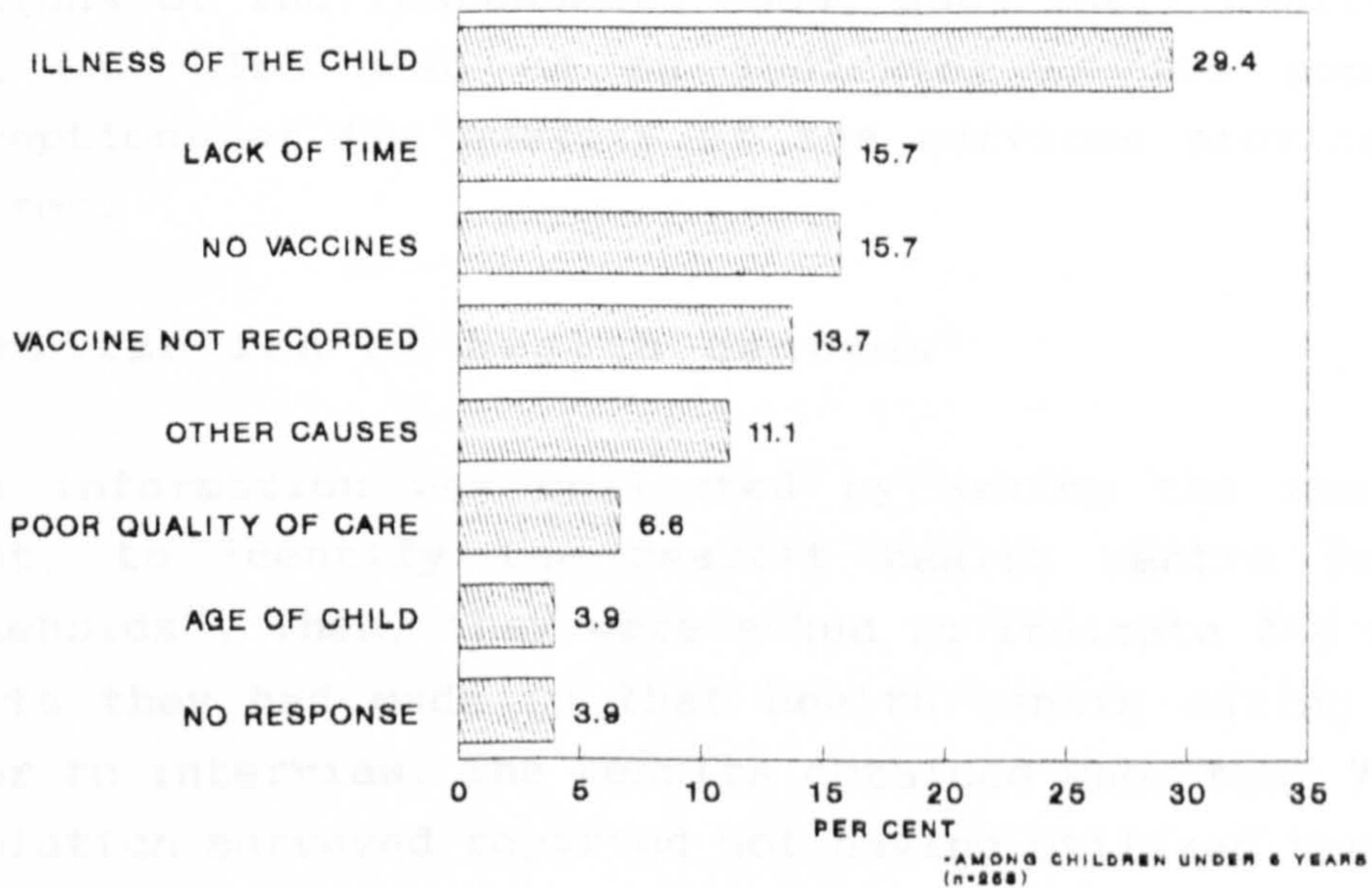
Reasons given for not having complete vaccination schemes. Of the total reasons, 60% were attributed to factors related to the mother or to the child him/herself. For example, illness of the child. The other 40% were causes related to the services provided by the health centres (Figure VIII.32). The association between the vaccination status and reported unwillingness of the nearest health centre to provide medical



**FIGURE VIII.31 VACCINATION COVERAGE OF CHILDREN UNDER 5 YEARS BY TYPE OF VACCINE\***



**FIGURE VIII.32 REASONS FOR NOT HAVING A COMPLETE VACCINATION SCHEME\***





care to the mother was analysed. It was found that the proportion of children vaccinated against measles, whose mothers had reported health centre refusals was lower (73%) than that of children with mothers not reporting consultation refusals (89%) ( $P < 0.05$ ). No significant differences were found in the coverage of other vaccines.

## 4. Utilization and acceptability:

### The case of SESA's health centres

The utilization of the primary health care services of one of Tlaxcala's health schemes, the state's government services (SESA), is analysed in this section. In the first place, the overall utilization of SESA's primary care centres by different population sub-groups is analysed. The number of contacts with the health centres per year was used as an overall indicator of use. Besides this, the reasons for not using the health centres was used as an additional indicator of the acceptability of the services to the population. The opinions of the respondents about what their centres lacked most was also used as an indicator of the population's perceptions of the quality of the services provided by the centres.

#### A. Utilization of health centres

This information was collected by asking the respondents, first, to identify the nearest health centre from their households<sup>24</sup>. Then, they were asked to indicate the number of visits they had made to that health centre during the year prior to interview. The results obtained show that 73% of the population surveyed reported not having utilized their health centre, 9% utilized it only once, 8% twice, and 10% three or

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<sup>24</sup>The type of each centre was identified according to SESA's catalogue of health units.



more times. The mean number of consultations per person per year was only 0.75.

Utilization of health centres and demographic characteristics.

Women utilized the health centres more than men (Figure VIII.33). Children aged under five years utilized the SESA's health centres most. This finding is consistent with that observed in relation to the habitual source of medical care (see Section 2.A). The peak in the utilization of the centres observed in the 20-49 year old group might have been caused by a higher utilization by women of fertile age. Respondents aged 15-19 were the ones who utilized the centres least, followed by the 50-59 and 5-14 age groups (Table VIII.6).

Utilization of health centres and socio-geographic characteristics of the locality.

The urban/rural nature of the locality of residence was statistically associated with the utilization of the health centres. Figure VIII.34 shows that a higher proportion of respondents from the rural localities reported utilization of the health centres than respondents from the urban localities. For both types of localities, urban and rural, the utilization of the health centres was significantly related to the living conditions of the locality of residence (Figure VIII.35).

For instance, the proportion of respondents from the lower rural stratum who utilized the centres was two times higher than that of the upper rural stratum, and 1.4 times higher than that of the middle rural stratum. Among the respondents from the urban localities, those from the lower stratum utilized the health centres two times as often as the respondents from the upper stratum. The highest proportions of respondents who did not utilize the health centres were seen among the upper strata, both urban and rural. For both areas, the proportion of respondents having contacted the centres three or more times, in the lower strata was three times higher than in the upper strata.

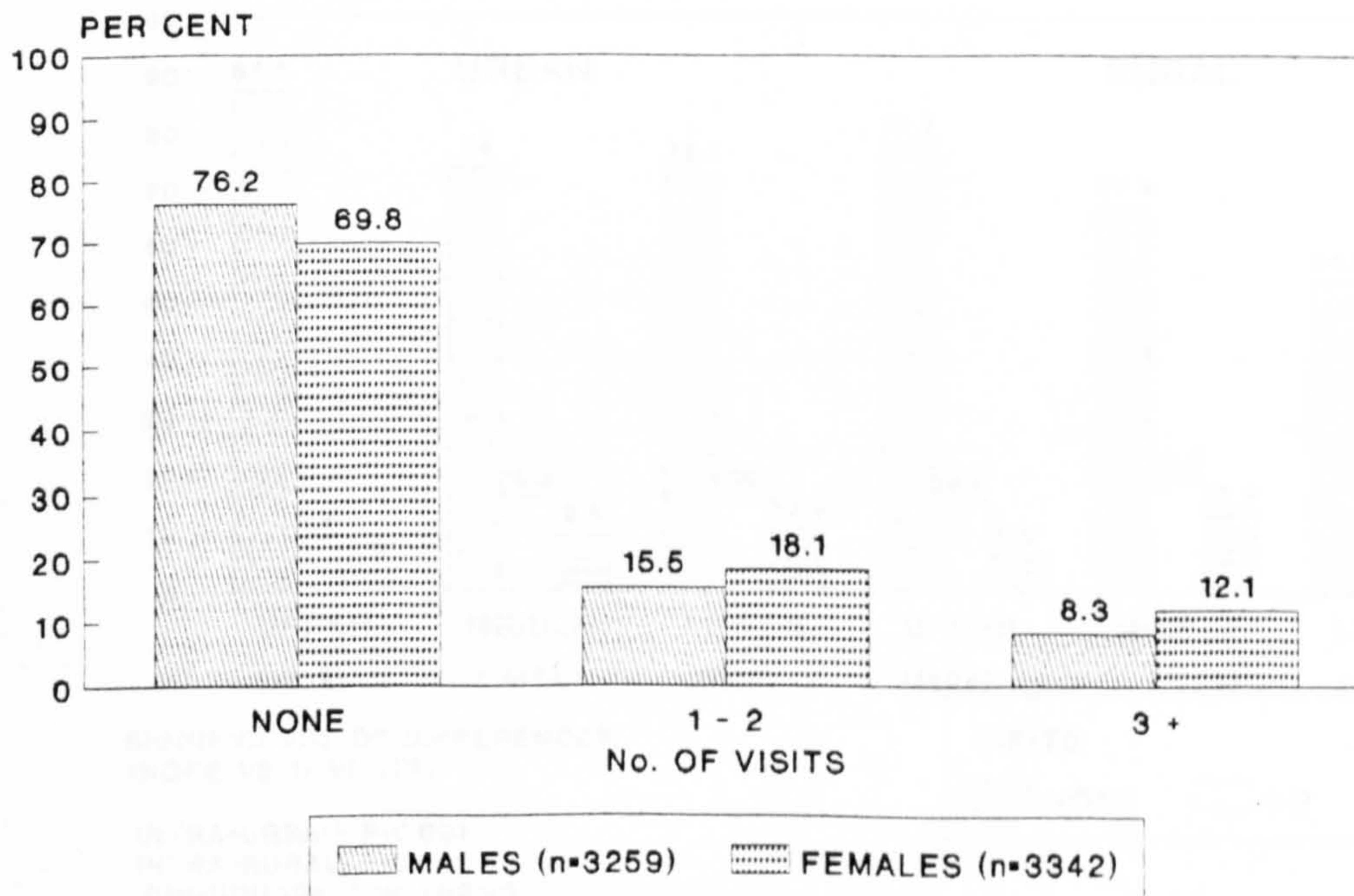


**TABLE VIII.6 NUMBER OF VISITS TO THE HEALTH CENTRE BY AGE GROUP\***

Age group	None %	1 - 2 %	≥ 3 %	Total (n)
<1	56.7	30.4	12.9	(171)
1 - 4	57.5	23.8	18.7	(697)
5 - 14	75.3	17.1	7.6	(1893)
15 - 19	81.4	13.0	5.6	(778)
20 - 29	73.5	15.8	10.7	(1030)
30 - 39	71.4	17.3	11.3	(699)
40 - 49	72.4	15.7	11.9	(471)
50 - 59	79.8	13.4	6.7	(357)
≥60	75.0	12.4	12.6	(476)
All	73.0	16.8	10.2	(6572)

\* During the year preceding the interview  
None vs ≥1 visits : p<0.001

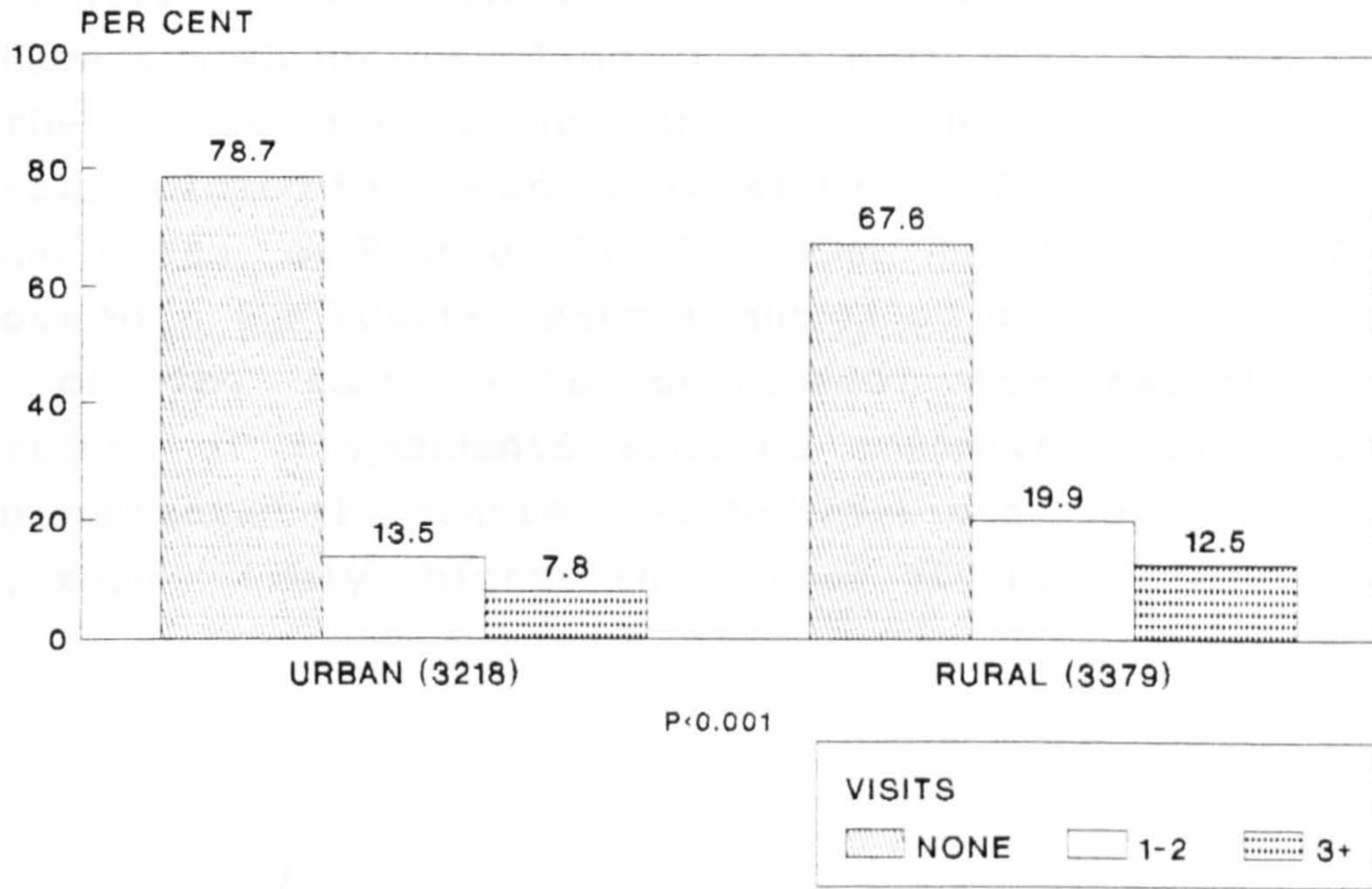
**FIGURE VIII.33 VISITS\* TO THE HEALTH CENTRE BY SEX**



\*DURING THE YEAR PRIOR TO INTERVIEW  
NONE VS 1+ VISITS: P<0.001



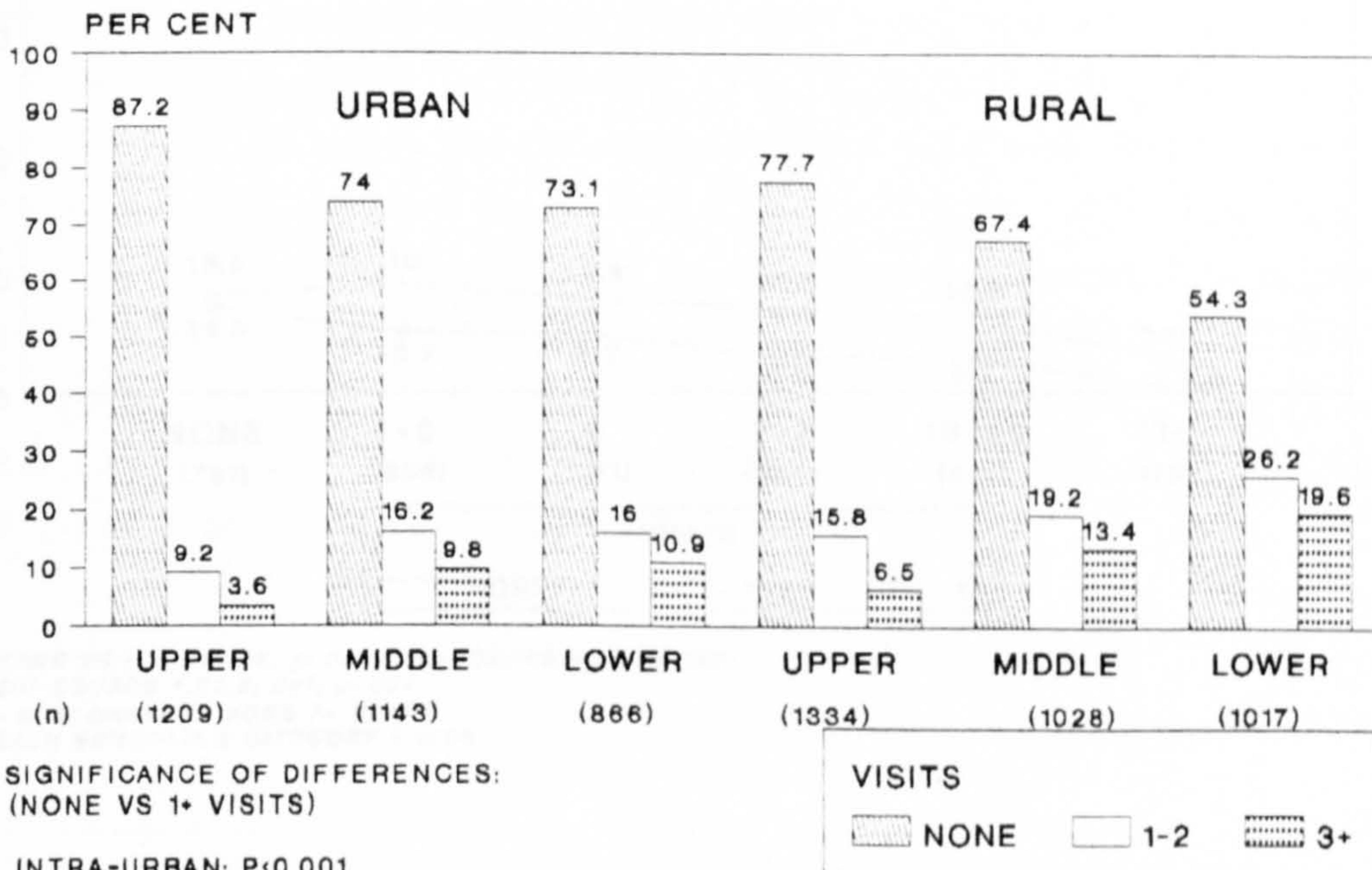
FIGURE VIII.34 VISITS\* TO THE HEALTH CENTRE BY SIZE OF THE LOCALITY



\*DURING THE YEAR PRIOR TO INTERVIEW  
 URBAN = 2,500-15,000  
 RURAL = < 2,500

URBAN VS RURAL (NONE VS 1+ VISITS): P<0.001

FIGURE VIII.35 VISITS\* TO THE HEALTH CENTRE BY LIVING CONDITIONS OF THE LOCALITY

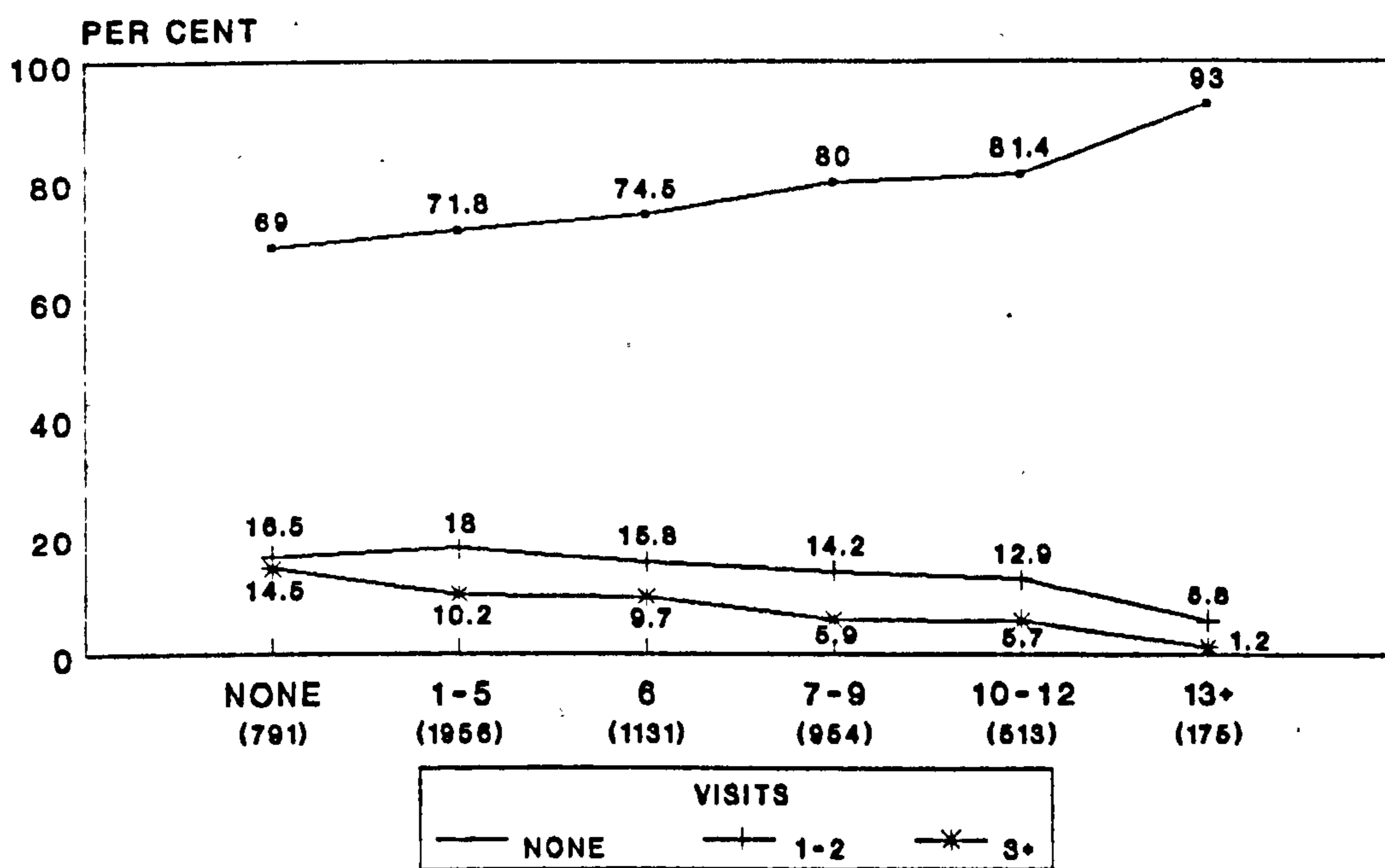


SIGNIFICANCE OF DIFFERENCES:  
 (NONE VS 1+ VISITS)

INTRA-URBAN: P<0.001  
 INTRA-RURAL: P<0.001  
 (CHI-SQUARE FOR TREND)

Utilization of health centres and education. Whilst, the overall utilization of the health centres was quite low (among respondents with no schooling it was only 31%), it was found that the utilization of the centres of the state system was inversely related to the educational level of the respondents. In other words, as Figure VIII.36 shows, the frequency of the contacts with the health centres increased as the educational level of the respondents decreased. For example, the proportions of respondents with no schooling who reported having contacted the centres 1-2 and  $\geq 3$  times, were 2.8 and 12 times, respectively, higher than those of the professionals.

FIGURE VIII.36 VISITS TO THE HEALTH CENTRE BY EDUCATION\*



NONE VS 1+ VISITS:  $p < .001$  (CHI-SQUARE FOR TREND)  
 CHI-SQUARE = 82.5; 5df;  $p < .001$   
 \* RESPONDENTS AGED 7+ YEARS  
 EACH SCHOOLING CATEGORY = 100%



Utilization of health centres and occupation. People in unpaid occupations and low-income occupations, such as household work and agricultural occupations, had the highest percentages of health centre utilization. Conversely, respondents in better endowed occupations, such as clerks and industrial workers, had the lowest percentages (Figure VIII.37).

Utilization of health centres and entitlement to social security. Among both males and females the non-insured respondents reported a significant higher utilization of the health centres than the insured ( $P < 0.001$ ), as Figure VIII.38 shows. Even among the uninsured population, however, the utilization of SESA's health centres was quite low. For instance, the percentage of males having once or more contacts during the previous year was only 27%, and that of females was 34%. This means that 69% of the non-insured population did not utilize the health centres at all during the year preceding the interview.

Utilization of health centres and habitual source of medical care. As expected, the greatest proportion of respondents (49%) who reported utilization of the centres was seen among those who had reported the SESA's services as their main source of care, which is consistent with what is described in Section 2.B of this chapter. However, it is striking that a high percentage (51%) of these respondents had not contacted the health centres. Of the 49% who utilized them, 57% visited the centres twice a year and 43% three or more times. Conversely, the respondents who did not have a regular source of care and those under the social security scheme reported the lowest utilization of the health centres, with percentages fluctuating between 13% and 15%.

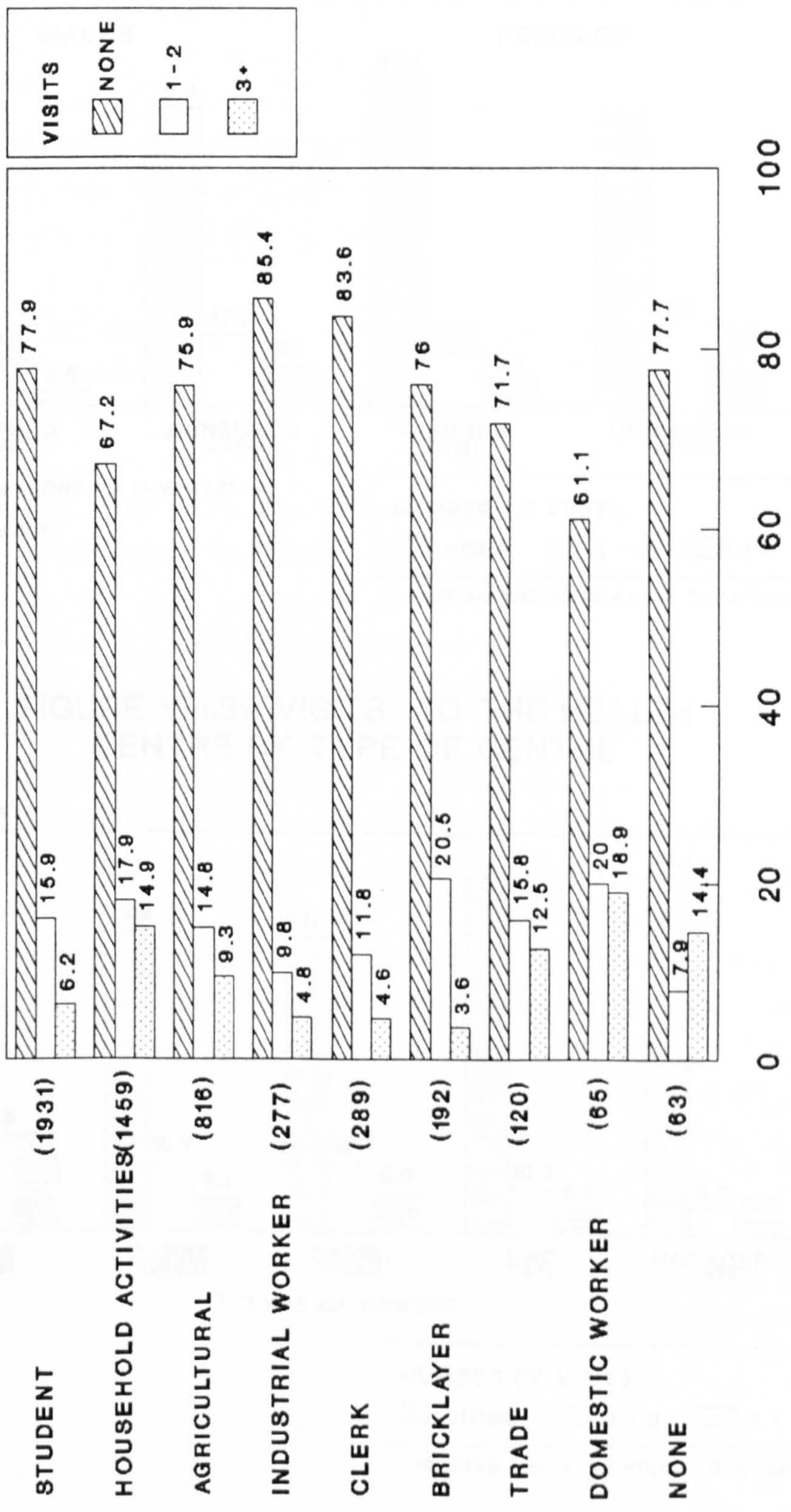
Utilization of health centres by type<sup>25</sup>. Figure VIII.39 shows that the Auxiliary Health Units (UAS) were the most utilized.

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<sup>25</sup>For the description of the characteristics of the different types of centres, see Chapter IV.



**FIGURE VIII.37 VISITS\* TO THE HEALTH CENTRE BY OCCUPATION\*\***



\* DURING THE YEAR PRECEDING THE INTERVIEW

\*\* POPULATION AGED 7+ YEARS

CRAFTSMAN: (n=30) NONE: 80%; 1-2: 10%



FIGURE VIII.38 VISITS\* TO THE HEALTH CENTRE BY ENTITLEMENT TO SOCIAL SECURITY

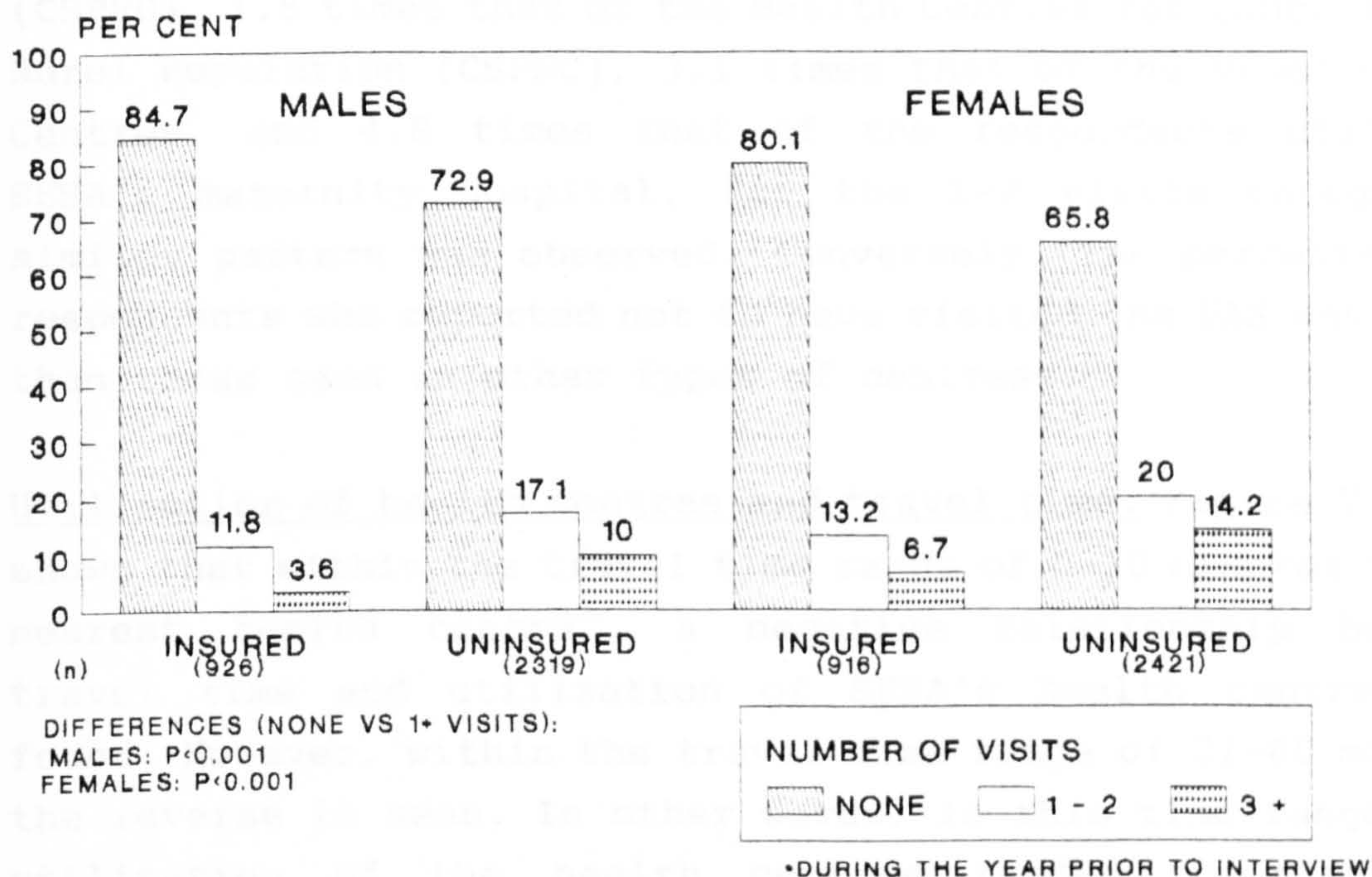
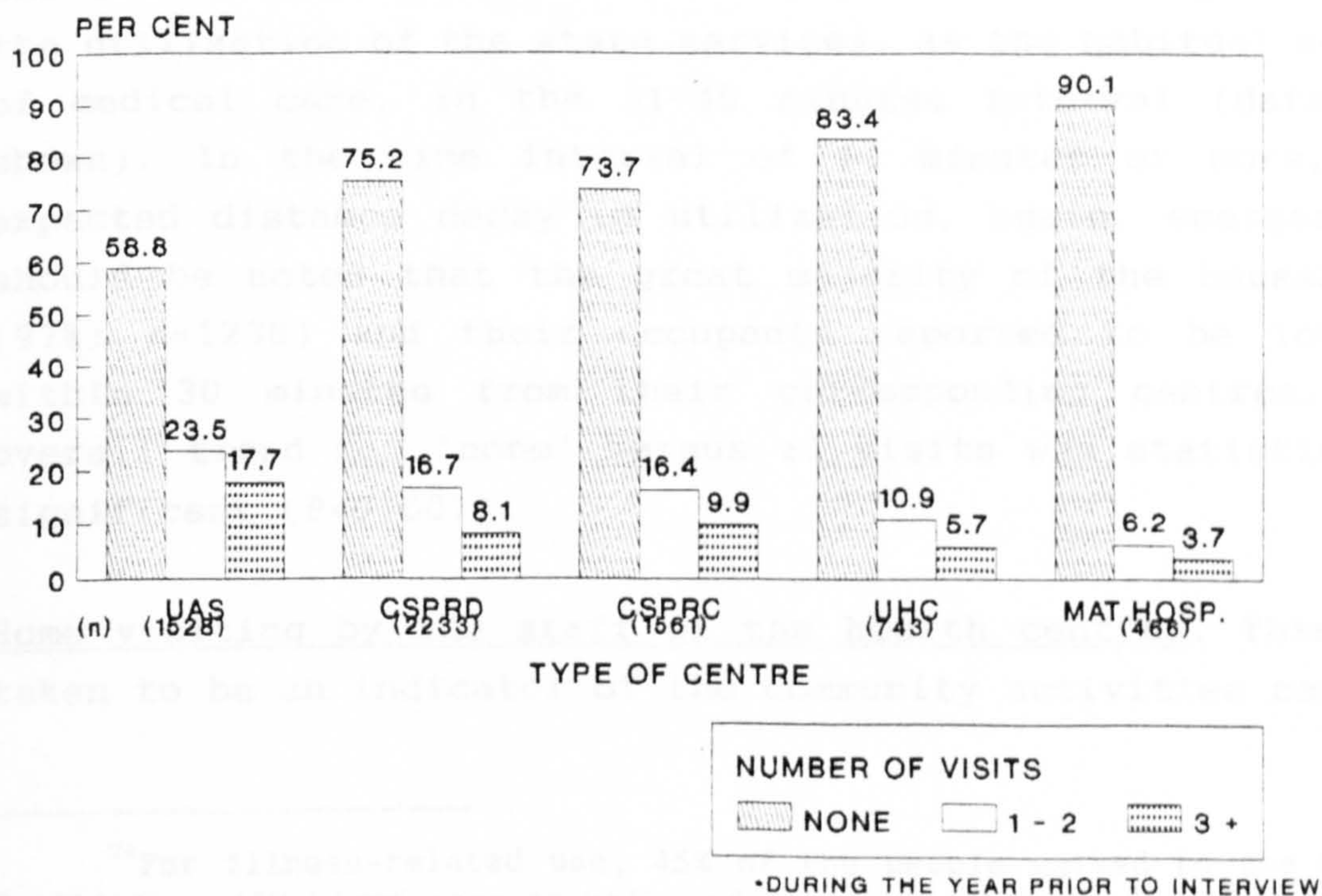


FIGURE VIII.39 VISITS\* TO THE HEALTH CENTRE BY TYPE OF CENTRE





For example, the proportion of respondents who contacted the UAS three or more times was 2.2 times that of the respondents using the Health Centres for Disperse Rural Population (CSPRD), 1.8 times that of the Health Centres for Concentrated Rural Population (CSPRC), 3.1 times that of the Urban Health Centres, and 4.8 times that of the respondents utilizing SESA's maternity hospital. For the 1-2 visits category a similar pattern was observed. Conversely, the percentage of respondents who reported not to have visited the UAS was lower than those seen in other types of centres.

Utilization of health centres and travel time. Figure VIII.40 shows that within the travel time range of 0-30 minutes to the nearest health centre<sup>26</sup>, a negative relationship between travel time and utilization of SESA's health centres was found. However, within the travel time range of 31-60 minutes the reverse is seen. In other words, in this time range, the utilization of the health centres tended to rise with increasing the travel time to the health care facilities. This unexpected finding is, however, consistent with the results obtained from the analysis of habitual source of medical care and travel time. It was found a similar increasing trend in the utilization of the state services, as the habitual source of medical care, in the 31-45 minutes interval (data not shown). In the time interval of 61 minutes or more, the expected distance decay in utilization, again, emerges. It should be noted that the great majority of the households (97%; n=1238) and their occupants reported to be located within 30 minutes from their corresponding centres. The overall trend for 'none' versus  $\geq 1$  visits was statistically significant ( $P < 0.001$ ).

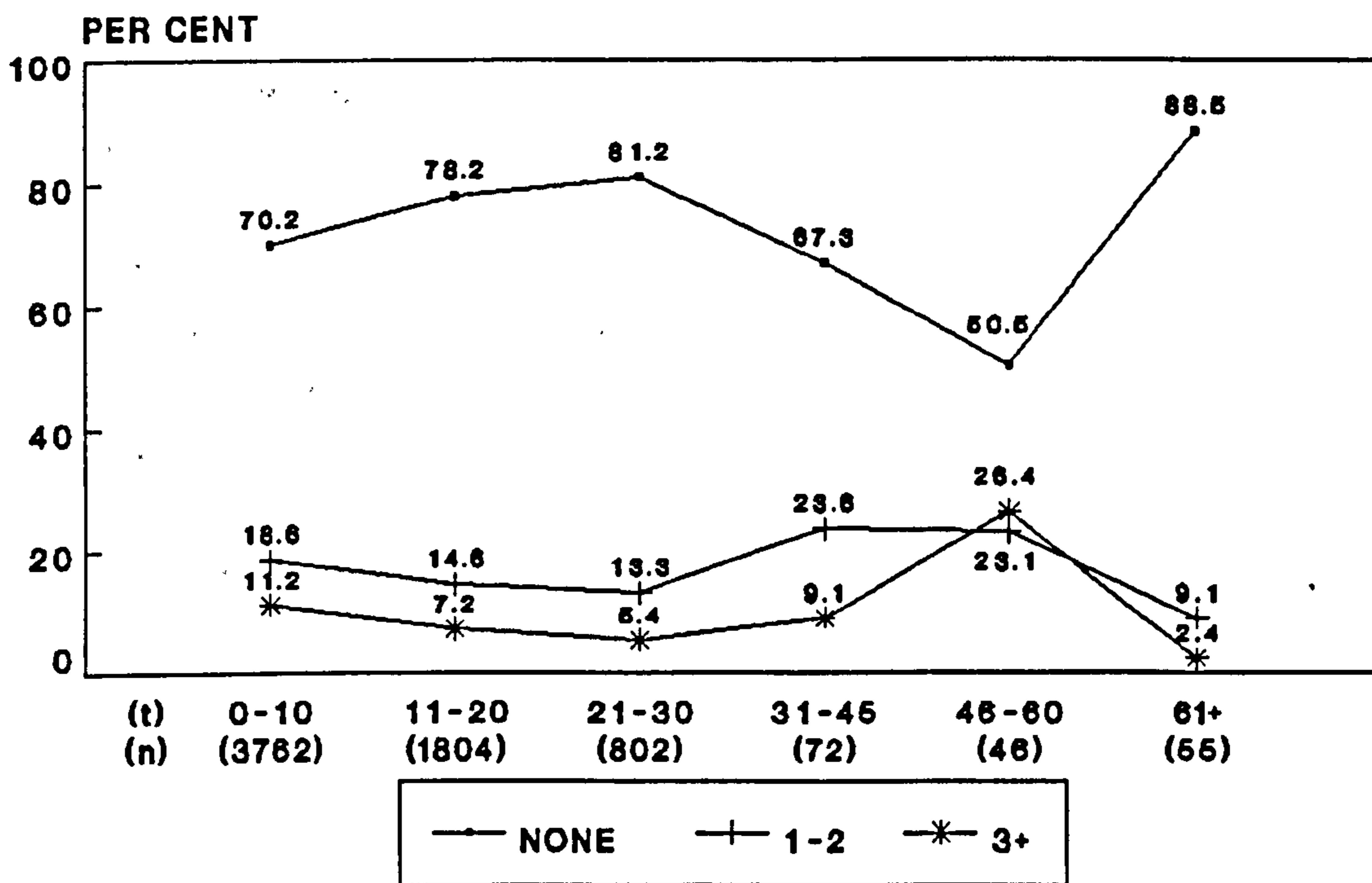
Home visiting by the staff of the health centres. This was taken to be an indicator of the community activities carried

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<sup>26</sup>For illness-related use, 45% of the people walked to the health facilities, 45% hired cars or utilized public transport, and 10% utilized their own vehicles (n=661).



**FIGURE VII.40 VISITS TO THE NEAREST HEALTH CENTRE BY TRAVEL TIME FROM HOUSEHOLDS**



(i) - TRAVEL TIME (MINS)

NONE VS 1 VISITS:  $p < .001$  (CHI-SQUARE FOR TREND)

out by the health centre. In 73% of the households (n=1238), the sample reported not to have had visits from the staff of the health centres during the year prior to interview. Of the 26% households reporting visits, 69% reported 1-2 visits, and 31% reported three or more visits. The commonest motives for the visits were: immunization (44%), surveys (22%), health promotion activities (13%), and medical care (6%).

## **B. Acceptability of the health centres**

Reasons for not utilizing the health centres. As an indicator of the acceptability of the services by the population, the respondents who reported not to have utilized their nearest health centre during the year prior to interview, were asked to indicate their reasons for not doing so. The question allowed the respondents to give a total of three reasons. Figure VIII.41 shows that "not needed" was the most frequent answer among the first reason replies (62%) and among the total reasons given (55%). This category included replies such as "it was not necessary", "self-treated at home", etc. Among the answers given as a second and third reason, perception of low quality care and poor geographical accessibility and availability of the centres, were the problems reported most frequently. This category, which was in second place with 27% per cent among all reasons given, included the following kinds of replies:

(a) "does not rely on the services provided by the centre", "one does not get cured there", "trusts more in the private doctor", "prefers to go to the hospital", "prefers to go to the 'huesero' (bone setter)", "doctors are frequently changed" (with a total of 398 answers); (b) "lack of time", "does not like the centre's working hours", "it is not open during the evenings", "works in a different locality", "one has to wait long" (179 replies); (c) "poor quality care", "service denied" (159 replies); (d) "you never find the doctor", "the centre is always closed" (120 replies); (e) "the centre lacks medicines", "the centre lacks vaccines", "the centre lacks



equipment" (63 replies); (f) "the centre is too far", "it is easier to go somewhere else" (11 replies). It was found that being entitled to the social security scheme was in the third place among all the reasons given, with 17%. In fourth place was "lack of money", which represented only 0.9% of all answers.

FIGURE VIII.41 MAIN REASONS FOR NOT USING THE HEALTH CENTRE

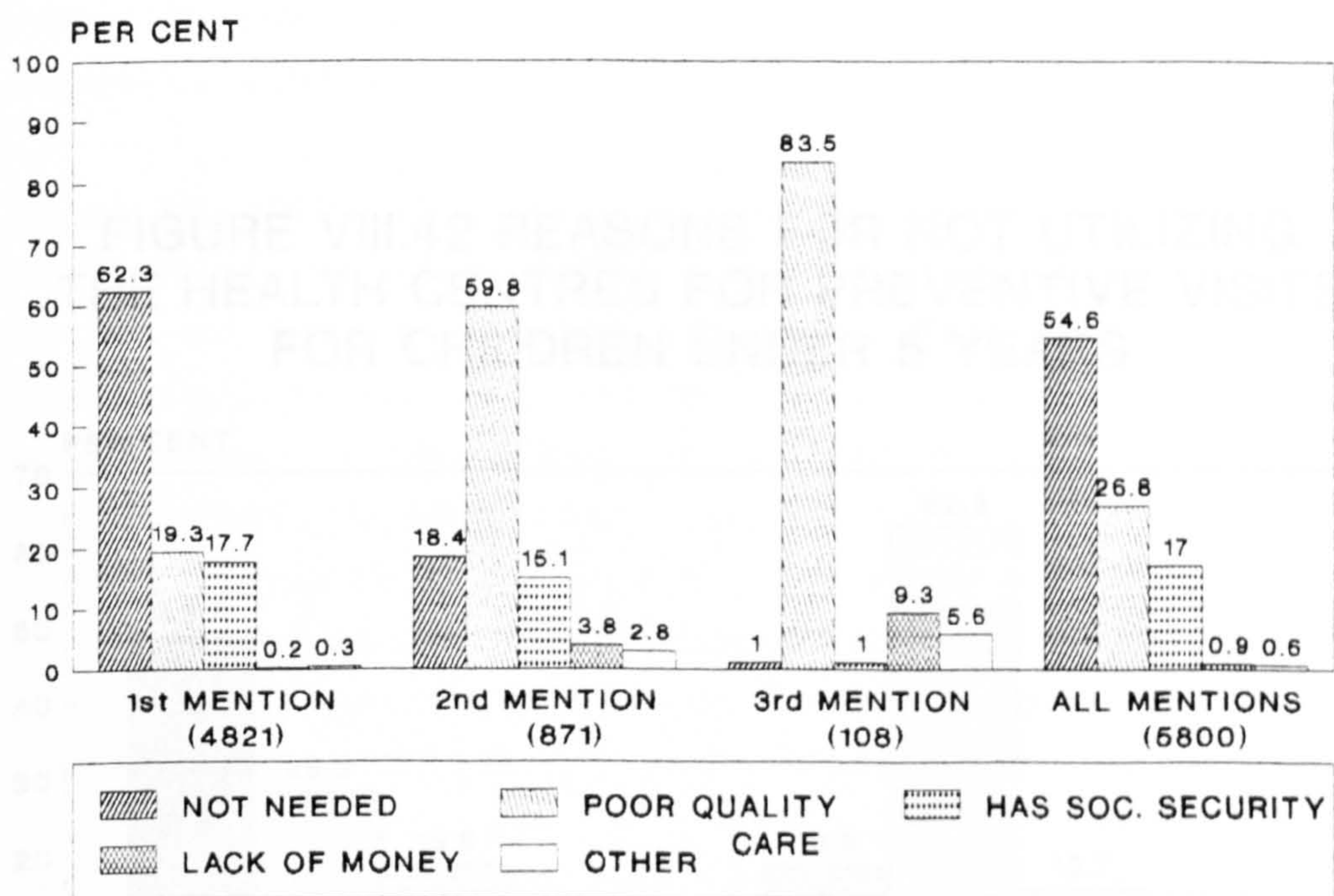
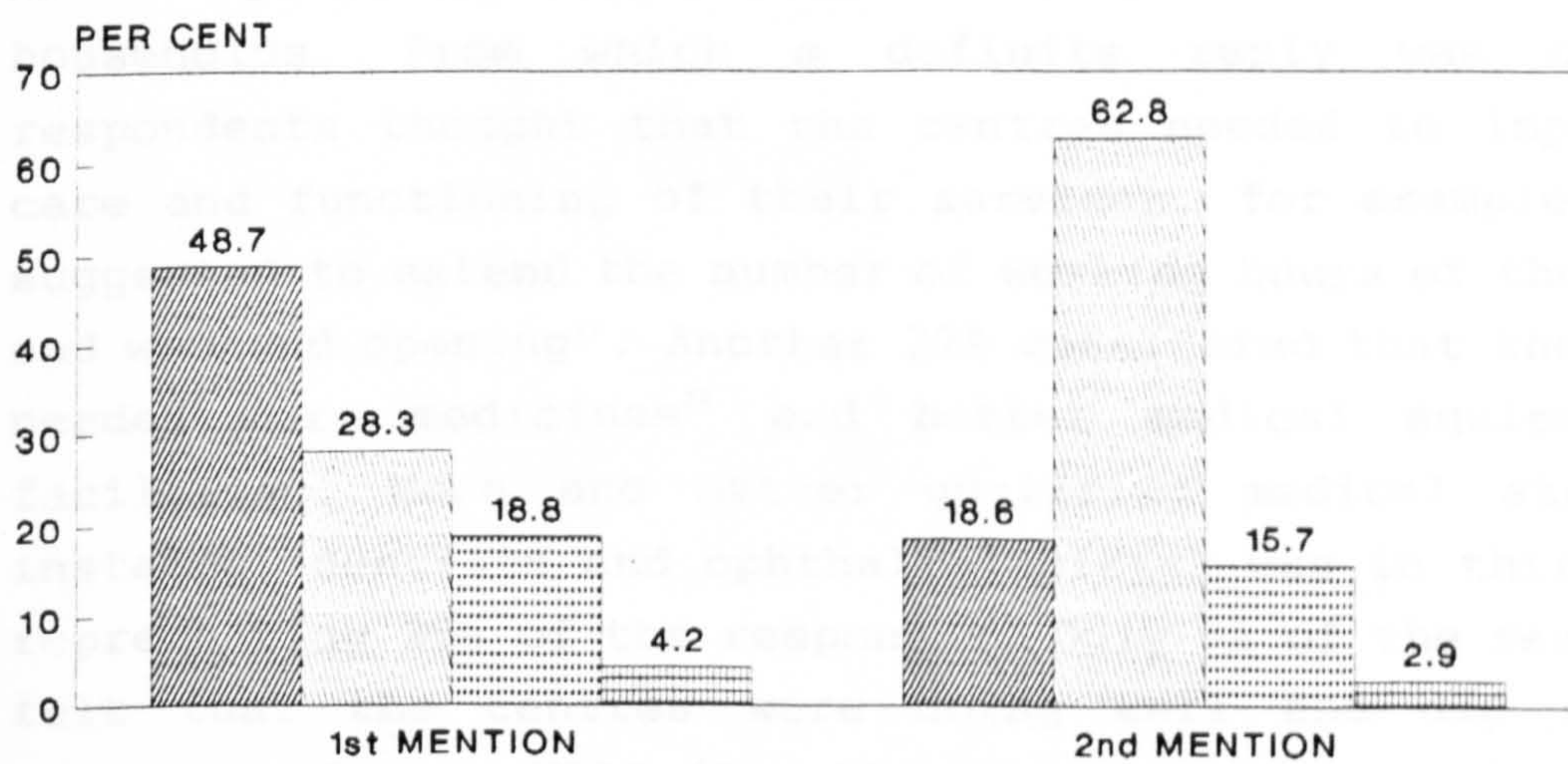


Figure VIII.42 presents the main reasons for not taking children under five years to the health centre for preventive consultations. Among the reasons given in first place, were: "not necessary" (49%), poor quality of care and poor accessibility of the centres (28%), and entitled to social security (19%). Among the reasons given in second place, the most common were: poor quality and poor accessibility of the centres (63%), "not necessary" (19%), and entitled to social



security (16%). Two findings are particularly interesting. First, the high percentage of respondents reporting poor quality of the services as a reason for not using them. This was, despite the fact, observed elsewhere, that respondents of interviews are often reluctant to express their views about the quality of the services, particularly if they are not favorable to institutions (Kroeger et al, 1987). Second, contrary with what was expected, being entitled to the social security scheme was not a frequent reason reported to account for non-utilization.

**FIGURE VIII.42 REASONS FOR NOT UTILIZING THE HEALTH CENTRES FOR PREVENTIVE VISITS FOR CHILDREN UNDER 5 YEARS**



A: 'NOT NEEDED'

B: POOR QUALITY CARE,  
POOR ACCESSIBILITY

C: ENTITLED TO SOC. SECURITY

D: OTHER

REASONS

A

B

C

D

(n=604)



Unmet demand. This aspect was analysed by asking the respondents if during the year prior to interview, a consultation in the health centre had ever been refused to them. Of a total of 1238 households, almost 5% reported consultation refusals. In the urban area, a higher proportion of refusals was seen among households from the upper stratum (5.1%) and middle stratum (4.6%) than in the lower stratum (1.9%), whereas in the rural localities, the opposite trend was seen. In fact, the lower rural stratum had the highest proportion of refusals (nearly 10%), whereas the percentages for the middle and upper strata were 4.6% and 2.7% respectively. As with regard of the type of centre, the CSPRD and the maternity hospital had the largest proportions of consultation denials (6.5% and 6.4% respectively).

Opinions about the health centres. This question allowed the respondents to give three answers. The response rate for at least one remark was 84% (n=1041). The percentage of "don't know" replies was 16. Overall it was found that in 35% of the households, from which a definite reply was obtained, respondents thought that the centres needed to improve the care and functioning of their services, for example, it was suggested to extend the number of working hours of the centres and weekend opening<sup>27</sup>. Another 32% considered that the centres needed more medicines<sup>28</sup> and better medical equipment and facilities. More and better qualified medical staff (for instance, dentists and ophthalmologists) was in third place, representing 25% of the responses. Only 9% of the respondents felt that the centres were doing well and did not lack anything (Figure VIII.43). The views of the population were also analysed by type of health centre. It was found that as

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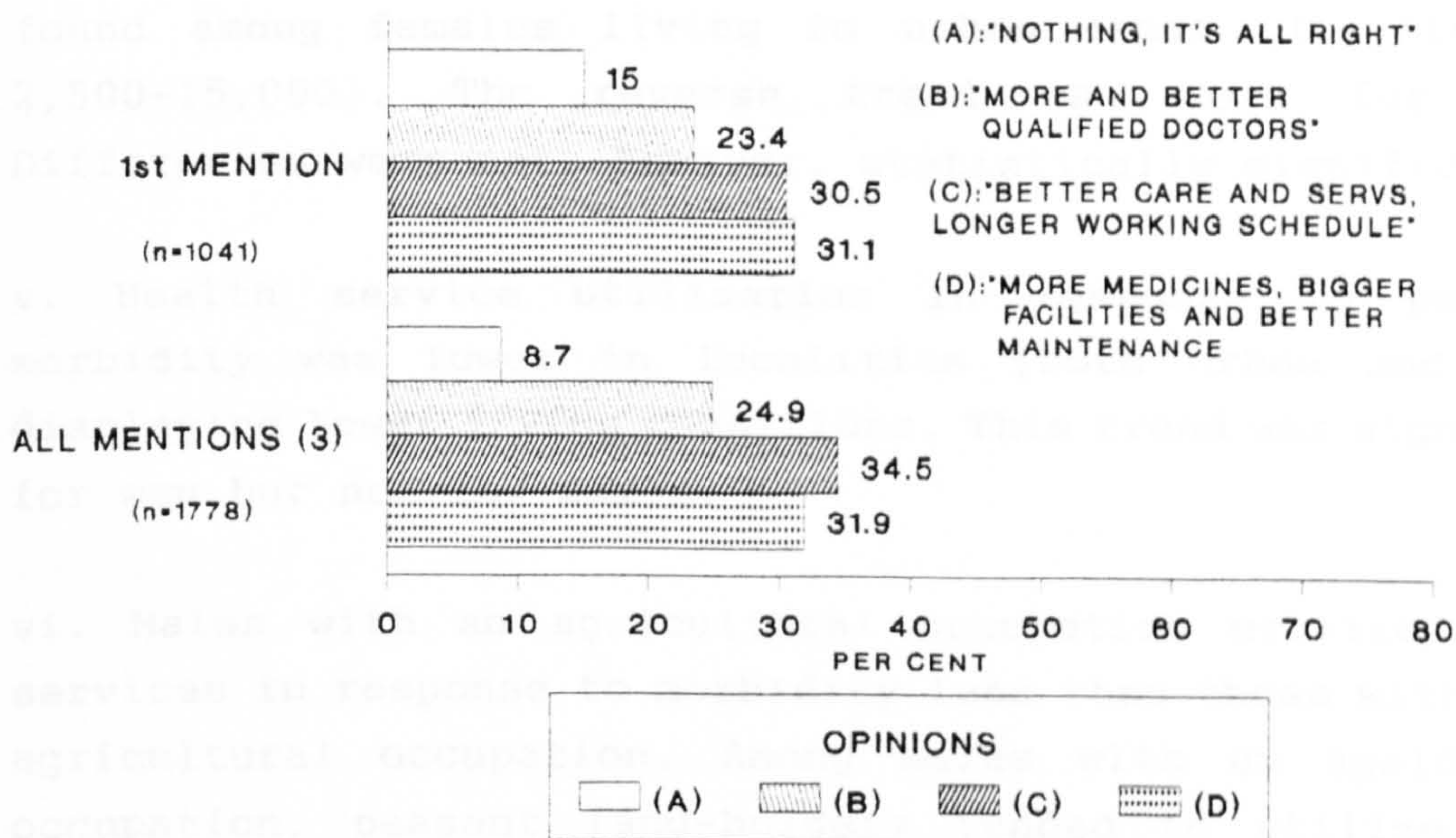
<sup>27</sup>This category also included: "to reduce the waiting time", "to abolish user charges", "to give priority to seriously ill patients", "to reduce absenteeism and frequent shifting of doctors".

<sup>28</sup>This recommendation was the single most frequent (357 responses), followed by "longer schedule and seven-days-a-week opening", and "better and considerate attention to the users", (290 and 219 responses, respectively).



the complexity of the structure and equipment of the centre increased (CSPRC and urban centre), the proportion of respondents who felt their centres needed to improve their quality of care, increased accordingly, whereas as the complexity of the organization diminished (UAS and CSPRD), the perception of lack of medicines and equipment increased.

**FIGURE VIII.43 RESPONDENTS' OPINIONS ABOUT WHAT THE HEALTH CENTRES NEED MOST**





## 5. Summary of findings

i. Children, older people and women had the highest utilization of health services.

ii. The utilization of health services represented 28% of all health care actions taken in response to overall perceived morbidity. Utilization was even lower when analysed in relation to all morbidity perceived as severe.

iii. Chronic illnesses were the health problems that led to the highest utilization of health services, whereas nervous and mental, and skin problems generated the lowest utilization. Infectious diseases, both respiratory and gastrointestinal, were predominately treated at home.

iv. A slightly higher illness-related health service use was found among females living in urban areas (localities of 2,500-15,000). The reverse trend was seen for males. Differences were not, however, statistically significant.

v. Health service utilization in response to perceived morbidity was lower in localities (both urban and rural) displaying lower living conditions. This trend was significant for men but not for women.

vi. Males with an agricultural occupation utilized health services in response to morbidity less than those with a non-agricultural occupation. Among males with an agricultural occupation, peasant land-holders tended to utilize health services more than waged labourers.

vii. For both sexes, the uninsured population made less illness-related use than the insured population.

viii. Respondents living in poorer housing conditions made less use of health services in response to perceived illness. This trend was significant for both sexes.

ix. Private services were the main habitual source of care among the population aged  $\geq 15$  years, whereas the state services were the principal source among those aged  $< 15$ .

x. The habitual source of medical care was strongly associated with the educational level and occupation of the respondents.

xi. Almost a half of the under five year olds had not had preventive contacts with the health services during the year preceding the interview. Large disparities in preventive visits were found between social groups.

xii. Children of younger mothers made more preventive visits.

xiii. A significant increasing trend in utilization of preventive services with increasing mothers' educational level was found.

xiv. Children of mothers working in their homes tended to have more preventive contacts than their counterparts with mothers working outside their homes.

xv. A greater proportion of children of insured mothers made preventive visits than children of uninsured mothers.

xvi. Children living in the most deprived urban localities (of 2,500-15,000 inhabitants) had a lower number of preventive contacts than their counterparts living in less deprived areas.

xvii. SESA's primary care centres were the facilities utilized for preventive visits of children under 5 years most.



xviii. High vaccination coverages were found. However, it is likely that these results are biased, since only children with vaccination cards were included for this analysis.

xix. As far as the utilization of SESA's primary care centres is concerned, this study presents evidence that there is some disparity in favour of lower socio-economic groups. However, the level of utilization among these groups is very low and does not seem to match their level of health care needs. Furthermore, the utilization of private services is relatively high, even among the insured population.

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## IX. DISCUSSION

The results presented in Chapters VII and VIII have documented the unequal distribution of health and health care utilization across different population sub-groups and socio-geographic regions in rural areas of the Mexican state of Tlaxcala. It was considered of paramount importance to obtain first the demographic and socio-economic profile of the study population in order to analyse to analyse the distribution of health and health care use across different groups. In describing the health of such population sub-groups and communities, several health measures and indicators were used. The strengths and weaknesses of these are discussed here. Findings are compared with those found in Mexico, Latin America and elsewhere. Social measures included individual and area-based indicators and these were utilized to analyse the distribution of health and health care use. Their power to produce groups with sharper differentials is compared and the appropriateness of the methods used in this study as well as the validity of any extrapolation of the results are assessed in this chapter. In the last section, the implications of the findings and methods for health service planning are also discussed.

### 1. Population and living conditions

#### A. Population structure

The results on the age-sex structure of the population showed that the study population appeared slightly younger than the average for the country. The percentage of those under 15 years old was 42%, compared to 38% in all the country (Poder Ejecutivo Federal, 1990). This indicates indirectly the level of living standards of the study population in comparison with



that of the whole country. No statistically significant differences were found between the age-sex structure of the sample population and those of the 1980 Census population and the 1987 projected population of Tlaxcala.

The high percentage of fertile women and children aged less than five years (36% of the total population) that was found indicates the kind of health problems and workload the health services might be expected to deal with.

The age distribution of the population in localities of different size (<2,500 and 2,500-15,000 inhabitants) was also comparable with that of the total population of Tlaxcala.

The population pyramids (Figures VI.1 and A.6.1) had the typical shape for the population structure of a developing society. A wide base and a slim apex, indicating a high proportion of children, and a low proportion of old people. The effects of the fertility decline were also evident. With the exception of the middle and lower rural strata, the proportion of children under five was lower than that of the children aged 5-9. Although the effects of sampling design cannot be ruled out, these differences might be confirming what has been found elsewhere in Mexico: that the fertility decline, which started in the middle seventies (Martinez-Manatou, 1985) has had a faster pace in the urban rather than the rural (Poder Ejecutivo Federal, 1990, Potter et al, 1987).

The masculinity index (men/women ratio) of the working age population was slightly below one (0.95)<sup>1</sup>, which could be indicating that slightly more men than women migrate. However, sex differences between the socio-economic strata were not statistically significant.

The proportion of persons of working age (15-64) was 53%, which is comparable with that of 53.4% obtained for the whole

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<sup>1</sup>This ratio was 0.972 for the total study population.

state of Tlaxcala by the National Health Survey, (SSA, 1988a). As expected, it was five per cent beneath than that of Mexico's 1987 projected population (58%) (Dirección de Estadística, 1990).

Fertility. The level of fertility observed in the study population was 1.8 times higher than that of the whole country, which is much higher than might be expected. Such a large difference cannot be explained purely by the method used.<sup>2</sup> Thus, this finding confirms previous findings of studies of fertility in rural areas of the country (SSA, 1989: Encuesta Nacional sobre Fecundidad y Salud). Sharp differences in the total fertility rate (TFR) ranging between 4.30 and 7.70 were seen among groups with distinct educational levels, and types of occupations (range 5.82-7.56). These differentials are consistent with those described in Chapters VII and VIII. In addition to their demographic implications, these differences reflect the unequal coverage and differential impact of the health services, particularly of the family planning programme.<sup>3</sup>

Migration. Although this was not studied directly, the population pyramid and information regarding the length of residence suggest that, contrary to what might be expected, migration is not an important factor in the population dynamics in the study area. This confirms published data on the migration movement of the population of Tlaxcala (INEGI, 1986). These data show a decline of the negative migration movement of the population of Tlaxcala from 18% of the total population in 1970 to almost 5% in 1980. This, despite the predominant rural nature of this state and the fact that Tlaxcala is relatively close to important attraction centres such as Mexico City and the states of Mexico, Puebla,

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<sup>2</sup>If the assumptions on mortality and fertility for the study population (on which indirect methods are based) are met, the maximum error is estimated to be of the order of 7-8% (Sullivan et al, 1985).

<sup>3</sup>See Alba and Potter, 1986.



Veracruz, and Hidalgo. Furthermore, Tlaxcala had a positive balance with the last mentioned state in 1980.

### **B. Disparities in living conditions**

An analysis of the unequal distribution of health and health care depends on knowledge of the social and economic circumstances of the population.

The general picture of the living standards of the study population emerges from the results presented in Chapter VI, which shows inequalities in the social and economic circumstances within an apparently homogeneous small area. The consequences of these inequalities on health and health care use of the study population were presented in Chapters VII and VIII.

Level of education and occupational profile. The overall level of education of the population is low, when compared to national standards. For example, the mean educational level of the study population was almost one and a half years lower than the national average. The gap is even greater if a comparison is made with the Federal District, and better off states such as the northern states of Nuevo León and Baja California. Likewise, the educational level of the working age population (12-64 years) is extremely low, which is reflected in the occupational profile of the population.

The predominant occupations are unskilled ones, such as those in agriculture. Among these, the most frequent are: 'campesinos' (peasants working their own plot of land) and waged labourers. The second group are the skilled (urban oriented) ones, including industrial workers, clerks and other employees of the service sector, who together represent only 10% of the total work force. While a large proportion of the population (61%) was found to be dependants, both women and children make an important contribution to the economy, particularly that of families dedicated to agricultural activities.

The result of the current decapitalization and crisis in the agricultural sector (briefly described in Chapter III, Section 1.B) is illustrated by the findings of the survey. A majority of the respondents in agricultural occupations were classified as under-subsistence 'campesinos' according to the Schejtman index (CEPAL, 1986).

Population under the social security scheme. A consequence of the occupational and social class structure is the very low coverage of the social security scheme. The study population had a population coverage by the social security scheme half (28%) that of the rest of the country in 1990 (59%)<sup>4</sup>. As mentioned in Chapter III, following the ideological function of the health care system, the better equipped social security services are reserved for privileged sectors of Mexico's work force, namely the state employees, armed forces and urban industrial workers, whereas the poorer equipped state services cater for the worse off occupations of the work force, such as peasants, wage labourers, street sellers and the unemployed and the less educated (see Chapter VI, Section 2.D and Chapter VIII, Section 2.A).

Housing conditions. Although these were better than expected, there were sharp differences between socio-geographic areas and social groups. While some areas and population groups enjoy good housing conditions, in terms of quality of construction materials, availability of sanitation services, possessions and domestic amenities, there were others in deprived municipalities such as El Carmen, Terrenate and Atlangatepec, whose houses had overcrowded conditions, earthen floors, and no W.C. facility, piped water, gas stove or other amenities.

Disparities in living standards. Whilst the social and economic circumstances of the study area are, in general, worse than those of other regions of Mexico, it was found that

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<sup>4</sup>(Salinas de Gortari, 1990).



within the rural area of Tlaxcala, there are sharp inequalities in the living standards (in terms of education, housing conditions, income, social security coverage) between small communities and population sub-groups. These variations within the rural area of Tlaxcala are more than merely the regional reflection of the national inequalities described in Chapters III and IV. Since the rural region of Tlaxcala is one of the most deprived of the country (in social, economic and health terms)<sup>5</sup> the present study is, therefore, concerned with health inequalities and health care inequities within an area recognized as being at the worst tail of the economic and health spectrum of Mexico.

## **2. Social distribution of health**

### **A. Differentials in self-reported morbidity**

Four morbidity measures were utilized: prevalence of overall morbidity, number of symptoms and problems reported per 100 respondents and per person reporting illness, prevalence of illnesses perceived as severe, and type of illness reported. The recall period utilized was similar for all the measures: a two-week recall period.

The overall morbidity rate (37%) was much higher than that reported by the National Health Survey (13% in Tlaxcala as a whole, and 16% in the whole country) (SSA, 1988a, 1988b), which may be partly explained by the use of different

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<sup>5</sup>For example, the GDP per capita was only lower in three states (Oaxaca, Zacatecas and Guerrero) than in Tlaxcala in 1980. In that year, over 68% of the population of Tlaxcala lived in overcrowded conditions compared to less than 48% of those of Mexico City, Baja California and Chihuahua. Some of Tlaxcala's rural areas - i.e. El Carmen, Alzayanca, Ixtenco, Trinidad Sanchez- are among those rural areas of Mexico with a higher proportion of population living in extreme poverty conditions (CCPNS, 1990; COPLAMAR, 1985). Selected health indicators such as infant mortality rate, 1-4 mortality rate and life expectancy at birth were worse in Tlaxcala in 1987 than in the whole country (SSA, 1990).

methodologies and levels of aggregation of the data<sup>6</sup>. It was also higher than the reported by Kroeger et al (1987) for marginal-urban and rural Nuevo León, Mexico (20-27%). By contrast, it was comparable with that reported in studies undertaken in countries of the Latin American region: rural Bolivia (42%) (Frerichs, 1980; Frerichs et al 1980); rural Ecuador (41%) (Kroeger, 1982); urban Honduras (32%) (Teller, 1973); marginal-urban Peru and Bolivia (22-38%), and rural Peru and Bolivia (39-53%) (López and Kroeger, 1990). It was also similar to that reported by the WHO International Collaborative Study (Kohn and White, 1976) carried out in 12 areas of North America, Europe and Argentina with an overall morbidity rate of 27%-45%.

Demographic differentials. Older respondents aged 45-64 and ≥65 years reported a higher morbidity, and mothers also reported a higher morbidity for their children under five years, which is compatible with results found in marginal urban and rural areas of Nuevo León, Mexico (Kroeger et al, 1987) and in other Latin American countries (López and Kroeger, 1990; Kroeger et al, 1988). It should be noted that mothers' proxy reports on their young children do not necessarily reflect 'true' morbidity prevalence, but as put by Kroeger (1983):

"...it does reflect true family attitudes and the group's perception of the individual's problem. This is particularly true for paternalistic societies, where the 'group management of therapy' and 'familism' are dominant features".

Children aged 5-14 and adolescents had the lowest overall morbidity rates and number of symptoms per respondent. This pattern was also observed for prevalence of illness assessed as severe, except for males aged 15-44 who had the lowest rates. Infectious illnesses, especially respiratory and digestive, were the predominant types of illnesses reported for children aged 0-4 years. Skin problems were highly

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<sup>6</sup>The National Household Survey did not utilize a tracer symptom list.



prevalent among children aged 5-14 years. Conversely, nervous and mental illness, chronic illness and musculoskeletal problems were more frequently reported among older respondents. Again, these results are in agreement with those of studies in other Latin American and Third World countries (Ross and Vaughan, 1986).

Over the four morbidity measures used here, women had higher rates than men. These findings confirm existing evidence that females report greater morbidity, as shown by studies undertaken in industrialized countries of Europe and North America (Kohn and White, 1976); Britain (Curtis, 1990; Townsend et al, 1988a; Bucquet and Curtis, 1986; Blaxter, 1985, 1987); France (Aiach and Curtis, 1990; Aiach and Cebe, 1983) and Norway (Måseide, 1990). Data reported here are also consistent with those reported in studies carried out in Mexico (Kroeger et al, 1991, 1987); Argentina (Kohn and White, 1976; Kroeger et al, 1984; Kroeger et al, 1988); Bolivia and Peru (López and Kroeger, 1990) and other Third World countries.

Although the explanation for differences in self-reported morbidity between sexes is not clearly known, in the case of the rural area of Mexico these may have much to do with inequalities in occupational participation, division of labour in general, and women's traditional responsibilities toward their families and family economy. Cultural and psychological factors may play an important role in generating gender differences in perceived morbidity. A higher propensity of women to report illness in health interview surveys has been reported in Britain by Bucquet and Curtis (1986) utilizing data from the British General Household Survey, and in France by Aiach et al (1981) in a study on the cultural factors of differentiation carried out in suburbs of Paris. Aiach and Cebe (1983) found a relationship between the higher propensity of women to report a greater number of symptoms and the psychological nature of these symptoms.

However, the influence of the method utilized can not be ruled out. It is possible that health problems of women were over-represented in the tracer list of symptoms utilized. The order of such problems in the list might have also influenced their reporting. Nevertheless, the tendency of women to report higher levels of morbidity remains, even after controlling for gynaecological and maternity problems (López and Kroeger, 1990). It has been suggested that sex differences in illness reporting is related to the proxy/direct kind of reporting (Mechanic and Newton, 1965). These authors have suggested that:

"Since it is probable that women are more likely to be found at home than men, the female-male observed difference may reflect the relative extent to which reports were obtained by proxy for males and females."

However, it is unlikely that this explanation would explain the large gender differences seen in this study, given the high proportion of direct reporting among males.

Socio-economic differentials in morbidity. The indicators of socio-economic position and status utilized were: education, occupation, entitlement to social security, habitual source of medical care, housing conditions, and frequency of meat consumption. The position within the agriculture production system (land-holders and waged labourers) was utilized as an indicator of social class among those in agricultural occupations. Quality of agricultural land (regarding source of water) was also used to distinguish the better off peasants from the worse off ones.

By using a variety of morbidity indicators and social markers, this study has compared the experience of illness of population sub-groups living under different socio-economic circumstances. The results presented in Chapter VII have shown that there is clear evidence of social differences in perceived morbidity. Over the four morbidity indicators, a regular and consistent trend was found: a significant increase



in the reported prevalence of illness with decreasing socio-economic status and social class. This trend was observed irrespective of the indicator of socio-economic status used and it remained after controlling for demographic variables such as age and sex. The salience of each of the social indicators used here, in discriminating groups of high and low morbidity, is examined later in this chapter.

Morbidity and education . Differences were particularly marked between respondents from distinct educational levels, as measured by completed years of education. Those respondents with no schooling or very low schooling (1-5 years) had the highest rates of overall morbidity and reported a greater number of symptoms compared to those with higher schooling (7-9 years) or even to those with complete primary school (6 years). Differences in morbidity perceived as severe between educational groups were even greater. Between groups with relatively small differences in level of education there were large differentials in illness reporting.

The findings of this study agree with those reported in Mexico for the rural area of Nuevo León (Kroeger et al, 1987), though the prevalence level of illnesses perceived as severe was much higher in Nuevo León, which was probably due to a different categorization of the data. For instance, the present study did not include 'moderately serious illnesses' in the category of severe illnesses. The inverse relationship between perceived morbidity and education has been reported by a number of studies in a variety of countries such as Italy (Piperno and Di Orio, 1990), Yugoslavia (Mastilica, 1990), Israel (Shuval, 1990) and the Netherlands (Spruit, 1990). Reports of studies on morbidity and education carried out in Third World countries are scarce.

Regarding the interpretation of these findings, it has been suggested that less educated people tend to exaggerate their experience of illness and present a worse condition than in fact exists (Piperno and Di Orio, 1990). However, in a study

carried out in New York to compare health interview responses with medical records from the Health Insurance Plan, no consistent differences in the reporting of chronic conditions in relation to medical records by education and income were found (Mechanic and Newton, 1965).

Morbidity and occupation, social class and land tenure. The present study documented the existence of large differentials in morbidity between occupations. Among males the trend found over the various morbidity measures shows that agricultural workers experienced higher rates than non-agricultural respondents, such as trained employees and skilled industrial workers. Between these were the semi-skilled and unskilled workers such as bricklayers. Differences were sharper for musculoskeletal problems and nervous and mental problems than for chronic illnesses. Moreover, for this last group of problems, older males ( $\geq 65$ ) from non-agricultural occupations showed higher rates. These occupational differences in the type of illness reported may be indicating the influence of different occupational and environmental risks, and living standards.

Among females, those occupied mainly in household activities experienced higher both overall and severe morbidity than those occupied outside the household. Differences were particularly steep and statistically significant in the 15-44 age group. Differences persisted for type of illness reported, being steeper for infectious and parasitic digestive illnesses, gynaecological and obstetrical disorders, and nervous and mental problems. This might reflect a higher proportion of young women from upper strata work outside the household as clerks or secretaries. These have, in general, better education and living conditions than women doing household duties and helping their families with the agricultural work.

Differences in health between women occupied in household duties and those employed outside the home have been



documented in Britain (Arber et al, 1985, Blaxter, 1987; Arber, 1991). In this country it has been suggested that the poor health of women not working outside the home may be due to selection of the least-fit out of the labour market (Blaxter, 1989). This study cannot confirm or reject such an assertion. Nor can it ascertain if differences found indicate a higher sensitivity to, or a greater propensity to, report morbidity for those occupied in household activities. However, differences in self-reported morbidity were consistent with differences in other health indicators and with disparities in living conditions among occupations.

Among the agricultural group, there was a slight tendency in the expected direction: waged labourers showed higher overall morbidity rates and a greater number of symptoms than peasants working their own plot of land. This finding confirms that reported in a previous study carried out in a rural area of Mexico in 1973 (Laurell et al, 1977) to compare the overall health and medical care utilization of two communities with different level of socio-economic development (see Chapter III, Section 3.A). This study concluded that the gap in health levels between poor peasants and waged labourers may be explained by the character of Mexican rural development and the consequent proletarianization of the agricultural sector.

This has caused a massive conversion of peasants into waged labourers in an unstable employment market. Considerable migration follows, which, in turn, has worsened the working and living conditions of this sector of the rural population. In the case of Tlaxcala, these phenomena occurred chiefly during the 1960s and 1970s when this state experienced the greatest migration flows. Similar circumstances have been documented in other countries of Latin America. For instance, a study carried out in rural areas of Brazil, revealed important differences between land tenure patterns and childhood malnutrition and mortality with the children of landless agricultural labourers being at disadvantage (Victoria and Vaughan, 1985).

From an analysis of the data on the relationship between morbidity and land tenure it is difficult to make a definitive conclusion, since although small differences are found in the expected direction, they were not statistically significant. Perhaps this is due to the fact that land tenure alone is a crude indicator, since the two resulting groups comprise heterogeneous sub-groups. That is, it is likely that a potential association might have been obscured by the sharp differences existing between sub-groups forming a category of this variable. For example, the group without land includes groups as different as waged labourers, clerks and professionals; whereas the groups possessing land consist of a range of poor, middle and rich peasants. By contrast, the significant relationship found between morbidity and type of land is a finding of the greatest significance for analysing morbidity by social class in the rural sector, since type of land is a reliable measure of socio-economic position in such a sector.

While the indicator of occupation/socio-economic position in the production system (land-holders/waged labourers) permitted a comparison of the social groups at the worst end of the social and economic spectrum of the rural sector, this measure (type of land) was particularly useful for comparing the illness experience between poor and richer peasants. It reflected the dual character and contrasts of the productive structure of the agricultural sector of Tlaxcala. On the one hand, there is a sector of rich peasants and farmers who have good quality land, utilize modern technology, fertilizers, irrigation facilities, and get high yields. On the other, there is a sector of poor peasants and 'ejidatarios'<sup>7</sup> with small plots of poor quality unirrigated land, who depend on the rainfall and traditional methods, and who consequently obtain low yields.

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<sup>7</sup>For definition see Chapter III, Section 1.B.



Morbidity and entitlement to social security and source of medical care. These were utilized as indirect indicators of occupation and social class. While use of both produced results consistent with those described for occupation, habitual source of medical care revealed clearer findings. This is a finer measure than entitlement to social security, since it allowed the clear distinction between two groups with different morbidity patterns within the uninsured population: those who usually utilize the state services and those who utilize the private services. The former group comprises low-income occupational groups such as agricultural workers, and women not working outside the households and their families; the latter group comprises better paid occupations and independent occupations, such as craftsmen, sellers, bricklayers, carpenters, and clerks. As mentioned earlier, the insured group chiefly includes industrial workers and clerks and their families. In short, it was found that morbidity was significantly higher among those who had state services as their main source of care, and was lower among those who were under the private services and the social security scheme.

Morbidity and frequency of meat consumption. This was utilized as an indirect indicator of income and socio-economic status. The analysis showed that this indicator clearly defined groups of high and low morbidity, with those who consume meat less frequently being the ones who had higher morbidity rates. This is an important finding of this study, since the review of the literature on inequalities in health showed that there are no studies in Mexico and Latin America utilizing this indicator.

Morbidity and housing conditions. This has been widely used as an indicator of the social environment and of poverty and deprivation in studies regarding inequalities in health in Britain (Carstairs and Morris, 1991; Blackman et al, 1989; Townsend et al, 1988b). In this study, housing conditions were mainly utilized as an indicator of living conditions and as an indirect indicator of income and status. Various aspects of housing were measured. While several results did not reach

statistical significance, the trend was consistent with other findings of this study and other studies on the adverse effects of poor quality housing conditions on health (Gabe and Williams, 1986; Townsend et al, 1988a; Lowry, 1990; Platt et al, 1989). The analysis of morbidity by the composite index exhibited consistent results, with some being statistically significant. Regarding specific indicators, it was found that type of construction materials utilized in floors; availability of toilet facilities; and possession of a refrigerator more clearly discriminated between groups with different levels of morbidity than did source of water supply and type of fuel used. The high prevalence of diarrhoeal morbidity, skin problems and other infectious illnesses among children in the lower rural socio-economic stratum may be explained by the poor housing conditions found, particularly in such a deprived stratum.

Socio-geographic differentials in morbidity. Over the four morbidity measures, the tendency found supports the widely recognised view that living in a socio-economically deprived area is significantly associated with reporting higher morbidity rates. As expected, it was found that small villages of less than 2,500 inhabitants had higher overall and severe morbidity and experienced more infectious illnesses, nervous and mental, and musculoskeletal problems, than did small towns (2,500-15,000 people).

This finding is consistent with the geographical distribution of living standards described in Chapter VI and with findings of other studies in Mexico and countries of Latin America. For instance, Kroeger et al (1987, 1991) found that rural areas of the state of Nuevo León had higher morbidity rates than the marginal urban area of Monterrey. Similar findings were obtained by the same author in Peru and Bolivia (López and Kroeger, 1990). Rural-urban differences found here were in the opposite direction to those reported in recent years for a number of Third World countries of Asia and Africa (Harpham et



al, 1988). This is an important finding with notable policy implications, which are discussed later.

With regard to differences between socio-economic strata of the locality, intra-rural differences were greater than intra-urban differences. For example, the risk (indicated by the odds ratio) of reporting a severe illness for women from the lower and middle rural strata was between 1.2 and 2.4 times lower than that of those from the upper stratum, whereas in the urban area these were only 1.1-1.2 times.

When using area-based methods it is very common to fall into the error of assuming homogeneity of the population within an area. However, preliminary tests of the area-based measures showed consistent association between these and a number of indicators of socio-economic position. Moreover, the consistency of the findings across the area-based measures, makes it unlikely that the significant associations between perceived morbidity and socio-geographic area of residence found are due to such an error.

In sum, the highest morbidity rates were observed among the less educated, those occupied in agricultural activities, particularly waged labourers and under-subsistence peasants possessing small plots of poor quality land, women occupied in household activities, uninsured respondents, and those living in poor housing conditions and deprived rural areas.

### **B. Differentials in childhood mortality**

The results presented here provide clear evidence of social differences in childhood mortality. The findings of this study have also documented a slow decline in infant mortality (IM) and under five mortality (U5M) in Tlaxcala over a period of 10 years (1976-1985).

Comparison of findings with other sources. Although there is the possibility that the levels of infant mortality have been

overestimated<sup>8</sup> due to the kind of methods (indirect) used, the data obtained on IM are comparable to those shown by published sources. Mina-Valdés (1988) utilizing the 1980 Population Census data applied the indirect methods of Brass (Brass et al 1968) and Feeney (1975), and used vital statistics data, to estimate the infant mortality of Mexico and its 32 states. The results obtained by this author, for the state of Tlaxcala, are strikingly similar to those found by the present study. For example, with the Brass and Feeney methods Mina-Valdés (1988) obtained similar results for infant mortality: 82 per 1000 live births, whereas this study, using the Brass-Sullivan-Trussel method (Brass et al, 1985; Sullivan et al, 1985; United Nations, 1988), estimated it as 81 per 1000.

The results are also comparable to those reported by INEGI (1986) (79), and by Rabell and Mier y Terán (1986) (85). By contrast, they differ from those reported by the Ministry of Health (SSA, 1990), which for 1987 reported a IMR (estimated with vital statistics) for Tlaxcala of 36 per 1000 live births, which is clearly an underestimate. The Fertility and Health National Survey (SSA, 1989) also found lower levels of infant mortality (50). These differences in estimates may be explained by the different methodologies used, sample sizes, and the distinct levels of aggregation of the data. It should be noted that the infant mortality estimates of Mina-Valdés and other studies refer to the whole state of Tlaxcala, whereas those of this study refer to the localities of less than 15,000 population.

As far as under five mortality is concerned, the levels obtained are also comparable with other sources. For example, Mina-Valdés (1988) using the Brass method on the 1980 Population Census data found an U5MR of 119 per 1000 live births for the state of Tlaxcala and 110 for the Mexican

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<sup>8</sup>Depending on the fulfillment of the assumptions of the indirect methods used, the maximum degree of overestimation that they could generate is between 20% and 25% (Sullivan et al, 1985).



republic, which are comparable to the figure (116) estimated by this study. Conversely, they were much higher than those reported for Mexico by UNICEF. According to UNICEF's figures, Mexico had an U5MR of 83 per 1000 live births in 1980 (UNICEF, 1990)<sup>9</sup>.

Regional and social differentials. In sum, the results obtained from the two mortality indices used (IMR and U5MR), were consistent with those reported for the morbidity measures and with the distribution of living standards. That is, childhood mortality was higher among those living in small localities of less than 2,500 inhabitants than in small towns of 2,500-15,000 inhabitants. Across the various social measures used, the risk of dying during the first year and first five years of life was higher among those families in worse social and economic circumstances; particularly among households whose heads had agricultural occupations, with none or low schooling, poor housing conditions, and who were not entitled to social security services and benefits. Comparatively, social differences in U5MR were greater than those in IMR.

The results on infant mortality and occupation of head of household were remarkably similar to those reported by Bronfman and Tuirán (1983) who analysed infant mortality by social class in Mexico (aggregated at the whole country level) in 1977. They found an infant mortality for poor and semi-proletarianized peasants of 85 per 1000 live births and of 98 for waged labourers, whereas for rich and middle peasants this was 71 per 1000 live births.

Comparing IM and U5M estimates. The results regarding infant mortality data should be treated cautiously, since the population of Tlaxcala has been experiencing changes in its

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<sup>9</sup>It should be noted that UNICEF's figures are based on official vital statistics which, at least in the case of Mexico, are well-known to be underestimates.

mortality and fertility (see Chapter VI, Section 1.C). These may not fit the assumptions on which the method used is based. One of these assumptions refers to the stationary demographic conditions the study population must have (Sullivan et al, 1985). Thus, it is likely that the mortality levels were overestimated. However, they suffice for the purposes of this study, which is comparing estimates across various social sub-populations.

While this study used both infant mortality ( $q_1$ ) and under five mortality ( $q_5$ ), the latter was an index preferred for the analysis of the results and to compare the sub-groups. The reasons for this were as follows. One of the problems in estimating infant mortality by the indirect method relates to the selection of the model life table mortality pattern<sup>10</sup>. According to Hill and David (1988) the infant mortality estimates may be erroneous when the age pattern of mortality of the study population does not correspond to that of the model chosen. According to these authors, the errors resulting from use of the wrong model life table can be reduced by selecting an alternative index of childhood mortality, such as under five mortality.

Using under five mortality (U5M) lessens the effects on the estimate of the age-pattern of mortality chosen (David et al, 1990). Another reason to prefer U5MR was that the majority of infectious diseases of childhood mostly affect children over one year of age. From UNICEF's point of view (UNICEF, 1990), the U5MR is the outcome of a wide variety of health and economic inputs, including immunization programmes, oral rehydration therapy, availability of maternal and child health care, basic sanitation services, and income and food availability. All of them are relevant when analysing social inequalities. The advantage of using U5M is illustrated by the

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<sup>10</sup>The model of mortality chosen in this study for the analysis of the results was the Latin American model table of the United Nations (United Nations, 1988), since such a model best fitted the underlying assumptions and the type of country of the area under study.



steeper social differentials shown by this indicator in comparison to those displayed by the IM indicator.

### **C. Differentials in self-assessment of health**

In general, self-assessments of health varied with the demographic, socio-geographic and socio-economic variables in the same way as did the morbidity measure.

With regard to demographic characteristics, the negative assessments of health increased with age, which supports the validity of the results (see also Section 2.A). Again, women were more likely than men to rate their health unfavorably. In a study carried out in Britain, Blaxter (1985) found that men were less willing than women to label themselves as in bad health. It seems that this a universal and regular tendency, with causes which are not clear.

Measures of socio-economic position and status were highly correlated with the self-assessments of health state. The favorable assessments of health declined by decreasing socio-economic level, as indicated by education, occupation, source of medical care, income and housing conditions. It is noteworthy that the negative aspect of health state indicated by this measure was more salient than the positive one in discriminating between groups.

The comparison between people with different educational levels revealed large disparities. The breakdown of health state ratings by occupation showed trends which are compatible with those observed for the morbidity measures. A negative assessment of health among men was associated with being in an agricultural occupation, and among women with being occupied inside the home; whereas a positive assessment among men was associated with having a non-agricultural occupation, and among women with employment outside the home. These findings agree with those reported in Britain by Blaxter (1985), in Spain by Rodriguez and Lemkow (1990), and in Yugoslavia by

Mastilica (1990). The review of the literature did not reveal similar studies undertaken either in Mexico or other Third World countries.

The comparison of assessments of health between respondents with different sources of medical care was clearly unfavorable to those utilizing the state services, which is consistent with the distribution of assessments by occupation and education. Low income groups, as indicated by a low frequency of meat consumption and poor housing conditions, rated their health as being poorer than people with a higher income, as indicated by a higher consumption of meat and better housing conditions.

The size of the locality of residence was significantly associated with the pattern of self-reported assessments of health state, with worse ratings by residents of smaller villages in comparison with their counterparts living in towns. It was found, however, that the living conditions index (socio-economic stratum of the locality) more clearly defined groups with good and bad perceived health state. Intra-rural differences were greater than intra-urban differentials. This is also an important finding which is consistent with the trend seen in respect to the distribution of severe illnesses.

#### **D. Comparison and meaning of health measures**

One of the main objectives of this study was to compare different measures of inequality. As far as the health measures are concerned, three different kinds of health indicators were utilized: self-reported morbidity, childhood mortality, and a positive measure of health. These measures depict different aspects and dimensions of health. They should not be summarized into a one-figure index, as has been attempted in other studies (Townsend et al, 1988b). As has been suggested by Carstairs and Morris (1991), attempts to develop a combined health measure confront the problem of assigning appropriate weights to different aspects of health.



Combining is not necessary since it has been demonstrated by these authors, and confirmed in this study, that the use of simple measures provides sufficient evidence of differentials.

The relative magnitude of the differentials such measures show between the various social sub-groups and areas is illustrated in Table IX.1 and Figures IX.1, IX.2. These summarize the principal relationships between different health and social measures under study. The results are presented as odds ratios of perceived morbidity (overall and severe) and unfavourable ratings of health for lowest socio-economic groups compared to highest groups.

The high level of agreement between the different measures is remarkable, and a common social trend is clearly distinguished. Although there are good reasons to believe these are real findings, consideration needs to be given to the potential weaknesses of the different measures used.

With regard to the limitations of the morbidity measures, some authors (Illsley, 1990) consider that little use can be made of self-reported morbidity because of the unknown relationship between 'actual' and reported illness. In other words, the validity of self-reports of illness as a measure of prevalence of morbidity is questioned on the grounds that it is not possible to distinguish 'actual' morbidity from self-perceived and reported illness. However, others (Blaxter, 1989) have reported that where comparisons have been made, the agreement between self-reports and medical assessments or medical records has been high. Although different terms and labels are used<sup>11</sup>, lay reporting and professional diagnosis usually agree with respect to the reporting of a number of conditions and symptoms such as diarrhoea, fever, tooth decay, fractures, skin and eye illnesses and even some medically diagnosed

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<sup>11</sup>For example, the medical label for the lay report "toothache" is tooth decay, for "headache" is cephalgia, for "vaginal discharge" is vaginitis.

**TABLE IX.1 ODDS RATIOS OF PERCEIVED MORBIDITY AND UNFAVOURABLE SELF-RATING OF HEALTH FOR LOWEST SOCIO-ECONOMIC GROUPS COMPARED TO HIGHEST GROUPS FOR SELECTED SOCIAL INDICATORS**

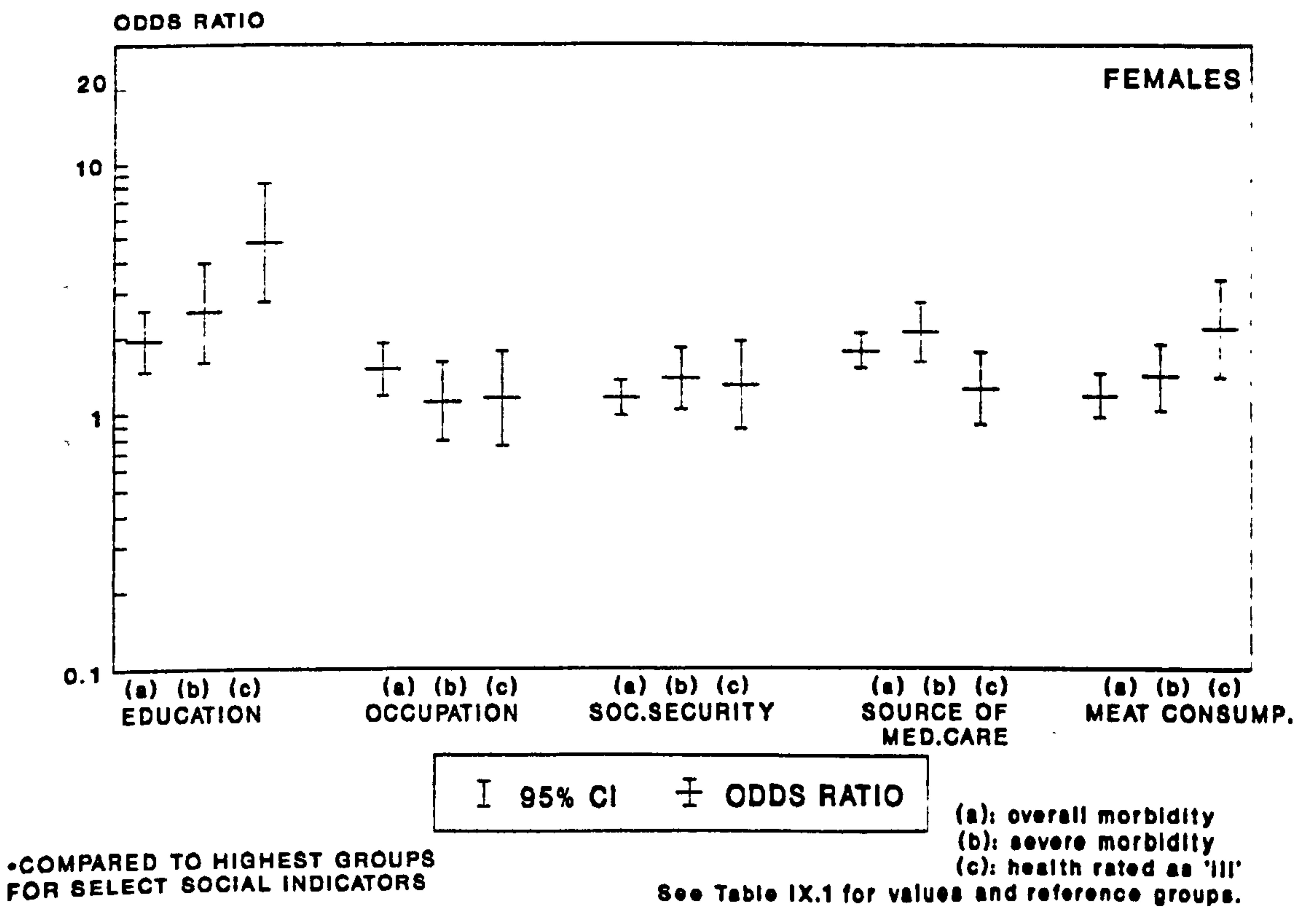
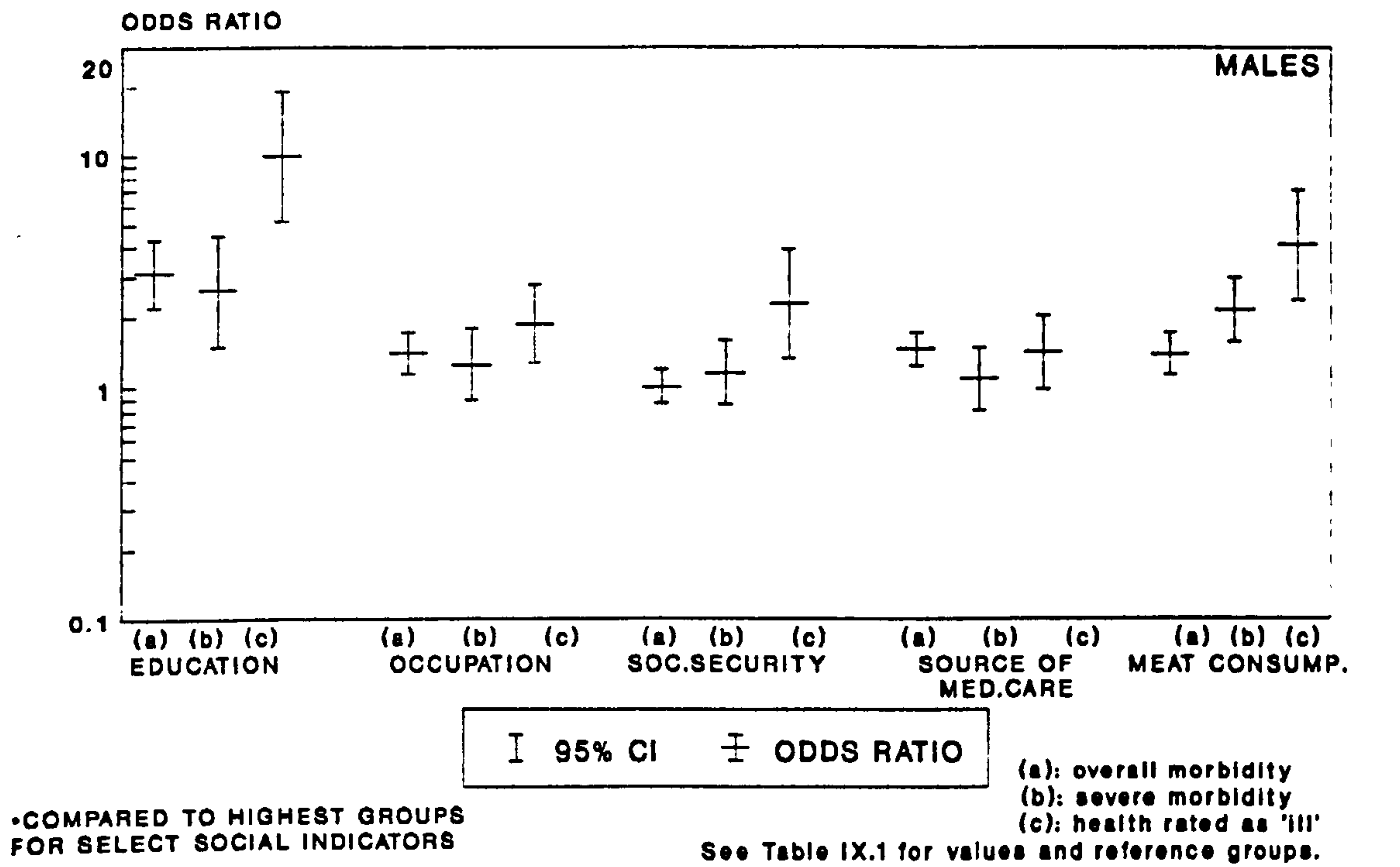
Socio-economic indicator	Overall perceived morbidity			Morbidity perceived as severe			Unfavourable rating of health state		
	OR	95% CL	OR	95% CL	OR	95% CL	OR	95% CL	
Education <sup>1</sup>	M	3.08	2.20 - 4.33	2.61	1.50 - 4.52	9.90	5.15 - 19.19		
	F	1.94	1.47 - 2.56	2.52	1.60 - 3.95	4.75	2.75 - 8.24		
Occupation	M <sup>2</sup>	1.41	1.15 - 1.74	1.27	0.89 - 1.82	1.88	1.29 - 2.76		
	F <sup>3</sup>	1.50	1.18 - 1.90	1.12	0.78 - 1.61	1.15	0.75 - 1.77		
Social security <sup>4</sup>	M	1.01	0.86 - 1.20	1.16	0.85 - 1.59	2.27	1.33 - 3.92		
	F	1.15	0.98 - 1.34	1.37	1.04 - 1.81	1.29	0.87 - 1.92		
Source of medical care <sup>5</sup>	M	1.46	1.23 - 1.73	1.08	0.80 - 1.47	1.41	0.98 - 2.03		
	F	1.75	1.50 - 2.05	2.08	1.59 - 2.73	1.25	0.90 - 1.73		
Meat consumption <sup>6</sup>	M	1.39 <sup>a</sup>	1.13 - 1.71	2.14 <sup>a</sup>	1.56 - 2.94	4.10 <sup>o</sup>	2.38 - 7.11		
	F	1.17 <sup>a</sup>	0.96 - 1.42	1.39 <sup>a</sup>	1.03 - 1.87	2.16 <sup>o</sup>	1.37 - 3.41		
Rural/urban area of residence <sup>7</sup>	M	1.40	1.20 - 1.63	1.80	1.36 - 2.39	1.55	1.10 - 2.18		
	F	1.66	1.44 - 1.91	1.75	1.38 - 2.22	1.37	1.02 - 1.83		
Living conditions:									
Rural area <sup>8</sup>	M	1.83	1.43 - 2.35	1.47	0.97 - 2.22	4.27	2.37 - 7.78		
	F	2.19	1.71 - 2.79	2.44	1.71 - 3.49	4.12	2.41 - 7.11		
Urban area <sup>9</sup>	M	1.22 <sup>*</sup>	0.93 - 1.59	1.22 <sup>*</sup>	0.72 - 2.07	1.48	0.75 - 2.94		
	F	1.31	1.01 - 1.70	1.20	0.75 - 1.91	1.87	1.07 - 3.27		

**Notes:**

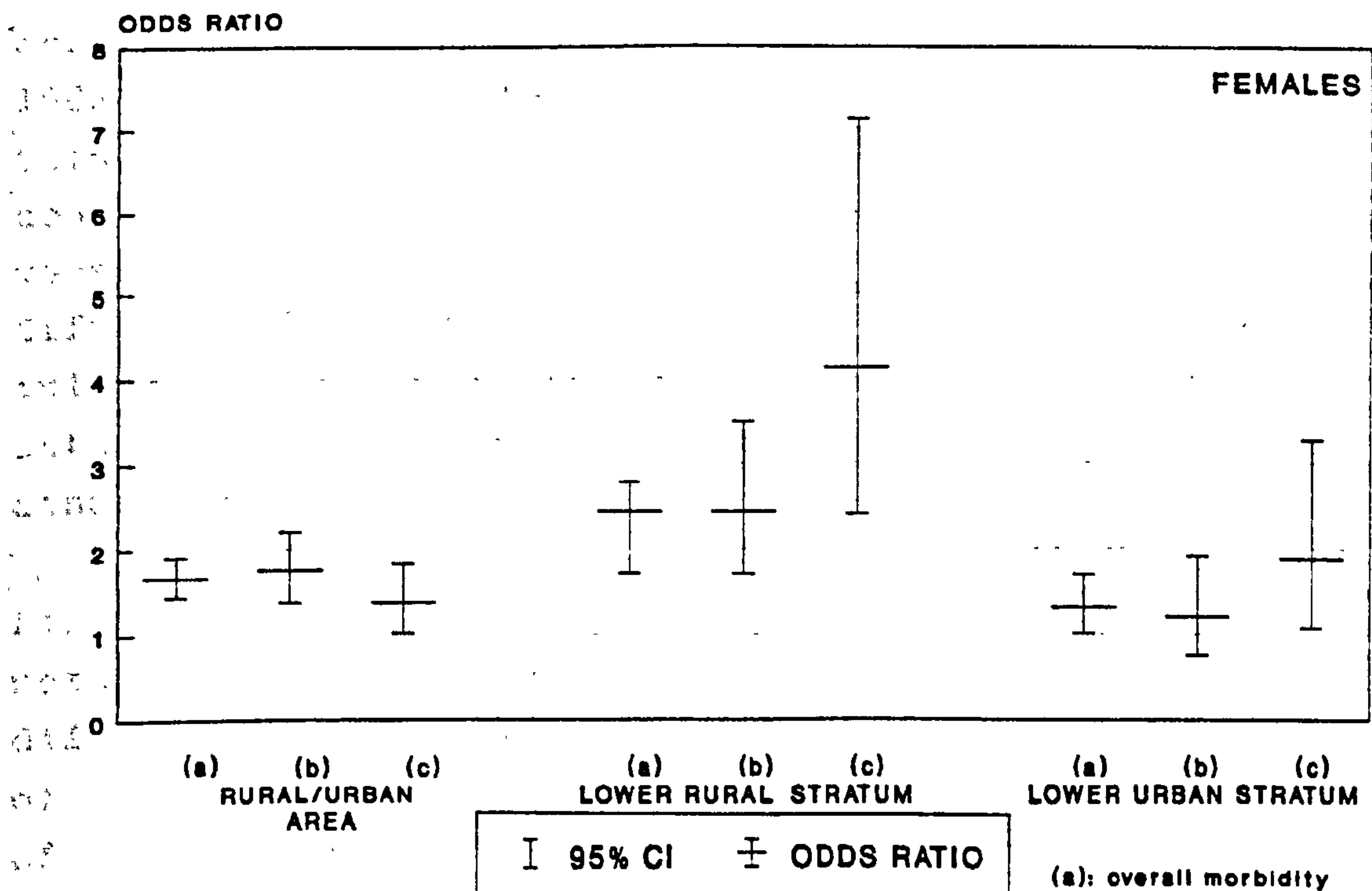
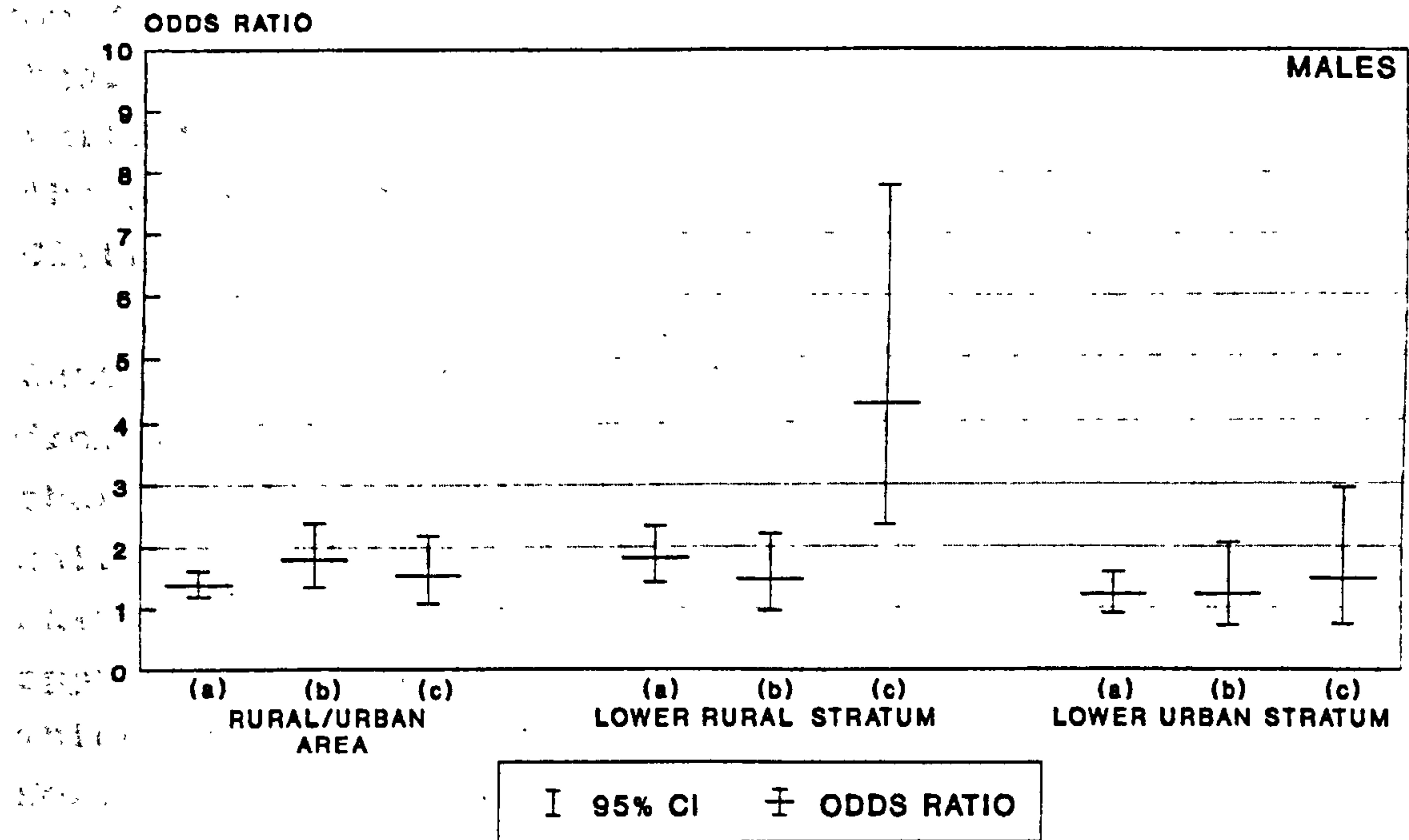
- 1 None vs. ≥ 7 years of schooling (reference group) (age-standardized, ≥ 15)
- 2 Agricultural vs. non-agricultural (reference group); (age-standardized, ≥ 15)
- 3 Occupied inside the household vs. occupied outside the household (reference group) (age-standardized, ≥ 15)
- 4 Uninsured vs. insured population (reference group)
- 5 State vs. private services (reference group)
- 6 Once a fortnight or less vs. once or more a week (reference group)
- 7 Once a fortnight or less vs. every other day or daily (reference group)
- 8 Rural (2,500 people) vs. urban (2,500 - 15,000 people; reference group)
- 9 Lower vs. upper rural stratum (reference group)
- Lower vs. upper urban stratum (reference group)
- \* Middle vs. upper urban stratum (reference group)



**FIGURE IX.1 ODDS RATIOS FOR PERCEIVED MORBIDITY AND UNFAVOURABLE RATING OF HEALTH FOR LOWEST SOCIO-ECONOMIC GROUPS\***



**FIGURE IX.2 ODDS RATIOS FOR PERCEIVED MORBIDITY AND UNFAVOURABLE RATING OF HEALTH FOR LOWEST SOCIO-GEOGRAPHIC AREA\***



\*COMPARED TO HIGHEST AREA FOR LIVING CONDITIONS INDEX

(a): overall morbidity  
(b): severe morbidity  
(c): health rated as 'ill'

See Table IX.1 for values and reference groups.



diseases understood by the patient, for example, measles, tuberculosis and malaria (Kroeger, 1988). Moreover, for a number of conditions professional diagnosis basically depends on the symptoms presented by the patient (Kroeger, 1983). Medical diagnosis, when based on laboratory tests, may be more valid than lay diagnosis. However, it may be irrelevant for the patient when the diagnosed disease does not give rise to distress or discomfort (Kroeger, 1988).

Another limitation of self-reported morbidity data, obtained from population surveys, for analysing social inequalities that has been mentioned in the literature, refers to the cultural variability in the way questions are perceived and answered (Illsley, 1990; Carr-Hill, 1990). In other words, the apparent differentials may be reflecting distinct ways in which the different social groups interpreted the questions. However, it seems very unlikely that this problem might be applicable to this study, since there is evidence that the use of tracer lists of conditions and problems, developed through intensive qualitative field research, standardize the understanding, perception and communication of local conditions and consequently illness classification (Kroeger, 1983, 1988; Ross and Vaughan, 1986). Another reason to reject this suggestion, in the case of this study, is the high consistency in the social trend shown by the four morbidity measures. It is, therefore, very unlikely that the differentials observed might have been the result of the influence of cultural or inter-class variability in interpreting and classifying the list of tracer symptoms and conditions.

Among the morbidity measures, the prevalence of illnesses perceived as severe was the one that showed the largest differentials. This is particularly important for the validity of the findings, since there is evidence that the prevalence of perceived morbidity of high severity reflects more clearly, than the overall morbidity and the number of symptoms, the type of conditions that the medical profession accepts as

clinical morbidity (López and Kroeger, 1990). Kroeger et al (1987) has suggested that the differentiation of (self-assessed) severe illnesses from non-serious or trivial illnesses contributes to the standardization of perceived morbidity.

The overall perceived morbidity, and particularly the measure based on number of symptoms, may be more influenced than perceived morbidity of high severity by the individual (and group) sensitivity to perceive and report illnesses and symptoms. The measure based on number of symptoms reported may be particularly influenced by subjective factors. According to a number of studies undertaken in Latin American countries, this measure may reflect social oppression and a high accessibility to health services, which increases the perception of non-serious illnesses (Kroeger, 1985; Kroeger et al, 1987; López and Kroeger, 1990; Kroeger and Freedman, 1992).

The design of the instrument permitted identification of the most important illness as defined by the respondent. While the differences shown by the overall morbidity measure were not as sharp as those produced by the number of symptoms indicator, the advantage of the former over the latter was that it is based on the most important illness, as defined by the respondent, whereas the number of symptoms is based primarily on non-serious conditions. Nevertheless, this study agrees with those that have found rates of symptoms to be a useful measure in discriminating clearly different social groups (Blaxter, 1989). It was particularly useful to detect general social trends rather than to indicate actual rates of illnesses.

The analysis of the age and sex distribution pattern of the specific types of illnesses reported provided an indirect way to validate the morbidity data. However, as mentioned earlier, this analysis is limited by the shortcomings of proxy reporting of mothers on their young children. Nevertheless,



such a pattern of morbidity fitted the expected occurrence of such specific illnesses across age and sex groups. For instance, infectious and parasitic illnesses were predominant among children, whereas the chronic ones were predominant among older groups. This measure supplemented the other morbidity measures in depicting the kind of problems that affect most certain social groups. For instance, an interesting and important finding was that, contrary to what is believed, nervous and mild psychiatric morbidity problems are highly prevalent in the rural area. It should be noted that this group of illnesses included many problems such as nervous anxiety, sleep problems, depression, worry. Such problems are frequently classified under the label of 'malaise' or 'lack of psychosocial well-being' and have been used to supplement morbidity measures based on physical symptoms<sup>12</sup>.

Although it is recognized that mortality and morbidity indicators measure different dimensions of ill-health, the childhood mortality indicators used in this study provided an useful way of validating social variations in perceived morbidity. In short, they showed the same trend of social inequality demonstrated by the morbidity measures and the positive health measure. Furthermore, differentials in childhood mortality, particularly U5M, were steeper than those seen in morbidity for some of the social markers used, such as social security and housing conditions.

Childhood mortality has been found to be a very useful measure of inequality because of its power in discriminating between sub-groups of the population (David et al, 1991). It has been suggested that in societies where early deaths contribute to a large extent to the general mortality, as is the case in Mexico, it may be the only dimension of health worth examining

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<sup>12</sup>The Nottinham Health Profile Index (Hunt and McEwen, 1980; Hunt et al, 1981, 1984, 1986) and the Cornell Medical Illness (Abramsom, 1965) provide examples of the use of this kind of indicators.

(Carr-Hill, 1990). However, the greater methodological difficulties and costs in obtaining reliable childhood mortality estimates in comparison with other health measures, are major shortcomings that make them impractical for wider use in health planning, particularly at the local level. This remains true, even when considering the new and relatively simple measurement techniques which have recently been developed (Brass and Macrae, 1985; Hill and Macrae, 1985; Aguirre and Hill, 1987; Hill and David, 1988).

Finally, with regard to the self-appraisal of health, which was the measure that showed the largest differentials, it should be noted that the concept used in this study was health state, which reflects the present health of the person. Although it is strongly associated with health status, which represents the longer term health, it should not be confused with this indicator. The decision to use health state instead of health status was based on the characteristics of the population under study, the predominance of acute conditions, and the objective of relating recent use to need.

It has been suggested that perception of health may be distorted by the ways in which different population sub-groups conceive of their health, and this may be itself unequal (Blaxter, 1989). However, health state is a concept easier to understand and to standardize than health status. According to Piperno and Di Orio (1990), using evidence from Italy, self-perceived health correlates with other indicators of lifestyles and health behaviour, and a negative assessment characterizes lower socioeconomic strata. The high consistency of the results across all the social measures used, as indicated by a notably sharp and constant variation by socioeconomic position (see Table IX.1), as well as the remarkable agreement between self-assessments of health and the results based on the morbidity measures (see Table IX.2), makes it very unlikely that these results are explained by biased responses.



TABLE IX.2 SELF-ASSESSMENT OF HEALTH AND PERCEIVED MORBIDITY MEASURES

M A L E S						
Self-assessment of health <sup>Δ</sup>	Overall perceived morbidity <sup>◊</sup> Rate/100*	No. of symptoms per person+	No. of symptoms per 100*	Severe illnesses <sup>◊</sup> Rate/100*		
'Healthy' (n=)	25.3 (2677)	1.76 (676)	44.3 (2677)	4.9 (2677)		
'Fair' (n=)	56.9 (406)	2.27 (231)	129.3 (406)	13.8 (406)		
'Sick' (n=)	73.3 (161)	2.82 (118)	206.8 (161)	34.2 (161)		
F E M A L E S						
Self-assessment of health <sup>Δ</sup>	Overall perceived morbidity <sup>◊</sup> Rate/100*	No. of symptoms per person+	No. of symptoms per 100*	Severe illnesses <sup>◊</sup> Rate/100*		
'Healthy' (n=)	33.5 (2674)	1.98 (896)	66.5 (2674)	6.4 (2674)		
'Fair' (n=)	69.3 (460)	2.74 (319)	189.8 (460)	18.7 (460)		
'Sick' (n=)	87.6 (210)	3.35 (184)	293.3 (210)	43.3 (210)		

<sup>Δ</sup> Current health state (at the time of the interview)

<sup>◊</sup> During the two weeks prior to interview

\* Respondents

+ Persons reporting illness during the preceding two weeks

The measure based on self-assessment of health was compared with two measures of morbidity by plotting concentration curves<sup>13</sup> for education, source of medical care and socio-economic stratum of the locality in Figures IX.3, IX.4 and IX.5a-b. As these figures illustrate, the concentration curves lie everywhere above the diagonal for the three measures, which indicates that irrespective of which measure is used, there are clear inequalities in favour of the better off. For the three social indicators, the concentration curves for a severe illness lie further from the diagonal than the curves for overall morbidity, which confirms that differentials seem to be greater when morbidity is measured by severe illness. The curves for an unfavorable rating of health lie even further from the diagonal than those for a severe illness, which demonstrates that, irrespective of which social indicator is chosen, the measure based on self-assessment of health produced the most pronounced differentials in health.

### **3. Health care in Tlaxcala: equitable for whom?**

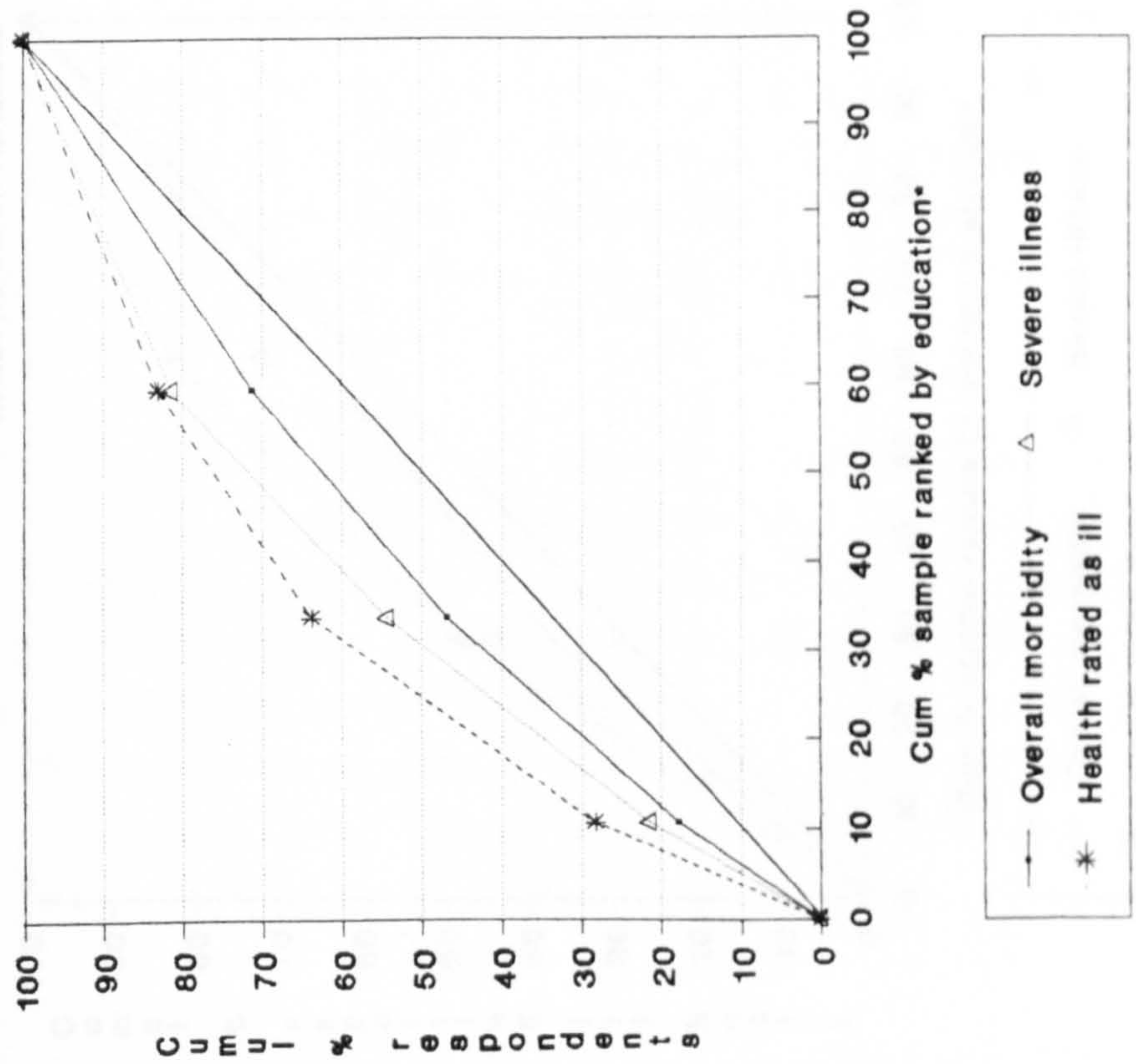
Despite the Constitutional right to health care and the State's commitment to provide equitable health care (Poder Ejecutivo Federal, 1983, 1989), the results presented above provide clear evidence that the distribution of health care utilization relative to need in Tlaxcala follows an 'Inverse Care Law'. That is, those at greater need utilize health services less, and vice versa. It was found that this trend remained, irrespective of the type of health service considered, either curative or preventive.

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<sup>13</sup>For a description of this measure of inequality, see Chapter II, Section 5.B.



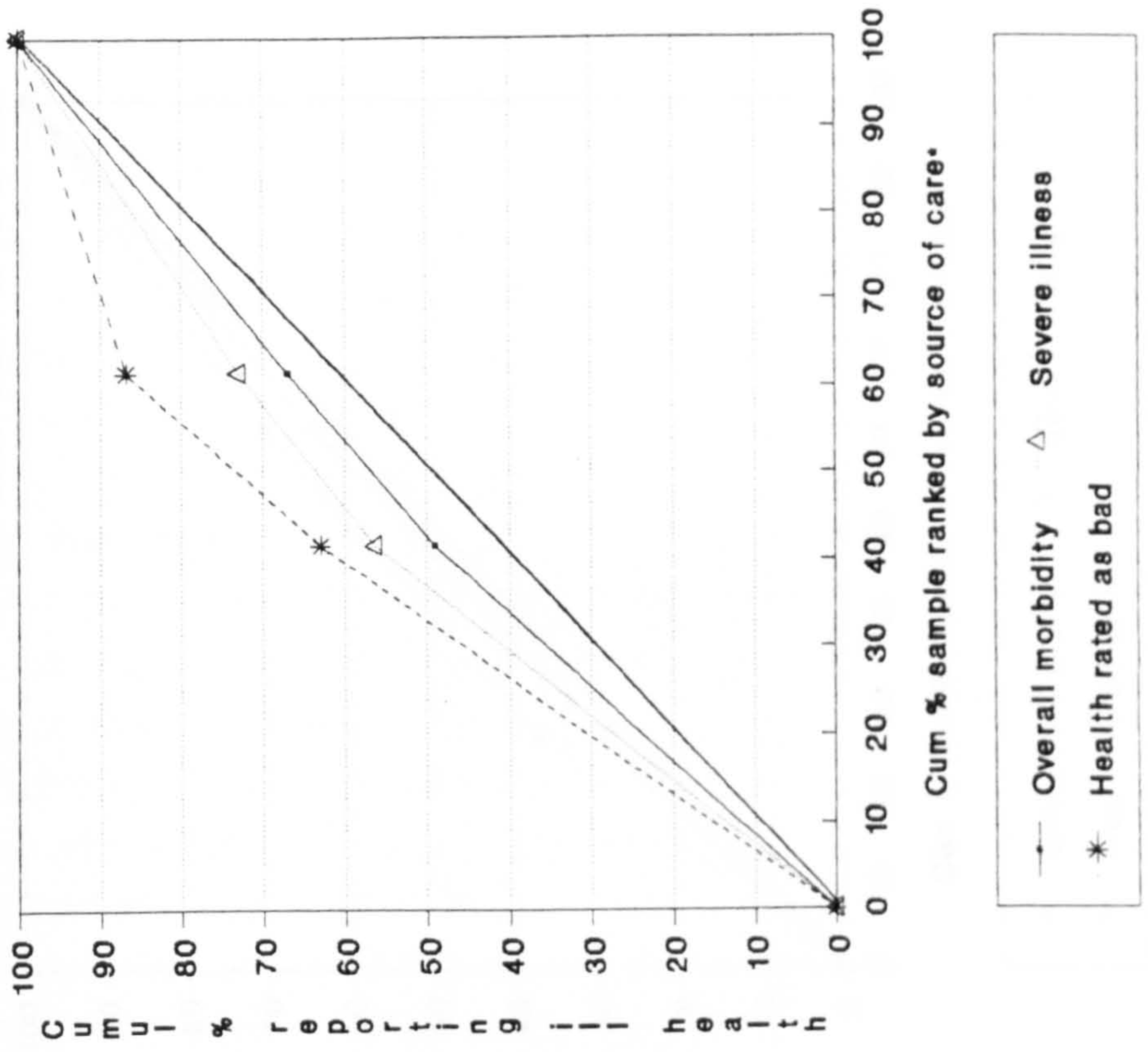
FIGURE IX.3 CONCENTRATION CURVES+  
FOR SELECTED MORBIDITY MEASURES  
MALES >15



\*No schooling, incomplete primary school  
complete primary school, secondary  
school and over.

\*CALCULATED WITH DATA FROM:  
FIGURES VII.4, 16 AND 28.

FIGURE IX.4 CONCENTRATION CURVES+  
FOR SELECTED MORBIDITY MEASURES  
FEMALES (ALL AGES)

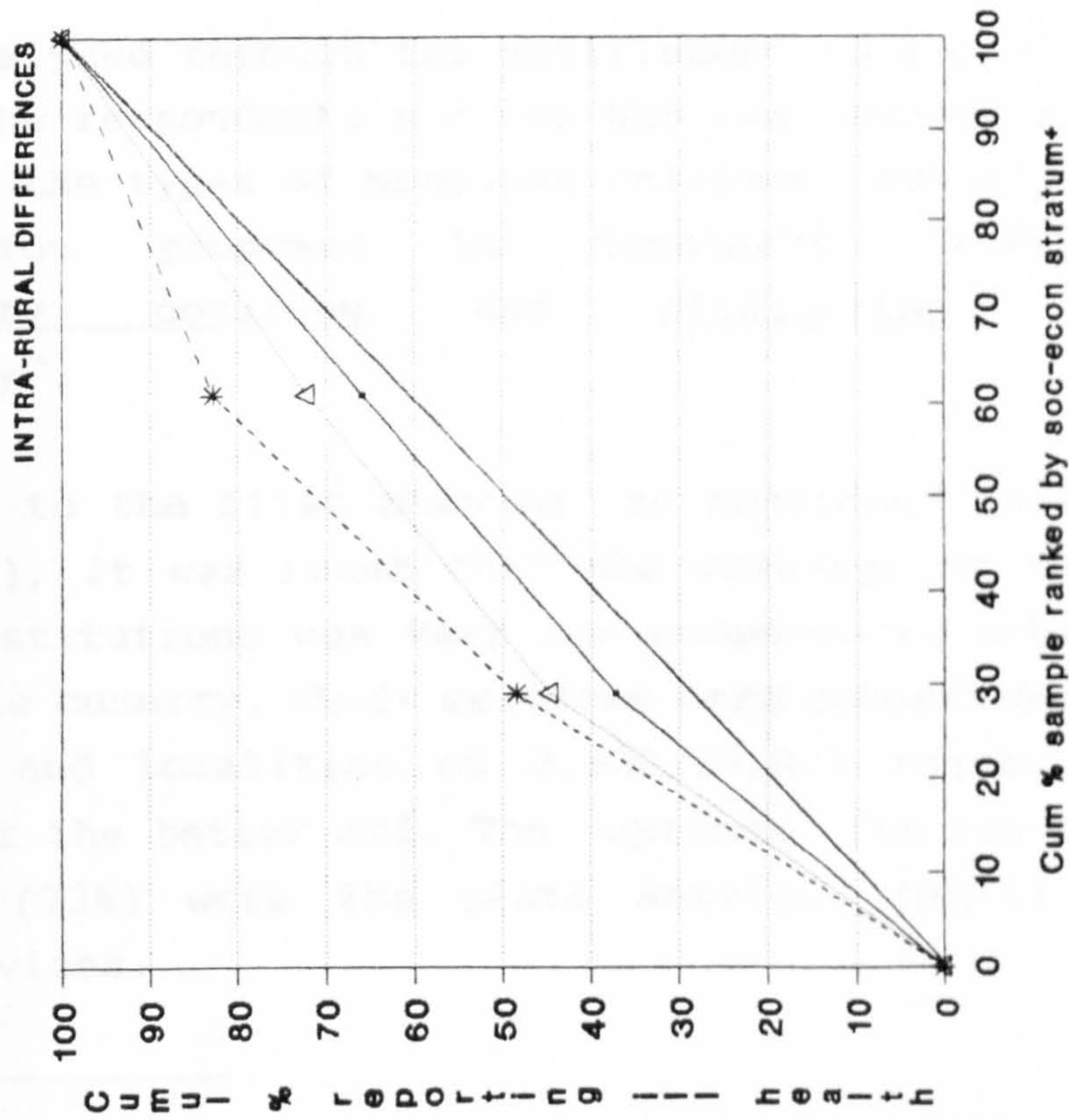


\*Health services:  
State, social security; private.

\*CALCULATED WITH DATA FROM:  
FIGURES VII.7, 18 AND 29b.



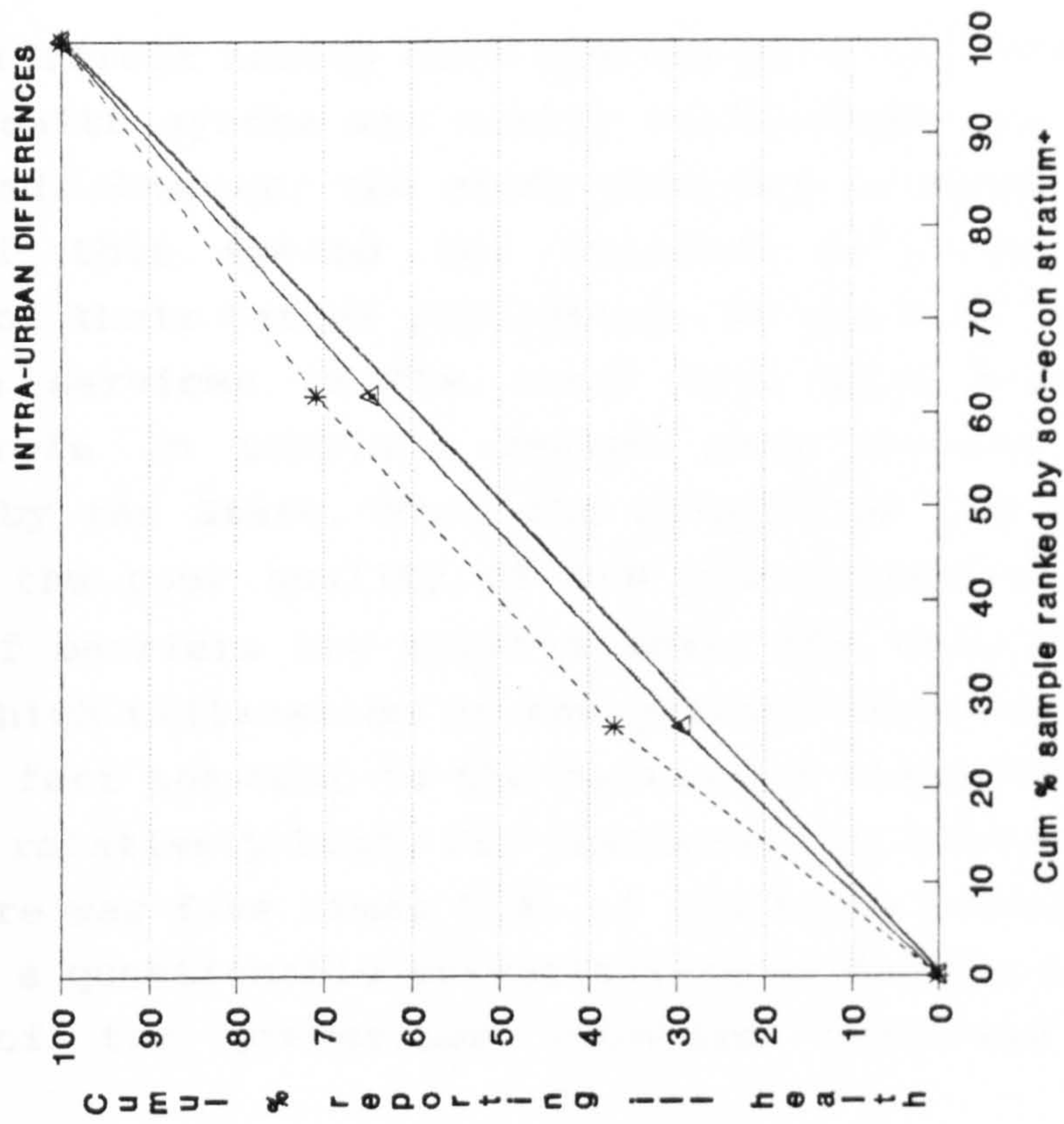
FIGURE IX.5a CONCENTRATION CURVES\*  
FOR SELECTED MORBIDITY MEASURES  
FEMALES (ALL AGES)



\*of the locality of residence:  
lower rural; middle rural; upper rural.

\*CALCULATED WITH DATA FROM:  
FIGURES VII.2, 16 AND 27.

FIGURE IX.5b CONCENTRATION CURVES\*  
FOR SELECTED MORBIDITY MEASURES  
FEMALES (ALL AGES)



\*of the locality of residence:  
lower urban; middle urban; lower urban

\*CALCULATED WITH DATA FROM:  
FIGURES VII.2, 16 AND 27.



Among the different health care systems existing in Tlaxcala, the state health system was mostly utilized by the socially disadvantaged. However, the study provided evidence that the services of this system are utilized only by a small proportion of their target population. It was also found that the private services in the rural area play a much more important role in people's health care choices than is recognized by the State. From the results of the study, it seems that the poor quality of the state services and the existence of barriers may explain their low utilization and consequent high utilization of the private services. This is despite the fact the cost to the patient of utilizing private services is relatively high. For instance, the cost of private delivery care was five times that of the state services. This constitutes a questionable privatization of health care and a diversion of the precarious economic resources of the population.

#### **A. Population coverage of the health services**

This was analysed through the entitlement to social security status of the respondents and the habitual source of medical care. Thus, the types of measures utilized, according to the classification proposed by Tanahashi (1978), were accessibility coverage and utilization coverage, respectively<sup>14</sup>.

With regard to the first measure, as mentioned earlier (see Section 1.B), it was found that the coverage of the social security institutions was very low compared to other states and the whole country. Their services were concentrated in the urban area and localities of 2,500-15,000 inhabitants and reserved for the better off. The 'options' for the uninsured population (72%) were the state services (SESA) and the private services.

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<sup>14</sup>The results on population coverage of specific health services and programmes are discussed in sub-sections B and C of this section.

As far as habitual source of care is concerned, the results showed that among the whole population (insured and non-insured) a slightly greater proportion preferred the private services to the state ones. Among the uninsured population, on the other hand, the reverse was found, though differences were very small. This may be explained by the finding that a higher proportion of the insured population utilizes the private services than the state services. The high preference among the population for the private services, has great significance, since this might reflect poor quality public services, particularly the state services. The low percentage of respondents using traditional healers suggests that the figure was probably underestimated, because of respondents' reluctance to report it during interviews. Kroeger (1985) found that in urban areas of Argentina, where traditional healers are publically persecuted, people were not inclined to admit that they had gone to see them. By contrast, in the Amazonic zone of Ecuador, where 'chamanism' is widely accepted among the indigenous population, Kroeger did not find apparent unwillingness to provide information regarding use of traditional healers.

These findings agree with those found in Nuevo León state (Kroeger et al, 1987), though in this state the insured population utilized private and state services less than in Tlaxcala. These results differ widely from the official figures on population coverage of the different health care systems. For instance, according to a number of sources (SSA, 1988c, 1988b) the coverage of the private services around 1985 was only 6-7% and that of the Ministry of Health services was 31-50%. In 1991 the population coverage of the private sector in Mexico was estimated at 4.4% (Valdés-Olmedo, 1991). It should be noted that these figures refer to the whole country. With the exception of one of these sources (SSA, 1988b), the concept of coverage and methods used for its estimation are not provided. It may be presumed that availability coverage was the measure used, which is a much more limited concept of



coverage than the one based on the accessibility and actual utilization of the health services (Tanahashi, 1978).

In general, the pattern of distribution of the different health care systems was associated with the sector of economic activity and social class of the respondents, as defined by their occupation and position in production. This agrees with previous findings (Laurell et al, 1977) and interpretations (López-Acuña, 1980; Menéndez, 1981; Ward, 1987). The state services are mainly utilized by poor peasants and waged labourers, other low-income and unskilled occupations, and the population outside working ages. The social security services are the main source of care for those in the skilled manual occupations and those in the non-manual occupations, who in general have better socio-economic conditions than the former group. The remaining population, who largely have the ability to pay fees, utilizes the private sector.

#### **B. Inequities in illness related use of services**

The overall rate of health services utilization<sup>15</sup> in Tlaxcala was 10%, being higher for women than for men. This use rate was similar to that reported in: Nuevo León state (8%) and Monterrey City (10%) (Kroeger et al, 1987), Colombia (9%) (Mejía-Vanegas, 1967), Peru (10%) (INE, 1986), Chaco, Argentina (11%) (Kroeger et al, 1984, 1988). By contrast, it was lower than that reported for urban areas of industrialized countries by the International Collaborative Study (15.5%) (Kohn and White, 1976).

As mentioned earlier (see Chapter II), and as suggested in the Black Report (Townsend and Davidson, 1982) and elsewhere (Walters, 1980), simply comparing overall consultation rates does not constitute the most appropriate basis for comparison between social groups, since it is not reasonable to examine

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<sup>15</sup>Number of respondents reporting illness-related use during the two weeks prior to interview per 100 respondents.

inequities in health care without taking account of the relative needs of the groups being compared (Montoya-Aguilar and Marin-Lira, 1986). For the purposes of this study, perceived need, as indicated by perceived morbidity, was considered to be the appropriate basis for comparing the utilization of health services across the different social groups and geographic areas. A similar approach has been used in a number of other studies (Forster, 1976, 1979; Kohn and White, 1976; Collins and Klein, 1980; Townsend et al, 1988a; Evandrou et al, 1990; O'Donnell and Propper, 1991).

Thus, in analysing the relationship between health care utilization and the social variables, perceived morbidity and, in some cases, severity of illness was controlled for in the analysis. This provided a consistent and standardized basis for inter-group comparisons.

The predominant health care response of the population to a recent (two weeks) illness was self-treatment and 'nothing', while the utilization of formal health services (public and private) was the action taken by almost a third of the respondents (28%). This was a slightly lower proportion than that reported for Nuevo León state (32%) and Monterrey City (40%) (Kroeger et al, 1987), whereas it was larger than that reported in the International Collaborative Study of Medical Care Utilization (Kohn and White, 1976). In general, this proportion is lower than those obtained in urban areas and similar to those for rural areas of Latin American countries (Kroeger et al, 1984, 1988; Ross and Vaughan, 1986; INE, 1986; López and Kroeger, 1990).

Demographic differentials in illness-related use. The pattern of health care utilization by age was curvilinear (U shaped) which is consistent with the pattern of perceived morbidity. This is in agreement with the universal notion that young children and older people are more likely to use health services (Maurana et al, 1981). It should be noted that results regarding the use of health services made by young



children are based on proxy reports made by their mothers. Thus, relative levels of health care utilization among young children should be seen cautiously.

It seems that the relationship between use and age is due to the strong relationship between age with the type of morbidity. Acute illnesses are highly prevalent among children, whereas chronic problems are more prevalent among the elderly. The level of unmet need, as indicated by non-utilization for morbidity of high severity is especially large among the elderly. Women at all ages, particularly at age 45-64, had greater use rates than men. A similar tendency was observed in the twelve areas of the International Collaborative Study (White et al, 1977), in Britain (Collins and Klein, 1980; Curtis, 1990; Bucquet and Curtis, 1986; Evandrou et al, 1990) and in the United States (Aday and Andersen, 1975, 1980; Taylor et al, 1975; Tessler et al, 1976). It has been suggested (Maurana et al, 1981) that women show a higher use of health services than men because of their obstetrical needs. Nevertheless, this study confirmed that this difference remained even after controlling for type of illness reported.

Socio-economic differentials in illness-related use. In sum, it was found that persons of low socio-economic position and income made less use of health services in response to illness. The social measures that discriminated groups of high and low utilization clearly were: housing conditions, entitlement to social security services, source of medical care and occupation among males (see Table IX.3 and Figure IX.6). This is an important finding, since the study has demonstrated that these groups had high risk and need, as indicated by their high rates of morbidity of high severity, and their poor socio-economic circumstances. With regard to education, the trend observed was in the expected direction, although differences were not statistically significant. The analysis of illness-related use and educational level provides

**TABLE IX.3 ODDS RATIOS FOR ILLNESS-RELATED USE OF HEALTH SERVICES<sup>1</sup> FOR HIGHEST SOCIO-ECONOMIC GROUPS COMPARED TO LOWEST GROUPS FOR SELECTED SOCIAL INDICATORS**

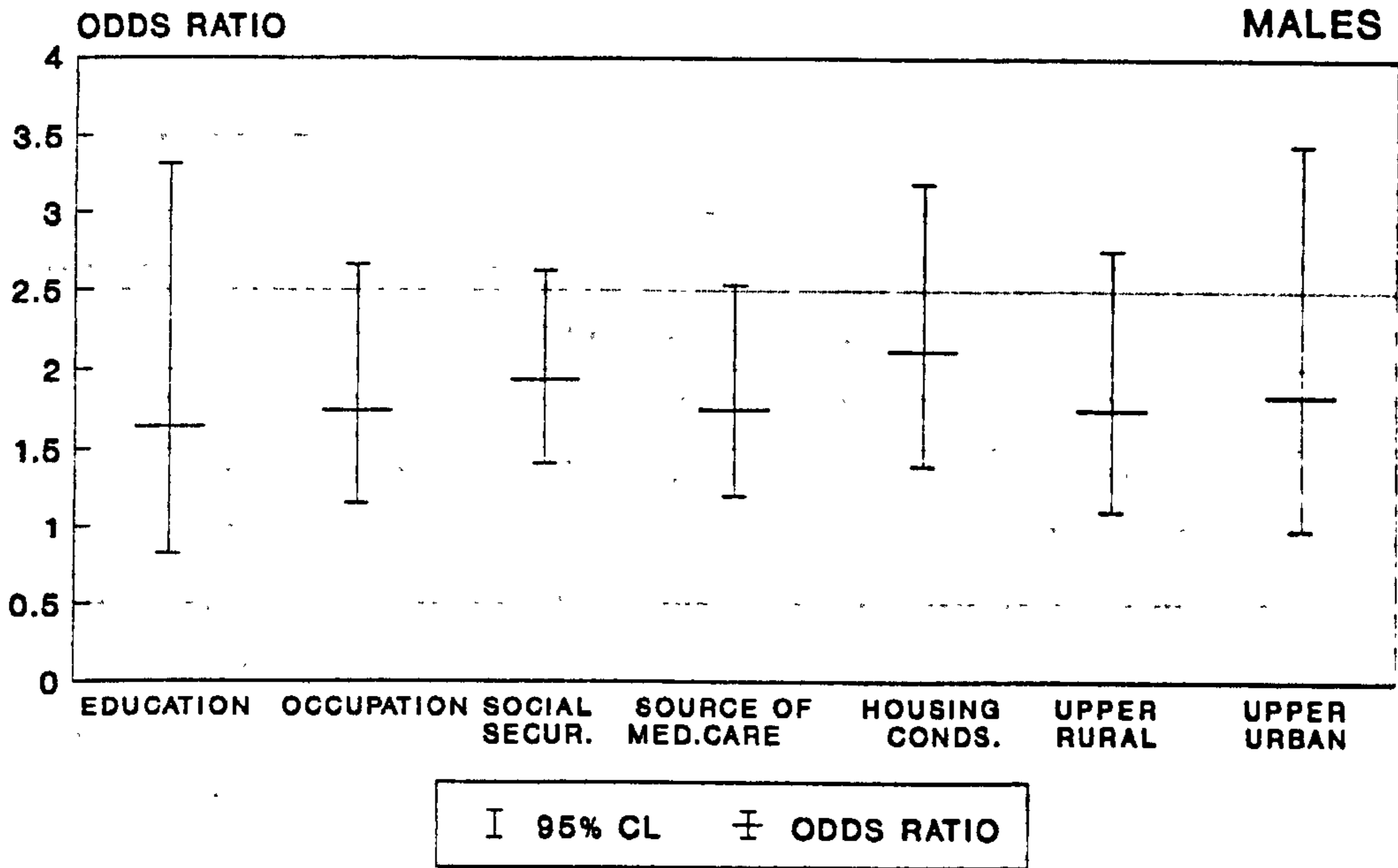
Socio-economic indicator		OR	95% CL
Education <sup>2</sup> (≥ 15)	M	1.64	0.82 - 3.31
	F	1.17	0.77 - 1.78
Occupation	M <sup>3</sup>	1.75	1.15 - 2.67
	F <sup>4</sup>	1.13	0.73 - 1.75
Social Security <sup>5</sup>	M	1.93	1.42 - 2.63
	F	2.19	1.69 - 2.84
Source of medical care <sup>6</sup>	M	1.75	1.20 - 2.54
	F	1.83	1.34 - 2.51
Housing conditions score <sup>7</sup>	M	2.11	1.39 - 3.19
	F	2.35	1.15 - 4.87
Living conditions:			
Rural areas	M <sup>8</sup>	1.75	1.11 - 2.76
	F <sup>9</sup>	1.20	0.82 - 1.76
Urban areas	M <sup>10</sup>	1.83	0.98 - 3.45
	F <sup>11</sup>	1.52	0.95 - 2.45

**Notes:**

- 1 During the two weeks preceding the interview
- 2 ≥ 7 years of schooling vs none (reference group)
- 3 Non-agricultural vs agricultural (reference group) ; ≥ 15 years
- 4 Occupied outside the household vs occupied inside the household (reference group) ; 12 - 64 years
- 5 Insured population vs uninsured population (reference group)
- 6 Social security vs state services (reference group)
- 7 ≥ 4 vs ≤ 2 (reference group)
- 8 Upper vs lower rural stratum (reference group)
- 9 Middle vs lower rural stratum (reference group)
- 10 Upper vs lower urban stratum (reference group)
- 11 Middle vs lower urban stratum (reference group)

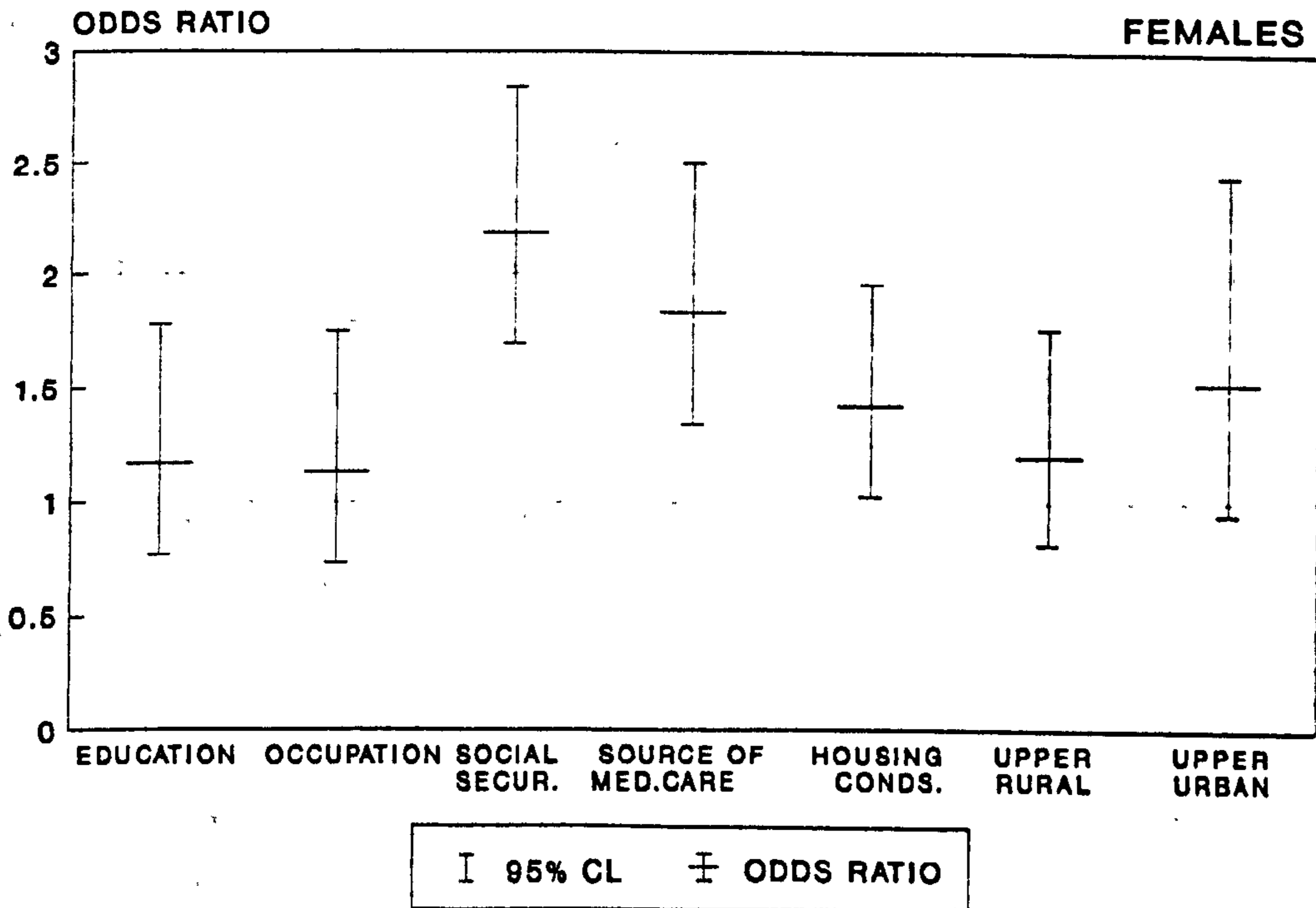


**FIGURE IX.6 ODDS RATIOS FOR ILLNESS RELATED USE OF HEALTH SERVICES FOR HIGHEST SOCIO-ECONOMIC GROUPS\***



\*COMPARED TO LOWEST GROUPS FOR SELECT SOCIAL INDICATORS

SEE TABLE IX.3 FOR VALUES AND REFERENCE GROUPS.



\*COMPARED TO LOWEST GROUPS FOR SELECT SOCIAL INDICATORS

SEE TABLE IX.3 FOR VALUES AND REFERENCE GROUPS.

an illustrative example of equality with inequity (see Figure VIII.6 and Table VIII.2). As far as occupation is concerned, differences were particularly marked among men aged 15-44 years, which suggests both a strong relationship between occupation and right to social security and the existence of economic barriers.

#### Socio-geographic differentials in illness-related use.

Although urban/rural differences were not particularly remarkable they showed the pattern expected, except for the fact that males from rural areas made more use than their counterparts from urban areas. It may be that urban/rural differences were obscured by the social heterogeneity within such areas. By contrast, marked geographic disparities in illness-related use of health care were evident when the index of living conditions of area was utilized. The findings suggest the existence of an "Inverse Care Law", since there was clear evidence that the level of unmet need was higher in the lower socio-economic strata. The pattern found illustrated that intra-urban contrasts were greater than the intra-rural ones. It should be noted that women from the middle urban stratum reported a higher utilization than those from the upper and lower strata. A possible explanation of this may be the higher utilization of health services among the middle classes, caused by the greater accessibility to the health services in small towns and urban areas that has been reported elsewhere (Kroeger et al 1987). It should be also noted males from the middle urban stratum had higher rates of morbidity of high severity than those from the lower urban stratum, whereas among females the reverse was seen.

With regard to the type of health service utilized for recent illness, the findings were strikingly consistent with those observed for habitual source of medical care (see Section 3:A), which shows the consistency and validity of the data. These findings suggest the importance of demographic and social factors for people's choices and the socio-economic stratification of the different health care systems.



The integrated model described in Chapter II (see Figure II.2) proved to provide a useful framework for the analysis of the factors affecting people's health care choices. The clear and statistically significant relationships found between demographic variables such as age and sex and socio-economic position variables such as occupation, education, income, housing conditions, and living standards, suggests the important role that predisposing factors had in the choice of the type of health service<sup>16</sup>. However, as the relatively high utilization of the private services demonstrates, the perception of the characteristics of the health services, particularly of their quality and the existence of barriers to the use of the public services, played an important role in people's health care choices. An illustration of this is that over 40% of the insured population did not utilize the services to which they were entitled for their recent illnesses. The great majority of this population preferred to see a private doctor. This interesting finding contrasts notably with that found in Chile by Scarpaci (1988) where, despite the privatization of the health sector during the military dictatorship, a clear preference for public versus private medical care was seen.

### **C. Inequities in the use of preventive services**

The utilization of preventive services was analyzed through two indicators: children under five having preventive consultations during the year prior to interview, and basic immunization for children under five.<sup>17</sup> It should be noted that these measures were included to indicate the overall

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<sup>16</sup>In Chapter II, Section 6 a comprehensive review of the research literature on health care models and determinants of health care use is presented.

<sup>17</sup>The quality component, measured by the content of child care consultations and compliance with treatment, was assessed by two other studies of this research project, however the results are not presented in this thesis.

distribution of preventive care. Thus, this does not support the notion (known as 'selective' primary health care) that sole medical interventions are sufficient to resolve and improve the health status of the population.

With regard to the first measure, which was used to indicate the level of need of a target population, it was found that a half of the children under five had not received preventive consultations during the preceding year. The other half who had contacted the services had an average number of preventive visits below the norm set by Mexico's Ministry of Health. The proportion of children not receiving preventive care increased with age. The health services most utilized for preventive child care were the SESA's health centres. A slightly lower proportion of children having their growth monitored was found in Nuevo León state (Kroeger et al, 1987), though the great majority of the children were taken to the clinics for illness care. By contrast, Victora et al (1988), in a longitudinal study carried out in Pelotas Brazil, found that children aged 20 months had received an average number of 10 preventive consultations.

The finding that the number of childrens' preventive consultations declined with the age of their mothers may be explained by the following factors. First, older women had more children to look after. Thus, they may have less spare time to take the children to the health centres. It has been reported elsewhere (Slensinger, 1976; Wolinsky, 1976; Colle and Grossman, 1978; Tessler, 1980) that as family size increases, use of preventive services decreases. Second, more older mothers think they have more experience than younger mothers. Third, older women tend to be less educated than the younger ones.

With respect to socio-geographic differences, the general pattern described for illness-related use was also seen for child health care, although some dissimilarities were identified. For instance, a higher proportion of children from



rural areas received preventive consultations than those from urban areas, though these made more visits. However, differences were not statistically significant. Regarding differences according to the area living standards index, intra-urban differences were more marked than intra-rural differences. This finding was compatible with that found in relation to illness-related use.

The analysis of the relationship between child health care and measures of socio-economic position of the mothers showed similar results for education and entitlement to social security to those observed for illness-related use. The number of preventive consultations was inversely related to the mother's educational level. Children whose mothers were entitled to receive social security benefits made more use of preventive care than children of uninsured mothers. An interesting and unexpected finding was that children of mothers working inside the homes made more preventive visits than children of mothers working outside the homes. It has been suggested elsewhere (Colle and Grossman, 1978) that as the time cost increased for working mothers, the likelihood of their children having a preventive visit decreased.

Furthermore, it should be noted that a potential limitation of this measure is that a visit to a health establishment does not necessarily imply that a child receives a preventive consultation according to the criteria for child health care. Another shortcoming of this indicator is that the long recall period used may have influenced the accuracy of the responses. However, within the limitations of this indicator, there is sufficient evidence to conclude that the child health care, as far as preventive consultations are concerned, is deficient, since half of the young children did not receive the benefits of this type of health care. Moreover, those who reported to have had preventive consultations had an inadequate number of

contacts, since this number was below the norm set by the Ministry of Health.<sup>18</sup>

Although vaccination coverages were high, it should be noted that the method utilized might have overestimated coverage, since this was calculated from the population that possessed vaccination cards. There are reasons to believe that the children excluded from this analysis (33%) had different coverages. It is very likely that the coverages of these children were lower than those of the children whose mothers produced the vaccination cards. Differences in the methods utilized to gather the information may explain the higher vaccination coverages found by this study compared to those reported by other studies such as the National Health Survey (SSA, 1988b), and the Nuevo León state health survey (Kroeger et al, 1987). None of these studies reported whether the data were collected from the vaccination card or whether they were collected from the information provided verbally by the mothers.

The apparently contradictory results obtained with respect to variations in vaccination coverages may be explained by the relationship between the possession of a card and the vaccination state. For instance, while the possession of the vaccination card was inversely related to the educational level of the mothers, a higher proportion of children from rural areas and lower socio-economic strata possessed cards. Accordingly, children of more educated mothers had a higher BCG coverage than those of less educated mothers, whereas the reverse was seen when the area living conditions index was used. A higher proportion of children from the lower rural stratum were BCG vaccinated than those from the middle and upper strata.

These findings may reflect the impact on coverage of the intensive immunization programmes that were carried out in

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<sup>18</sup>See Lever, 1989 for definition of coverage measures.



rural areas of Mexico, prior to the study, though it is likely that the pattern of inequality favourable to lower strata of rural areas found has been produced by the method used. However, it has to be recognized that from the results of this study it is not possible to reach a definitive conclusion on inequalities in vaccination coverages.

#### **D. Comments on explanations of health care inequities**

Although an explanation to inequities in health care was not the central purpose of this study, the importance of this issue can not remain without comment. The high consistency of the results obtained with different indicators and social markers makes it very unlikely that the pattern is an artefact. As we have seen, the same trend was found for both illness-related use and preventive care. In order to match use with need among individuals of similar social group, the information on recent health care use was related to the main illness reported. Thus, ecological fallacy is an unlikely explanation for the conclusions on inequity in health care use, of the kind reported elsewhere (Scott-Samuel, 1981).

On the other hand, the consistency of the results across individual-based and area-based socio-economic measures indicates that an ecological fallacy is unlikely. Thus, the socio-geographic inequities may be explained largely by differences in social class structure and by the differential accessibility to the health services in the areas under study.

Differential access to health services, as well as the disparities in the utilization of different types of services between occupations and social classes, supports the view that such differences are largely dependant on a persons' position in the productive system, rather than on any subjective or behavioural factors. Although the role of these factors in inequalities is not dismissed, there is evidence that, in health at least, they are over-determined by socio-economic

position (Davey-Smith et al, 1991a). As the authors of the Black Report (DHSS, 1980) with regard to inequalities in the use of health care services in Britain clearly put it:

"It is hard to resist the conclusion that this pattern of unequal use is explicable not in terms of non-rational response to sickness by working-class people, but of a rational weighting of the perceived costs and benefits to them of attendance and compliance with the prescribed regime. These costs and benefits differ between the social classes both on account of differences in way of life, constraints and resources, and of the fact that costs to the working class are actually increased by the lower levels and perhaps poorer quality provision to which many have access (DHSS,1980)."

In the rural area of Tlaxcala, we have seen an unequal distribution of opportunities of access to public and private services among the social classes and groups, as indicated by the unequal distribution of income and social benefits such as social security (see Chapter VI). Furthermore, the lower quality of public services in addition to organizational barriers (such as inadequate schedules, frequent absences of medical staff, lack of medicines, etc) makes the utilization of the public health services by the most socially, economically and politically disadvantaged in the rural society of Tlaxcala more difficult. In sum, there are sufficient grounds to consider the causes of inequalities in health care in the same direction as for those of inequalities in health.

## **4. Methodological issues**

### **A. Appropriateness of methods and measures**

The findings of this study illustrate that the cross-sectional population-based approach used in this research has proved to be effective in providing reliable and valid information about a number of health aspects across different population subgroups. This permitted ascertainment and measurement of the



existence and extent of inequalities in health and health care in the study area.

As mentioned earlier, routinely collected statistics do not denote the differences in unmet need and health care utilization between subgroups of the population. Regarding the question of the surveys of users and/or institutional statistics as an alternative for the more complex and expensive household surveys, the finding that there is a high level of non-utilization of the health care facilities, particularly of the public ones makes them more limited than the population surveys to detect vulnerable groups. Moreover, the existence of a wide variety of health care systems, in the case of Mexico and other Latin American countries, magnifies the problems of gathering reliable and useful information. Thus, it is possible to conclude that measurement of inequalities in health and health care should be based on population-based data, since the information routinely collected in the health institutions is insufficient and of a limited value for such measurement. As put by White et al (1977):

"The population represents not only the political base of perceived need, to which all politicians and all social services must sooner or later be responsive and accountable, but also the only scientific base usable by the planner to evaluate and compare health care systems objectively in time and space and among different populations."

With respect to the health measures used (discussed in Section 2.D), perceived morbidity measures and self-ratings for health state are an appropriate supplement to mortality measures and even an acceptable alternative to differentiate between social groups. Likewise, the results suggest that perceived morbidity was related to health care utilization.

Social measures. The extent of inequalities in health is influenced by the type of measure used to measure socio-economic position (Davey-Smith et al, 1991a). The selection of the social variables for analysing health inequalities

suggests the meaning given to inequality (Blaxter, 1989), as well as the explanation for health differences (Le Grand, 1986; Máseide, 1990). In this study, individual and area based measures of socio-economic position were used to indicate the material circumstances of the different subgroups. The underlying assumption is that it is the way in which wealth and power are distributed in a given society what determines the way in which health and health care are distributed in the same society. The case of the agricultural sector in Mexico illustrates this well. The individual-based social markers used proved to be useful in discriminating vulnerable groups. Among these, education produced the largest differentials in health (see Table IX.1 and Figure IX.1). This is a variable of great socio-economic and health significance, since it influences socio-economic status, type of occupation, life style and overall values and beliefs, and health care seeking behaviour. There is evidence that the strong association found between educational level and the three different types of health measures used may be mainly explained in terms of its association with occupation. As shown in Chapter VI, this variable was strongly related to occupation.

As the findings demonstrate, occupation has been a useful measure to define groups with different levels of health and health care utilization. Differentials were highlighted when disaggregated occupational categories were used. It is likely that among males differences were concealed by the use of broad categories with considerable variation within them such as agricultural/non-agricultural occupation. Thus, an improved categorization of social class such as occupation used together with land tenure and type of land permitted differentiation between the agricultural social classes (see Section 2.A). Occupation is a central social variable in studies concerning inequalities in health and health care (see Chapter V, Section 6.A). In addition to the specific risk factors directly related to particular occupations, the type of occupation is strongly related to income and, consequently, to the material conditions of life. For instance, associated



with the definition of waged labourer were low income, low education, poor housing conditions, poor nutrition, lack of social security benefits, and poor access to public services, including medical care.

Source of medical care was another socio-economic marker that clearly defined groups with distinct health levels. This variable is also strongly related to occupation. Its main advantage over the social security indicator was that it permitted differentiation between the two major social groups comprising the uninsured population: the population under the state services and those under the private sector.

The use of income-related indicators, such as frequency of meat consumption, allowed the identification of groups with sharper differentials in health state assessments and severity of illness than those observed with housing conditions. Regarding these indicators (meat consumption and housing conditions), a distinction needs to be drawn between their value for analysing causal relationships and their value for indicating membership to a socio-economic group. It should be noted that these variables were primarily used as income and SES indicators, since as demonstrated in Chapter VI, there is considerable variation in meat consumption and housing conditions among different socio-economic groups and socio-geographic areas. Lower socio-economic groups and areas experienced larger housing disadvantage and consumed less meat. On the other hand, the relationship between poor quality housing conditions and ill-health has been well documented (see Section 2.A). These indicators reflect exposures, which are direct causes of health differentials (Davey-Smith et al, 1991b). There is strong evidence that direct effects of SES on health are mediated via material circumstances such as nutrition, housing, working conditions, etc. Thus, irrespective of which component one chooses, these indicators are associated with health status.

In relation to the index of living standards for small areas, this was found to be a useful measure in discriminating areas of high and low morbidity and utilization. In Britain, area deprivation measures have been used as an alternative to social class for epidemiological analysis of inequalities in mortality, morbidity and health care use (Carstairs and Morris, 1989a, 1989b, 1991). In this study, the socio-geographic distribution of health was compatible with the productive structure of the municipalities and distribution of socio-economic deprivation in Tlaxcala. Differences in health were particularly marked among villages of less than 2,500 persons. By contrast, intra-urban differences in health care utilization were wider than the intra-rural ones.

#### **B. Extrapolation of the results**

From the assessment of the representativeness of the sample and the findings on the population and its living conditions (see Chapter VI), the findings of this study can be generalized to the entire rural area of Tlaxcala. While most of the demographic and socio-economic characteristics of rural Tlaxcala are, to a great extent, similar to rural Mexico as a whole, Tlaxcala has peculiarities that make it different from other regions of Mexico (see Chapters IV and VI). Thus, it would not be appropriate to extrapolate the findings of this study to rural areas of states such as Baja California, Sonora or Tabasco. Furthermore, the nature of the research subject makes a generalization of the findings from one area to another difficult. As widely recognized, the issue of social inequalities, due to its economic, political and historical dimensions, has to be examined in the context of particular social situations (Runciman, 1969).

Nevertheless, the methods used and the findings can be, to a large degree, applied to other areas of rural Mexico, particularly those at the extreme end of the socio-economic development spectrum in the country.



## 5. Policy implications

In sum, the results of this study have two broad classes of policy implications. The first type is related to the development of methods and information systems for health planning, while the second is concerned with the appropriate policy initiatives that these findings suggest.

First, the development of indicators and social markers, in particular individually-based social measures, has enormous implications for health planning and evaluation, since these groups can be identified as priority population targets for special deployment of resources, through the principle of positive discrimination. The ability to identify the groups at greatest risk could provide an opportunity to improve efficiency and obtain the greatest impact. These indicators could be also used to indicate the kind and extent of future need for health care.

Among the area-based social measures, the results showed that the socio-economic stratum of the locality index was highly correlated with the morbidity measures and other health measures. This finding suggests that the index might be a useful measure of relative need for health care, and provides the possibility of effectively using census data for health planning at the local and district levels. This approach might give the health services the opportunity to orient health care planning towards the population needs. It is population-based, which represents an advantage over other approaches in health planning, which are based on defective institutional statistics.

Whilst population-based morbidity data are not available, and are difficult and expensive to obtain, there is information on the socio-economic stratification in the whole country at such high level of disaggregation as the basic statistic geographic area (AGEB), which is roughly equivalent to the municipal

level (see Chapter V, Section 4.B). These data might be used as a surrogate indicator of morbidity. The use of this information would not imply an additional cost to the health services, because it is already available and updated by the decennial population census and ad hoc socio-economic population surveys and estimates for the inter-census years carried out by the National Institute for Statistics, Geography and Informatics (INEGI). The potential of using small area statistics of social deprivation as a surrogate indicator of morbidity and use of health care services has been widely advocated in Britain (Jarman, 1983; Thunhurst, 1985; Bucquet and Curtis, 1986; Curtis, 1990). However, the use of an underprivileged area index for predicting the workload of general practitioners in Britain has been the focus of much criticism based on methodological issues, e.g. lack of validity of the data, wide heterogeneity of socio-economic circumstances within the areas for which the scores are calculated (Carr-Hill and Sheldon, 1991; Davey-Smith, 1991).

It should be noted that the association between some of the variables included in the index and the different aspects of health is not sufficiently clear. Thus, further empirical research is needed to refine the index. Multivariate methods may be used to determine the relative importance of such variables and estimate the likelihood of reporting morbidity and utilizing health care services for people living in areas with different living standards.

The epidemiological population-based approach used in this study may be useful not only for documenting the extent of inequalities but also for monitoring ongoing intervention programmes. For example, it could be used to assess the impact of inter-sectoral programmes like the National Solidarity Programme. This study has already established a baseline assessment in the state of Tlaxcala, which could be repeated at five or six year intervals to evaluate changes over time and give evidence of whether the health system as a whole is



becoming more or less equitable. This could be useful for monitoring the consequences of the economic crisis and adjustment policies on health and health care.

Furthermore, the development of methods and indicators for effective health planning is not only important in the context of local and national planning but also in the context of other countries in Latin America, which share similar problems to those of Mexico.

Consideration of the range of health policy options resulting from the findings of this study is inevitably linked to the question of the causes of inequalities. Although the study did not provide sufficient data to draw definitive conclusions on this question, the findings clearly denote the salience of the materialist explanation for health differentials. However, in the context of this explanation, the implementation of effective policies aimed at reducing the existing inequalities in health, poses enormous theoretical and practical problems.

Two different positions regarding the policy implications of this explanation can be distinguished. The first position is represented by those who claim that reforms within the health care system would remain ineffective unless accompanied by broad structural changes in society (Waitzkin, 1983). In the context of the Third World countries some successful examples can be mentioned in support of this position such as China, Cuba and Nicaragua. Their health experiences reflected deep changes in the social and economic structures.

On the other hand, there are those who believe that the health consequences of life circumstances can be effectively combated by health care programmes and medical technologies (UNICEF, 1984, quoted in Musgrove, 1987). This position leads us to formulate the following two important related questions: first, what is the role of health services in health inequalities?, and second, which aspects of the health services and under which conditions, would the health services

contribute to reduce health inequalities?. In Britain, the Black Report suggested that inequalities in health care was only a partial explanation for the inequalities in health. It concluded that the unequal distribution of health was a consequence of the socio-economic circumstances of the population rather than the access to and use of health care services (Townsend et al, 1988a). This view is widely shared elsewhere (Macintyre, 1989).

Although the link between preventive measures and health outcomes is more or less clear, the suggestion by some authors (Illsley, 1990) that more services and improved accessibility to health services could have an important effect on health inequalities in Third World countries is still a matter of debate. For example, conclusions from a study by Musgrove (1987) in Latin American and Caribbean countries suggest that while:

"...worsened economic conditions can seriously damage health status, with effects on infant mortality and on the patterns of disease and death, especially for children." "...One of the principal findings so far of the UNICEF studies is that there is little necessary connection between the severity of the crisis in economic terms and its apparent consequences for health, since malnutrition, infectious disease and mortality can be effectively combated by health care and nutrition programs."

However, recent evidence shows that the opposite situation may result (Boyd, 1988; Zuckerman, 1989; Sollis and Moser, 1991). Moreover, there are many examples where despite the universal availability of health services, the social inequalities still persist. Rifkin and Walt (1986) argue that in many less developed countries communicable diseases continue to be the main causes of childhood mortality and morbidity despite the availability of medical technologies. They suggest that among the most socially disadvantaged groups, the delivery of health services is not sufficient to improve their health.



Health differentials of the magnitude of those found in the rural area of Tlaxcala and Mexico call for profound changes in the existing unequal distribution of income, power and the overall material conditions of life. Although, as mentioned earlier, an antipoverty programme has been launched recently by the federal government, no intersectoral strategy will be effective unless it is also accompanied by a distribution of income and power.

Health policies to be effective must transcend the health sector and even the social sector. As Gunatilleke (1988) says: "equity in health is above all equity in development". Socio-economic development is an integrated process, in which the health sector interacts with other sectors of the socio-economic system (Christian et al 1977). In this context, to be effective in tackling the problem, health policy has to be viewed only as a part of a large intersectoral strategy, in which rural development must have a predominant place.

In the case of Mexico, rural development means many things, such as: land redistribution, democratization of the electoral process, independent trade unions, financial loans, stable employment, higher wages, fair and guaranteed prices for crops, fairer terms of trade, agricultural insurance, technological assistance, research and equitable health care. However, all this cannot be met by the State alone with a paternal approach, but above all it must be generated by a collective process of production, consumption, and organization.

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## X. CONCLUSIONS

The aim of this study was to document the existing inequalities in both health status and health care utilization in the rural area of the Mexican state of Tlaxcala. The conclusions are presented in three sections: population and inequalities in material conditions; inequalities in health; and inequities in health care. The policy and research recommendations derived from this study are presented in Chapter XI.

### 1. Population and inequalities in living conditions

i. The sample was representative of the population of the state of Tlaxcala living in localities of less than fifteen thousand inhabitants, which represents over three quarters of the total population. The upper, middle and lower socio-economic strata were also represented in the samples from the localities of less than 2,500 population and between 2,500 and 15,000 population.

ii. The study population showed a younger age structure than that of the whole country, with a larger proportion of children under five and women in the fertile age range (36%). The working age population (15-64) was 53% of the total.

iii. The effects of a fertility decline were evident in the population pyramids. However, the total fertility rate was almost twice that for the whole country. This is consistent with the notion that family programmes have had less impact in rural areas of the country. Sharp differentials in fertility



levels were seen among women with different educational levels and occupations. These results suggested the existence of social inequities in the coverage of primary health care services.

iv. The general picture that emerges on the living conditions in the study area, shows that rural Tlaxcala stands among the most deprived regions in Mexico. Its overall educational level was lower than the national average. 39% of the population aged 15 and over had had no schooling or little schooling (1-5 years). This proportion increased among older age groups, which suggests a cohort effect. The social security coverage of the population was (28%) a half of that for the whole country (59%). Overcrowding was common among a large proportion of households and sanitation facilities were worse than in many other states of the country. Only 36% of the study population had toilet facilities.

v. Large disparities in the living conditions were found among social groups and socio-geographic areas. For education, social security coverage, housing conditions, and income-related indicators, peasants and waged labourers were the most deprived, followed by bricklayers and other manual unskilled urban occupations. Among localities of different size, the villages of less than 2,500 population, particularly of the lower stratum, were the most deprived.

vi. The predominant occupations among males aged  $\geq 15$  years were agricultural (39%) and the unskilled and low-waged ones. Of the total male population with an agricultural occupation, 21% were waged labourers, whereas the remainder was mainly made up of poor and middle peasants. Agricultural occupations were more frequent among older males. Although a high percentage for the dependent population was found (61%), it should be borne in mind that in these kind of agricultural societies, women and children contribute greatly to productive activities.

vii. The great majority of the peasants (57%) were classified as under-subsistence campesinos according to the CEPAL index. If the criteria of PRONASOL<sup>1</sup> is used, this population can be considered as living under conditions of extreme poverty. This proportion is 2.7 times greater than that reported for the country.

viii. The findings on assets, land, agricultural implements, livestock and savings suggests a generalized decapitalization of the agricultural sector of Tlaxcala.

ix. With regard to land ownership and related characteristics, 57% of the households had a plot of land. Most of landholders, owned unirrigated low-quality land. Most of the plots were very small.

x. The results suggest that the social indicators used in the study proved to be sufficiently sensitive to discriminate between groups and areas, within a population that by definition appears to be quite homogeneous.

## 2. Inequalities in health

i. To compare the overall health of population sub-groups and by socio-geographic areas, three different kinds of health measures were utilized: self-reported morbidity, childhood mortality and self-appraisal of current health state. The results obtained with these measures were strikingly consistent.

ii. For the four morbidity measures, this study has demonstrated a consistent pattern of inequality among socio-economic groups, and communities of different size and living standards. For both sexes, the general trend was a significant increase in morbidity with decreasing socio-economic position.

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<sup>1</sup>The anti-poverty programme of the Mexican government.



Differences between educational groups and occupations were found to be more marked among men.

iii. Amongst the morbidity measures, prevalence of perceived morbidity of a high severity showed the largest differentials. For instance, the risk of reporting severe illnesses was five times as high among men without schooling as among men with seven or more years of schooling. The risk of these illnesses for those living in a highly deprived rural area was 2.4 times that of those living in the least deprived rural areas.

iv. The results suggest that perhaps the measure based on severity of illness is superior to the other morbidity measures used, since it could be argued that this is less influenced by subjective factors and reflects better the morbidity that would be detected by professionals.

v. With regard to the diagnostic pattern of morbidity, infectious illnesses, particularly respiratory and gastrointestinal, were predominant among children. Nervous and mental illnesses, musculo-skeletal and chronic health problems had the highest rates in older ages. The same trend of social inequality demonstrated by the measures based on overall morbidity and number of symptoms, was found regardless the type of illness analysed. The relevance of an adverse social environment was highlighted by the high prevalence of gastrointestinal illnesses among the most deprived areas and in the socially disadvantaged groups.

vi. Contrary to widespread belief, it was found that nervous and mild psychiatric problems were more prevalent in impoverished small rural villages than in the better endowed and larger localities.

vii. As far as mortality measures are concerned, the study produced findings on infant mortality and under five mortality that were strikingly consistent with those reported by other studies. The infant mortality rate was 73 per 1000 live births, and the under five mortality rate was 107, which

reflect higher mortality levels in rural Tlaxcala than in the whole country.

viii. With regard to social and regional differentials, levels of childhood mortality were higher among children:

- living in rural villages of less than 2,500 population;
- living in most deprived localities;
- having families whose head had low or no schooling;
- having fathers whose occupation was agricultural;
- having families not entitled to social security;
- living in poor housing conditions

ix. Of the two childhood mortality indices used, the under five mortality index showed the largest differentials. The results suggest that this indicator has some methodological advantages over infant mortality in this type of analysis.

x. The findings on self-assessment of health state paralleled those on perceived morbidity and this measure showed the largest differentials between social groups. Unfavourable ratings increased with age and women rated their health more unfavourably than men. A significant inverse relationship was found between unfavourable assessments of health state and the diverse measures of socio-economic position and status used.

xi. Education, as a simple measure of socio-economic status, defined most clearly the groups with high and low morbidity and mortality, as well as those with good and bad assessments of health.

xii. Occupation and habitual source of medical care, (the latter was used as a proxy measure of social class), also produced large differentials. Moreover, it seems that the strong association observed between the education and health measures could be partially explained by the relationship between education and occupation. Results suggest that differentials were greater when finer categories of occupation were used.



xiii. Social class, defined on the basis of position in the production system and relationship to the means of production (access to land), proved to be useful in detecting differentials in perceived morbidity within the agricultural population, which is commonly considered to be a homogeneous population. The analysis was improved when amount and quality of land were introduced. Waged agricultural labourers had worse health conditions, than peasant land-holders as indicated by perceived morbidity and perceived health state. Among the latter, those having access to good quality land showed better health conditions than peasants with access to poor quality land. These results are relevant when considering the potential impact of the present State policies on the rural sector of the country.

xiv. The consistent findings across the various health and social measures, makes it very unlikely that these differentials are an artefact. The notable association between indices used to measure health and socio-economic status argues for materialist explanations rather than behavioural ones in explaining the large social differentials. In the context of unequal life circumstances, similar to those found in the study area, explanations based on lifestyle and analogous theories appear not to explain the differentials. These explanations support the belief that the social system puts the blame on the victim to justify the (ill-) health consequences of the inequitable and unjust distribution of wealth and power.

xv. Whilst the overall results on morbidity and childhood mortality are compatible with those reported elsewhere in the country, there is no comparable information available for other populations at the level of disaggregation of the data generated by this study. Previous studies have tended to concentrate on examining differences between heterogeneous populations and regions. Thus, the relevance of the findings from this study lie in presenting clear evidence of the existence of large differentials between social groups and communities within an apparently homogeneous population.

### 3. Inequities in health care

i. To compare the utilization of health services relative to need across the different social groups and socio-geographic areas, two kinds of measures were used: illness-related contacts and preventive care contacts. The first was associated with the response to self-perceived morbidity during the two weeks prior to interview, whereas the second was related to preventive consultations and immunizations for children under five. These indicators proved to be appropriate measures of perceived need and provided the basis for comparisons across the various social measures.

ii. The commonest response to recent illness was self-treatment (non-prescribed medicines and home remedies), whereas the utilization of formal health services represented nearly a third (28%) of the total responses. The pattern of health care utilization by age was U-shaped (curvilinear), that is, young children and older people tended to use more. Women at all ages made a greater use than men and this difference remained after controlling for type of illness.

iii. The utilization of health services was in general very low. The overall utilization rate during the last two weeks was 12% for women and 8% for men. The actual utilization pattern was consistent with that of morbidity of high severity, but the high level of non-utilization for severe illnesses was large particularly among older people, despite the perception of the need for care.

iv. Chronic illnesses led to the highest utilization of health services, whereas nervous and mild psychiatric morbidity and skin problems showed the lowest. Acute respiratory and gastrointestinal infections and parasitic illnesses were mainly self-treated with home remedies and non-prescribed medicines.

v. The findings illustrate that disparities also exist in the utilization of health services between socio-economic groups



and socio-geographic areas. The study showed a decreasing trend in utilization with decreasing socio-economic position of the respondents and by living standards of their locality of residence. This trend was observed for both illness-related use and preventive care.

vi. The findings for utilization of health services by the different social groups and by areas suggests that the level of use of health services does not reflect the level of need for health care, as indicated by the morbidity measures and other measures of need.

vii. Furthermore, the results provide evidence of the existence of an "inverse care law", since the utilization of health services was inversely related to the level of overall perceived morbidity and morbidity of high severity. That is, social groups and areas at greater need made less use of health services and vice versa. The level of unmet need was particularly large among the elderly.

viii. For men with an agricultural occupation and for women without a waged occupation, the illness-related use of health services was lower than for their counterparts with a non-agricultural occupation or working outside the home. The same tendency was observed with the social class related indicators. The uninsured population made less illness-related use than the insured population. The population who regularly utilized the state services had the lowest utilization in response to recent illness, whereas the population under the social security scheme the highest. This was despite the fact that the former had the highest prevalence rates for severe illnesses and the latter the lowest.

ix. The results suggest that the health system in Tlaxcala is highly stratified according to the occupation and social class of the population. The distribution of health care is closely associated with the economic activity and the social class of the respondents. The state services are mainly utilized by poor peasants and waged labourers, low income and unskilled

workers, and people in the non-working age groups. The social security services are utilized by the better-off, organized salaried urban workers, and the non-manual urban employees. The private services are utilized mainly by people in the uninsured population who have the purchasing power to pay the fees.

x. The coverage of social security in Tlaxcala is low compared to other states and to the whole country. Although among the insured population social security services are the first choice for illness treatment, it is significant that 44% of the insured population who reported illness and who had used health services had not utilized those services to which they were entitled. They preferred to pay for the services they wanted.

xi. The private services play an important role as far as people's health care choices are concerned. The findings suggest that the relatively high use of private services may be explained by the poor quality of the public services, particularly of the state services, when combined with the existence of barriers. Although facilities are physically available, there are organizational barriers that deter people from using them, such as lack of medicines and other supplies, inadequate working schedules, frequent absences of medical staff, perception of poor quality care, as well as and poor geographical accessibility of the centres.

xii. A conclusion from this study is that, in effect, the treatment of perceived illness has been privatized. In reality the patients, many of them impoverished campesinos (peasants), are obliged to go private and pay for the services they want.

xiii. In parallel with the class and economic specialization of the health care system, a specialization by diseases also emerged from the results. The state services are commonly used to treat infectious and parasitic gastro-intestinal illnesses, and skin problems, whereas the private and social security services are the main choice for chronic illnesses, nervous



and mild mental problems, and musculo-skeletal problems. All health services are commonly used to treat acute respiratory infections.

xiv. Child health care coverage in Tlaxcala, as far as preventive consultations are concerned, is inadequate since a half of the children aged under five years had not been in contact with the health services during the previous year. Furthermore, among the half who had had preventive contacts, the number was too low according to the norms of the Ministry of Health. Large disparities were seen between social groups, which were particularly marked among children whose mothers had different educational levels. Children not entitled to social security services made less preventive visits than those entitled to such services.

xv. High vaccination coverages (over 80%) were found (BCG, DPT, polio and measles vaccines). Children from the lower socio-economic strata of rural areas tended to have higher vaccination coverages. However, these results should be interpreted cautiously, since it is likely that such high coverages, as well as the pattern of inequality favourable to children from deprived rural areas, might have been caused by the method used to collect the information.

xvi. Finally, it should be noted that inequities in health care are relevant, not only because of their possible relationship with inequalities in health, but because they are unjust in principle. Furthermore, access to health care is an essential social right established by the Political Constitution of the Republic, and one of the oldest social aspirations of the Mexican people.

## XI. RECOMMENDATIONS

### 1. Policy

- i. The identification of the vulnerable groups at greatest need, either using individual or area-based measures, should be emphasized in health policy and planning. The identification of vulnerable groups is not merely a technical exercise for professionals and health planners but it should also involve the population itself.
- ii. Individual-based social measures used in this study, such as educational level, occupation and social class, as well as area-based measures such as socio-economic stratum of the area of residence, proved to be useful in identifying vulnerable groups and areas and could be used as measures of relative need.
- iii. For health planning purposes at the district level (jurisdicción sanitaria), the individual-based social measures would be more useful than the area-based measures to give intra-area profiles of relative need among population subgroups. The pertinent data on the social markers to generate these profiles could be obtained by simple population surveys based on small samples of the district population.
- iv. The results of this study suggest that simple population counts based only on the age and sex composition of the population are not sufficient for appropriate local programming of health services, since these do not indicate differences in health status and utilization of health services between social groups and between different socio-geographic areas.



v. For planning and resource allocation purposes at the state and regional levels, it seems more practical and economical to use the area-based socio-economic (living standards) index<sup>1</sup> developed by INEGI, since census information to construct this index is available at the municipal level, which is roughly equivalent to the local or district level. This index might be useful for making comparisons on the relative needs of contrasting jurisdicciones sanitarias. An important advantage of this index is that it tends to be valid for relatively long periods between the decennial censuses. The components of this indicator are of a structural nature and thus changes in the variables occur only gradually. This index has proved to be useful in discriminating between areas with large differentials in health and health care utilization, particularly within the dispersed rural stratum (villages of less than 2,500 inhabitants).

vi. These methods might be incorporated into the evaluation and health information systems of the jurisdicción sanitaria (local administrative area) and sistemas estatales de salud (state administrative level) to provide a more relevant profile of the differences in unmet needs and for analysing utilization of specific health services by different population subgroups. In this way monitoring and evaluation would occur as a more continuous planning and management process.

vii. The measurement and analysis of coverage should allow the identification of inequities in coverage, that is, the identification of differentials in coverage between population subgroups and socio-geographic areas. Special consideration should be given to broader definitions of coverage, other than nominal or availability coverage, such as utilization coverage, which would be based on the proportion of people in need of a service who actually uses the service, and adequate utilization coverage, which is based on standards of care,

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<sup>1</sup>or a similar socio-economic index, such as the one based on the productive structure of the area and those developed by CONAPO and COPLAMAR based on socio-economic deprivation (see Chapter IV.1).

concerning the number of contacts with a specific service, and indicators of coverage based on content and quality of care.

viii. Special deployment of services and resources could be targeted to vulnerable groups and most deprived areas under a principle of "positive discrimination". It is imperative to reverse the existing inverse care law, that is, more care should be provided for those at greatest need and (as suggested by Hayes, 1991) where possible, in proportion to that need.

ix. The conclusions of this study suggest that an intersectoral strategy should be adopted to tackle the great health problems of vulnerable groups, by defining health more broadly and including an element of redistribution policy. Given the magnitude and nature of the health problems, it would appear to be inappropriate, and probably a waste of resources, to reduce the inequalities through the mere application of medical interventions alone. Moreover, existing evidence suggests that, although interventions restricted to the health sector may produce some positive changes in the prevalence of mortality from specific diseases over the short term, in the long term they have shown poor results and even a negative impact on other sectors (Rifkin and Walt, 1986; Gunatilleke, 1988).

x. Since the unequal distribution of political and socio-economic power and material conditions are the root causes of the unequal distribution of health and health care, the success of any strategy, including those of a multisectorial nature, will depend on the feasibility of producing changes. Thus the underlying principle for an equitable policy in health should be the redistribution of wealth and power.

xi. To ensure success, intersectoral actions should promote community involvement in the planning, implementation and

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<sup>2</sup>For a detailed description of these measures of coverage see: Lever, 1989; and Tanahashi, 1978.



evaluation of health services and programmes. This would ensure social control over the services at all stages of health development. Previous experiences of community involvement in the organization, planning and implementation of health services in the rural areas, such as the Servicios Médicos Rurales Cooperativos<sup>3</sup>, might be adapted to the present social, political and historical circumstances of rural Mexico.

xii. Health development in rural areas should be viewed as part of rural socio-economic development. However, we have seen that the development strategy applied in Mexico puts an emphasis on the industrial sector while neglecting the primary sector. The resulting economic growth has provoked on the one hand, a marked concentration of wealth, and on the other hand groups in severe poverty. Thus, it is imperative to change this defective model of development that has neither solved the enormous social problems of the great majority of the population nor met the basic needs of the population, particularly that of the rural areas. A new strategy for socio-economic development is needed.

xiii. As far as the rural sector is concerned, this new strategy should develop policies that would give stability of land tenure and that increased the financing and technological support for the campesinos to increase production. New and fairer trade mechanisms are needed as well as price supports. A key factor in the defense of the campesinos interest is their organization, particularly of the waged labourers, who at present are not organized at all. Of great importance is the incorporation of the rural population into the consumption process in order to meet, at least, their basic needs for food, education, health, housing, clothing, transport.

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<sup>3</sup>A cooperative health service system set up in 1936 in some rural regions of Mexico under the pressure of organized peasants with the financing contribution of the federal government and the 'ejidos' (semi-communally owned farms). Depending on their contribution, the peasants had an important role in the decision making and planning of the services (Hernández-Llamas, 1984).

xiv. The conclusions from this study are relevant to the policy recommendations for research into essential needs in Mexico carried out by COPLAMAR<sup>4</sup>. These recommendations are still valid and the following seem particularly important:

•A new approach to planning should be adopted, which would be based upon the basic needs of the population and the estimation of goods and services required to meet them. Thus, the goals and objectives of growth in production would be determined. This requires definition of a minimum normative basket of basic goods and services that would be required to meet the basic needs of an average-sized family during a year. This basket would include goods and services, and comprise of food, education, health care, housing, amenities and sanitation, culture and entertainment, clothing, transport and communications and so on. This would mean that the present planning method would have to be reversed.

•Another relevant policy concerns the development of basic social rights. We have seen that the legal system in Mexico has privileged the better organized salaried urban workers and neglected the campesinos and waged rural labourers. It is necessary to introduce new social rights or to re-formulate the existing ones. Among these, the population's right to have access to a minimum of services and benefits, such as education, health, housing, public services, provision of meals and supplements to children and pregnant women, social security, employment, and minimum wages needs to be made explicit. Of these, the right to social security has particular relevance, since its present unequal distribution clearly reflects the political nature of social policy in Mexico. It is necessary to introduce a comprehensive package of benefits for all the population including sickness, disability, life and unemployment insurances.

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<sup>4</sup>See: COPLAMAR, 1982; Boltvinik, 1989.



xv. Whilst the multisectoral approach implied by the new government's poverty relief programme represents an advancement with respect to previous attempts to tackle extreme poverty, it will remain ineffective unless the root causes of the existing social inequalities and poverty are addressed. This requires not only a strengthening of the multisectoral actions of this programme but also an effective policy for the redistribution of income needs to be added. For instance, it has been estimated (CCPNS, 1990) that it would be necessary to wait only 4-5 years to meet the basic needs of the poorest 40% if the income of the richest 60% of the population were to remain constant and all the increase of product per capita (assuming an annual economic growth of 3%) were distributed among the poorest. It is also necessary to transform the political and electoral nature of this programme into a tool to obtain social justice, otherwise it will have no credibility and support among the population.

xvi. The results of this study suggest that, as far as the health sector is concerned, the following policies of the National Solidarity Programme seem relevant to reduce inequalities in health care:

- To reduce the existing inequalities in access to the health services, the elimination of the occupational and social class stratification of the health system is required. Health policy has been based on the promotion of economic efficiency rather than on social justice. Health services have been concentrated on the more productive and more organized members of society (salaried urban workers, state workers) neglecting the less organized and socially and politically disadvantaged population (peasants, waged labourers, the unemployed, the elderly).

- This situation requires the establishment of a national health system so that universal access can be ensured. Thus, access to health services would be based upon the health needs of the people, regardless of their occupational structure and income level. This system would

extend the benefits and services of social security to the non-insured population, to reduce the gap between this population and that entitled to the social security benefits.

•A comprehensive PHC approach should be adopted as a national policy and in allocating resources priority should be given to deprived rural areas and groups at greatest risk.

xvii. The results of the present study suggested that the under-utilization and non-utilization of the public health facilities may be due to the existence of structural barriers and the poor performance of facilities, which makes the private services more attractive to use in the treatment of severe illnesses. Moreover, there is evidence that the quality of the services varies between public institutions. Thus, special attention should be paid to the quality issue at both local and national levels. This should include a broad range of activities such as health services research, staff in-service training, improvement of current supervision and evaluation systems, setting up of quality assurance systems, and so on. However, if this policy is to succeed, profound structural and organization changes in the health system are needed. An integrated health system would carry much of the required changes, apart from a more equitable distribution of resources among its components.

## 2. Further research

i. Although, there is sufficient evidence for the link between social conditions and the distribution of health and health care to justify deep changes in the social environment to improve the poor health conditions of large sectors of the population of the country, further research is needed to understand the mechanisms through which the social conditions



operate. We need to know why some members of a social group experience ill health and others not.

It is widely recognized that little is known about the causal links at such a precise level and complex longitudinal studies would be needed to explore such causal relationships. This knowledge would be helpful, not only for achieving a better understanding of the causes of ill-health and processes related to social inequality, but also for the development of more equitable policies.

ii. Another research need is to address the two-way relationship between inequalities in health and inequalities in health care. With respect to this, two related questions seem important: first, what is the role of health care in the production of health inequalities?; and second, which aspects of the health services, and under which conditions, do the health services contribute to a reduction in health inequalities?.

iii. Research is needed to develop reliable area-based measures of need at a disaggregated level, for district health planning. The availability of pertinent census data at the AGE<sup>5</sup> level provides an opportunity for further development of socio-economic and deprivation indices at such level.

iv. It seems important for policy purposes to identify which supply factors are relevant in regard to inequities in health care utilization. The information gathered by other components of the research project, of which this study forms part, provides the rare opportunity to relate population-based data to establishment-based data, such as adequacy of inputs to analyse the balance between need, resources, and use. Another possible application of this information would be the analysis inequalities in the distribution of quality of care.

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<sup>5</sup>See Chapter V for description of this geographic level.

v. Further research is needed in order to determine the adjustments required in the structure and operation (training of staff, practice patterns, development of performance criteria, organization changes, etc) of the health services to improve their performance and eliminate structural barriers. Four out of the six studies in this research project gathered information about a broad range of quality issues, such as adequacy of inputs, organizational efficiency, adequacy of process of care, consumer satisfaction and patient compliance. The analysis of this valuable information should be continued.

vi. This study has provided a baseline assessment of how equitable the health system is in Tlaxcala and where the main problems lie. However, a single cross-sectional assessment cannot provide information about trends. The repetition of this study at five-year intervals would permit the monitoring changes over time and would give an indication of whether such a system is becoming more or less equitable. The second assessment could be carried out in three years time to assess the impact on health and health care inequalities in Tlaxcala of the National Solidarity Programme activities after five years of implementation. In addition a repeat survey would also monitor the impact, as far as the health conditions and health care in the rural area of Tlaxcala are concerned, the new agricultural policy and land reform of the present federal government, as well as the effects of their economic adjustment policies.

vii. Finally, if research related to the issue of inequalities in health and health care is to succeed, it will have to be viewed within a wider context. Thus, it is strongly recommended that research in this area be related to a comprehensive and co-ordinated research effort concerning poverty and extreme poverty in Mexico.

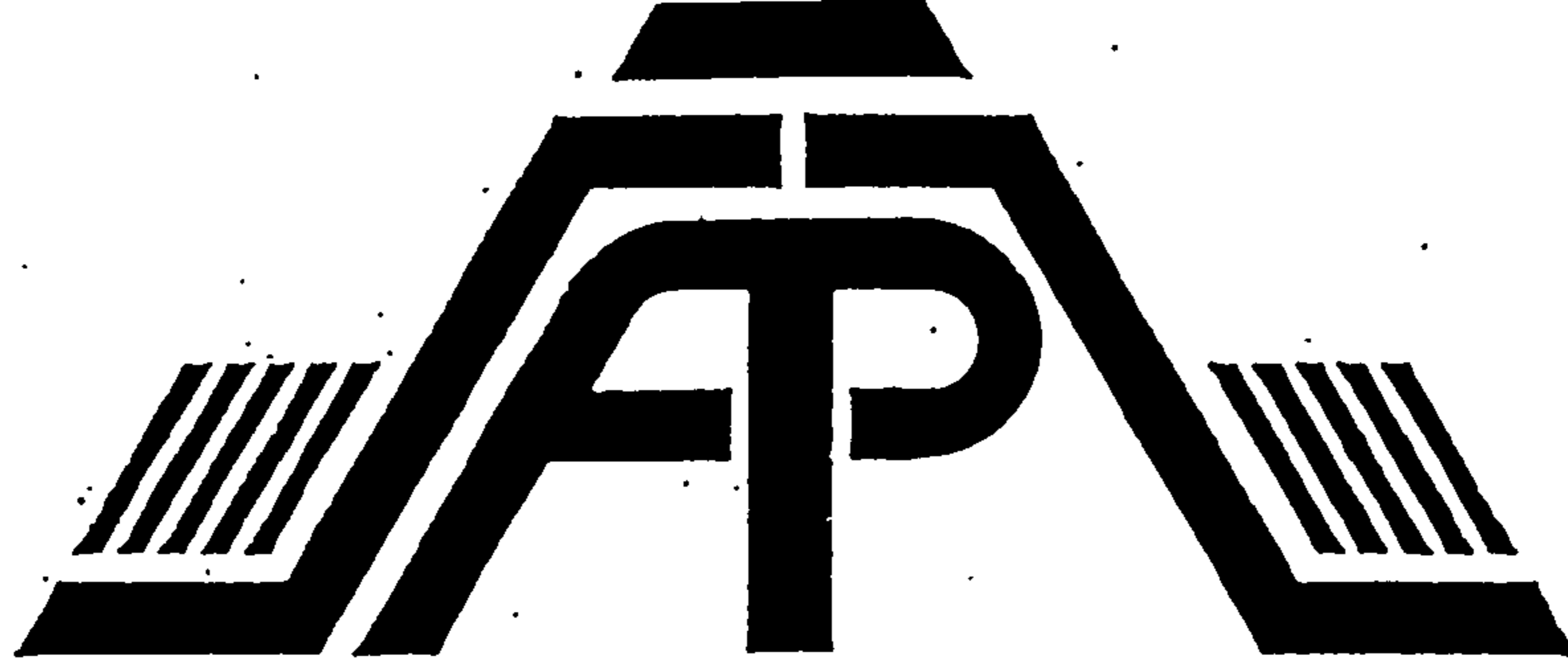


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**APPENDIX 1:**  
**Questionnaire**





EVALUACION  
SERVICIOS DE ATENCION PRIMARIA A LA SALUD

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E.N.A.P.S.

ESTUDIO DE NECESIDADES  
EN ATENCION PRIMARIA A LA SALUD.

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SUBSECRETARIA DE PLANEACION  
DIRECCION GENERAL DE  
COORDINACION SECTORIAL Y REGIONAL



SECRETARIA DE SALUD  
TLAXCALA

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TRABAJO EN LA SECRETARIA DE SALUD DE MEXICO EN UN ESTUDIO PARA CONOCER DE QUE SE ESTAN ENFERMANDO LAS PERSONAS QUE VIVEN AQUI Y ASI PODER COMBATIR MEJOR ESAS ENFERMEDADES, POR LO QUE LE VOY A HACER ALGUNAS PREGUNTAS SOBRE EL ESTADO DE SALUD Y USO DE SERVICIOS MEDICOS DE LOS QUE VIVEN EN SU CASA. LOS DATOS QUE USTED NOS PROPORCIONE SON CONFIDENCIALES Y SE USARAN EXCLUSIVAMENTE CON FINES ESTADISTICOS, ES DECIR, NADIE SE VA A ENTERAR DE LO QUE UD. ME DIGA.

IDENTIFICACION DEL HOGAR

MUNICIPIO	<input type="text"/>	AGEB	<input type="text"/>
LOCALIDAD	<input type="text"/>	AREA DE LISTADO	<input type="text"/>
DOMICILIO	<input type="text"/>	VIVIENDA	<input type="text"/>
ESTRATO	<input type="text"/>	HOGAR	<input type="text"/>

Nº. DE VISITA	PRIMERA		SEGUNDA		TERCERA		CUARTA	
FECHA	DIA	MES	DIA	MES	DIA	MES	DIA	MES
NOMBRE DEL ENTREVISTADOR								
CODIGO DEL ENTREVISTADOR								
HORA QUE COMENZO	HORA	MINUTOS	HORA	MINUTOS	HORA	MINUTOS	HORA	MINUTOS
HORA DE TERMINO								
DURACION								
RESULTADO*	CODIGO		CODIGO		CODIGO		CODIGO	

\*CODIGOS PARA RESULTADO:

ENTREVISTA COMPLETA . . . . .	1	INFORMANTE INADECUADO . . . . .	6
ENTREVISTA INCOMPLETA . . . . .	2	VIVIENDA DESOCUPADA . . . . .	7
TEMPORALMENTE AUSENTE . . . . .	3	NO ES VIVIENDA . . . . .	8
NADIE EN CASA . . . . .	4	OTRO ESPECIFIQUE . . . . .	9
SE NEGÓ A DAR INFORMACION . . . . .	5		

	SUPERVISADO POR	CRITICADO POR	CAPTURADO POR
NOMBRE			
FECHA	DIA MES	DIA MES	DIA MES



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1. Por favor, dígame los nombres de todas las personas que viven en esta casa, empezando por el jefe del hogar hasta el niño más chiquitito.

2. ¿Cuál es el sexo de \_\_\_?

ANOTE  
PERSO-  
NA  
FOR  
PERSO-  
NA

HOM-  
BRE: 1  
MU-  
JER: 2

3. ¿Cuántos años cumplidos de edad tiene \_\_\_?

PREGUNTE  
PERSONA  
FOR  
PERSONA

MENORES  
DE UN  
AÑO: 00  
87 O MAS  
AÑOS: 87  
NR: 88  
NS: 99

01		_ _ _	_ _ _
02		_ _ _	_ _ _
03		_ _ _	_ _ _
04		_ _ _	_ _ _
05		_ _ _	_ _ _
06		_ _ _	_ _ _
07		_ _ _	_ _ _
08		_ _ _	_ _ _
09		_ _ _	_ _ _
10		_ _ _	_ _ _
11		_ _ _	_ _ _
12		_ _ _	_ _ _
13		_ _ _	_ _ _
14		_ _ _	_ _ _
15		_ _ _	_ _ _
16		_ _ _	_ _ _



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N U M E R O D E P E R S O N A

4. ¿Cual es el ultimo año aprobado de \_\_\_\_\_ en la escuela?

FREGUNTE SOLO PARA MAYORES DE 6 AÑOS EN CASO DE DUDA, ANOTE LA ESCOLARIDAD LO MAS ESPECIFICAMENTE POSIBLE.

- NINGUNO: [ 0, 0 ]
- PRIMARIA: [ 1 ]
- SECUNDARIA o PREVOCA-CIONAL: [ 2 ]
- SECUNDARIA TECNICA: [ 3 ]
- COMERCIO: [ 4 ]
- PREPARATO-RIA o VOCA-CIONAL: [ 5 ]
- CARRERA TECNICA: [ 6 ]
- NORMAL: [ 7 ]
- PROFESIONAL: [ 8 ]
- NR: [ 8, 8 ]
- NS: [ 9, 9 ]

5. ¿En que trabaja \_\_\_\_\_?

FREGUNTE SOLO PARA LOS MAYORES DE 6 AÑOS

ANOTE, DE ACUERDO AL LISTADO NUMERO 1, EL CODIGO DE LAS DOS OCUPACIONES PRINCIPALES. EN CASO DE DUDA, ANOTELAS LO MAS ESPECIFICAMENTE POSIBLE.

LA PRIMERA MENCION TOMELA COMO LA ACTIVIDAD PRINCIPAL: AQUELLA A LA QUE LE DEDICA MAS TIEMPO.

	P R I M E R A M E N C I O N	S E G U N D A M E N C I O N	
_____	_____	_____	01
_____	_____	_____	02
_____	_____	_____	03
_____	_____	_____	04
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_____	_____	_____	10
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_____	_____	_____	14
_____	_____	_____	15
_____	_____	_____	16



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6. ¿Desde cuando vive en el poblado _____?	7. ¿Tiene derecho _____ al.....	8. ¿En este momento, como se siente _____?	N U M E R O  D E  P E R S O N A																																														
PREGUNTE PERSONA FOR PERSONA	PREGUNTE PERSONA FOR PERSONA	PREGUNTE PERSONA FOR PERSONA																																															
<table style="width: 100%; border-collapse: collapse;"> <tr><td>MENOS DE 1 AÑO:</td><td style="text-align: right;">1</td></tr> <tr><td>DE 1 A 4 AÑOS:</td><td style="text-align: right;">2</td></tr> <tr><td>DE 5 A 9 AÑOS:</td><td style="text-align: right;">3</td></tr> <tr><td>DE 10 A 14 AÑOS:</td><td style="text-align: right;">4</td></tr> <tr><td>DE 15 A 19 AÑOS:</td><td style="text-align: right;">5</td></tr> <tr><td>20 o MAS AÑOS:</td><td style="text-align: right;">6</td></tr> <tr><td>DESDE SIEMPRE:</td><td style="text-align: right;">7</td></tr> <tr><td>NR:</td><td style="text-align: right;">8</td></tr> <tr><td>NS:</td><td style="text-align: right;">9</td></tr> </table>	MENOS DE 1 AÑO:	1	DE 1 A 4 AÑOS:	2	DE 5 A 9 AÑOS:	3	DE 10 A 14 AÑOS:	4	DE 15 A 19 AÑOS:	5	20 o MAS AÑOS:	6	DESDE SIEMPRE:	7	NR:	8	NS:	9	<table style="width: 100%; border-collapse: collapse;"> <tr><td>-IMSS?:</td><td style="text-align: right;">1</td></tr> <tr><td>-ISSFAM?:</td><td style="text-align: right;">2</td></tr> <tr><td>-ISSSTE?:</td><td style="text-align: right;">3</td></tr> <tr><td>-SEGURO PRIVADO?:</td><td style="text-align: right;">4</td></tr> <tr><td>-OTRO (ESPECIFIQUE)?:</td><td style="text-align: right;">5</td></tr> <tr><td>-NR:</td><td style="text-align: right;">8</td></tr> <tr><td>-NS:</td><td style="text-align: right;">9</td></tr> </table>	-IMSS?:	1	-ISSFAM?:	2	-ISSSTE?:	3	-SEGURO PRIVADO?:	4	-OTRO (ESPECIFIQUE)?:	5	-NR:	8	-NS:	9	<table style="width: 100%; border-collapse: collapse;"> <tr><td>MUY SAND (MUY BIEN)....</td><td style="text-align: right;">1</td></tr> <tr><td>SAND (BIEN)...</td><td style="text-align: right;">2</td></tr> <tr><td>REGULAR.....</td><td style="text-align: right;">3</td></tr> <tr><td>ENFERMO (MAL).</td><td style="text-align: right;">4</td></tr> <tr><td>MUY ENFERMO (MUY MAL)....</td><td style="text-align: right;">5</td></tr> <tr><td>NR.....</td><td style="text-align: right;">8</td></tr> <tr><td>NS.....</td><td style="text-align: right;">9</td></tr> </table>	MUY SAND (MUY BIEN)....	1	SAND (BIEN)...	2	REGULAR.....	3	ENFERMO (MAL).	4	MUY ENFERMO (MUY MAL)....	5	NR.....	8	NS.....	9	
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12. En lo que va del año, ¿Cuántas veces ha ido al Centro de Salud de \_\_\_\_\_?  
 NOMBRE DEL CENTRO DE SALUD MENCIONADO EN LA PREGUNTA 10

PREGUNTE PERSONA POR PERSONA

ANOTE NUMERICAMENTE:

NINGUNA:	0	
UNA:	1	
DDS:	2	P
TRES:	3	A
CUATRO:	4	S
CINCO:	5	-->E
SEIS:	6	
SIETE o MAS:	7	A
NR:	8	
NS:	9	P.14

13. ¿Porque no ha ido al Centro de Salud de \_\_\_\_\_?  
 NOMBRE DEL CENTRO DE SALUD MENCIONADO EN LA PREGUNTA.10

PREGUNTE PERSONA POR PERSONA

- |  |    |
|--|----|
| NO TUVO NECESIDAD. . . . .   | 01 |
| SE ATIENDE SOLO EN SU CASA . . . . .                                 | 02 |
| POR LA MALA ATENCION QUE AHI DAN . . . . .                           | 03 |
| LO TARDAN A UNO MUCHO TIEMPO. . . . .                                | 04 |
| NUNCA ESTA EL DOCTOR . . . . .                                       | 05 |
| SIEMPRE ESTA CERRADO . . . . .                                       | 06 |
| NO HAY MEDICINAS. . . . .  | 07 |
| NO LO QUIEREN ATENDER. . . . .                                       | 08 |
| VOY A OTRO CENTRO DE SALUD . . . . .                                 | 09 |
| AHI NO CURAN. . . . .  | 10 |
| TIENE SEGURO (IMSS, ISSSTE, ISSFAM, ETC.)                            | 11 |
| POR FALTA DE CONFIANZA. . . . .                                      | 12 |
| POR FALTA DE TIEMPO . . . . .  | 13 |
| POR FALTA DE DINERO . . . . .  | 14 |
| QUEDA MUY LEJOS. . . . .   | 15 |
| NO TIENE CON QUIEN DEJAR A SUS HIJOS. . . . .                        | 16 |
| NO ES MUJER LA QUE ATIENDE EN EL CENTRO DE SALUD . . . . .           | 17 |
| PORQUE EL DOCTOR DEL CENTRO DE SALUD LO MANDO A OTRA PARTE . . . . . | 18 |
| OTRO (ESPECIFIQUE) . . . . .   | 19 |
| NR. . . . .  | 88 |
| NS. . . . .  | 99 |

PUEDE ANOTAR TRES MENCIONES

N U M E R O D E P E R S O N A

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LISTA DE PROBLEMAS Y SINTOMAS ORIENTADORES	NOMBRE	NOMBRE	NOMBRE	NOMBRE
- Diarrea (chorro)/Disenteria (deposicion con moco y sangre)				
- Vomito/Nausea o asco/Mareos (sin embarazo).				
- Fiebre (calentura, temperatura, escalofrios).				
- Anginas/Dolor o ardor al tragar.				
- Dolor o pus (secrecion) en el oido.				
- Resfriado, catarro y tos (de menos de dos semanas de duracion).				
- Sarampion/Viruela loca/Paperas u orejones, Tosferina.				
- Parasitos o bichos (animales) en el estomago/Lombrices/Gusanos/Amibas.				
-Ojos rojos/Ardor o picazon en los ojos/Lagañas.				
- Ardor al orinar/Urgencia al orinar/Mal de orin/Dificultad para orinar en ancianos.				
- Tiña/Jiotes/Algodoncillo/Pie de atleta.				
- Sarna/Roña/Liendres/Piojos/Ladillas.				
- Granos/Vejigas/Ronchas/Ulceras/Llagas/Alergias.				
- Dolor de cabeza o cerebro.				
- Dolor de muelas o dientes.				
- Dolor de pecho/Dolor de pulmon.				
- Dolor de espalda/Dolor de riñon/Dolor de cintura.				
- Colicos/Retortijones/Dolor de estomago/Ardor en la boca del estomago/Dolor de higado.				
- Dolor de huesos o coyonturas/Reumas.				
- Diabetes (azucar en la sangre).				
- Presion alta/Mal del Corazon/Ahogo/Dificultad para respirar al caminar o al dormir/Palpitaciones o latidos.				
- Asma/Bronquitis/Tos fuerte de mas de dos semanas (de repeticion con flema, sin fiebre y sin sangre)/Silbido o ronquido de pecho.				
- Tumores, bolas, quistes, cancer.				
- Varices/Ulcera de pierna.				
- Almorranas/Hemorroides.				
- Piedras en el riñon o en la vesicula/Mal de higado.				

- Edema/Hinchazon de piernas en la tarde/Hinchazon de parpados en la mañana (sin embarazo).				
- Cirrosis/Hidropesia.				
- Quemaduras.				
- Heridas grandes o fracturas por golpes, por caidas/Mordidas o picaduras de algun animal.				
- Balazos/Navajazos/Cortadas.				
- Choques/Atropellamientos.				
- Intoxicaciones/Envenenamientos.				
- Problemas y malestares de embarazo/Hinchazon de piernas y pies/Sangrado				
- Problemas de la regla (dolores, mucho sangrado, cuajarones)				
- Inflamacion de ovarios, matriz.				
- Flujo o secrecion de su parte (NO LA LEA SI HAY HOMBRES).				
- Epilepsia/convulsiones/Ataques				
- Paralisis/Tullidos				
- Sordera/Dificultad para oir y hablar bien/Zumbidos, ruiditos o campanitas en los oidos.				
- Enfermedades de la vista/No ver bien				
- Adormecimiento de las piernas/Calambres.				
- Nerviosidad/Miedos/Angustias/Mal de los nervios.				
- Dificultad para dormir/Falta de sueño/Se despierta en la noche.				
- Tristeza/Desanimo/Llora facilmente.				
- Problemas por tomar mucho.				
- Anemia/Falidez de la piel/Debilidad				
- Bajo de peso/Desnutricion/Niños barrigones.				
- Falta de hambre.				
- Daño/Embrujado/Mal de ojo/Ojeado/Susto/Perdida del alma/Empachado/Embarado/Ferrilas/Eclipsado/Tiricia.				
- Sangre por la nariz				
- Vomito de sangre				
- Obra con sangre como moronga				
- Otros problemas de salud:				

ENCUESTADOR:

- HAGA EL SEGUIMIENTO INDIVIDUAL PARA CADA UNA DE LAS PERSONAS ANOTADAS EN ESTA LISTA. LLENE UNA SECCION AMARILLA PARA CADA PERSONA.



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Nº. DE PERSONA 

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ENTREVISTA: 

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 1. DIRECTA  
2. INDIRECTA

Nº. DE FOLIO

<p>17.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>ENCUESTADOR: TRANSCRIBA DE LA LISTA Y PREGUNTE MAS ESPECIFICAMENTE LAS ENFERMEDADES, MALESTARES o ACCIDENTES QUE TUVO o HAYA TENIDO LA PERSONA EN LOS ULTIMOS 15 DIAS.</p> <p>EN CASO DE ACCIDENTE PREGUNTE Y ESPECIFIQUE:</p> <ul style="list-style-type: none"> <li>-MECANISMO DE ACCIDENTE</li> <li>-TIPO DE LESION</li> <li>-PARTE(S) DEL CUERPO AFECTADA(S)</li> <li>-LUGAR DONDE OCURRIO</li> </ul> </div>	<p>1a <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table></p> <hr/> <p>2a <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table></p> <hr/> <p>3a <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table></p> <hr/> <p>4a <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table></p> <hr/> <p>5a <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table></p>												
<p>18. De las que me menciono, ¿Cual considera que es la mas importante?</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>RECUERDE QUE SOBRE ESTA MENCION VA A HACER EL SEGUIMIENTO</p> </div>	<p><table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table></p>												
<p>19. ¿Que tan grave es (o fue segun sea el caso)?</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">MUY GRAVE:</td> <td style="text-align: right; padding: 2px;">1</td> </tr> <tr> <td style="padding: 2px;">POCO GRAVE:</td> <td style="text-align: right; padding: 2px;">2</td> </tr> <tr> <td style="padding: 2px;">NADA GRAVE:</td> <td style="text-align: right; padding: 2px;">3</td> </tr> <tr> <td style="padding: 2px;">NR:</td> <td style="text-align: right; padding: 2px;">8</td> </tr> <tr> <td style="padding: 2px;">NS:</td> <td style="text-align: right; padding: 2px;">9</td> </tr> </table> </div>	MUY GRAVE:	1	POCO GRAVE:	2	NADA GRAVE:	3	NR:	8	NS:	9	<p><table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td></tr></table></p>		
MUY GRAVE:	1												
POCO GRAVE:	2												
NADA GRAVE:	3												
NR:	8												
NS:	9												
<p>20. -PARA ENFERMEDAD o MALESTAR:</p> <p>¿Cuanto tiempo hace que empezo a sentirse mal o se enfermo?</p> <p>-PARA ACCIDENTES:</p> <p>¿Hace cuanto tiempo sufrio ese accidente?</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>CASOS ESPECIALES:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">NINGUNO:</td> <td style="text-align: right; padding: 2px;">00</td> </tr> <tr> <td style="padding: 2px;">NR:</td> <td style="text-align: right; padding: 2px;">88</td> </tr> <tr> <td style="padding: 2px;">NS:</td> <td style="text-align: right; padding: 2px;">99</td> </tr> </table> </div>	NINGUNO:	00	NR:	88	NS:	99	<p><table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> DIAS</p> <hr/> <p><table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> SEMANAS</p> <hr/> <p><table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;"></td></tr></table> MESES</p>						
NINGUNO:	00												
NR:	88												
NS:	99												



21. ¿Cuanto tiempo dejo de hacer sus actividades normales, por ejemplo ir a la escuela, al trabajo, hacer sus labores - del hogar (JUGAR PARA EL CASO DE LOS NIÑOS) por causa de ese malestar (o enfermedad o accidente, según sea el caso)?

  DIAS

  SEMANAS

  MESES

**CASOS ESPECIALES:**  
 NINGUNO: 00  
 NR: 88  
 NS: 99

22. ¿En las últimas dos semanas para aliviarse . . .

-TOMO REMEDIOS CASEROS?----->

1. SI	2. NO	8. NR	9. NS
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

-TOMO MEDICINAS SIN QUE SE LAS HAYA RECETADO EL MEDICO?----->

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
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-FUE A ALGUN SERVICIO MEDICO o DE SALUD, INCLUYENDO CURANDERO, PARTERA, BRUJO, HIERBERO, ETC.?----->

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
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↓ P.23      ↓ P.26      ↓ P.26      ↓ P.26

23. ¿A cual fue?

ANOTE 2 MENCIONES  
 1ª MENCION=PRIMER AGENTE  
 o SERVICIO

  1ª.M \_\_\_\_\_

  2ª.M \_\_\_\_\_

- |   |  |
|---|--|
| 00. NINGUNO, SE ATIENDE SOLO  | 11. CON EL DE LA FARMACIA  |
| 01. CENTRO DE SALUD o IMSS-COPLAMAR                                 | 12. CON FAMILIARES, VECINOS  |
| 02. CASA DE SALUD CON AUXILIAR o ENCARGADA DE SALUD DE LA COMUNIDAD | 13. NO LO HA NECESITADO  |
| 03. MEDICO PARTICULAR   | 14. CLINICA DEL SEGURO (UMF-IMSS)                                  |
| 04. DENTISTA PARTICULAR   | 15. CLINICA DEL ISSSTE   |
| 05. CONSULTORIO DE TRABAJO  | 16. HOSPITAL GENERAL DEL IMSS                                      |
| 06. DISPENSARIO MEDICO  | 17. HOSPITAL GENERAL o DE GINECOOBSTETRICIA DE SALUBRIDAD (CIVIL). |
| 07. CONSULTORIO ESCOLAR   | 18. HOSPITAL DEL ISSSTE  |
| 08. CONSULTORIO DEL DIF   | 19. CRUZ ROJA  |
| 09. PARTERA   | 20. OTRO (ESPECIFIQUE)   |
| 10. CURANDERO, HIERBERO, BRUJO, HUESERO                             | 88. NR   |
|   | 99. NS   |

24. ¿Cuanto hizo de su casa a -

LO QUE HAYA CONTESTADO EN LA PREGUNTA 23 COMO 1er AGENTE

  MINUTOS

  HORAS

ANOTE EL N° DE MINUTOS Y HORAS  
 EN CASO DE QUE LE DEN 2 TIEMPOS EN UNA RESPUESTA, ANOTE EL TIEMPO MENOR

CASOS ESPECIALES: NR: 88  
 NS: 99



25. ¿En que medio de transporte fue a \_\_\_\_\_?

LO QUE HAYA CONTESTADO EN LA PREGUNTA 23 COMO 1er AGENTE UTILIZADO

FUEDE MARCAR DOS OPCIONES

1.  CAMINANDO, A PIE
2.  A LOMO DE BESTIA (EN BURRO, CABALLO, MULA)
3.  EN COCHE, CAMION CAMIONETA PROPIO
4.  EN COCHE, CAMION CAMIONETA PRESTADO o ALQUILADO.
5.  EN MOTOCICLETA.
6.  EN BICICLETA
7.  EN OTRO \_\_\_\_\_
8.  NR
9.  NS

26. ¿Cuanto gasto por causa de esta enfermedad (malestar o accidente) en los ultimos 15 dias

-EN CONSULTAS, HOSPITALIZACION, HONORARIOS MEDICOS?

PESOS

OTRO TIPO DE PAGO \_\_\_\_\_

-EN MEDICINAS, ANALISIS DE LABORATORIO Y GABINETE (RADIOGRAFIAS, ELECTROS, ETC.)?

PESOS

-EN TRANSPORTE?

PESOS

-EN OTRAS COSAS? \_\_\_\_\_

PESOS

CASOS ESPECIALES:

NADA: 00000  
 OTRO TIPO DE PAGO: 77777  
 NR: 88888  
 NS: 99999

-ENCUESTADOR: -SI LA PERSONA UTILIZO ALGUN SERVICIO MEDICO o DE SALUD PASE A LA PREGUNTA 28

-O HAGA EL SEGUIMIENTO DEL SIGUIENTE CASO DE MORBILIDAD Y/O ACCIDENTES

SOLO SI NO FUE A ALGUN SERVICIO MEDICO o DE SALUD

27. ¿Por que no fue ud a consultar a nadie?

FUEDE ANOTAR DOS MENCIONES

1a. M \_\_\_\_\_

2a. M \_\_\_\_\_

1. NO HUBO NECESIDAD
2. POR FALTA DE TIEMPO
3. POR LO CARO
4. POR FALTA DE DINERO
5. NO HAY DONDE IR

6. NO TIENE CON QUIEN DEJAR A SUS HIJOS
7. OTRO (ESPECIFIQUE)
8. NR
9. NS



I. SOBREVIVENCIA DE PRODUCTOS DE EMBARAZOS ANTERIORES

SOLO PARA MADRES DE 12 A 49 AÑOS; PREGUNTAR SOLO SI ESTAN PRESENTES

NOMBRE DE LA MADRE: \_\_\_\_\_ No. DE PERSONA

28. ¿Cuántos hijos y también hijas ha tenido que hayan nacido vivos? (INCLUYA A LOS QUE HAYAN DADO SEÑALES DE VIDA, AUN CUANDO HUBIERAN MUERTO POCOS MINUTOS DESPUES DEL PARTO)

ANOTE EL No. CORRESPONDIENTE EN DOS DIGITOS, HAGA LA SUMA DE AMBOS SEXOS Y VERIFIQUE EL TOTAL CON LA RESPONDIENTE.

-CASOS ESPECIALES: NINGUNO: 00  
NR: 88  
NS: 99

HIJOS (MASCULINO)

HIJAS (FEMENINO)

T O T A L

29. ¿Cuántos de sus hijos y de sus hijas le sobreviven?

ANOTE EL No. CORRESPONDIENTE EN DOS DIGITOS, HAGA LA SUMA DE AMBOS SEXOS Y VERIFIQUE EL TOTAL CON LA RESPONDIENTE.

-CASOS ESPECIALES NINGUNO: 00  
NR: 88  
NS: 99

HIJOS (MASCULINO)

HIJAS (FEMENINO)

T O T A L

30. ¿Cuántos de sus hijos y de sus hijas se le han muerto?

ANOTE EL No. CORRESPONDIENTE EN DOS DIGITOS, HAGA LA SUMA DE AMBOS SEXOS Y VERIFIQUE EL TOTAL CON LA RESPONDIENTE.

-CASOS ESPECIALES: NINGUNO: 00  
NR: 88  
NS: 99

HIJOS (MASCULINO)

HIJAS (FEMENINO)

T O T A L

ENCUESTADOR: VERIFIQUE QUE EL TOTAL DE LA PREGUNTA 30 MAS EL TOTAL DE LA PREGUNTA 29 SEA IGUAL AL TOTAL DE LA PREGUNTA 28

S I G A . . . . .



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2. ULTIMO EMBARAZO DURANTE EL ULTIMO AÑO

SOLO PARA MADRES DE 12 A 49 AÑOS; PREGUNTAR SOLO SI ESTAN PRESENTES

NOMBRE DE LA MADRE: \_\_\_\_\_ No. DE PERSONA

--	--

31. ¿Cuántas veces fue a controlarse o a consulta de su último embarazo?

--	--

EN CASO DE CONTESTAR 1 o MAS

PASE A LA -----> P.33

ANOTE EL NUMERO EN 2 DIGITOS

-CASOS ESPECIALES:		
NINGUNA:		00
NR:		88
NS:		99

32. ¿Por que no fue a controlarse o a consulta de su último embarazo a ningún lado?

1a.M. \_\_\_\_\_

FUEDE ANOTAR DOS OPCIONES

2a.M. \_\_\_\_\_

- 1. NO HUBO NECESIDAD
- 2. POR FALTA DE TIEMPO
- 3. POR LO CARO
- 4. POR FALTA DE DINERO
- 5. NO HAY ADONDE IR

- 6. NO TIENE CON QUIEN DEJAR A SUS HIJOS
- 7. OTRO (ESPECIFIQUE)
- 8. NR
- 9. NS

UNA VEZ CONTESTADA ESTA PREGUNTA PASE A LA ----->P.34



33. ¿En donde la revisaron mas - veces en su ultimo embarazo?

(OTRO LUGAR) \_\_\_\_\_

SI CONTESTO OPCION 01 o 02 ----> P.35

- |   |                                   |
|---|-----------------------------------|
| 00. EN NINGUNO, SE ATENDIO SOLA EN CASA                             | 11. CON EL DE LA FARMACIA         |
| 01. CENTRO DE SALUD O IMSS-COPLAMAR                                 | 12. CON FAMILIARES, VECINOS       |
| 02. CASA DE SALUD CON AUXILIAR o ENCARGADA DE SALUD DE LA COMUNIDAD | 13. NO LO NECESITO                |
| 03. MEDICO PARTICULAR   | 14. CLINICA DEL SEGURO (UMF-IMSS) |
| 04. DENTISTA PARTICULAR   | 15. CLINICA DEL ISSSTE            |
| 05. CONSULTORIO DE TRABAJO  | 16. HOSPITAL GENERAL DEL IMSS     |
| 06. DISPENSARIO MEDICO  | 17. HOSPITAL GENERAL DE GINECOOBS |
| 07. CONSULTORIO ESCOLAR   | 18. HOSPITAL DEL ISSSTE           |
| 08. CONSULTORIO DEL DIF   | 19. CRUZ ROJA                     |
| 09. PARTERA   | 20. OTRO (ESPECIFIQUE)            |
| 10. CURANDERO, HIERBERO, BRUJO, HUESERO                             | 88. NR                            |
|   | 99. NS                            |

34. ¿Por que no se atendio en el Centro de Salud de su ultimo embarazo?

1a.M. \_\_\_\_\_

FUEDE ANOTAR TRES OPCIONES

2a.M. \_\_\_\_\_

3a.M. \_\_\_\_\_

- |   |  |
|---|--|
| 01. NO TUVO NECESIDAD                         | 13. POR FALTA DE TIEMPO  |
| 02. SE ATENDIO SOLA EN SU CASA                | 14. POR FALTA DE DINERO  |
| 03. POR LA MALA ATENCION QUE AHI DAN          | 15. QUEDA MUY LEJOS  |
| 04. LO TARDAN A UNO MUCHO TIEMPO              | 16. NO TIENE CON QUIEN DEJAR A SUS HIJOS                       |
| 05. NUNCA ESTA EL DOCTOR                      | 17. NO ES MUJER LA QUE ATIENDE EN EL CENTRO DE SALUD           |
| 06. SIEMPRE ESTA CERRADO                      | 18. PORQUE EL DOCTOR DEL CENTRO DE SALUD LA MANDO A OTRA PARTE |
| 07. NO HAY MEDICINAS                          | 19. OTRO (ESPECIFIQUE)   |
| 08. NO LA QUISIERON ATENDER                   | 88. NR   |
| 09. VOY A OTRO CENTRO DE SALUD                | 99. NS   |
| 10. AHI NO CURAN                              |  |
| 11. TIENE SEGURO (IMSS, ISSSTE, ISSFAM, ETC.) |  |
| 12. POR FALTA DE CONFIANZA                    |  |

2.1 ATENCION DEL ULTIMO PARTO DURANTE EL ULTIMO AÑO

35. ¿Cual fue el resultado de su ultimo embarazo?

1. PERDIDA o ABORTO (QUE SE HAYA PERDIDO ANTES DE CUMPLIR EL 60 MES DE EMBARAZO)

2. NACIDO VIVO (INCLUYA A LOS QUE HAYAN DADO SEÑALES DE VIDA, AUN CUANDO HUBIERAN MUERTO POCOS MINUTOS DESPUES DEL PARTO)

3. NACIDO MUERTO (QUE SE HAYA PERDIDO DESPUES DE CUMPLIR EL 60 MES DE EMBARAZO Y QUE NO HAYA DADO SEÑALES DE VIDA DESPUES DEL PARTO)

8. NR

9. NS



2. ULTIMO EMBARAZO DURANTE EL ULTIMO AÑO... (CONTINUACION)

NOMBRE DE LA MADRE: \_\_\_\_\_

No. DE PERSONA

36. ¿Le hicieron cesarea?  
(nació por arriba)

- 1.  SI
- 2.  NO
- 8.  NR
- 9.  NS

37. ¿En donde se alivio de su ultimo embarazo (parto)?

(EN OTRO LUGAR) \_\_\_\_\_

EN CASO DE CONTESTAR OPCION 01 o 02

PASE A LA -----> P.39

- |   |   |
|---|---|
| 00. EN NINGUNO, SE ATENDIO SOLA EN CASA                             | 11. CON EL DE LA FARMACIA                                       |
| 01. CENTRO DE SALUD O IMSS-COPLAMAR                                 | 12. CON FAMILIARES, VECINOS                                     |
| 02. CASA DE SALUD CON AUXILIAR o ENCARGADA DE SALUD DE LA COMUNIDAD | 13. NO LO NECESITO  |
| 03. MEDICO PARTICULAR   | 14. CLINICA DEL SEGURO (UMF-IMSS)                               |
| 04. DENTISTA PARTICULAR   | 15. CLINICA DEL ISSSTE  |
| 05. CONSULTORIO DE TRABAJO  | 16. HOSPITAL GENERAL DEL IMSS                                   |
| 06. DISPENSARIO MEDICO  | 17. HOSPITAL GENERAL DE GINECOOBSTETRICIA DE SALUBRIDAD (CIVIL) |
| 07. CONSULTORIO ESCOLAR   | 18. HOSPITAL DEL ISSSTE   |
| 08. CONSULTORIO DEL DIF   | 19. CRUZ ROJA   |
| 09. PARTERA   | 20. OTRO (ESPECIFIQUE)  |
| 10. CURANDERO, HIERBERO, BRUJO, HUESERO                             | 88. NR  |
|   | 99. NS  |

38. ¿Por que no en el Centro de Salud ?

1a.M. \_\_\_\_\_

2a.M. \_\_\_\_\_

3a.M. \_\_\_\_\_

FUEDE ANOTAR TRES OPCIONES

- |   |  |
|---|--|
| 01. NO TUVO NECESIDAD                         | 13. POR FALTA DE TIEMPO  |
| 02. SE ATENDIO SOLA EN SU CASA                | 14. POR FALTA DE DINERO  |
| 03. POR LA MALA ATENCION QUE AHI DAN          | 15. QUEDA MUY LEJOS  |
| 04. LO TARDAN A UNO MUCHO TIEMPO              | 16. NO TIENE CON QUIEN DEJAR A SUS HIJOS                       |
| 05. NUNCA ESTA EL DOCTOR                      | 17. NO ES MUJER LA QUE ATIENDE EN EL CENTRO DE SALUD           |
| 06. SIEMPRE ESTA CERRADO                      | 18. PORQUE EL DOCTOR DEL CENTRO DE SALUD LA MANDO A OTRA PARTE |
| 07. NO HAY MEDICINAS                          | 19. OTRO (ESPECIFIQUE)   |
| 08. NO LA QUISIERON ATENDER                   | 88. NR   |
| 09. VDY A OTRO CENTRO DE SALUD                | 99. NS   |
| 10. AHI NO CURAN                              |  |
| 11. TIENE SEGURO (IMSS, ISSSTE, ISSFAM, ETC.) |  |
| 12. POR FALTA DE CONFIANZA                    |  |



39. ¿Quién la atendió cuando se alivio de su ultimo embarazo- (parto)?

--	--

(OTRO) \_\_\_\_\_

- 01. MEDICO DEL CENTRO DE SALUD o IMSS-COPLAMAR
- 02. MEDICO DEL HOSPITAL DE LA SSA
- 03. MEDICO DEL IMSS
- 04. MEDICO DEL ISSSTE
- 05. MEDICO DE OTRA INSTITUCION DEL GOBIERNO
- 06. MEDICO PARTICULAR
- 07. ENFERMERA DEL CENTRO DE SALUD o IMSS-COPLAMAR
- 08. ENFERMERA DEL IMSS

- 09. ENFERMERA DEL ISSSTE
- 10. ENFERMERA DE OTRA INSTITUCION DEL GOBIERNO
- 11. LA PARTERA
- 12. CURANDERO, HIERBERO, BRUJO, HUESERO.
- 13. EL DE LA FARMACIA
- 14. UN FAMILIAR
- 15. NADIE (SE ATENDIO ELLA MISMA)
- 16. OTRO (ESPECIFIQUE)
- 88. NR
- 99. NS

40. ¿Cuanto pago por la atencion de su ultimo parto . . . .

-EN CONSULTAS, HOSPITALIZACION, HONORARIOS MEDICOS?

--	--	--	--	--	--	--	--

PESOS

OTRO TIPO DE PAGO \_\_\_\_\_

-EN MEDICINAS, ANALISIS DE LABORATORIO Y GABINETE (RADIOGRAFIAS, ELECTROS, ETC.)?

--	--	--	--	--	--	--	--

PESOS

-EN TRANSPORTE?

--	--	--	--	--	--	--	--

PESOS

-EN OTRAS COSAS? \_\_\_\_\_

--	--	--	--	--	--	--	--

PESOS

**CASOS ESPECIALES**

NADA: 00000  
 OTRO TIPO DE PAGO: 77777  
 NR: 88888  
 NS: 99999

-ENCUESTADOR: -PASE A LA PREGUNTA 41

-O HAGA EL SEGUIMIENTO DEL SIGUIENTE CASO DE ULTIMO EMBARAZO DURANTE EL ULTIMO AÑO



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3. ATENCION DEL EMBARAZO ACTUAL

SOLO PARA MADRES DE 12 A 49 AÑOS: NO PREGUNTAR SI NO ESTAN PRESENTES

NOMBRE DE LA MADRE: \_\_\_\_\_ No. DE PERSONA 

--	--

41. ¿Cuántos meses tiene de estar embarazada?

--	--

EN CASO DE QUE LE DEN DOS TIEMPOS DE RESPUESTA ANOTE EL TIEMPO MENOR

ANOTE EL NUMERO DE MESES CUMPLIDOS EN DOS DIGITOS.

-CASOS ESPECIALES:

NR: 88  
NS: 99

42. ¿Cuántas consultas ha recibido durante su actual embarazo?

--	--

ANOTE EL NUMERO EN 2 DIGITOS

-CASOS

ESPECIALES: NINGUNA: 00  
NR: 88  
NS: 99

EN CASO DE CONTESTAR 1 o MAS

PASE A LA -----> P.44

43. ¿Por que no se esta atendiendo de su actual embarazo?

1ª M. \_\_\_\_\_

FUEDE ANOTAR DOS OPCIONES

2ª M. \_\_\_\_\_

UNA VEZ CONTESTADA ESTA PREGUNTA PASE A LA -----> P.45

- 1. NO HUBO NECESIDAD
- 2. POR FALTA DE TIEMPO
- 3. POR LO CARO
- 4. POR FALTA DE DINERO
- 5. NO HAY ADONDE IR

- 6. NO TIENE CON QUIEN DEJAR A SUS HIJOS
- 7. OTRO (ESPECIFIQUE)
- 8. NR
- 9. NS



44. ¿En donde se esta atendiendo de su actual embarazo?

(OTRO) \_\_\_\_\_

EN CASO DE HABER MAS DE UNA MENCION, ACLARELE QUE ES - ADONDE HA IDO A CONTROL DE SU EMBARAZO MAS VECES

EN CASO DE CONTESTAR OPCION 01 o 02

PASE A LA -----> P. 46

- |   |  |
|---|--|
| 00. EN NINGUN LADO SE ATIENDE EN SU CASA                            | 12. CON FAMILIARES, VECINOS                                      |
| 01. CENTRO DE SALUD o IMSS-COFLAMAR                                 | 13. NO LO HA NECESITADO  |
| 02. CASA DE SALUD CON AUXILIAR O ENCARGADA DE SALUD DE LA COMUNIDAD | 14. CLINICA DEL SEGURO (UMF-IMSS)                                |
| 03. MEDICO PARTICULAR   | 15. CLINICA DEL ISSSTE   |
| 04. DENTISTA PARTICULAR   | 16. HOSPITAL GENERAL DEL IMSS                                    |
| 05. CONSULTORIO DEL TRABAJO   | 17. HOSPITAL GENERAL DE GINECOOBS TETRICIA DE SALUBRIDAD (CIVIL) |
| 06. CONSULTORIO DEL DIF   | 18. HOSPITAL DEL ISSSTE  |
| 07. CONSULTORIO ESCOLAR   | 19. CRUZ ROJA  |
| 08. DISPENSARIO MEDICO  | 20. OTRO (ESPECIFIQUE)   |
| 09. PARTERA   | 88. NR   |
| 10. CURANDERO, HIERBERO, BRUJO, HUESERO                             | 99. NS   |
| 11. CON EL DE LA FARMACIA   |  |

45. ¿Por que no se esta atendiendo de su embarazo en el Centro de Salud?

1a.M. \_\_\_\_\_

FUEDE ANOTAR TRES MENCIONES

2a.M. \_\_\_\_\_

3a.M. \_\_\_\_\_

- |  |   |
|--|---|
| 01. NO HA TENIDO NECESIDAD                       | 12. POR FALTA DE CONFIANZA  |
| 02. SE ATIENDE SOLA EN SU CASA                   | 13. POR FALTA DE TIEMPO   |
| 03. POR LA MALA ATENCION QUE AHI DAN, TRATAN MAL | 14. POR FALTA DE DINERO   |
| 04. LO TARDAN A UNO MUCHO TIEMPO                 | 15. QUEDA MUY LEJOS   |
| 05. NUNCA ESTA EL DOCTOR                         | 16. NO TIENE CON QUIEN DEJAR A SUS HIJOS  |
| 06. SIEMPRE ESTA CERRADO                         | 17. NO ES MUJER LA QUE ATIENDE EN EL CENTRO DE SALUD                              |
| 07. NO HAY MEDICINAS                             | 18. PORQUE EL DOCTOR DEL CENTRO DE SALUD LA MANDO A QUE SE ATENDIERA A OTRA PARTE |
| 08. NO LA QUIEREN ATENDER                        | 17. OTRO (ESPECIFIQUE)  |
| 09. VOY A OTRO CENTRO DE SALUD                   | 88. NR  |
| 10. AHI NO CURAN                                 | 99. NS  |
| 11. TIENE SEGURO (IMSS, ISSSTE, ISSFAM, ETC.)    |   |

46. ¿En donde se va a aliviar de su embarazo, es decir, donde va a dar a luz?

(OTRO) \_\_\_\_\_

- |   |  |
|---|--|
| 00. EN NINGUN LADO SE ATIENDE EN SU CASA                            | 12. CON FAMILIARES, VECINOS                                      |
| 01. CENTRO DE SALUD o IMSS-COPLAMAR                                 | 13. NO LO HA NECESITADO  |
| 02. CASA DE SALUD CON AUXILIAR O ENCARGADA DE SALUD DE LA COMUNIDAD | 14. CLINICA DEL SEGURO (UMF-IMSS)                                |
| 03. MEDICO PARTICULAR   | 15. CLINICA DEL ISSSTE   |
| 04. DENTISTA PARTICULAR   | 16. HOSPITAL GENERAL DEL IMSS                                    |
| 05. CONSULTORIO DEL TRABAJO   | 17. HOSPITAL GENERAL DE GINECOOBS TETRICIA DE SALUBRIDAD (CIVIL) |
| 06. CONSULTORIO DEL DIF   | 18. HOSPITAL DEL ISSSTE  |
| 07. CONSULTORIO ESCOLAR   | 19. CRUZ ROJA  |
| 08. DISPENSARIO MEDICO  | 20. OTRO (ESPECIFIQUE)   |
| 09. PARTERA   | 88. NR   |
| 10. CURANDERO, HIERBERO, BRUJO, HUESERO                             | 99. NS   |
| 11. CON EL DE LA FARMACIA   |  |



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PREGUNTE SOLO A LA MADRE o TUTOR

NOMBRE DEL NIÑO \_\_\_\_\_

Nº . DE PERSONA

--	--

47. ¿Que edad tiene \_\_\_\_\_ ?

		AÑOS
--	--	------

		MESES
--	--	-------

48. En lo que va del año, ¿Cuan-  
tas veces ha llevado a \_\_\_\_\_ a  
algun servicio medico o de  
salud a revision sin que  
estuviera enfermo(a)? (por  
ejemplo a vacunar, a pesar,  
por racion de leche, etc.)

--	--

EN CASO DE CONTESTAR 1 o MAS  
PASE A LA -----> P.50

ANOTE EL NUMERO EN 2 DIGITOS

-CASOS ESPECIALES:	NINGUNA:	00
	NR:	88
	NS:	99

49. ¿Por que no lo ha llevado a  
revision?

FUEDE ANOTAR TRES  
MENCIONES

	1ª .M. _____
--	--------------

	2ª .M. _____
--	--------------

	3ª .M. _____
--	--------------

UNA VEZ CONTESTADA PASE A LA ----> P.51

1. NO HUBO NECESIDAD  
2. POR FALTA DE TIEMPO  
3. POR LO CARO  
4. POR FALTA DE DINERO  
5. NO HAY ADONDE IR

6. NO TIENE CON QUIEN DEJAR A  
SUS HIJOS  
7. OTRO (ESPECIFIQUE)  
8. NR  
9. NS



NOMBRE DEL NIÑO \_\_\_\_\_

No. DE PERSONA

50. ¿A donde lo ha llevado a revisión?

(OTRO) \_\_\_\_\_

EN CASO DE CONTESTAR OPCION 01 o 02  
PASE A LA -----> P.52

- 00. A NINGUN LADO
- 01. CENTRO DE SALUD o IMSS-COPLAMAR
- 02. CASA DE SALUD CON AUXILIAR o ENCARGADA DE SALUD DE LA COMUNIDAD
- 03. MEDICO PARTICULAR
- 04. DENTISTA PARTICULAR
- 05. CONSULTORIO DEL TRABAJO
- 06. DISPENSARIO MEDICO
- 07. CONSULTORIO ESCOLAR
- 08. CONSULTORIO DEL DIF
- 09. PARTERA
- 10. CURANDERO, HIERBERO, BRUJO, HUESERO

- 11. CON EL DE LA FARMACIA
- 12. CON FAMILIARES, VECINOS
- 13. NO LO HA NECESITADO
- 14. CLINICA DEL SEGURO (UMF-IMSS)
- 15. CLINICA DEL ISSSTE
- 16. HOSPITAL GENERAL DEL IMSS
- 17. HOSPITAL GENERAL DE GINECO-OBS TETRICIA DE SALUBRIDAD (CIVIL)
- 18. HOSPITAL DEL ISSSTE
- 19. CRUZ ROJA
- 20. OTRO (ESPECIFIQUE)
- 88. NR
- 99. NS

51. ¿Por que no lo ha llevado al Centro de Salud?

FUEDE ANOTAR TRES MENCIONES

1a.M. \_\_\_\_\_

2a.M. \_\_\_\_\_

3a.M. \_\_\_\_\_

- 01. NO TUVO NECESIDAD
- 02. LO ATIENDE EN SU CASA
- 03. POR LA MALA ATENCION QUE AHI DAN, TRATAN MAL
- 04. LO TARDAN A UNO MUCHO TIEMPO
- 05. NUNCA ESTA EL DOCTOR
- 06. SIEMPRE ESTA CERRADO
- 07. NO HAY MEDICINAS
- 08. NO LO QUIEREN ATENDER
- 09. VOY A OTRO CENTRO DE SALUD
- 10. AHI NO CURAN
- 11. TIENE SEGURO (IMSS, ISSSTE, ISSFAM, ETC.)

- 12. POR FALTA DE CONFIANZA
- 13. POR FALTA DE TIEMPO
- 14. POR FALTA DE DINERO
- 15. QUEDA MUY LEJOS
- 16. NO TIENE CON QUIEN DEJAR A SUS HIJOS
- 17. NO ES MUJER LA QUE ATIENDE EN EL CENTRO DE SALUD
- 18. PORQUE EL DOCTOR DEL CENTRO DE SALUD LO MANDO A QUE SE ATENDIERA A OTRA PARTE
- 88. NR
- 99. NS

52. ¿Hasta que edad le dio pecho (leche materna de ud. u otra mujer) a \_\_\_\_\_?

1.

NUNCA LE DIO

2.

TODAVIA LE DA

3.

MENOS DE 3 MESES

4.

DE 3 MESES A MENOS DE 6 MESES

5.

DE 6 MESES A MENOS DE 9 MESES

6.

DE 9 MESES A MENOS DE UN AÑO

7.

UN AÑO o MAS

8.

NR

9.

NS



NIÑOS MENORES DE 5 AÑOS

PREGUNTE SOLO A LA MADRE o TUTOR

NOMBRE DEL NIÑO \_\_\_\_\_

No. DE PERSONA

53. ¿Me muestra por favor la cartilla de vacunación de \_\_\_\_\_?

1.  SI MOSTRADA

2.  NO MOSTRADA ->

EN CASO DE QUE NO TENGA CARTILLA Y LLEVE UN CARNET QUE SIRVA DE CARTILLA, TOMELA - COMO TAL Y CONTINUE EL CUESTIONARIO

-CONTINUE CON EL -  
CUESTIONARIO PARA  
EL SIGUIENTE NIÑO  
MENOR DE 5 AÑOS

-O PASE A  
LA ---->P.56

54.

EN CASO DE QUE SI LE MUESTREN LA CARTILLA O UN CARNET QUE SIRVA DE CARTILLA, EN EL SIGUIENTE ESQUEMA MARQUE, DE ACUERDO A LA EDAD DEL NIÑO(A):

1. LAS VACUNAS RECIBIDAS SEGUN LA CARTILLA (o CARNET)
2. LAS VACUNAS QUE LE FALTEN DE PONER
3. LAS VACUNAS QUE AUN NO LE TOQUEN PONER

V A C U N A	B. C. G.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	T R I P L E	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	P O L I O	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	S A R A M P I O N	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MESES DE EDAD		2	4	6

EN CASO DE QUE LE FALTEN DE APLICAR 1 o MAS VACUNAS:

1a.M. \_\_\_\_\_

55. ¿Por que no le ha(n) puesto la(s) vacuna(s) que le falta(n) a \_\_\_\_\_?

2a.M. \_\_\_\_\_

FUEDE ANOTAR TRES MENCIONES

3a.M. \_\_\_\_\_

- 01. FOR ENFERMEDAD DEL NIÑO
- 02. LE HACEN DAÑO, LE HACEN MAL
- 03. TODAVIA NO LE TOCAN
- 04. NO HABIA VACUNAS
- 05. POR FALTA DE TIEMPO
- 06. NO ESTABA CUANDO FUERON A VACUNAR

- 07. NO HUBO QUIEN SE LAS FUSIERA
- 08. SE LAS FUSIERON DURANTE UNA CAMPAÑA Y NO LO ANOTARON EN LA CARTILLA
- 09. SE LAS PUSIERON PERO PERDI LA CARTILLA Y NO LAS ANOTARON EN LA NUEVA
- 10. OTRO (ESPECIFIQUE)
- 88. NR
- 99. NS



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ACTIVIDADES DEL CENTRO DE SALUD EN LA COMUNIDAD

56. En lo que va del año, ¿Cuan-  
tas veces ha venido a su casa  
el personal del Centro de Sa-  
lud?

ANOTE EL NUMERO DE VECES  
EN UN DIGITO.

CASOS ESPECIALES:

NINGUNA: 0 ----->P. 58

7 o MAS: 7

NR: 8

NS: 9

57. ¿A que ha venido el personal  
del Centro de Salud?

1a.M. \_\_\_\_\_

2a.M. \_\_\_\_\_

3a.M. \_\_\_\_\_

FUEDE ANOTAR TRES OPCIONES

- 01. A DAR CONSULTAS
- 02. A DAR PLATICAS DE EDUCA-  
CION PARA LA SALUD
- 03. A DAR PLATICAS DE PLANI-  
FICACION FAMILIAR
- 04. A VACUNAR
- 05. A REVISAR NIÑOS

- 06. A REVISAR A MUJERES EMBARAZADAS
- 07. A AYUDAR A CONSTRUIR LETRINAS
- 08. A REVISAR EL AGUA
- 09. A HACER ENCUESTAS Y CENSOS
- 10. OTRO (ESPECIFIQUE)
- 88. NR
- 99. NS

58. En lo que va del año, ¿algu-  
na vez le han negado la con-  
sulta en el Centro de Salud a  
alguien de los que vivan en  
esta casa (es decir, que no  
lo hayan querido atender)?

1.  SI

2.  NO

8.  NR

9.  NS

59. ¿Que se debe mejorar del --  
Centro de Salud para que se  
atienda mejor a la gente?

1a.M. \_\_\_\_\_

2a.M. \_\_\_\_\_

3a.M. \_\_\_\_\_

FUEDE ANOTAR TRES OPCIONES

- 01. NADA, ASI ESTA BIEN
- 02. HORARIO MAS LARGO
- 03. QUE ATIENDAN TODOS LOS  
DIAS DE LA SEMANA
- 04. QUE DEN MEJOR ATENCION,  
QUE TRATEN BIEN A LA GENTE
- 05. MAS MEDICOS
- 06. MAS ENFERMERAS
- 07. MAS MEDICINAS

- 08. MEDICOS MAS PREPARADOS, CON MAS  
EXPERIENCIA
- 09. INSTALACIONES MAS GRANDES Y EQUI-  
PADAS (RAYOS X, APARATOS, ETC.)
- 10. QUE AYUDE LA GENTE CON DINERO O  
CON FAENAS
- 11. OTRO (ESPECIFIQUE)
- 88. NR
- 99. NS



--	--	--	--

60. Los habitantes de esta casa ¿tienen tierras?

INCLUYA COMO SI A LAS EJIDALES, COMUNALES, COLONO, NACIONALERO

1.  SI

2.  NO

8.  NR --> P.63

9.  NS

61. ¿Cual es su superficie?

ANOTE EL NUMERO DE HECTAREAS

CASOS ESPECIALES:

NINGUNA:	00
HASTA 1 HECTAREA:	01
NR:	88
NS:	99

DE TEMPORAL

DE RIEGO

DE AGOSTADERO

DE OTRO TIPO \_\_\_\_\_

62. ¿Cuales son los dos principales productos que cultiva?

(OTRO) \_\_\_\_\_

(OTRO) \_\_\_\_\_

00. NINGUNO	03. TRIGO	06. SORGO	09. HORTALIZAS	12. OTRO (ESPECIFIQUE)
01. MAIZ	04. SOYA	07. ARROZ	10. FRUTAS	88. NR
02. FRIJOL	05. CERADA	08. FORRAJES	11. MAGUEY	99. NS

63. En este momento. ¿Cuántos de los siguientes animales tienen los habitantes de este hogar?

ANOTE EL NUMERO EN LOS CUADROS CORRESPONDIENTES

CASOS ESPECIALES:

NINGUNO:	00
NR:	88
NS:	99

VACAS

CABALLOS

MULAS

BURROS

YUNTAS DE BUEYES

FUERCOS

CABRAS

BORREGOS

CONEJOS

GALLINAS

GUAJOLOTES

OTROS \_\_\_\_\_



--	--	--	--

64. ¿Cuántas de las siguientes cosas tienen los habitantes de esta casa para su trabajo?

ANOTE EL NUMERO EN DOS DIGITOS

**CASOS ESPECIALES:**

NINGUNO:	00
NR:	88
NS:	99

- |                      |                      |                      |
|----------------------|----------------------|----------------------|
| <input type="text"/> | <input type="text"/> | PICOS                |
| <input type="text"/> | <input type="text"/> | PALAS                |
| <input type="text"/> | <input type="text"/> | ARADO                |
| <input type="text"/> | <input type="text"/> | TRACTOR              |
| <input type="text"/> | <input type="text"/> | TRILLADORA           |
| <input type="text"/> | <input type="text"/> | DESGRANADORA         |
| <input type="text"/> | <input type="text"/> | LIMPIADORA           |
| <input type="text"/> | <input type="text"/> | MOLINO               |
| <input type="text"/> | <input type="text"/> | CAMION Y/O CAMIONETA |
| <input type="text"/> | <input type="text"/> | CARRETA              |
| <input type="text"/> | <input type="text"/> | HOZ o GUADAÑA        |
| <input type="text"/> | <input type="text"/> | MACHETE              |
| <input type="text"/> | <input type="text"/> | OTRO _____           |

65. ¿Cuántas veces comen carne las personas que viven aquí?

- |  |                            |
|--|----------------------------|
| 0. NUNCA                                   | 5. UNA VEZ CADA 15 DIAS    |
| 1. DIARIO                                  | 6. UNA VEZ CADA MES        |
| 2. CADA TERCER DIA (3-4 VECES A LA SEMANA) | 7. MENOS DE UNA VEZ AL MES |
| 3. DOS VECES POR SEMANA                    | 8. NR                      |
| 4. UNA VEZ POR SEMANA                      | 9. NS                      |

**CARACTERISTICAS Y CONDICIONES DE LA VIVIENDA**

66. ¿Cuántos cuartos hay en esta casa, incluyendo la cocina?

ANOTE EL NUMERO EN DOS DIGITOS

**CASOS ESPECIALES:**

NINGUNO:	00
NR:	88
NS:	99



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67. En su casa, ¿De que material es la mayor parte de ....

Las paredes? \_\_\_\_\_

Los pisos? \_\_\_\_\_

El techo? \_\_\_\_\_

- 01. ADOBE,
- 02. TABIQUE, LADRILLO, TABICON, BLOCK
- 03. MADERA, TEJAMANIL, TABLETA TABLON
- 04. TIERRA, TEPETATE TEZONTLE
- 05. CEMENTO o CONCRETO
- 06. MOSAICO, Y SIMILARES
- 07. LAMINA DE CARTON
- 08. LAMINA DE ASBESTO o METALICA
- 09. TEJA

- 10. PIEDRA, CANTERA, CANTO RODADO,
- 11. CARRIZO, GARROCHA, OTATE, BAMBU PAJA, PALMA, ZACATE, CLAZOL DE CAÑA Y SIMILARES
- 12. EMBARRO o BAJAREQUE
- 13. PENCAS, RAMAZON, RASTROJO
- 14. OTROS (ESPECIFIQUE)
- 88. NR
- 99. NS

68. El agua que beben los habitantes de esta casa, la toman de....

FUEDE ANOTAR TRES MENCIONES

1a.M. \_\_\_\_\_

2a.M. \_\_\_\_\_

3a.M. \_\_\_\_\_

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>1. TOMA DENTRO DE LA CASA</li> <li>2. TOMA FUERA DE LA CASA (HIDRANTE PUBLICO)</li> <li>3. JAGUEY, LAGO, LAGUNA, PRESA</li> <li>4. POZO</li> </ul> | <ul style="list-style-type: none"> <li>5. RIO o MANANTIAL</li> <li>6. PIPA</li> <li>7. OTRO (ESPECIFIQUE)</li> <li>8. NR</li> <li>9. NS</li> </ul> |
|---|--|

69. ¿En esta casa se cuenta con .....

1.  EXCUSADO O RETRETE CON AGUA CORRIENTE ?

2.  LETRINA O POZO NEGRO ?

3.  NADA, HACEN EN EL SUELO ?

4.  OTRO ? \_\_\_\_\_

8.  NR

9.  NS

70. ¿Como se elimina la basura de esta casa?

FUEDE ANOTAR TRES MENCIONES

(OTRO) \_\_\_\_\_

(OTRO) \_\_\_\_\_

(OTRO) \_\_\_\_\_

- |  |   |  |
|--|---|--|
| <ul style="list-style-type: none"> <li>1. SE TIRA AL CORRAL o PATIO</li> <li>2. SE TIRA A LA CALLE</li> <li>3. SE QUEMA</li> </ul> | <ul style="list-style-type: none"> <li>4. SE ENTIERRA</li> <li>5. OTRO (ESPECIFIQUE)</li> </ul> | <ul style="list-style-type: none"> <li>8. NR</li> <li>9. NS</li> </ul> |
|--|---|--|



--	--	--	--

**S O L O P A R A E L E N C U E S T A D O R ; O B S E R V E Y R E G I S T R E L O S S I G U I E N T E S A S P E C T O S D E L A V I V I E N D A .**

**C O D I G O S :**    1. SI            3. NO SE PERMITIO OBSERVAR AL ENCUESTADOR  
                          2. NO            4. NO SE OBSERVO POR OTRO MOTIVO (ESPECIFIQUE)

		1.	2.	3.	4.
71. ¿La vivienda tiene luz electrica? _ _ _ _ _		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
72. ¿Hay refrigerador? _ _ _ _ _		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
73. ¿Se tiene mesa para comer? _ _ _ _ _		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
74. ¿Hay basura esparcida dentro de la casa? _ _ _ _ _		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
75. ¿Hay basura esparcida alrededor de la casa? _ _ _ _ _		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
76. ¿Hay animales domesticos (perros, gatos, gallinas, puercos, guajolotes, etc.) sueltos alrededor y/o en el interior de la casa? _ _ _ _ _		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>E1 (LOS) DEPOSITO(S) DE AGUA PARA BEBER ESTAN. . . . .</b>					
77. ¿Cerrado(s) - tapados(s)? _ _ _ _ _		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
78. ¿Dentro de la casa-habitacion? _ _ _ _ _		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>EN LA LETRINA:</b>					
79. ¿Hay excremento donde la gente se sienta a defecar? _ _ _ _ _		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
80. ¿Hay concentracion de moscas y/u otros insectos? _ _ _ _ _		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
81. ¿Esta a mas de 30 metros de la casa? _ _ _ _ _		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**82. El tipo de cocina es:**

1.  CON ESTUFA DE GAS
2.  CON ESTUFA DE PETROLEO
3.  CON BRACERO DE CARBON
4.  CON FOGON DE LEÑA
5.  OTRO \_\_\_\_\_
9.  NO SE CONSTATO

**83. La colaboracion de la familia entrevistada fue:**

1.  MUY BUENA
2.  BUENA
3.  REGULAR
4.  MALA
5.  MUY MALA

**84. La principal fuente de informacion fue...**

FUEDE MARCAR HASTA DOS MENCIONES

1.  JEFE DEL HOGAR
2.  AMA DE CASA
3.  TODA LA FAMILIA
4.  OTRO \_\_\_\_\_

ENCUESTADOR AGRADEZCA LA COLABORACION

OBSERVACIONES

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\_\_\_\_\_  
FIRMA



## LISTADO 1 (OCUPACIONES)

01. **CAMPESINO EN SU PARCELA:** Toda persona que labore en sus tierras o en las de su familia sin recibir una remuneración monetaria por ello. Pueden ser ejidatarios, comuneros, pequeños propietarios, nacionaleros, avecindados o colonos.
02. **PEON o JORNALERO AGRICOLA:** Toda persona que labore en tierras ajenas o de su familia recibiendo por ello una remuneración monetaria (salario, jornal, etc). Pueden ser ejidatarios, comuneros, pequeños propietarios, nacionaleros, avecindados o colonos, o campesinos sin tierra.
03. **ARTESANO:** Toda persona que fabrique y/o venda artesanías (cuadros, orfebre, joyero, alfarero, tejedor, etc.).
04. **CRIA Y ENGORDA DE ANIMALES:** Toda persona que se dedique al cuidado de especies mayores (vacas, caballos, etc) y especies menores (cabras, cerdos, borregos, aves, etc.). Los animales pueden destinarse al autoconsumo o a la venta.
05. **ALBAÑILERIA:** Toda persona que se dedique a trabajos relacionados con la construcción, puede ser peón, media cuchara, oficial, maestro de obra, pintor de brocha gorda, etc.
06. **HERRERO, CARPINTERO, MECANICO, TALACHERO:** Toda persona que se dedique a labores relacionadas con la herrería, trabajos con madera, plomería, trabajos de electricidad. reparación de neumáticos, etc. (fontanero, soldador, electricista, mecánico en general, zapatero).
07. **OBRERO:** Toda persona que labore en una cadena de producción ya sea agropecuaria, agroindustrial, maquiladora e industrial en general.
08. **CHOFER:** Toda persona que conduzca un vehículo automotor (tractor, camión, camioneta, taxi, etc.).
09. **VENDEDOR AMBULANTE:** Toda persona que se dedique a la comercialización de productos diversos, porque no cuenta con un local y su actividad la realiza de casa en casa o de comunidad en comunidad.
10. **COMERCIANTE:** Toda persona que posea un local, ya sea en un tianguis o en una tienda determinada, en donde comercializa productos diversos (joyería, tienda de víveres, restaurant, cantina, pulquería).
11. **EMPLEADO:** Toda persona que labore en una oficina o comercio bajo las órdenes de un superior o del dueño (portero, conserje, policía, cartero, mensajero, dependiente de tienda).
12. **LABORES DENTRO DEL HOGAR:** Toda persona (hombres, mujeres o niños) que se dediquen a trabajos dentro del solar cuyo objetivo es el bienestar del hogar sin recibir a cambio remuneración monetaria alguna; estas labores pueden ser: cuidado de la casa, cuidado de los niños, desgranado, acarreo de agua, coser ropa, etc.

**13. LABORES PARA HOGARES AJENOS:** Toda persona (hombres, mujeres o niños) que se dediquen a trabajos para hogares diversos al suyo, recibiendo por ello una remuneración monetaria (pueden realizar el trabajo dentro o fuera de su casa). Estas actividades pueden ser: lavar, cocinar, coser ropa, nana, sirvienta, nodriza, etc.

**14. MINERO:** Toda persona que se dedique a la explotación directa de yacimientos minerales. Incluye canteros, trabajadores de mina.

**15. PENSIONADO o JUBILADO:** Toda persona cuya fuente de ingresos proviene de una pensión o jubilación del trabajo anterior.

**16. ESTUDIANTE:** Toda persona que se dedique al estudio. Incluye tanto la educación formal como informal.

**17. NINGUNA:** Toda persona que no tenga trabajo ni esté estudiando o percibiendo una pensión.

**18. OTRO:** SOLDADO, GUARDIA FORESTAL, PARTERO, CURANDERO, GUARNICIONERO, PELUQUERO, SASTRE, MODISTO, TAPICERO, PROFESIONISTA (MEDICOS, DENTISTAS, ABOGADOS, ETC.), ASI COMO ALTOS CARGOS Y MANDOS MEDIOS (DIRECTORES, SUBDIRECTORES, JEFES DE DEPARTAMENTO, GERENTES, ETC.).

88. NR

99. NS



**APPENDIX 2:**  
**Sampling aspects**

## APPENDIX 2: SAMPLING ASPECTS<sup>1</sup>

### 1. SELECTION PROBABILITY OF HOUSEHOLDS

The selection probability of a household was estimated as follows:

First, it is necessary to define some terms:

- $P_{hijk}$  = selection probability of the k-th household, of the jth secondary sampling unit (SSU), of the ith primary sampling unit (PSU) in the h stratum.
- $^n(\text{PSU})_h$  = sample size of the PSU (AGEB)<sup>2</sup> in the h stratum.
- $^n(\text{PSU})_{hi}$  = number of households of the ith PSU in the h stratum.
- $^n(\text{SSU})_{hi}$  = sample size of SSU (listed areas), of the ith PSU in the h stratum. This number is 2 for all the PSU's in this survey.
- $^n(\text{SSU})_{hij}$  = number of households of the jth SSU, of the ith PSU in the h stratum.
- $^n(\text{TSU})_{hij}$  = sample size of tertiary sampling units (TSU=households) of the jth PSU, of the h stratum. This number is 20 for all SSU.
- $F_{hijk}$  = this is the inverse of the selection probability of the kth household which is the same for all the households.

where

- h = 1, 2, 3  
i = 1, ..., K (no. of PSU in the stratum)  
j = 1, ..., L (no. of SSU in the ith PSU)  
k = 1, ..., M (no. of households in the jth SSU)

---

<sup>1</sup>Bibliography for sampling aspects: Kish, 1985, 1987; Kish and Frankel, 1974 (see Chapter V for references).

<sup>2</sup>Basic statistic geographic area



$P_{hijk}$  was defined as follows:

$$P_{hijk} = \frac{n(PSU)_h * h(PSU)_{hi} * \frac{n(SSU)_{hi} * h(SSU)_{hij}}{\sum_{j=1}^L h(SSU)_{hij}} * \frac{n(TSU)_{hij}}{h(SSU)_{hij}}}{\sum_{i=1}^K h(PSU)_{hi}}$$

and given that

$$\sum_{j=1}^L h(SSU)_{hij} = h(PSU)_{hi}$$

we have

$$P_{hijk} = \frac{n(PSU)_h * n(SSU)_{hi} * n(TSU)_{hij}}{\sum_{i=1}^K h(PSU)_{hi}} = \frac{1}{F_{hijk}}$$

and as

$$n'(PSU)_h = \frac{n(TOT) \sum_{i=1}^K h(PSU)_{hi}}{\sum_{h=1}^J \sum_{i=1}^K h(PSU)_{hi}}$$

and

$$n(PSU) = \frac{n'(PSU)_h}{n(SSU)_{hi} * n(TSU)_{hij}}$$

we have that

$$P_{hij} = \frac{n(TOT) \sum_{i=1}^K h(PSU)_{hi} * n(SSU)_{hi} * n(TSU)_{hij}}{n(SSU)_{hi} * n(TSU)_{hij} * \sum_{h=1}^J \sum_{i=1}^K h(PSU)_{hi} \sum_{i=1}^K h(PSU)_{hi}}$$

$$P_{hijk} = \frac{n(TOT)}{\sum_{h=1}^J \sum_{i=1}^K h(PSU)_{hi}} = \frac{1}{F}$$

Thus, given that the selection probability was the same for all the households, the estimates obtained from the sample data are the correct estimates.

## 2. ESTIMATES

Using the following notation:

- $Y_{hijk}$  = a given variable of the kth household interview, of the jth SSU, of the ith PSU in the h stratum.
- $M_{hij}$  = number of interviews in the jth SSU of the ith PSU in the h stratum.
- $L_{hi}$  = number of the SSU of the ith PSU in the h stratum.
- $K_h$  = number of PSU in the h stratum
- $H$  = number of strata: 3.
- $F_{hijk}$  = expansion factor which is the inverse of the selection probability of the kth household (55: for each household and interviewee).

We have that the estimate of  $\hat{Y}$  is given by:

$$\hat{Y} = \sum_{h=1}^3 \sum_{i=1}^{K_h} \sum_{j=1}^{L_{hi}} \sum_{k=1}^{M_{hij}} Y_{hijk} * F_{hijk}$$

Thus, for example rates and means were calculated as follows:

$$\hat{r} = \hat{Y} / \hat{X}$$

where  $\hat{Y}$  is the total sample value of a given variable (eg. number of respondents aged 15-44 years reporting illness); and  $\hat{X}$  is the respective total number of elements in the sample (eg. the total number of respondents aged 15-44 years)

The variance was estimated as follows:

$$\text{var}(r) = \frac{1}{X^2} \sum_{h=1}^3 \frac{S_h}{S_h - 1} \sum_{i=1}^{S_i} (Z_{hi} - \bar{Z}_h)^2$$

where

- $S_h$  = number of SSU in the stratum
- $Z_{hi}$  =  $Y_{hi} - rX_{hi}$
- $Z_h$  =  $Y_h - rX_h$
- $Y_{hi}$  = the sum of all values of the variable
- $X_{hi}$  = the respective total number of elements in the SSU



**APPENDIX 3:**  
**Additional tables and figures**

**TABLE A.4.1 INDICATORS OF INEGI'S LIVING STANDARDS INDEX**

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- Economically active population with an income below the minimum wage
  - Economically active population without income
  - Illiteracy rate among the population aged  $\geq 10$
  - Population aged  $\geq 15$  without schooling
  - Population aged  $\geq 15$  with incomplete primary schooling
  - Population aged  $\geq 18$  without secondary schooling
  - Population aged 6-14 years without school enrolment
  - Households with dirt floors
  - Households with no tap water
  - Households with no sewage facilities
  - Households with no electricity
  - Households with only one room
  - Crude death rate
  - Population per medical facility
  - Economically active population working  $\leq 32$  hours a week
- 

Source : INEGI, 1986



TABLE A.7.1 UNDER FIVE MORTALITY\* BY SELECTED  
SOCIAL INDICATORS, BOTH SEXES\*\*

Age group of women	Social indicator			
	<u>Mothers' entitlement to social security</u>			
	Insured	Non-insured		
25-29	0.0978	0.1044		
30-34	0.0690	0.1327		
35-39	0.0806	0.1338		
40-44	0.1026	0.1419		
	<u>Mothers' habitual source of medical care</u>			
	State	Social security	Private	
25-29	0.0931	0.1214	0.0978	
30-34	0.1289	0.0835	0.1063	
35-39	0.1475	0.0854	0.0796	
40-44	0.1686	0.0758	0.0835	
	<u>Head of household education (in years)</u>			
	None	1-5	6 only	≥7
25-29	0.1921	0.1364	0.0920	0.0574
30-34	0.2073	0.0930	0.1289	0.0680
35-39	0.1722	0.1242	0.0642	0.0825
40-44	0.1749	0.1308	0.1054	0.0921
	<u>Head of household occupation</u>			
	Agricultural	Non-agricultural		
25-29	0.1196	0.0902		
30-34	0.1530	0.0816		
35-39	0.1242	0.0969		
40-44	0.1530	0.1026		
	<u>Mothers' occupation</u>			
	Inside home	Outside home		
25-29	0.1007	0.0969		
30-34	0.1148	0.1092		
35-39	0.1044	0.1177		
40-44	0.1345	0.0709		

TABLE A.7.1 CONTD.

Age group of women	Social indicator	
	<u>Material of floors</u>	
	Concrete	Dirt
25-29	0.0921	0.1686
30-34	0.1092	0.1622
35-39	0.0950	0.2028
40-44	0.1205	0.1749
	<u>Presence of a W.C.</u>	
	Yes	No
25-29	0.0729	0.1308
30-34	0.0940	0.1308
35-39	0.0719	0.1148
40-44	0.1186	0.1419
	<u>Possession of a refrigerator</u>	
	Yes	No
25-29	0.0486	0.1148
30-34	0.0544	0.1308
35-39	0.0642	0.1252
40-44	0.1016	0.1308

\*  $Q_5$  (Probability of dying between ages 0 and 5 years. See Chapter VII, Section 9 for estimation methods).

\*\*Period to which estimates refer: 1976-1985



FIGURE A.6.1 POPULATION PYRAMIDS FOR THE SOCIO-ECONOMIC STRATA

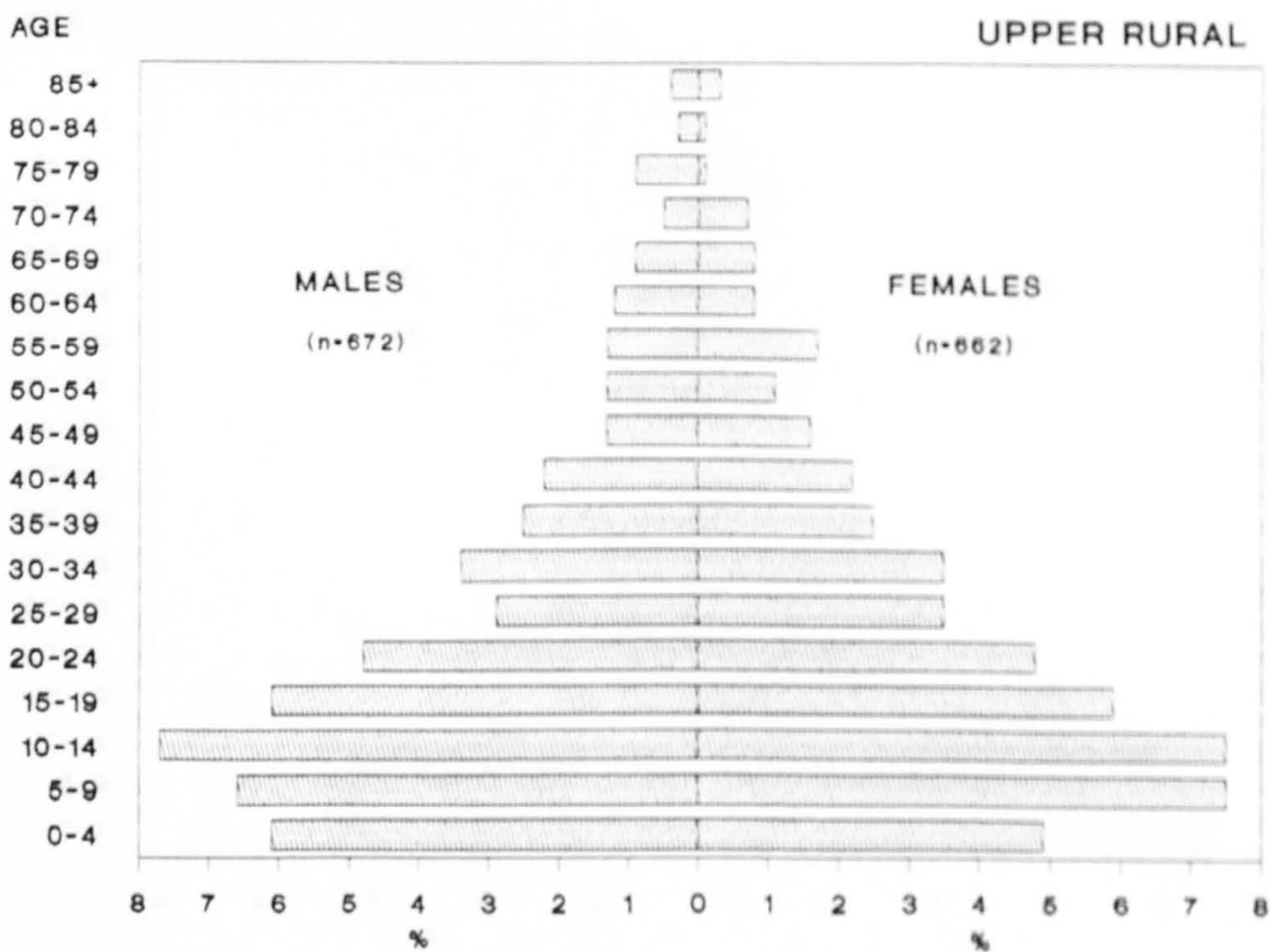
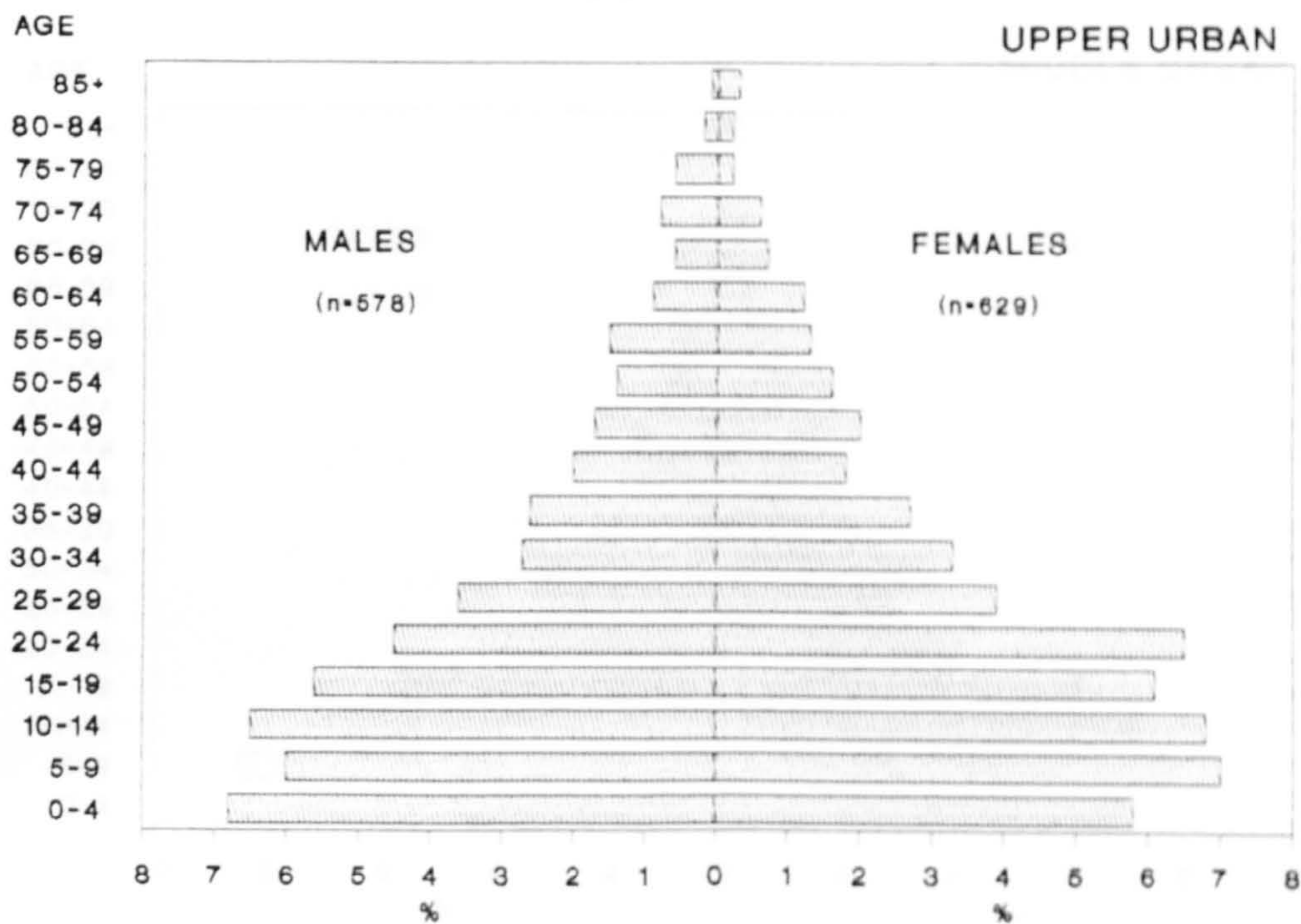




FIGURE A.6.1 POPULATION PYRAMIDS FOR THE SOCIO-ECONOMIC STRATA  
CONTD.

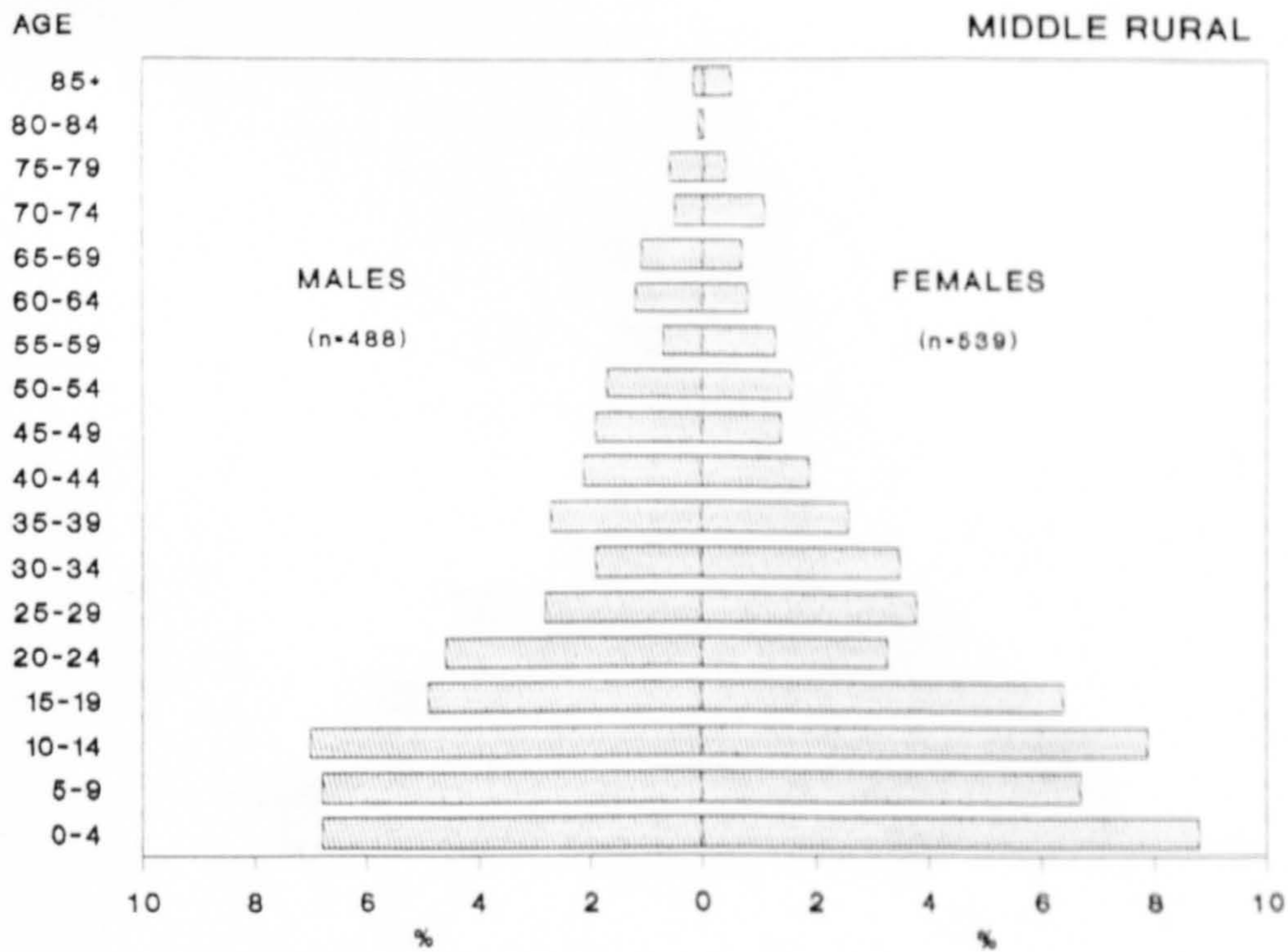
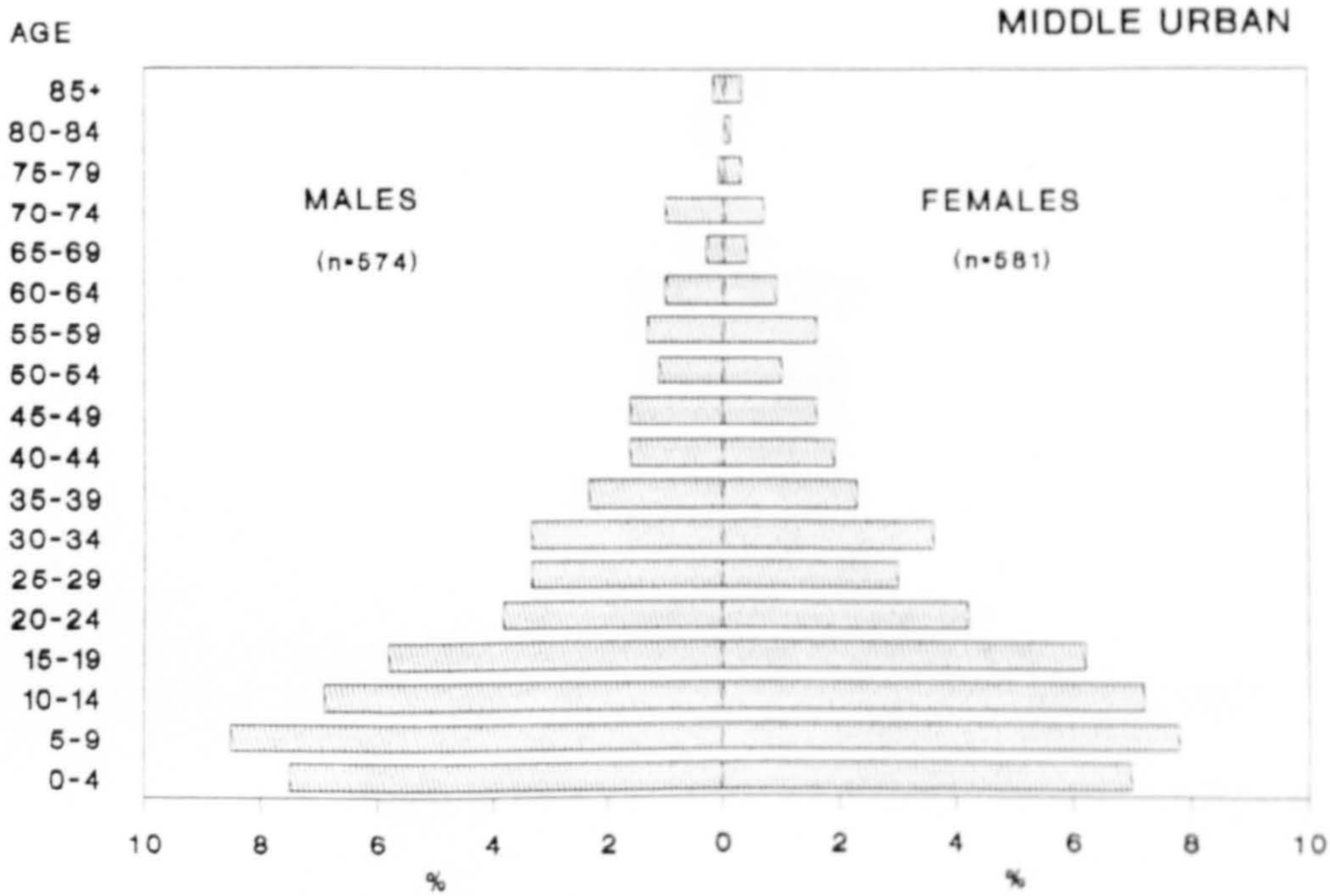




FIGURE A.6.1 POPULATION PYRAMIDS FOR THE SOCIO-ECONOMIC STRATA CONTD.

