Availability of health care for older persons in primary care facilities in Uganda

By

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Abstract

Background:

This thesis evaluated the health care available and delivered to older persons (≥50years) at primary care facilities in Uganda in order to identify gaps and weaknesses and to suggest potential solutions for improving the quality of their care.

Methods

The study was conducted in 48 primary care facilities across Uganda. It involved structured interviews with the persons in-charge of the facilities to determine what health care was provided at their facility; analysis of the numbers of outpatients attending the clinics to determine the absolute and relative caseloads due to older persons; structured interviews with health workers to determine their knowledge, attitudes and practices regarding the care of older persons; and structured exit interviews with older persons and younger adults (35-49 years) to determine their perceptions of the services they had received from the facility. Study participants were selected through a multistage stratified random sampling method designed to give a representative sample of Ugandan government primary care clinics and outpatients. Data were analysed using methods for complex multistage surveys.

Findings

Availability of services: The study found important gaps and weaknesses in the availability of services, equipment and amenities that were considered to be particularly important for the care of older persons and that were enquired about in the study. Availability was particularly low for non-communicable diseases and at lower level (levels II and III) primary care facilities.

Caseload: A total of 11,847 out of 140,338 total visits (8%) were made by older persons. Infectious illnesses (63%), as opposed to chronic non-communicable diseases (32%), were the most commonly diagnosed illnesses among the older persons.

Knowledge, attitudes and practices of health workers: In total, 145 health workers (92% of target) were interviewed. Using predefined criteria, 32% of them were classified as having poor knowledge of geriatrics and 68% as having at least satisfactory knowledge. Most of them (97%) were classified as having neutral attitudes towards older persons. Although hardly any of them (0.6%) was classified as having bad practices overall; a substantial proportion reported not giving older persons and younger adults autonomy (46-49%), health education (15-35%), prompt attention (19-30%), and or screening for diseases that are common in older persons (14-17%).

Perceptions of older persons and younger adults of the services they had received: In total, 244 older persons (96% of target) and 96 younger adults (100% of target) were interviewed. Although only 16-17% were classified as having received poor treatment overall, a substantial proportion reported not being screened for common diseases found in older persons (65-70%), receiving prompt attention (66-76%), having autonomy (70-80%), or receiving health education (30-39%). Only 1-2% perceived they had received poor service from the primary care facilities. Generally, older persons were not treated differently from younger adults (p=0.52) and their perceptions of the services were similar (p=0.21).

Conclusion

There were important gaps and weaknesses in services important for the care of older persons, and in the knowledge, attitudes and practices of the health workers. The Ministry of Health should therefore investigate how they might improve services for older persons at all levels of primary care facilities.

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Integrating statement

The author previously worked as a Medical Superintendent and Assistant District Director of Health Services in a rural district in Northern Uganda. The author later worked as a Project Leader in a research project with Medical Research Council in Uganda. With a long-term goal to assume top leadership of health services in Uganda, the author pursued the Doctor of Public Health to strengthen his leadership and management, and research skills. These skills were acquired through a taught component of the Doctor of Public Health, organisational and policy analysis, and a thesis research project. The taught component had three modules: two modules in evidence based public health practice and one module in leadership, management and professional development.

The evidence based public health practice modules were about public health policy making and examined the stages and processes involved, from evidence through to changes in policy and practice. It entailed critically appraising research evidence and using the evidence to improve public health. The author did two assignments: 1) a systematic review of effectiveness of health warnings on tobacco products in children and young people. The author also used the evidence generated from the systematic review to develop a policy brief intended for the Minister of Health in Uganda. 2) Agenda setting assignment that considered setting the agenda for male medical circumcision in Uganda. The evidence based public health practice module and the assignments enabled the author to develop skills in locating, assessing, synthesising, presenting and using research-based information to improve public health in a range of settings.

The leadership, management and professional development module was about understanding leadership, management and organisations. It focused on organizational management theory, including strategic management, change management and personal leadership development. In an assignment, the author used the organisation and leadership theories to analyse why the medical superintendent he succeeded in the district hospital succeeded in improving the hospital that had nearly collapsed but left most of the staff unhappy. In another assignment, the author used leadership and management theories to analyse some of the problems he faced during his previous leadership/management roles, and to develop a personal professional development plan. The leadership, management and

professional development module enabled the author to understand a range of issues and theories relating to management, leadership and organizations and how to apply the theories in public health organizations and in his future leadership/management practice.

Knowledge gained from the two taught courses was used in the organisational and policy analysis project. This involved evaluating a public health organization in order to understand how the organization functions to influence public health policy and/or deliver public health goals. The organisational and policy analysis was undertaken from March to September 2011 at International HIV Alliance in Uganda (Alliance-Uganda) – a country office of International HIV/AIDS Alliance Secretariat in the United Kingdom (IHAA-Secretariat). The IHAA-Secretariat was transitioning Alliance-Uganda to a community-based and nationally owned institution called Community Health Alliance Uganda. The transition however stalled while the author was studying the transition process. The author therefore analysed why this happened. Applying the knowledge and skills gained through the evidence based public health practice, the author conducted a document review to obtain background information about the transition, and a systematic review to understand why transition efforts often fail. The document review also enabled the author to identify the key stakeholders of Alliance-Uganda that had the potential to influence the transition process. The information obtained from the reviews was then used to develop topic guides that were used for in-depth interviews with the key informants drawn from Alliance-Uganda, IHAA-Secretariat, and national and international organisations Alliance-Uganda collaborated with. Informal discussions about the transition were also done with staff of Alliance-Uganda. To get the real picture of the transition-related events unfolding in Alliance-Uganda, and to help verify or nullify some of the information obtained during interviews and literature reviews, the author also used observational methods. Qualitative data were obtained. Applying the knowledge on change management theories and frameworks gained through the leadership, management and professional development course, the author then used the complex model of change management to analyse why the transition process stalled. Within this model, the author used various frameworks learnt from the evidence based public health practice and from the leadership, management and professional development modules to analyse how multiple factors interacted at various levels to stall the transition: a stakeholder analysis, learnt during evidence based public health practice module, was used

to systematically analyse and assess the impact of stakeholders on the transition, the 7S-model, PEST-analysis, and Kotter's framework, learnt during the leadership, management and professional development modules, were used respectively, to analyse the internal and external organisational factors, and explore inconsistencies in the content and process of change that hindered the transition. The author had never done such a complex analysis before and the experience gained from the organisational and policy analysis enabled the author to understand how an organisation should work or be led/managed in order to achieve its public health goals.

The skills, knowledge and experiences gained during the taught courses and organisational and policy analysis were then used in the thesis research project on health care for older persons in primary care facilities in Uganda. This project has its roots in the author's interest in approaches to improve the quality of care for poor and vulnerable groups. Skills and experiences gained during the organisational and policy analysis project were particularly useful in designing, implementing, and writing up the thesis research project. Knowledge of how to conduct a systematic review obtained during the evidence based public health practice course was particularly useful in conducting the systematic literature review for the study. The thesis research project enabled the author to refine his skills in designing, implementing, analysing and writing up a research study. The author aims to use the findings of this study to draw attention to the gaps and weaknesses in the care of older persons in Uganda and improve the quality of their care. The author will therefore publish the findings of this study in international journals, develop policy briefs, hold meetings with key individuals within the Ministry of Health to share the findings of the study and its recommendations, and conduct further research.

The Doctor of Public Health has enabled the author to develop very good knowledge and skills in leadership and management of a public health organisation and in designing, implementing, analysing and writing up a research project. The author has also developed very good skills in critically appraising research studies and using the evidence for action.

Table of Contents

List of Tables

List of Figures

List of Abbreviations and Acronyms

DEFF	Design Effect
HW	Health workers
LQAS	Lot Quality Assurance Sampling
MIPAA	Madrid International Plan of Action on Ageing
MoGLSD	Ministry of Gender, Labour and Social Development
MoH	Ministry of Health
MRC/UVRI	Medical Research Council/Uganda Virus Research Institute
NCDs	Chronic Non-Communicable Diseases
OP	Older Person
PCFs	Primary Care Facilities
PI	Principal investigator
SSA	Sub-Saharan Africa
STIs	Sexually transmitted infections
UBOS	Uganda Bureau of Statistics
UDHS	Uganda Demographic and Health Survey
UK	United Kingdom
USA	United States of America
WHO	World Health Organization

Outline

This thesis presents the findings of a quantitative study which was conducted in Uganda from March-June 2013. The study explored the health care services available and delivered to older persons at primary care facilities. The thesis is divided into seven chapters:

Chapter 1 is the introduction of the study. Firstly, it gives the definition of an "older person" and the justification for the age reference used in the thesis. The demographic trends and its implications for the health older persons is then explained. What should be in the minimum health care package for older persons and how the minimum health care package should be delivered to older persons are then explained. Because there is currently no specific recommendation on what the minimum package should be in Sub-Saharan Africa, I have proposed one. Using the socio-ecological model (figure 2), it examines the factors that influence the availability of health care for older persons. Findings of the systematic literature review on services available and delivered to older persons in primary care facilities in Sub-Saharan Africa are then presented. An overview of Uganda and the situation of older persons in Uganda are then described. The chapter ends with the rationale for the study. The study aim and objectives are then presented in **Chapter 2,** methods in **Chapter 3,** results in **Chapter 4,** discussions in **Chapter 5,** Limitations in **Chapter 6,** and conclusions, policy implications and recommendations in **Chapter 7.** The recommendations draw upon the quality improvement approaches[1-3].

Chapter 1: Introduction

1.1. Operational definition of an "older person"

There is no universal agreement on the age at which someone becomes old. Consequently, the term "old" means different things to different societies. The United Nations and many demographers for example define an older person (OP) as someone aged ≥60 years[4, 5]. Many governments in Sub-Saharan Africa (SSA)[6-10] also use the United Nation's reference point to define "old". In many developed countries, an OP is defined as someone aged ≥65 years based on the age at which people become eligible for the old age pension fund[11]. Unless specified otherwise, an OP in this thesis means someone aged ≥50 years. This reference point will align the findings of this study with World Health Organization's (WHO's) "minimum dataset on ageing and OPs in SSA"[12] that uses the cut-off of ≥50 years.

1.2. Demographic trends and their implications for the health of older persons

Improvements in public health have led to increases in life expectancy globally. Consequently, there is a rapid increase in the world's population of OPs[13-15] (Table 1).

Table 1: Population projections for older persons

		World's population of older persons (in thousands)		
Year	**All age-groups (n)**	**≥50 years n (%)**	**≥60 years n (%)**	**≥80 years n (%)**
2006	6,525,521	1,271,311 (19.5%)	683,334 (10.5%)	90,014 (1.4%)
2015	7,225,878	1,620,873 (22.4%)	895,032 (12.4%)	126,465 (1.8%)
2030	8,290,288	2,310,781 (27.9%)	1,402,673 (16.9%)	214,680 (2.6%)
2050	9,401,505	3,146,862 (33.5%)	2,087,597 (22.2%)	466,094 (5.0%)
Population of older persons in Sub-Saharan Africa				
2006	752,790	73,025 (9.7%)	35,415 (4.7%)	2,524 (0.3%)
2015	921,181	91,492 (9.9%)	45,056 (4.9%)	3,542 (0.4%)
2030	1,244,021	140,443 (11.3%)	69,205 (5.6%)	6,330 (0.5%)
2050	1,754,492	271,643 (15.5%)	139,270 (7.9%)	14,506 (0.8%)

Source: United Nations[15]

Because the increase in life expectancy is occurring at a time when there is reduction in fertility rates globally, there is a demographic transition towards an ageing population. Sub-Saharan Africa (SSA) is projected to have over 140 million OPs (11% of the total population) by 2030 and this population is projected to double by 2050 – up from 73 million (10% of the total population) in 2006[15].

While longevity is a public health triumph, OPs are at an increased risk of mortality and morbidity associated with chronic non-communicable diseases (NCDs) such as cardiovascular diseases (e.g. stroke, hypertension, congestive heart failure, and coronary artery disease), diabetes mellitus, cancers, and chronic obstructive pulmonary diseases (e.g. chronic bronchitis and emphysema)[16-19]. OPs are also particularly vulnerable to chronic non-communicable conditions such as vision impairment (resulting commonly from cataracts, trachoma, glaucoma, and macular degeneration); hearing impairment; mental and neuropsychiatric disorders such as depression and dementia; muscle and bone diseases such as osteoporosis and arthritis; frailty; falls and accidents that often lead to bone fractures; immobility; skin conditions such as dryness of the skin and wounds; urinary problems such as urinary incontinence and frequent micturition; loss of teeth; faecal incontinence; and sexual health problems[16-19]. Globally, NCDs account for almost two thirds of all deaths[17, 18] and 54% of disability-adjusted life years (DALYs)[20]. Three quarters of NCD-deaths occur among OPs ≥60 years[17, 18]. Of the 53 million deaths that occurred in the world in 2010 for example, two thirds (68%) were OPs and NCDs were the most common cause of death among the OPs[21]. Nearly 80% of the NCD-deaths occur in low- and middle-income countries[16-18]. Additionally, due to a variety of reasons that include frailty and the deterioration of immune function with age (immunosenence), OPs, particularly in low income countries, also face an increased risk of infectious diseases[13, 22]. The morbidity associated particularly with NCDs is known to have a long-term impact on the ability of OPs to live happy and independent lives and reduce their capacity to engage in income generating activities[16-19].

While the demographic transition to an ageing population in the developed world is occurring at a time when there is an epidemiological transition towards increase in NCDs and a decrease in infectious illnesses; the demographic transition in SSA is occurring at a time when infectious illnesses are still prevalent and prevalence of NCDs is rising rapidly[18]. A systematic literature review of the common ailments that affect OPs that I undertook as preliminary work towards the DrPH showed that OPs in SSA suffer a dual burden of both infectious and non-communicable diseases (Table 2). Worryingly, the review showed that a substantial proportion of OPs in SSA (3-8%) were infected with HIV and yet, to the best of

my knowledge, the HIV programmes in SSA do not specifically target OPs. Given that patients on life-long antiretroviral treatment can expect to live an average of at least 27 years longer than their expected time of HIV/AIDS-related death without treatment[23], the prevalence of HIV in OPs in SSA is set to increase rapidly as adults currently on life-long antiretroviral treatment in their 30s or 40s will survive into old age[24].

Table 2: Prevalence of diseases in older persons ≥50 years in Sub-Saharan Africa I obtained during a systematic literature review

	Prevalence (%)
Chronic non-communicable diseases	
Chronic pain[25-28]	36-90
Osteoarthritis[25-27, 29-34]	56-86
Oral-dental problem[25, 27, 31, 32, 35]	36-79
Visual problems[26, 29-32, 34, 36-42]	11-78
Hypertension[25, 29, 31, 34-37, 42-47]	22-65
Diabetes[44, 48, 49]	4-20
Cancer[45]	4
Depression[26, 33, 35, 42]	7-60
Dementia[27, 30, 50-52 53, 54]	4-12
Hearing impairment[55]	6
Chronic obstructive airways disease[27, 47, 56]	8-39
Infectious illnesses	
Respiratory tract infections[25, 31, 32, 46]	14-68
Malaria[25, 26, 46, 57]	14-67
HIV[24, 58-62]	3-8
Nutritional problems	
Under nutrition (BMI<18.5kg/m^2)[25, 63-71]	6-48
Severe malnutrition (BMI<16.0kg/m^2)[25, 69]	2-22
Overweight (BMI 25-29.9kg/m^2)[25, 64, 65, 68, 71]	5-54
Obesity (BMI ≥30kg/m^2)[25, 64, 65, 68]	2-55

Key: Detailed table presented in annex 9.1.3

The review included 50 primary studies published in English between January 2000 and November 2012 on common ailments that affect OPs in SSA. The studies were obtained through a systematic search of databases in PUBMED MEDLINE, EMBASE, Global Health, and Africa Wide Information using key search terms (Annex 9.1.1). Data were extracted using a checklist provided by "Centres for Reviews and Dissemination"[72] and a descriptive synthesis was done. However, based on the criteria provided by Cochrane Collaboration's "Effective Practice and Organisation of Care Group"[73], nearly all of the studies were of fair quality e.g. nine of the studies[27, 29, 31, 43, 45, 46, 51, 74, 75] might have overestimated the prevalence of

diseases among OPs because they were done among OPs at health facilities (high risk of bias). Full texts could also not be obtained for 19 of the studies[26, 29, 32, 34, 36, 43-47, 51, 53, 54, 57, 66, 67, 69, 74, 76] and their quality could not be properly ascertained. All of the 19 studies were published in local journals in SSA. The abstracts were however considered valid for inclusion because they quantified the burden of health problems in OPs. Quality evidence on health problems in OPs in SSA is now emerging from the INDEPTH[1] WHO-SAGE [2] collaborative longitudinal study[77], with the first set of results revealing declining health status in ageing populations in SSA (Table 3).

Table 3: The association of age with poor health status in Sub-Saharan Africa

Age-group (years)	Odds ratio (OR)			
	Kenya[78]	Tanzania[79]	South Africa[80]	Ghana[81]
50-59	1	1	1	1
60-69	2.3	1.6	1.1	1.5
70-79	3.1	2.6	1.8	2.4**
80+	9.5	4.5	3.1	

Source: Global Health Action, Supplement 2, 2010[77]. **OR shown is for age ≥70 years.

Some older persons have also been found to suffer abuse from members of their families and communities, and from trusted care givers such as health workers (HWs)[82-86]. Action on Elder Abuse in the United Kingdom defines elder abuse as: ‘‘a single or repeated act, or lack of appropriate action, occurring within any relationship where there is an expectation of trust which causes harm or distress to an older person’’[84]. Elder abuse, according to Action on Elder Abuse[84], takes various forms such as:

- Physical abuse—a deliberate or intentional act of inflicting physical pain or injury through, for example, beating, slapping, or restraining by physical means.
- Sexual abuse—a non-consensual sexual contact of any kind.
- Neglect—the failure or severe delay by those responsible to provide food, shelter, health care, or protection.

[1] INDEPTH (International Network for the Demographic Evaluation of Populations and Their Health) in developing countries.
[2] WHO-SAGE (World Health Organization (WHO) Study on Global Ageing and Adult Health (SAGE))

- Exploitation—illegally taking, misusing, or concealing funds, property, or assets of an OP for someone else's benefit.
- Emotional abuse—a deliberate or intentional act of inflicting mental pain, anguish, or distress on an OP through verbal or nonverbal acts such as shouting at, making mean comments at, humiliating, intimidating, and threatening.

WHO's world report on violence and health, estimates that 4 – 6% of OPs suffer elder abuse[85]. However, there are suggestions that this may be a considerable underestimate because OPs are afraid of reporting abuse and that many do not have the opportunity to report abuse even if they wanted to[87]. The prevalence of elder abuse in Sub-Saharan Africa is currently unknown, but has been reported to be common in a number of qualitative studies[82, 83, 88, 89]. Regardless of the type, elder abuse results in unnecessary suffering, injury or pain, the violation of human rights, and a decreased quality of life for the older person[90].

Findings of this literature review on the common health problems that affect OPs show that OPs have a great need for health care and require special attention. Efforts are therefore urgently needed to provide an enabling environment for OPs to achieve and maintain better health, better functioning, and to live happy and quality lives. Such efforts should include provision of age-appropriate health care at all levels of health service delivery.

1.3. The minimum health care package for older persons in Sub-Saharan Africa

Currently, there is no specific, agreed recommendation on what the minimum or basic health care package for OPs in Sub-Saharan Africa should be. Because OPs are particularly vulnerable to NCDs, WHO has made specific recommendations for governments around the world to prevent and treat NCDs and their consequent disabilities[91]. At the core of WHO's recommendation is a life-course approach where healthy behaviours that prevent the risk of occurrence of NCDs are promoted for all ages (right from childhood), and where patients with NCDs are properly managed at a low cost[91]. Actions recommended by WHO to promote healthy behaviours include promotion of healthy diets and physical activity (active ageing), and counselling on cessation of smoking and on excessive alcohol use; while the recommendation to treat NCDs focus on early detection and treatment of NCDs, and plans for long-term care including palliative care[91]. WHO has also made specific recommendations on the management of the "geriatric giants": memory loss, urinary

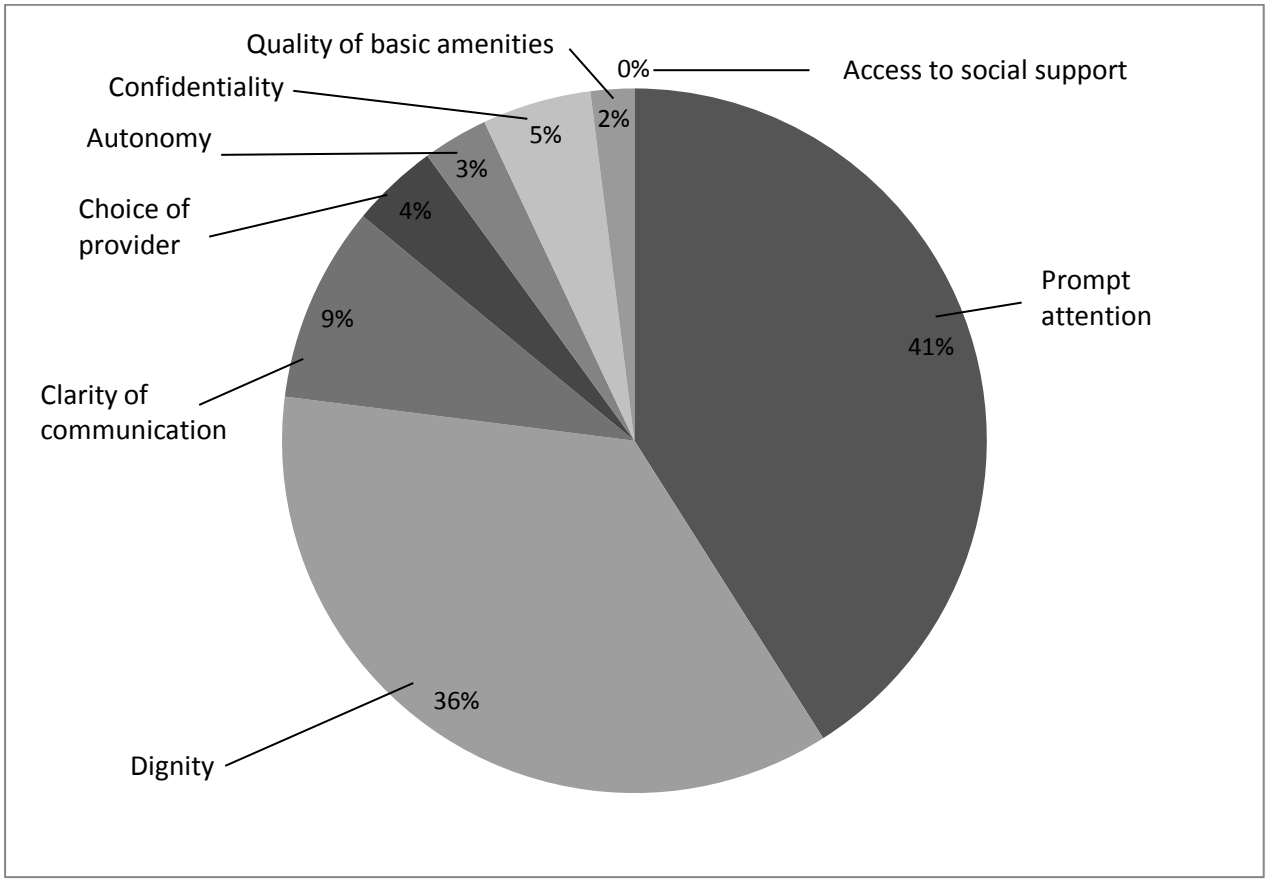
incontinence, depression, frailty, and falls/immobility[92]. Cognisant of the fact that OPs are vulnerable to HIV, *the Global Forum on Ageing in the 21st Century* recommended inclusion of OPs in HIV/AIDS programmes[11]. Creation of "age-friendly environments" for OPs at the health facilities has also formed a key component of their recommendations and these focus on prevention of age discrimination and elder abuse, and innovations in housing designs that enable easy mobility for OPs[11].

Premised on the fact that an increase in and sustainability of public confidence in a health system depend on the ability of the health system to keep pace with and respond to the social needs of the patients, WHO's recommendations for care of OPs have also focussed on the non-clinical aspects of health care – also referred to as "health system responsiveness" [93, 94]. Health system responsiveness is "a measure of how the health system responds to non-clinical expectations of the patients and include: dignity, confidentiality, autonomy, prompt attention, social support, basic amenities, and choice of provider" [93]. The recommendations on health system responsiveness provide for treatment of patients with respect i.e. ensuring dignity of patients, facilitating their role in decisions about their care (autonomy), communicating with patients in a manner that would enable them to understand their illness and its management, and keeping patients' health information confidential. The recommendations also provide for provision of prompt attention to patients, ensuring inpatients have access to social support, ensuring patients can choose their service providers, and providing basic amenities of adequate quality. Promotion of health system responsiveness was the core of the "*World Health Report 2000*"[95].

In general population surveys of health system responsiveness in 41 countries involving 105,806 respondents with previous experience of having received care from a health facility, the respondents (all age-groups) ranked prompt attention as the most important, and access to social support as the least important non-clinical health care they wanted to be provided with (figure 1)[96]. OPs ≥60 years also ranked prompt attention as the most important domain, followed by dignity, communication, choice of provider, autonomy, confidentiality, quality of basic amenities and social support[96]. In Nigeria, the only country in SSA that participated in the study, 44% of respondents (all age-groups) ranked prompt attention as the most important, followed by dignity (19%), communication (12%), choice of

provider (9%), confidentiality (8%), autonomy (4%), quality of amenities (2%) and social support (2%). Interventions aimed at improving health care for OPs should therefore target these specific components of health system responsiveness, and should pay particular attention to the top ranked components[96].

Figure 1: Percentage of respondents rating a domain of responsiveness to be important



Source: WHO (pg. 143)[94]: http://www.who.int/responsiveness/papers/MCSS_Analytical_Guidelines.pdf

Therefore based on these global recommendations[11, 91, 92, 94], one would expect that all facilities in SSA offer age-appropriate health care that includes, at the minimum, the prevention and treatment of NCDs and of communicable diseases such as HIV. Because most of the health problems in OPs have their origins in unhealthy life-styles in the younger ages[97], prevention programmes for chronic diseases would be expected to be offered both at facility and community level and target all age-groups. The minimum NCD-prevention package at all facilities would be expected to include health promotion through education on the causes and risk factors such as unhealthy diets, physical inactivity, tobacco and

excessive alcohol use. For the communicable diseases such as HIV and non-HIV sexually transmitted infections (STIs); the prevention package would be expected to include health education programmes about the diseases for all age-groups, including for OPs. All facilities would also be expected to routinely screen patients, through history taking and physical examination, for the presence and risk factors for chronic diseases even if patients present with unrelated complaints. For NCDs, such screening would be expected to include taking history of NCDs in the past and in the family and asking about risky behaviours such as cigarette smoking and excessive alcohol use, and then carrying out physical examinations such as blood pressure measurement, waist and mid-upper arm circumference measurement, and measurement of weight and height followed by calculation of body mass index. Screening in women would be expected to include visual inspection of the cervix and physical examination of the breasts to exclude cancer of the cervix and breast, respectively. Screening for NCDs would also be expected to include assessment for vision, hearing and common mental health problems such as depression and memory loss, and assessment for incontinence, frailty and mobility problems. For communicable diseases such as HIV and non-HIV STIs; one would expect that all facilities specifically target OPs as well as younger ages and screen them for risky sexual behaviour and disease. Lastly, all facilities would be expected to offer treatment, including life-long treatment of chronic diseases/conditions.

Although specific services or programmes for the prevention or treatment of elder abuse are not expected to be found at PCFs, one would expect the HWs to be aware and knowledgeable about elder abuse, think of it in appropriate situations, and be able to screen OPs they suspect of having suffered abuse and appropriately manage them, including referring them to other institutions such as the police for further action.

In order to offer the above services, one would expect that governments have policies for providing health care to OPs and health facilities have basic items that are particularly important for providing the services such as basic equipment, guidelines, medicines, and staff. For them to be useful for offering services to OPs, such basic items would be expected to be found in the patient consultation area. The health facility environment would also be expected to be age-friendly to enable OPs to easily access care without fear of discrimination or abuse from the HWs, have basic amenities such as a waiting area that

shields patients from sun or rain, enough seats in the waiting area for OPs to find a place to sit, a ramp to enable OPs with frailty and mobility problems to easily navigate the health facilities, and privacy to ensure the comfort and dignity of OPs while seeking health care. Because knowledge, attitudes and practices of HWs are a key determinant of the quality of care they provide to patients and of patient's perceptions and utilisation of health care services[98-107], HWs in the facilities would also be expected to have the awareness, knowledge and skills to care for the common ailments that affect OPs, and have good practices and positive attitudes towards OPs. HWs would have good practices regarding the care of OPs if they routinely screen OPs for the common health problems that affect OPs, promptly attend to OPs, do not extort money from OPs, and treat OPs with respect as discussed in the health system responsiveness above[93].

1.4. Primary care facilities for delivering health care to older persons: The rationale

In 1978 in Alma-Ata in the then Soviet Union, the World Health Assembly prompted the formation of a global health strategy to achieve health for all called *primary health care*[108]. That declaration, commonly known as the Alma-Ata declaration, emphasized health, or well-being, as a fundamental right and a world-wide social goal, to address inequality in the health status of persons in all countries, and to target government responsibility for policy that would promote economic, social, and health development[108]. Primary health care was defined as "essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally accessible to individuals and families in the community through their full participation and at a cost that the community and country can afford to maintain at every stage of their development in the spirit of self-reliance and self-determination" [108]. Since the Alma-Ata declaration, primary health care has, in many countries, formed an integral part both of the health system, of which it is the central function and main focus, and of the overall social and economic development of the community[109]. In other words, primary health care is a broad concept that aims to improve the health and wellbeing of populations as well as individuals through addressing the determinants of health including political, social and economic environments. Promotion of primary health care is a core concept of WHO's goal of *"health for all"*[110].

One of the strategies for achieving primary health care in most countries has been delivery of primary medical care through PCFs – i.e. generalist-led health facilities. Primary care refers to the "delivery of a complex set of services, which include the first contact, delivery of comprehensive care, case management, and maintenance care and disease prevention. It assumes responsibility for referral to distinct services in response to the clients' needs"[111]. As in many developed countries, PCFs in developing countries form the first level of contact of individuals, the family and community with the formal health sectors because they are located closer to where people live[109] . Consequently, WHO has recommended PCFs as the model for delivering health care to OPs in developing countries[112, 113].

The concept of delivering health care to OPs through PCFs is particularly important for SSA because most individuals (80-94%) in SSA live in rural areas[114-117] and PCFs are the most available source of formal health care for people who live in rural areas in SSA. OPs with ailments are therefore more likely to present to PCFs than to hospitals because hospitals in SSA are often located in urban centres, and distances to them are considerably long and public transport infrastructure is poor and relatively expensive. Studies aimed at improving the quality of health care for OPs should therefore focus on the PCFs. Improving services at PCFs would enable OPs to be treated closer to their homes and potentially reduce the cost of accessing health care for them. For OPs who are on life-long chronic care and treatment, ease of access to health care would improve their adherence to treatment and to appointment schedules.

1.5. Factors that influence the availability of health care for older persons

1.5.1. The Conceptual framework

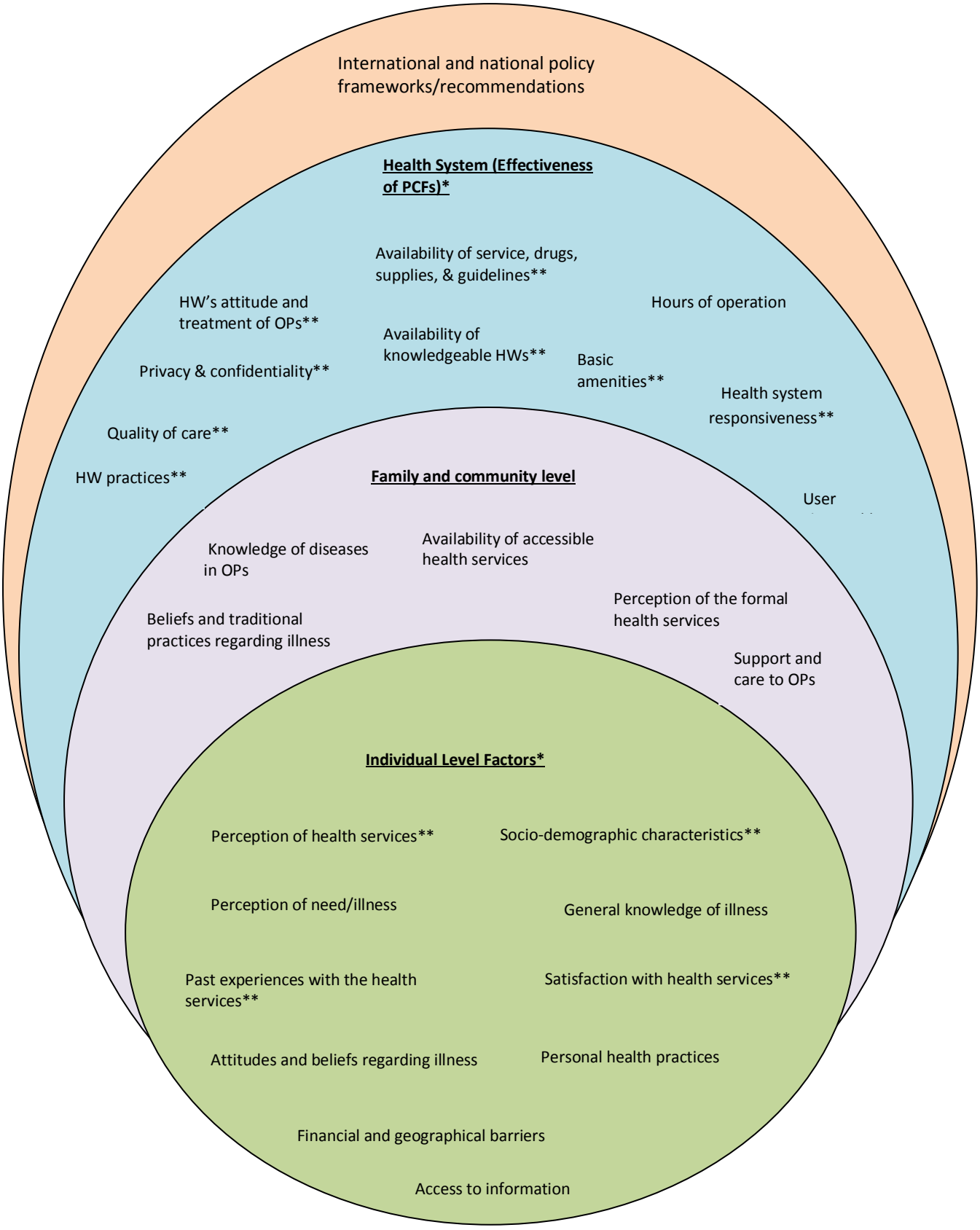
The conceptual framework (figure 2), based on the socio-ecological model[118], shows that a number of factors interacting at multiple levels influence health care availability for OPs. The model considers the complex interplay between factors that influence the availability of health care for OPs at national and international policy level, health system level, family/community (interpersonal) and individual (Intrapersonal) level. The potential gaps and weaknesses in health services for OPs and intervention areas for quality improvement can therefore be understood by evaluating these factors.

The policy level factors look at the national and global laws and policies that recognise OPs as a vulnerable group and support provision of care to them. The health system factors examine the influence of the health system on health care access and utilization by individuals and communities. These include the presence of affordable health care services, the knowledge, attitudes and practices of HWs, hours of operation, and availability of an environment conducive for providing health care to OPs such as basic amenities, overall responsiveness of the health system, and privacy and confidentiality.

The family, community or societal factors look at how health care access and utilization by individuals can be influenced by social and cultural norms, traditional practices regarding illness, family/community's satisfaction with and perceptions and expectations of health services, level of knowledge and awareness about health problems that affect OPs, and community support to OPs who need health care. It also examines the availability of accessible health care services. The individual level factors identify biological and personal history factors that affect health care access and utilization. These include age, education, income, general knowledge and perception of illness, attitudes and practices regarding illness, perceptions of health services, past experiences with health services, expectations of health services, and financial and geographical barriers.

This thesis focused on the health system, and, some aspects of the individual-level factors of the conceptual model (items marked in asterisks).

Figure 2: Factors that influence availability of healthcare for older persons who require care



*Domains examined in the thesis. **Specific items examined within each domain

1.5.2. Policy frameworks

Owing to their increased vulnerability to diseases, a variety of international documents have articulated the need to address the consequences of demographic trends and particularly deal with the increasing burden of NCDs in OPs[97, 119-121]. The Madrid International Plan of Action on Ageing (MIPAA), developed in April 2002, in particular called on governments to strengthen health care for OPs through health promotion and disease prevention interventions[121]. Consequently, in article 14 of the political declaration on the MIPAA, the world's political leaders committed themselves to providing OPs with equal access to health care[119]. Ratifying the MIPAA[121] and the political declaration[119], the African Union developed the "African Union policy framework and plan of action on ageing"[120, 122] in July 2002 that also called on African governments to strengthen health care for OPs[83, 85]. Consequently many countries in SSA developed policies for addressing issues affecting OPs[11].

The policy frameworks in many SSA countries, developed by the Ministries of Social Development, make specific recommendations on actions to improve the care of OPs, and assign specific responsibilities to the MoH. Despite the existence of the policy frameworks[11] , there are proxy indicators to show that OPs have limited access to health care in SSA e.g. high proportions of OPs who were unaware of their hypertensive status and therefore not on treatment were reported by community-based studies in Uganda (50%)[42], Senegal (50%)[76],Ghana (96%)[11], South Africa (92%)[11], and Nigeria (97%)[75]. In fact, the studies in Uganda[42] and Senegal[76] may have underestimated the proportions of OPs who were unaware of their hypertensive status because in Uganda, the study was done in a rural population cohort, established by the Medical Research Council/Uganda Virus Research Institute (MRC/UVRI), that has been in existence for nearly 20 years and has access to medical services provided by MRC/UVRI while the one in Senegal[76] was done in an urban setting where health care services are more widely available. Similarly, another study in Nigeria[41] concluded that OPs had limited access to vision services while a study in Uganda[42] reported that only 5% and 11% of OPs in Uganda with far and near sightedness, respectively, had glasses.

We do not know the extent to which MoH were involved in the development of the policies. It is possible that ownership of the policies by MoH is limited in SSA. In Uganda for example,

the stewardship role for issues affecting OPs is provided by the Ministry of Gender Labour and Social Development (MoGLSD). There is very little evidence that the MoH is centrally or actively involved in policy debates about what services, as whole, are needed for OPs. For example, although health care for OPs is one of the key intervention areas mentioned in the national policy for OPs that was developed in 2009 by MoGLSD[123], the Uganda national health policy[124] and health sector strategic plan[125] that were developed a year later in 2010 by MoH made no specific mention of health care services for OPs – they have largely focused on services for children, women's reproductive services, and acute services for adults. Consequently, the national policy[123] and the national plan of action[126] for OPs lack clarity on what would be required for the provision of good quality health services to OPs. Such apparent lack of involvement of the MoH may be a key factor impeding health care for OPs in SSA because, based on the French-Raven's power and influence theory[127] and David Goleman's theory of expert power[128], it is the MoH that has the mandate and the expertise to provide leadership for health care delivery in the country. These leadership theories suggest that successful implementation of programmes require leaders that have the mandate and expertise to provide direction, which MoGLSD in Uganda clearly lacks as far as health care issues are concerned. Evaluating potential gaps and weaknesses in development and implementation of policy for OPs in SSA may therefore be informative.

1.5.3. Effectiveness of primary care facilities

Globally, the effectiveness of PCFs in reducing social disparities in access to health care and in reducing mortality and morbidity for the general population is well documented[129-135]. In developing countries, the effectiveness of PCFs in expanding health care and ensuring equitable and affordable access to health services for the general population has been reported by a systematic review by Kruk et al (2010)[136] and by primary studies in El Salvador[137] and South Africa[138]. A review of primary care implementation in Africa by WHO (2008)[139] also noted improvements in health care utilization and access as a result of PCFs. However, a study by HelpAge International (2008) in five Asian countries (Cambodia, India, Indonesia, Singapore and Vietnam) on the perceptions of OPs of PCFs noted that OPs perceived the quality of services in PCFs to be poor and said the HWs in the PCFs neither screened them for diseases nor gave them health education about common diseases[140].

However literature on the effectiveness of PCFs in SSA has not been consistent. For example, a study in South Africa that assessed patients' satisfaction with PCFs reported high levels of satisfaction with PCFs, with 95% of the patients saying their health care needs were met, 83% saying they were satisfied with PCFs, and 91% saying they would recommend PCFs to other patients[138]. High levels of satisfaction with and good perceptions of PCF-services were also reported by two other studies in South Africa[141, 142]. Elsewhere in SSA however, high levels of dissatisfaction with and poor perceptions of PCFs were reported by studies in Nigeria[143, 144], Ethiopia[145], and Tanzania[136, 146]. In Nigeria for example, 90% of patients were reported to have been dissatisfied with PCF-services[143], and 97% were reported to have had poor perceptions of PCF-services[144]. The main reasons for the dissatisfaction with PCFs commonly reported by the studies in Nigeria[143, 144], Ethiopia[145] and Tanzania[136, 147] were: poor services, lack of drugs, lack of diagnostic facilities, not finding HWs on duty, early closure of facilities, lack of physical examination, delays in seeing patients by HWs, poor attitude of HWs and verbal abuse by HWs. These were also given as reasons by participants in the studies in Tanzania for bypassing PCFs facilities[109, 119]. Notable is the emergence of a clear pattern in levels of satisfaction with PCFs, with high levels of satisfaction reported in South Africa and disaffection reported in other countries in SSA. This pattern should not be surprising because South Africa, as an upper middle-income country, has better facilities and better services than most of SSA. Generalising study findings from South Africa to the rest of SSA should therefore be approached with caution.

1.5.4. Services provided at primary care facilities in Sub-Saharan Africa

The WHO reports on PCFs in SSA, and reports of governments in East Africa show that PCFs in SSA are organized around the acute care model, focusing on the prevention and treatment of infectious diseases that cause the highest mortality and morbidity and for which there are effective low-cost interventions[109, 139, 148-152]. In Uganda and Nigeria for example, the essential medicines list for lower and mid-level PCFs did not contain medicines for managing NCDs such as hypertension and diabetes[153-155]. Mid-level PCFs only had basic laboratory services for diagnosis of infectious illnesses such malaria while lower-level PCFs did not have laboratory services. Higher-level PCFs however provided services for NCDs such as hypertension and diabetes and had basic laboratory services that could investigate some of the NCDs such as diabetes. These findings suggest that in SSA, patients with chronic NCDs

struggle to get services unless they live within a higher-level PCF or a hospital. However, five studies that evaluated availability of services in PCFs in South Africa found that both acute and long-term chronic care was provided at all levels of PCFs[141, 142, 156-158].

Studies and government reports have also shown that PCFs in SSA face a lot of challenges that include severe shortage of staff and medicines, poor infrastructure, and inadequate funding[109, 139, 141, 144, 148-152, 156, 159]. For example, studies in Kenya[159] and Nigeria[144] that audited PCFs for availability of laboratory services found that only 38% and 2.6% of the PCFs respectively had any laboratory services. The two studies also reported stock out of essential drugs in the PCFs, with essential drugs being out of stock in 88% of the PCFs in Nigeria and 38% in Kenya[144, 159]. However, one study that evaluated PCFs in South Africa for availability of drugs for NCDs did not find stock out of the drugs[156]. Severe shortage of staff at PCFs were reported by studies in Nigeria (with only 29% of approved positions filled) [144], Kenya (with 47% of approved positions filled)[159], and South Africa[141]. In Uganda, staffing at PCFs varied by level of the PCF: with lower-level PCFs staffed mainly by nurses, mid-level PCFs staffed by nurses and Physician assistants, and Higher-level PCFs staffed by nurses, physician assistants and physicians[153]. One study that audited PCFs in South Africa for availability of guidelines for diagnosis and treatment of NCDs found that very few (3%) of the PCFs had NCD-guidelines – suggesting that the potential for mismanaging patients with NCDs could be high[156]. The study in South Africa however found that nearly all PCFs surveyed had the necessary equipment for managing NCDs, with all (100%) PCFs surveyed having adult weighing scales, sphygmomanometers, visual acuity charts, glucometers, and ophthalmoscopes, and the great majority having adult height scales (87%), tape measures (73%), and haemoglobinometers (70%)[156]. As noted above, generalising study findings from South Africa to the rest of SSA should be approached with caution.

Despite the mixed findings on its effectiveness, PCFs remain the main source of health care for OPs because they are located in rural areas where most OPs live. Evaluations are therefore needed to understand whether the PCFs in SSA meet the healthcare needs of OPs.

1.5.5. Availability of services for older persons in primary care facilities in Sub-Saharan Africa: Systematic literature review

There is paucity of research on health care for OPs in SSA. A systematic search for reports on availability of health care for OPs at PCFs in SSA published in English language between January 2000 and January 2014 did not identify any article (Annex 9.1.4). The search, using key search terms (Annex 9.1.1), was conducted in PUBMED, MEDLINE, EMBASE, Global Health, Africa Wide Information, and health system evidence between June 2012 and 31st January 2014. However, given that PCFs in most of SSA focuses mainly on prevention and treatment of acute ailments[109, 125, 139, 151, 152, 160, 161], it can be inferred that OPs with chronic NCDs struggle to get services in SSA.

1.5.6. Knowledge, attitudes and practices of health workers regarding the care of older persons in primary care facilities in Sub-Saharan Africa: Systematic literature review

Knowledge, attitudes and practices of HWs are a key determinant of the quality of care they provide to patients and of patient's perceptions of care services[98-107]. A systematic search for reports of primary studies on knowledge, attitudes and practices published in English between January 2000 and 31st January 2014 revealed only one study[162] (Annex 9.1.5). The study, done in Northern Uganda, reported that 19% of the HWs had poor knowledge of geriatrics, 69% had satisfactory knowledge, and 12% had good knowledge[162]. The great majority (80%) and 15% of the HWs in the study were reported to have positive and negatives attitudes towards OPs, respectively[162]. The findings of the study cannot however be generalised to SSA because the study involved only two health facilities in one district and the study participants were purposively selected– rendering the selection process open to potential selection bias[163]. Furthermore, the tools (*Palmores Aging Quiz-1*[164] and *Kogan's Older People's Attitude Scale*[165]) used for the study to measure knowledge and attitude, respectively, have never been validated in Africa. Indeed, quite a substantial number of the questions in the tools – such as those asking about "one-tenth of OPs living in nursing homes", "aged drivers causing few accidents", "population of OPs aged 65 years now being 20%", "poverty line as defined by US federal government"– are not applicable to a region like Northern Uganda where there are no residential homes for OPs and where people (let alone OPs) hardly own or drive cars, and the authors did not explicitly say that they

modified/adapted the tools. The study[162] may also have overestimated the proportion of HWs with positive attitudes because it only classified as "neutral attitude" participants who scored the exact midpoint on the five-point Likert scale it used – this potentially is a major analytical flaw.

To gain further insight into the knowledge, attitudes and practices of HWs in the PCFs in SSA, a further literature search was conducted for any study that reported on the knowledge, attitudes and practices of HWs regarding provision of health care to patients in general (not just OPs). Four studies, all conducted in South Africa, were identified that met the inclusion criteria[115, 129, 130, 150] (Annex 9.1.5). Two of the studies assessed HWs' practices related to screening of patients for NCDs and concluded that HWs did not comprehensively screen patients for NCDs[156, 157]. One of the studies reported that despite equipment being available, a substantial proportion of patients that should have been screened were not screened, with the proportions of those screened being low for: height measurement (50%), ECG screening (26%), retinal screening (20%), diabetic foot screening (20%), cholesterol tests (18%), reflex tests (17%), chest X-ray (12%), renal function tests (11%), and waist circumference measurement (7%) but high for measurement of blood pressure (98%) and weight (88%)[156]. One of the studies assessed HWs' knowledge and practices related to management of STIs and concluded that HWs did not comprehensively screen patients for STIs, but most of their diagnoses (90%) and treatment prescriptions (80%) were correct[166]. One of the studies assessed HWs' responsiveness to patients and reported that HWs generally treated patients with respect, with 75% of the HWs ensuring privacy of the patients, and 75% asking for permission before carrying out physical examination but the HWs tended not to give enough time to patients to explain their illness[142]. Three quarters (71%) of the HWs in the study also appropriately referred patients for further care[142]. These findings are mixed to draw any plausible conclusions but suggest that there are important gaps and weaknesses in knowledge and practices of HW in the PCFs and there is room for improvement.

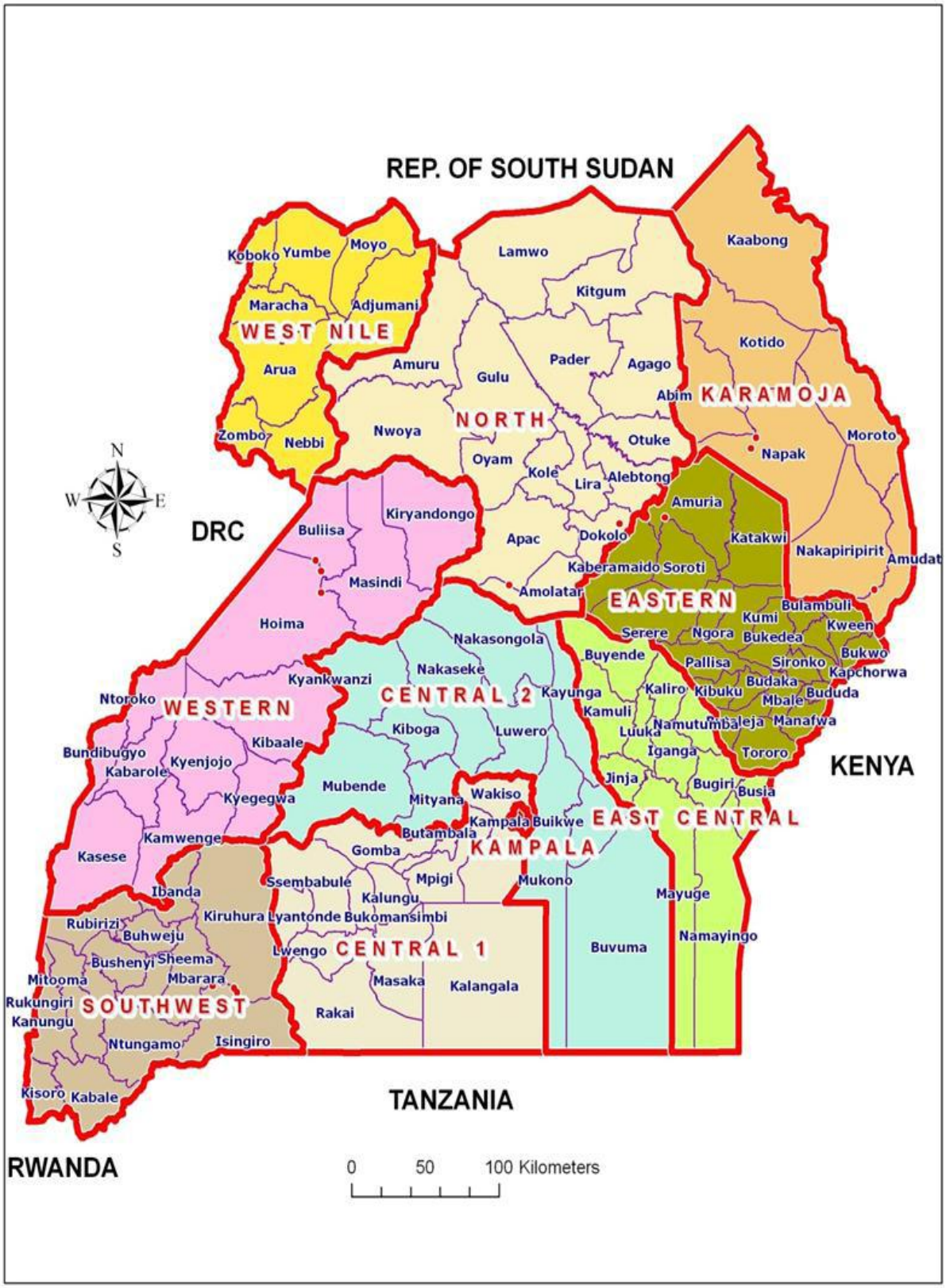
1.5.7. Perceptions of older persons of the services they received from the primary care facilities in Sub-Saharan Africa: A systematic literature review

Perceptions of patients of the health services they receive are a key determinant of their utilisation of health services[167-169]. Understanding the perceptions of OPs of the services at PCFs is therefore critical for developing measures to increase the utilization of health care services, the quality of care and the overall performance of the PCFs. However, a systematic search for reports of primary studies on perceptions of OPs of services at PCFs in SSA published in English between January 2000 and 31st January 2014 did not identify any study (Annex 9.1.6). To gain insight into the perceptions of OPs of the health services in SSA, a further literature search was conducted for any study that reported on the perceptions of OPs of health services in general (not just health services at PCFs) (Annex 9.1.6). Five population-based cross-sectional studies that met the inclusion criteria were identified[32, 82, 83, 170, 171] (Annex 9.1.6). One study, conducted in South Africa involving 3,840 OPs ≥50 years, which evaluated the perceived responsiveness of both private and public facilities to the OPs reported that OPs perceived private facilities to be more responsive (79%) than public facilities (65%). In the public outpatient services, a relatively high proportion of OPs thought: the quality of basic amenities was good (72%), there was confidentiality (68%), the facilities treated them with dignity/respect (67%), communication with HWs was clear (67%), and they were given autonomy (63%)[170]. However, only 54% of the OPs thought they were promptly attended to. Four studies in Botswana[171], Kenya[32, 82] and Uganda[83] reported that OPs did not seek health care from government facilities when they needed to because they perceived the quality of the services to be poor. OPs in the four studies were also reported to have said that they did not seek care because HWs have poor attitudes towards them– often disregarding them in favour of younger patients, being unkind to them and making them feel neglected at the health care facilities[27, 155-157]. In two of the studies, some of the OPs said they avoided the health facilities due to the long queues and lack of specific health care for them at the health facilities[82, 83].

Findings of the systematic review imply that there are important gaps and weaknesses in the health care available and delivered to OPs in SSA but not much is known about the specific components that need improvement. Further studies are therefore needed to understand the health care available and delivered to OPs.

1.6. Overview of Uganda

Figure 3: Map of Uganda



1.6.1. Geography and demography

Data for this study were obtained from Uganda. Figure 3 shows the map of Uganda. As at August 2012, Uganda was partitioned into 112 local government authorities also referred to as districts[172]. The decentralized system of governance adopted in 1995 devolved most functions and powers to districts, which shoulder the task of service delivery to grass roots/local communities.

With an annual population growth rate of 3.2%[173], and total fertility rate of 5.9 children per woman[174], Uganda's population has increased rapidly in the past 10 years. By mid-2012, projections by the Uganda Bureau of Statistics (UBOS) indicated that Uganda had a population of 34 million people[175], up from 24.4million in 2002[176]. The average life expectancy at birth in Uganda is only 56 years[177] – slightly lower than that in the other East African countries such as Kenya (60 years), Rwanda (60 years), and Tanzania (59 years) but substantially lower than that in developed countries such as the United Kingdom (UK) (80 years)[178].

1.6.2. Socio-economic situation

Uganda is a poor country with per capita GDP of only $579[172] – substantially lower than that of its neighbours such as Kenya, Rwanda and Tanzania[179] (Table 4). About 25% of Ugandans are estimated to live below the poverty line of one dollar a day[114]. As in most countries in SSA[114-117], the great majority (85%) of Uganda's population lives in rural areas[180], and subsistence farming is the main economic activity employing 80% of the workforce[114]. The average literacy rate in Uganda (those that can read and write) was 73.2%, lower than that of Kenya (87.4%) but similar to that of Rwanda (71.1%) and Tanzania (73.2%)[174].

1.6.3. Burden of disease in Uganda

Uganda is a high disease burden country, 75% of which are preventable (MoH pg. 5)[125]. Communicable diseases account for most (54%) of the disease burden in Uganda, with HIV/AIDS, tuberculosis, and malaria being the leading cause of morbidity and mortality (MoH pg. 13-16)[125]. For example in 2009, a diagnosis of malaria alone accounted for 40% of outpatient visits, 20% of inpatient admissions and 14% of inpatient deaths in the health facilities. With 42,000 cases per year, Uganda ranked 16th in 2009 among the tuberculosis

high burden countries in the world[181]. HIV prevalence meanwhile remains high (7%)[182], with recent evidence showing the prevalence is once again rising[183] especially among people in long term relationships who account for 43% of the new infections in the country[184]. Uganda's infant mortality rates and maternal mortality ratio[185] are similar to that of its neighbouring countries such as Kenya[186], Tanzania[187] and Rwanda[188](Table 4).

Most of those affected with disease and facing the risk of death in Uganda are the poor and powerless, with little or no cash income and mostly living in rural areas. Determinants of good health such as adequate housing, safe drinking water, adequate sanitation, access roads, nutrition and health information and education are very limited in rural areas[114, 124]. Paradoxically, this highly vulnerable group has limited access to health services. Although 72% of Ugandans live within a 5km radius of a health facility (MoH pg. 5)[125], PCF services where most seek health care are very weak, poorly funded, and with frequent stock outs of essential medicines, inadequate infrastructure, and severe shortage of qualified HWs[125]. Community-based structures like village health teams that could play important roles in health promotion and health care provision are weak, with only 31% of the districts having functional village health teams[125]. Higher-level health facilities such as hospitals where fairly good services could be obtained are mainly located in urban centres – far away from the poor and rural communities.

1.6.4. Health care financing

Despite the high disease burden in the country, Uganda government's per capita expenditure on health was only $11.2 in 2012– lower than that of Rwanda ($35.6), Tanzania ($14.7) and Kenya ($14.3) in the same year[174] (Table 4). Even though Uganda abolished official user fees in the public sector, there is high private out of pocket expenditure on health care in Uganda[174]. Such out of pocket expenditure are known to inflict an enormous economic burden on poor and vulnerable people, further impoverishing them and entrenching a cycle of poverty, ill health and death[189].

Table 4: Comparison of selected indicators across countries in East Africa

Indicators	Uganda	Kenya	Tanzania	Rwanda
Literacy rate among adults aged ≥15 years	73.2%	87.4%	73.2%	71.1%
Life expectancy at birth (years)[177, 178]	56	60	59	60
IMR/1,000 live births[185-188, 190]	54	52	51	49.8
MMR/100,000 live births[185-188, 191]	435	488	454	487
HIV Prevalence among 15-49 year olds[174]	7.2%	6.2%	5.8%	2.9%
Deaths due to HIV/100,000 population[174]	181	148	181	58
Age standardised mortality rate/100,000 population[174]				
All causes	1959	1495	1733	1174
Cancer	191	178	113	158
Cardiovascular diseases & Diabetes	421	276	341	290
Chronic obstructive airways disease	111	69	86	68
GDP per capita (USD)[172, 179]	$598	$967	$629	$682
Health care financing[174]				
Per capita government expenditure on health (USD)	$11.2	$14.3	$14.7	$35.6
Total government expenditure on health as a % of total government expenditure	10.8%	5.9%	11.1%	23.7%
Total government expenditure on health as a % of total GDP	9.5%	4.5%	7.3%	10.8%
Government expenditure on health as a % of total expenditure on health	26.3%	39.6%	39.5%	56.7%
Total out of pocket expenditure as a % of total private expenditure on health	64.8%	76.7%	52.4%	49.4%
External resources for health as a % of total expenditure on health	27%	38.8%	41.2%	46.3%

1.6.5. Health service delivery in Uganda

Health care services in Uganda are delivered by both the public sector (government) and private entities that include private-not-for-profit and private-for-profit organisations as well as complementary health service providers such as the traditional medicine providers. The public health facilities make up just about half (55%) of the total health care facilities in Uganda, with private-not-for-profit and private-for-profit making up 16% and 29%, respectively. Nearly all (90%) of the private-for-profit facilities are located in one district – Kampala district which also hosts Uganda's capital city.

Due to an insufficient training capacity and an unattractive remuneration package to retain HWs, there is severe shortage of HWs in the public health sector in Uganda[192]. In 2012 for example, only 63% of approved positions were filled[193], although up from 42% in 2009[192]. Coupled with inadequate financial resources and poor infrastructure, shortage of critical staff such as doctors, clinical officers, laboratory staff and qualified nurses has greatly compromised the delivery of quality health services.

1.6.6. Organisational structure of health services in Uganda

In the health service delivery structure, the national level stewardship functions are performed by the MoH (Table 5). In the public sector, health services are delivered through the national referral hospitals, regional referral hospitals and district health services – all reporting separately to the MoH and administratively independent of each other. The district level health service includes the general hospitals and PCFs. Under the decentralised system of governance, the district level health service is under a District Health Officer who is appointed by and accountable to the district local government.

1.6.7. The primary health care in Uganda

In Uganda, there are three levels of PCFs: level II, III and IV all focussing mainly on prevention and treatment of infectious illnesses[192] (Table 5). Level II PCF (PCF II) is the lowest level of formal health care delivery. PCF II is mostly staffed by nurse aides and qualified nurses. PCF III is the mid-level PCF and has provisions for basic laboratory services, maternity care and inpatient care (often for onward referral). PCF III is usually staffed by nurse aides, qualified nurses and clinical officers (physician assistants). Level IV PCF (PCF IV) is a high-level PCF. It is the level immediately below a district hospital and has provisions for an operating theatre, in-patient and laboratory services, and is a referral facility for 20-30 level II and III PCFs under its jurisdiction. PCF IV is staffed by nurse aides, qualified nurses, clinical officers and doctors, although the majority does not have doctors[192].

Table 5: Health service delivery structure in Uganda

Level (location)	Total (public facilities)	Total (private-not-for-profit facilities)	Total (private-for-profit facilities)	Target Population (public facilities	Function (government facilities
Village health team (village)	–	–	–	1,000	Community based preventive and promotive services.
PCF II (Parishes)	1662	496	1391	5,000	Provides preventive, promotive and outpatient curative services, and emergency maternal deliveries.
PCF III (Sub-county)	868	251	69	20,000	Provides all the above services. In addition, it provides inpatient, maternity and laboratory services.
PCF IV (County level)	166	14	8	100,000	Provides all the above services. In addition, it provides emergency surgery, blood transfusion, laboratory services and supervises PCF III and II.
General hospital (District level)	50	62	21	500, 000	District level referral facility. Provides all the above services but more comprehensive than PCF IV. In addition, it provides elective surgery and imaging services.
The district health services (District)	–	–	–	500,000	Stewardship of the district health services. Supervises all the above facilities
Regional hospitals	12	–	–	2 million	Provides all services provided by a district level general hospital. In addition, it provides specialised services.
National hospitals	3	–	–	10 million	Provides all services provided by regional hospitals but more comprehensive than regional hospital, teaching of medical students and research.
MOH	–	–	–	Entire country	Stewardship: policy formulation, setting standards, quality assurance, resource mobilization, capacity building, research coordination, monitoring & evaluation, nationally coordinated services such as epidemic control.

Source: MoH (2010; pg. 2-5)[124]

1.7. Older persons in Uganda:

1.7.1. Demographic trends:

According to the Uganda population and Housing Census (2002), the population of OPs (≥50 years) was 1,912,974 (7.8% of the total population)[194]. This population was projected to have increased marginally to 2,004,500 in 2012, but had decreased as a proportion of the total population to 5.9%[173]. The marginal increase in the population has been attributed to deaths of young adults due to HIV/AIDS as few younger adults matured into old age[195]. The population projections show that by 2020, Uganda will have slightly over 3 million OPs[175].

1.7.2. Socio-economic situation of older persons in Uganda

Most (93%) OPs in Uganda live in rural areas[196] where poverty is rife, economic opportunities are limited, ill health is common and access to health care is poor[123]. 11% of the OPs live alone and 41% are widowed[196]. The *"Uganda Participatory Poverty Assessment studies"* have singled out OPs as one of the groups worst hit by poverty and many OPs are chronically poor[197]. According to the National Household Survey 2009/2010 (pg. 138)[196] 84% of OPs were economically active, with 85% of them involved in farming, usually only for subsistence. Their economic situation is worsened by the lack of social security system, burden of illness and by the burden of looking after orphans and their children infected with HIV/AIDS[123]. Cognisant of the challenges affecting OPs, Uganda government is currently piloting, in 14 districts, the "Social Assistance Grant for Empowerment for OPs" where chronically poor OPs receive a monthly payment of about £6. The "Social Assistance Grant for Empowerment for OPs" was one of the key interventions suggested in the national policy for older persons in Uganda[123]. If successful, the target is to rollout the scheme to the rest of the country. Although this scheme helps OPs to get some cash income monthly, the money is very small to meaningfully solve the multiple problems that affect OPs.

1.7.3. Health care of OPs in Uganda

As in the rest of SSA, OPs in Uganda suffer from multiplicity of health conditions that include both communicable and non-communicable diseases. The National Household Survey 2009/2010 (pg. 49)[196] report indicated that 67% of OPs in Uganda reported ill health; up from 61% in the 2005/2006 survey (pg. 42)[198], with the proportion of OPs with disability also

increasing from 44% in 2005/06 survey (pg. 129)[198] to 65% in the 2009/10 survey (pg.138) [196]. Although Uganda is one of the countries that ratified the MIPAA declaration[121], it was only recent (in 2009) that Uganda started addressing ageing issues– following the development of the national policy for OPs by the MoGLSD[123]. The policy provides a framework for legislation and programming, as well as identifying opportunities to harness the potential of older persons. Although health care for OPs forms a key component of the national policy, the Uganda national health policy[124] and health sector strategic plan[125] (developed by the MoH in 2010) have paid no specific attention to the health care needs of the OPs. Consequently, geriatric care as a specialty is non-existent in Uganda[125] and my experience as a physician in Uganda is that OPs do not receive special attention at the health facilities.

1.8. Rationale for the study

1.8.1. Why is health care needed for older persons?

The absolute number of OPs in SSA is increasing rapidly. In 2006, there were 73 million OPs in SSA. This number has been projected to reach 93 million in 2015 and over 270 million by 2050[15]. In Uganda, the absolute number of OPs is also increasing and Uganda is projected to have over 3 million OPs by 2020[175]. While longevity is a public health triumph, OPs are particularly vulnerable to chronic NCDs and over 90% of OPs have at least one chronic NCD[16-19, 21]. Currently, little is known about the health care utilization rates among OPs in SSA but evidence from developed countries such as England and Wales shows that OPs use health care services two times more often than younger adults[199]. Therefore, owing to their increasing population and their greater need for health care, OPs require special health care. Studies aimed at improving the care of OPs are therefore urgently needed. The need to care for OPs becomes even more important because OPs in SSA play vital roles within their families and communities. For example they care for children orphaned by HIV/AIDS[123, 171, 200-208]. According to the Uganda National Household Survey (2010, pg. 138)[196] for example, about three quarters of OPs in Uganda headed households.

1.8.2. Why primary health care for older persons

Most OPs (80-94%) in SSA live in rural areas[114-117] and those with ailments are more likely to present to PCF than to hospitals because PCF are the most available source of health care for rural communities in SSA. Hospitals are often located in urban centres, and distances to them are long and public transport infrastructure is poor and relatively expensive. Studies aimed at improving services for OPs through PCFs are therefore crucially important as improvements in PCFs for OPs would enable OPs to be treated closer to their homes and reduce the cost of treatment for them and enable those with chronic illnesses, including, for example, NCDs, HIV and tuberculosis, to adhere to long-term treatment.

Chapter 2: Aim and Objectives

2.1. Aim of the study

The high-level aim of the study was to contribute to improving health care for OPs in SSA. The specific aim was to evaluate the health care available and delivered to OPs through PCFs in Uganda in order to identify any gaps and weaknesses and to suggest potential solutions.

2.2. Objectives

The specific objectives of the study were:

1) To determine whether care for the common conditions that affect OPs can be found at the PCFs in Uganda.
2) To determine the absolute and relative caseloads due to OPs.
3) To describe the common diseases diagnosed among OPs by the HWs in the PCFs.
4) To determine the knowledge of the HWs of the common ailments that affect OPs.
5) To determine the attitudes of HWs towards OPs
6) To determine the practices of HWs regarding the care of OPs at the PCFs facilities.
7) To determine how OPs were treated at the PCFs and how their treatment differed from that of younger adults aged 35-49 years.
8) To determine the perceptions of OPs of the health care they had received from the health facility and how their perceptions differed from that of younger adults (aged 35-49years).

Chapter 3: Study Methods

3.1. The scope

Broadly, this chapter describes the: pilot study, study design and setting, study population, precision estimates, sampling of participants, data collection methods and activities, and data management and analysis.

3.2. The pilot study

Background

In preparation for the main study, a pilot study was conducted between February and June 2012. The aim of the pilot study was to get preliminary data to establish whether it was likely that there were important problems in the provision of health care for OPs in PCFs in Uganda. No study had been done of this prior to the pilot study. The pilot study was also aimed at improving the questionnaire and studying the feasibility of conducting the main study. The pilot study was done in two districts in Central Uganda where Medical Research Council-Uganda has study sites. It included 30 PCFs; 15 in each district. Within each district, the PCFs were stratified by level and simple random sampling was used to select 4 PCF IVs, 7 PCF IIIs and 4 PCF IIs. Within each PCF, 2 HWs and 5 OPs (≥50 years) were randomly sampled from the listings of those present in the outpatient department of the PCF.

The first part of the study involved interviews with the HW in-charge of the PCFs (the "in-charge") to determine what health care was provided at the PCF. The second part involved interviews with HWs about their knowledge, attitudes and practices regarding the care of OPs. The last part involved exit interviews with OPs about their perception of the services they had received from the PCFs. Both quantitative and qualitative data were obtained using structured and semi-structured questions, respectively. The study received ethics approval from LSHTM, Uganda Virus Research Institute, Uganda National Council for Science and Technology, and President's office, and all study participants gave written informed consent. Data in each PCF were collected by two interviewers and took two days.

Descriptive analysis was done in STATA version 10.0 using methods that are appropriate for one-stage survey design and including sampling weights. The feasibility and acceptability of the data collection methods were assessed by:

- Feedback from the interviewers obtained in a group meeting.
- The average time that was taken to complete each questionnaire.
- Proportion of sampled individuals who agreed to participate.

Findings of the pilot study

Response rates

Twenty-seven in-charges (90% of the target of 30), 42 HWs (70% of the target of 60), and 144 OPs (96% of the target of 150) were interviewed. The main reason for not meeting the target numbers for in-charges and HWs was refusal (n=3 and 12, respectively). The reason for not meeting the target for OPs was that an insufficient number of OPs attended the PCFs on the two days when the team was in that health facility (n=6).

Interview durations

Interviews with the in-charges took 90-120 minutes and with HWs and OPs took 60-90 minutes.

Availability of services

The pilot study found important gaps and weaknesses in the availability of services and items that were enquired about. Availability differed by type of disease, with availability being high for infectious illnesses but very low for NCDs. Generally, availability decreased with decreasing level of PCF (Annex 9.2.1).

Knowledge, attitudes and practices of health workers regarding care of older persons

The pilot study also found important gaps in the knowledge, attitudes and practices of the HWs. On average, the HWs answered 61% of the questions correctly (CI: 58, 65). A relatively high proportion of HWs reported treating OPs with respect (76%), promptly attending to them (87%), ensuring their privacy (85%) and communicating with them in a manner that would enable the OPs to understand their illness and its management (85%). However, a

relatively low proportion of HWs said they involved OPs in key decisions regarding their care (56%), screened them for NCDs (27%) and targeted them for health education about diseases (22%) (Annex 9.2.2). The HWs tended to think that OPs are not at risk of HIV and are "past the age for using condoms". Consequently, a very low proportion of HWs reported targeting OPs for HIV education (12%) and offered them condoms (10%). Many HWs said OPs are deformed with a bent back, untidy, irritable, selfish, grouchy, often seeking for attention, and wanting to be attended to first. On the other hand, many also regarded OPs as "people who have special needs and who must be treated well and cared for immediately".

Older persons' perceptions of the services they received from the PCFs

A lower proportion of the OPs than the proportions reported by HWs said they were treated with respect (64%), promptly attended to (46%), communicated to in a manner that would enable them to understand their illness (45%), involved in key decisions (13%) and given privacy during medical consultations (79%). Only 31% of the OPs said they were examined by HWs and 19% said they received health education (Annex 9.2.3). The mean overall rating of the quality of services at PCFs by the OPs was 63% (Annex 9.2.4).

Conclusion and recommendations from the pilot study

The results of the pilot study implied that there were major problems with the health care OPs in Uganda received from PCF. However, the findings of the pilot study could not be generalised to the rest of the country because the number of facilities involved was small and the facilities were sampled from two districts in only one geographical zone. Due to the small numbers, the confidence intervals were wide and our power to detect a difference was low. Secondly, it was difficult to determine whether the treatment the OPs said they received from the PCFs was unique to them or the same for all patients. Based on the lessons learned from the pilot study, the the study team (the principal investigator (PI), supervisors and advisors) aimed to reduce these limitations through conducting a larger, more representative survey with greater power to look at risk/protective factors for good/poor care, and compare the way OPs are treated at PCFs and their perceptions of the services with that of younger adults (35-49 years). There were also specific recommendations to: select the districts randomly across Uganda, reduce the number of

questions so that each interview would take at most 45 minutes, adjust the questions that did not work very well, take key steps to reduce refusal rates among HWs, increase the number of days for data collection in each facility, and determine the absolute and relative caseload due to OPs from the outpatient statistics in order to determine utilization of PCFs by OPs. All these recommendations were acted upon during the main study.

3.3. Study design

The initial aim of the study was to use both qualitative and quantitative methods to evaluate the availability of services expected in the minimum health care package and factors that influence their availability for OPs (Figure 2). This was planned to involve: 1) In-depth interviews with policy makers in Uganda in order to understand the role played by the MoH in development of policies and improvement of the quality of care for OPs. 2) In-depth interviews within the health facilities with OPs who had sought health care, and in the communities with OPs who felt they needed health care but had not sought health care from the health facilities in order to understand factors at individual, family/community, and health system level that influence their health care access and utilization. 3) Focus group discussions with members of the communities in order to understand the societal and health system factors that influence the availability of health care for OPs. 4) In-depth interviews with HWs to explore their knowledge, attitudes and practices regarding the care of OPs. 5) Observational method in order to document what exactly happens when OPs interact with HWs. 6) Quantitative study using structured questions to determine what health services were provided at the PCFs, the knowledge, attitudes and practices of HWs regarding the care of OPs, and the perceptions of OPs of the services they received from the PCFs. And 7) quantitative study through review of records to assess the caseload due to OPs and the common ailments the OPs were diagnosed with. However, due to time and financial constraints, only quantitative data were collected; focussing only on the services that were expected to be in the minimum health care package and on the health system and individual level factors that influence health care for OPs (Figure 2). We plan to do the qualitative studies after the DrPH.

The study was a cross-sectional survey with four major components:

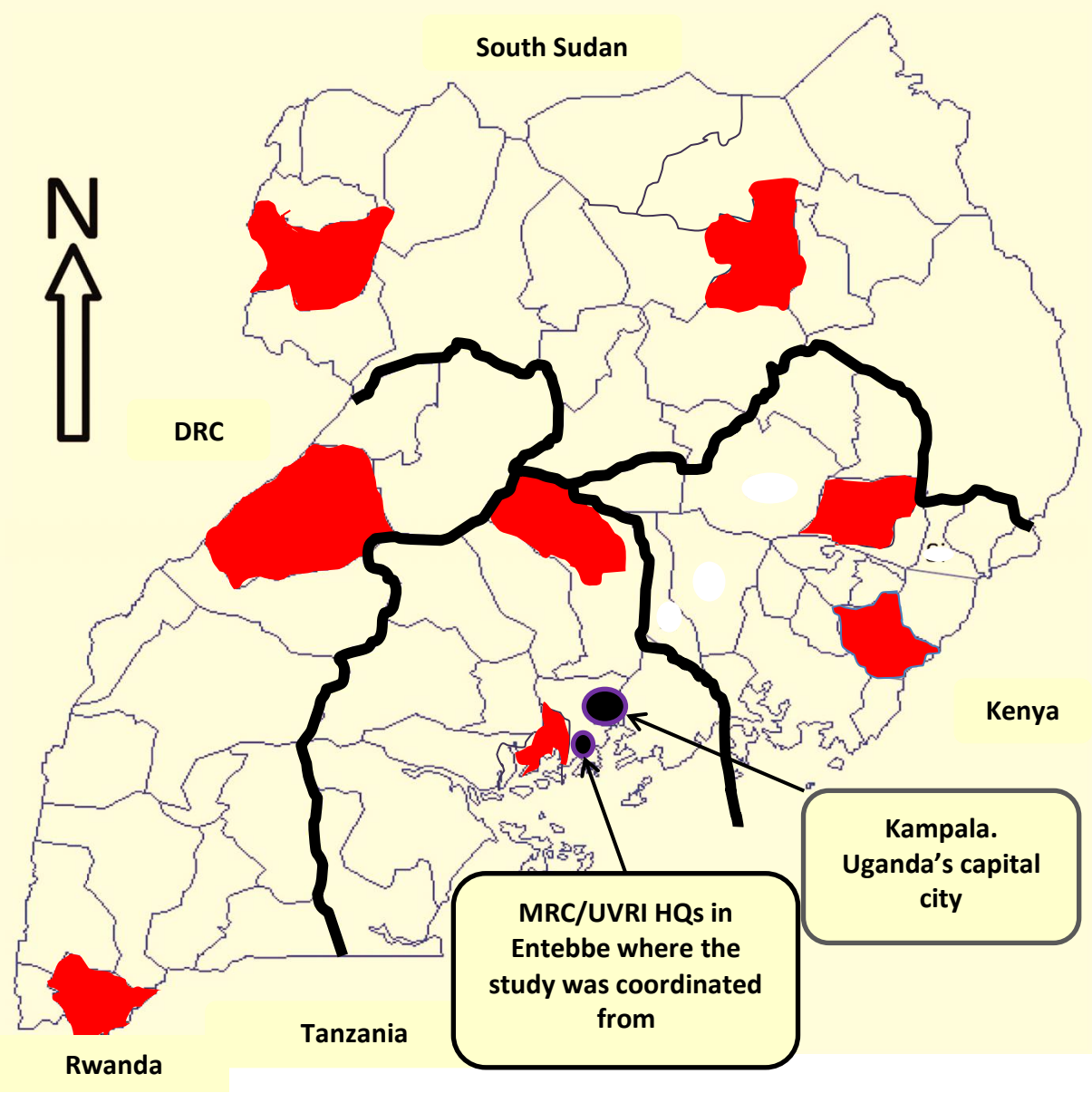
1) Structured interviews with the in-charges of the PCFs to determine what health care was provided at their facility.
2) Analysis of routine outpatient statistics to determine the absolute and relative caseloads due to OPs and the common ailments diagnosed among OPs.
3) Structured interviews with the HWs to determine their knowledge, attitudes and practices regarding caring for OPs.
4) Structured exit interviews with OPs to determine how they were treated at the PCF and their perceptions of the care they received from the facility. In order to understand whether the treatment received by OPs differed with that of other adult patients, exit interviews were also conducted with younger adults.

3.4. Study setting

The study was conducted in PCFs[3] in Uganda. The 2013 mid-year population estimates of the districts ranged from 159,800 to 801,400[172]. As in many parts of Uganda, most of the population in the study districts is poor and lives in rural areas where subsistence farming is the main economic activity. Other economic activities include small-scale trading and animal rearing. The roads within the districts are generally poor and difficult to navigate during the rainy seasons. Public transport in the rural areas is scarce and relatively expensive. Men often ride bicycles while women, often with babies on their backs and luggage on their heads, walk. As in many parts of the country, PCFs are the main source of health care in the rural areas of the districts.

[3] PCFs have been described in section 1.6.7, pages 25-25

Figure 4: Map of Uganda showing the study districts



Key: study districts are shaded

3.5. Study population

The study included 48 functional government PCFs in 8 districts across the four geographical zones of Uganda (Figure 4), 160 HWs, 256 OPs aged 50+ years, and 96 younger adults aged 35-49 years. These numbers were the maximum feasible.

3.6. Precision estimates for study samples

The precision of the point estimates depended on the sample size, the true proportion, and the design effect (DEFF)[209]. The DEFF is a measure of the effect of the multistage sampling

design on the precision, and depends on the amount of clustering in the population (measured by the intra-cluster correlation coefficient). An estimate of the DEFF was obtained using STATA svy commands. To estimate the absolute proportion of PCFs that reported availability of a specific service with the sample size of 48 PCFs, the precision for a range of true proportions and a range of design effects is shown in table 6. In the table, a precision of 14.1 for example means that we could estimate the proportion providing a particular service to ±14.1% with 95% confidence. The precision for a proportion of 60% is the same as that for 40%, for a proportion of 70% is the same as for 30% etc. Hence, if the design effect was 3 and the true proportion providing the service was 30%, the study would have a precision of 22.5, or a 95% chance of estimating it between 7.5% and 52.5%.

Table 6: Estimate of the precision for the absolute proportion of PCF providing services with sample size of 48 PCFs

	Design effect (DEFF)			
True proportion (%)	1	1.5	2	3
20	11.3	13.9	16.0	19.6
30	13.0	15.9	18.3	22.5
40	13.9	17.0	19.6	24.0
50	14.1	17.3	20.0	24.5

With a mean sample size of 3 HWs per PCF (total 160 HWs), table 7 shows the precision with which the true proportion of HWs would have mentioned a given action taken when an OP visits the PCF would be estimated, for a range of true proportions and DEFFs.

Table 7: Precision estimate for absolute proportion of health workers reporting a given knowledge, attitude or practice

	Design effect (DEFF)			
True proportion (%)	1.5	2	3	4
20	7.6	8.8	10.7	12.4
30	8.7	10.0	12.3	14.2
40	9.3	10.7	13.1	15.2
50	9.5	11.0	13.4	15.5

With a mean sample size of 5 OPs per PCF (256 OPs in total), table 8 shows the precision with which the proportion of OPs who responded positively to questions related to their

treatment and perceptions of the health services can be estimated, for a range of true proportions and design effects.

Table 8: Precision estimates for the absolute proportion of OPs responding positively to questions about health care perception, with a sample size of 256 OPs

	Design Effect (DEFF)			
Proportion (%)	1.5	2	3	4
20	6.0	6.9	8.5	9.8
30	6.9	7.9	9.7	11.2
40	7.4	8.5	10.4	12.0
50	7.5	8.7	10.6	12.3

3.7. Selection of the study participants

Study participants were selected through multistage stratified random sampling. First, Uganda was stratified into four geographical zones: Northern, Eastern, Central and Western – zones that are used in government reports. To select the PCFs, an independent 2-stage sample was then taken from each geographical zone. At the first stage, two districts were sampled from each zone and at the second stage PCFs were sampled from each district as shown in Figure 5. Within each PCF, interviewees were then sampled as described below.

Sampling of the districts and primary care facilities

In December 2012, an up-to-date list (sampling frame) of all districts with their health care facilities was obtained from the MoH in Uganda. The list consisted of 112 districts and 5,073 health care facilities. Any currently functional government PCFs were potentially eligible for inclusion in the study. A total of 136 Government PCFs that were reported by MoH to be closed, under construction or whose functional status was not reported were excluded. Hospitals and all private facilities (private-not-for-profit and private-for-profit facilities) were also excluded from the sampling frame. Private facilities were excluded because, although private-for-profit facilities formed a third (30%) of the PCFs in the country, nearly all (90%) were located in one district – Kampala district, and there were none in 89 (79%) of the districts. On the other hand, private-not-for-profit facilities made up only 15% of the PCFs in Uganda. Owing to the small number of such facilities, it would not be possible to make any meaningful conclusions about any differences that might be observed between government and private facilities.

A total of 2,560 government PCFs in 112 districts were therefore included in the sampling frame. These included 166 PCF IVs, 868 PCF IIIs and 1,526 PCF IIs. Two districts were selected from each geographical zone.

The districts were selected based on probability proportional to size; with size being the total number of eligible PCFs in the district. A total of 8 districts were selected as follows: All districts in each geographical zone were listed in geographical order together with the number of their PCFs that met the inclusion criteria. A running cumulative total of PCFs in each geographical zone was then calculated. A sampling interval was then calculated as: cumulative total /2 districts. A random number (random start) was chosen between 1 and the sampling interval. The district whose cumulative total just exceeded the random start was chosen as the first district. The sampling interval was then added to the random start, and the second district was chosen as the one whose cumulative total just exceeded this value.

Within each district, PCFs were then stratified by level (PCF IV, PCF III and PCF II) and one PCF IV, two PCF IIIs, and three PCF IIs were randomly sampled from each stratum (Annex 9.3). However one of the districts in Northern Uganda (Agago district) did not have a PCF IV. Three PCF IIIs, instead of two, were therefore selected in that district.

Sampling of health workers

In the context of the interviews with the HWs, a HW was defined as: “someone who officially (by employment, secondment or assignment) makes diagnoses and prescribes or provides treatment to patients at the facility”. (In the context of the interviews with the OPs and younger adults however, a HW was defined as: “someone who officially (by appointment, secondment or assignment) works at the facility including support staff”).

A total of six HWs in each PCF IV, four in each PCF III, and two in each PCF II were sampled. Sampling was done from a list of HWs who were present in the outpatient department of the PCF during the week of data collection, obtained from the “in-charge”. Where there were more eligible HWs than the target number, simple random sampling was done in

STATA to select the target number. Where the number of eligible HWs was equal to or less than the target number, all were sampled. Sampled HWs were then approached by the interviewers, given information about the study, and invited to participate. Interview schedules were then made with HWs who agreed to participate so that the interviews did not interfere too much with their routine activities.

No replacements were made for refusals. Instead, informed by the experiences during the pilot study where 20% of the sampled HWs refused to participate, effort was put into reducing the refusal rates. Prior to the commencement of data collection, the PI wrote letters to District Health Officers of the sampled districts, and through the District Health Officers to the in-charges of the sampled PCFs to explain the importance and dates of the study, and encouraged them to participate. At the commencement of data collection activities, interviewers paid a courtesy call to register their presence and build a rapport with the District Health Officers and the in-charges. We made sure that in-charges always introduced the interviewers to the study participants. During supervisory visits, the PI also paid a courtesy call to the District Health Officers and in-charges and further discussed the importance of the study with them.

Sampling of older persons

A total of eight OPs in each PCF IV, six in each PCF III and four in each PCF II were selected. OPs were sampled from the listings of those attending outpatient services during the days of data collection. *Firstly*, the interviewers gave a general talk about the study to all patients who were in the waiting area of the outpatient department. OPs were then asked to identify themselves and move to one side, making sure they did not lose their position in the queue. OPs who were too sick or unable to give consent for any reason were excluded by the interviewers. The number of eligible OPs was then counted and each OP was given a number on a piece of paper as an identifier. The same numbers were sent to the PI for sampling.

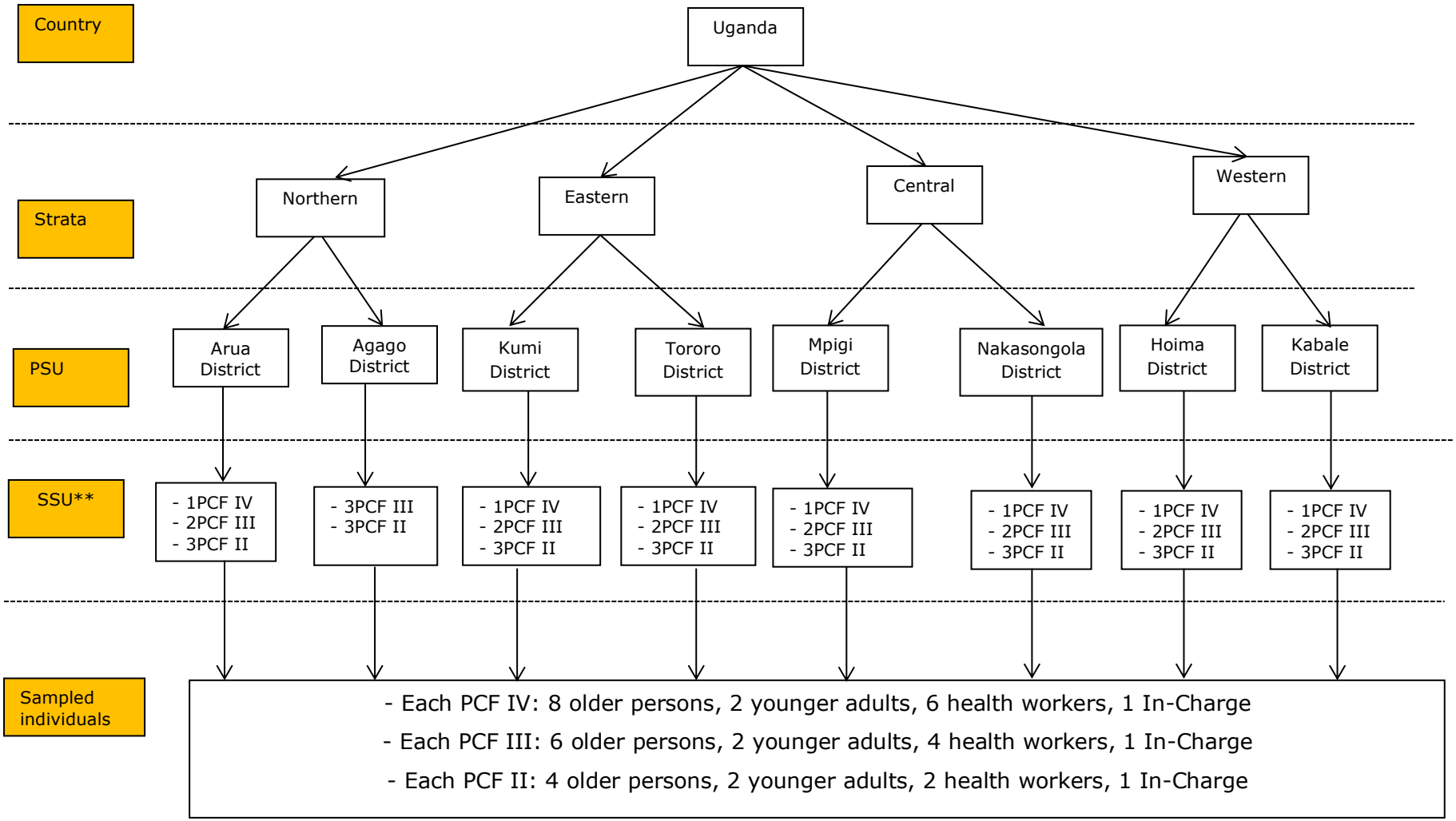
Where the number of OPs was more than the target sample, simple random sampling was done in stata to select the target sample. No replacements were made for refusals. Where the number of OPs was equal to or less than the target sample, all were sampled and those

who arrived afterwards were included in the study in order of their arrival (with no replacement for refusal) until the sample size was achieved. If the sample size was not achieved on day 1, the sampling process was repeated on the subsequent day(s). Sampling was done before OPs were seen by the HWs. In order not to bias the practices of the HWs too much, HWs were not told which patients had been sampled. All sampled OPs were interviewed on the same day.

Sampling of younger adults

In each PCF, two younger adults were sampled. Sampling was done as described for OPs.

Figure 5: Flow chart of the stratified multistage sampling



Key:
PSU = Primary Sampling Units
SSU = Secondary Sampling Units
**PCF level is also a stratum

3.8. Questionnaire development and data collection methods

General overview

A four-part tool was developed to collect data, namely: service availability questionnaire, caseload assessment form, a questionnaire for assessing the knowledge, attitudes and practices of HWs, and a questionnaire for assessing the perceptions of OPs and younger adults (Annex 9.4). The questionnaires were developed by the PI in consultation with the supervisors and advisors and based on the existing tools and issues identified during the pilot study. The specific questions included in the questionnaire were informed by the services that were expected to be in the minimum health care package for OPs and by health system and individual level factors in the conceptual framework that influence their availability (Figure 2). The questions for interviews with OPs and younger adults were translated into the local languages and back translated into English by two groups of translators. The content of the translated and back translated questionnaire were compared and necessary adjustments were made. The questions were tested during the pilot study and adjusted in the light of the experience during the pilot study. Data were collected over a two-month period from early April to early June 2013. Data collection took three days in PCF II, four days in PCF III and five days in PCF IV. All data were collected within the PCF-premises. Details of questionnaire development and data collection methods are as follows:

Availability of services

Structured interviews were conducted with the in-charges of the PCFs to determine whether their PCFs provided services that were expected to be in the minimum health care package for OPs. The structured questions (annex 9.4.1) were developed based on WHO's recommendations on "service availability and readiness assessment"[210]. The concept of "service availability and readiness assessment" was developed by WHO to assess whether a health facility meets the required conditions to support the provision of basic or specific services. Service availability refers to the physical presence of the delivery of services[210]. Service readiness meanwhile refers to the capacity of a facility to provide a particular service measured through the availability of the important basic items such as trained staff, guidelines, equipment, and diagnostic services[210]. The specific questions from the "service availability and readiness assessment" tool included in the questionnaire were informed by

literature review on what specific services were expected to be in the minimum health care package for OPs in SSA. Questions that were thought to be important, based on the literature review, but were not in the "service availability and readiness assessment" tool were also added to the questionnaire by the PI.

Data were collected on the characteristics of the PCFs and on the availability of services for: 1) NCDs (cardiovascular diseases, diabetes, cancer, mental and neuropsychiatric disorders, vision problems and hearing problems) and 2) STIs (non-HIV STI services, HIV services, HIV counseling and testing services, and life-long antiretroviral treatment services). Improvement of these services for the care of OPs was specifically recommended by the *Madrid International Plan of Action on Ageing (MIPAA)*[119, 121] and by the *Global Forum on Ageing in the 21st Century*[11] because as discussed in section 1.3, OPs are vulnerable to these health problems[17, 18, 20,24, 59-61]. Although OPs in SSA also face an increased risk of other infectious illnesses[13], availability was not assessed for the other infectious illnesses because our experience and literature available[109, 139, 151, 152, 161] indicated that services for infectious illnesses were available at the PCFs.

Data were also collected on the availability of basic items that are necessary for delivering the specific services to OPs, namely: equipment, guidelines, and drugs, staff that had received specific training to care for the diseases, laboratory services, and comfort amenities. The basic items of the equipment and laboratory services included in the questionnaire was informed by our clinical knowledge of what basic equipment and laboratory services are vital for offering the specific services to Ops in SSA. The comfort amenities included in the questionnaire meanwhile were based on WHO's recommendation on creating age-friendly physical environments for OPs[11, 92, 113]. For all these items where it was potentially feasible, the interview responses were confirmed by direct observation. Both the interview response and observation results were recorded.

Caseload due to older persons

Data for assessment of absolute and relative caseload due to OPs were obtained through transcription of health facility records onto a form (Annex 9.4.2). The form was developed based on the health management information system of the MoH in Uganda[211]. Data

transcribed were the number, age and sex of all patients who attended the PCFs. Data transcription was based on visits rather than on the number of discrete patients – with each patient-visit recorded as a new visit. Basing the analysis on the number of patient-visits was logical because each visit, whether new or a revisit, added to the amount of work done by a PCF. The age-groups used included 0-4 years, 5-14 years, 15-34 years, 35-49 years, 50-59 years, 60-79 years and 80+ years. The age-groups 0-4 years to 35-49 years are those often used by MoH for its health reports. Data for OPs are never specifically reported by the MoH. The grouping from age 50 years and above was therefore arbitrary.

Data were also transcribed on diseases OPs ≥50 years were diagnosed with and the sex and age of the OPs. Each disease diagnosis was counted separately e.g. if an OP was diagnosed with three diseases, then the number of diseases counted would be three. If the same disease was diagnosed as in the previous visit for the same patient, this duplicate diagnosis was not transcribed. Since the aim was to assess the prevalence of diseases diagnosed among OPs, disease records for patients <50 years were not transcribed. Data were transcribed separately for each month and for each outpatient clinic.

Knowledge of health workers of the common ailments that affect older persons

Structured interviews with multiple choice questions were conducted with the HWs to obtain data on their knowledge of the common ailments that affect OPs. Tools for assessing the knowledge of HWs of the common ailments affecting OPs are currently unavailable. Most studies[162, 212-215] use *Palmore's facts on ageing quiz*[164] to assess knowledge of geriatrics among HWs or nursing students. The *Palmore's facts on ageing quiz* is a validated tool that has been used in high income countries[164]. However, the tool could not be used for the current study because it focuses more on the social aspects of ageing than on the common diseases in OPs. We also could not use tools such as Alzheimer's Disease Knowledge Scale (ADKS)[216] because they focus on a specific disease. We therefore developed a 34-item tool, requiring a "true", "false" and "I don't know" answer, to assess the knowledge of HWs (Annex 9.4.3). The questions were developed from the social gerontology manual for Uganda[217] that colleagues and I developed.

Attitudes of health workers towards older persons

To assess attitudes of HWs towards OPs, structured interviews were conducted with the HWs using a 23-item tool with a 5-point Likert scale (Annex 9.4.3). Thirteen of the items expressed negative sentiments while ten expressed positive sentiments towards OPs. Some of the items were adapted from *Kogan's attitude towards older people scale* [165] and *Palmore's facts on ageing quiz*[164, 218] while others were derived from known stereotypes and feelings about OPs among HWs in Uganda obtained during the pilot study. The *Kogan's attitude towards older people scale*[165] is a validated tool that measures attitudes towards OPs and has been used by several studies in high income countries[104, 219-229]. However, quite a substantial number of the questions in the *Kogan's attitude towards older people scale* – such as those asking about "one-tenth of OPs living in nursing homes", "aged drivers causing few accidents", "population of OPs aged 65 years now being 20% of USA's population", and "poverty line as defined by US federal government"[165]– are inapplicable to Uganda because there are for example no residential homes for OPs in Uganda and very few OPs own or drive cars.

Practices of health workers regarding the care of older persons

Structured interviews with Likert-scale format questions (Annex 9.4.3) were conducted with the HWs to assess their practices regarding the care of OPs. Development of the study questions were based on WHO's recommendations on *"health system responsiveness*" [93]. As discussed in section 1.3, the concept of health system responsiveness was developed by WHO "to assess, monitor and raise awareness of how people are treated when seeking health care" [93]. The assessment of health system responsiveness is based on core domains which characterize patients' interaction with the health system, namely: dignity, prompt attention, and clarity of communication, autonomy, choice of provider and access to social support. However, "access to social support" and "choice of provider" were not assessed in the current study because assessment of access to social support is only done for inpatients[93] (but the current study was done among outpatients) while assessment of choice of provider is done in situations where there is "gatekeeping" or health insurance schemes but in Uganda there is currently no "gatekeeping" or insurance schemes in the public health services. Data were collected on how often, during the previous 12 months, the HWs:

1) Treated patients (OPs and younger adults) with dignity. The questions in this domain assessed whether HWs often welcomed patients to the facility, offered them seats, addressed or talked to them respectfully, never shouted at them, never made mean comments about them, never verbally abused or insulted the patients, asked for permission of patients before carrying out physical examination, and carried out physical examination in a respectful way.
2) Involved patients in key decisions regarding their (patients') care (autonomy). The questions in this domain assessed whether HWs often involved patients in discussions on what treatment the patients should receive and gave consideration to patients' views about their treatment and management plan.
3) Promptly attended to patients. The questions in this domain assessed whether HWs often attended to patients as soon as the patients arrived at the facility and whether, whenever possible, invited the patients to be seen ahead of the other patients even if they arrived late.
4) Ensured privacy of patients during medical consultations, and confidentiality of their medical information. The questions in this domain assessed whether HWs often attended to patients in a room where people who are not involved in their care could see or hear them with the patients, and whether the HWs often kept medical records confidential.
5) Communicated to patients in a manner that would enable the patients to understand their illness and its management. Questions in this domain assessed whether HWs often explained to patients what the patients were suffering from and what treatment the patients should receive, gave patients as much time as the patients would desire to explain their illness, took as much time as was necessary to explain to patients their illness, and allowed or encouraged patients to ask questions about their illness.

Two additional domains were included by the PI to assess practices of HW related to providing health education to patients and routinely screening patients for diseases. In the domain of health education and promotion, the questions assessed whether HWs often specifically targeted patients for health education and promotion activities about NCDs, STIs such as HIV, and elder abuse. In the domain of routine screening for diseases, the questions

assessed whether HWs often examined patients, specifically encouraged patients to go for HIV counselling and testing, examined them for signs of abuse whenever they suspected this, and screened them for NCDs and their risk factors.

Assessment of what older persons said about their treatment and their perceptions of the services

Assessment of the treatment the OPs and younger adults said they received from the PCFs was done as a proxy assessment of HW-practices. Data were collected through exit interviews with the OPs and younger adults using structured questions (Annex 9.4.4). As was the case with the practices of HWs, the questions for the interviews with OPs were developed based on WHO's recommendations on health system responsiveness[93]. The same domains used to assess the practices of HWs were also used to assess the perspectives of the patients about their treatment. While the questions used for interviews with HWs assessed how often the HWs provided services to the patients; the questions used for interviews with the patients assessed how often the patients received the specific services. One additional domain on the cost of treatment was included in the questionnaire to assess if patients incurred financial costs through official or unofficial (under-the-table) payment to HWs.

To assess the perceptions of the patients of the services they received from the PCFs, patients were asked to rate as "very poor", "poor", "neither-poor-nor-good", "good", or "very good" their treatment related to dignity, prompt attention, autonomy, privacy and confidentiality, communication, and disease screening. Patients were also asked to give an overall rating for all the services they had received from the PCFs including the way they were treated by any member of the staff.

3.9. Recruitment and training of interviewers

After sampling of the districts, an internal advert for positions for field interviewers was put within MRC/UVRI in the second week of March 2013. Uganda is ethnically diverse, with each district in most cases having its own local language or dialect. Even though English is the official language, a relatively small proportion of the population speaks it. Therefore, in order to address language barrier, proficiency in English and in the local language of the

sampled districts were key requirements. Applicants also needed to have 1) a minimum of diploma in a medical field, social sciences, or humanities, 2) good communication skills, and 3) previous experience in data collection. 17 out of 21 applicants were shortlisted and interviewed. The interview panel comprised the PI, and two other senior staff of MRC/UVRI. Eight interviewers were recruited, one for each district.

The initial aim was to have each interviewer collect data from his/her district of origin but this would introduce an interviewer bias[230]. A decision was taken by the study team to pair up the interviewers so that each interviewer collected data from two districts; with the interviewer who did not speak the local language of that district only interviewing participants who were able to speak English. Data collection was therefore done in two phases; with phase one covering four districts and phase two covering the remaining four districts.

The interviewers were trained by the PI for seven days on questionnaire content and data collection methods. An interview guide developed by the PI was used for the training. The goal of the training was to enable the interviewers to correctly obtain data. The major areas covered during the training were:

- Information about the study (purpose and importance).
- Key steps required to obtain informed consent.
- Key steps required to select the study participants.
- How to correctly conduct the interviews e.g.:
  - How to correctly ask each of the questions in the questionnaire.
  - How to probe for appropriate response.
  - How to correctly record the answers.
  - How interviewers should conduct themselves during interviews.

The main methods used for the training included lectures, brainstorming, and practical (e.g. participants practiced the process of obtaining informed consent, they interviewed each other, and received feedback on their performance from fellow participants and the PI). Generally, by the end of the training, the interviewers were able to:

- Explain the key terms used in the study.

- Explain the purpose and importance of the study.
- Explain and follow the key steps required to obtain informed consent.
- Explain the criteria and correctly follow the process of sampling study participants.
- Correctly ask each of the questions in the questionnaires, probe for appropriate responses and correctly record the answers.

3.10. Remuneration of interviewers

In addition to their salary, the interviewers were given money for accommodation, meals transport and airtime. During data collection therefore, interviewers got accommodation closer to the PCF until data collection or days of data collection in that PCF were completed. The interviewers used the airtime given to them to contact the PI on issues that were not clear to them.

3.11. Coordination and Supervision of data collection

Coordination and supervision of data collection was done by the PI who was often hundreds of kilometres away from the field sites. Contact with the interviewers was maintained through telephone calls. Supervisory visits to each district lasting two days were made by the PI to directly observe the data collection activities. The PI was supervised by Prof. David Ross (LSHTM) and co-supervised by Prof. Janet Seeley (MRC/UVRI and University of East Anglia). Prof Ross also made a 3-day supervisory visit to Uganda. During his visit he, together with Prof. Janet Seeley and the PI, visited one of the study sites (in Mpigi district) to directly observe the data collection activities. Both Prof. Ross and Prof. Seeley were happy with the way data were being collected.

3.12. Ethical issues

Ethics approvals

The study received ethics approvals from LSHTM, Uganda Virus Research Institute, Uganda National Council for Science and Technology, the President's office, and MoH.

Obtaining informed consent

All study participants gave written informed consent before interviews. Obtaining informed consent was the sole responsibility of the interviewers. Before obtaining a written informed

consent, the interviewers gave study participants a general talk about the purpose of the study and importance of the participants taking part in the study if selected. Questions participants had were answered by the interviewers or the answers were sought by the interviewers from the PI. Sampled study participants were then given an information sheet to read in the language the participants said they read and understood very well. For participants who could not read, the information sheet was read and explained to them by the interviewers. The major areas covered in the information sheet included:

- ***Information about the study*** i.e. what the study was about, why the study was important, who the people doing the study were, what the relevance of the study to the participant and others was, who the people to be interviewed were, and why it was important for participants to take part in the study.
- ***Information about confidentiality*** i.e. that, the information participants gave would only be accessed or known by people who were directly involved in the study; that no one would know about the time, date, and place of interview ; that the participant's name would not be written anywhere; and that no one would know who gave the responses.
- ***Information about their right to refuse to participate*** i.e. that participation was voluntary. That even if they consented to participate in the study, they could decide to withdraw anytime they felt like. That no one would be told that they had withdrawn from the study and they would not suffer any consequences.

Participants who agreed to participate after reading the information sheet where then given consent forms to read and sign. The consent form was read and explained to those who did not know how to read. Participants consented by putting their signature or thumb print on two copies of the consent form. One copy of the consent form, together with the information sheet, was given to the study participant to keep while the interviewers retained the other copy.

Ethical considerations in interviewing older persons

The interviews will have increased the expectations of OPs of better services at the PCFs. However the questions used during the interviews were not sensitive to detecting OPs who might have wanted or needed services that they didn't receive from the PCFs, and to

detecting bad behaviour of HWs with regard to caring for OPs. The interviewers were also not trained to identify OPs who were in need of services that they didn't get from the PCFs and detect maltreatment of OPs by HWs. Because the aim of this study is to contribute to improvements in the care of OPs, the candidate will publish the findings of the study in international journals to draw the attention of the scientific community and civil society organisations to the gaps /weaknesses in the care of OPs. The candidate will also develop a policy brief intended for officials in the MoH, MoGLSD, and the parliamentary committee on disability and social protection to draw their attention to the gaps/weaknesses. The district and health facilities that participated in the study will receive comprehensive written feedback on the strengths and weaknesses/gaps in the care that OPs received from their facilities. The feedback will succinctly point out areas of focus for quality improvement and how such improvement can be achieved. The candidate has already started writing the articles for publication and the feedback to the districts and health facilities.

Before the start of this study, the candidate held separate meetings about the study with the Minister for Health, Director General of Health Services, Commissioner for Clinical Services and Assistant Commissioner in charge of NCD control in the MoH, and with the Director of Social Protection in the MoGLSD. All these individuals gave their support for the study and were keen to receive the report and act on its recommendations. The MoH also gave a written approval for the study. The candidate will therefore hold a follow-up meeting with these individuals to share the findings and recommendations of the study with them and ask them about what they think is the best way forward. If these informal talks do not give an assurance that the care of OPs will improve, the candidate will mobilise and build a coalition of groups who want to bring change in the care of OPs and push for such change using the various strategies for setting a policy agenda. This will involve a policy-level analysis to identify the sources and reasons of resistance and development of appropriate strategies to counter them.

As discussed in section 1.5.2, the lack of central role played by the MoH in developing policies for OPs is one of the most important factors contributing to the major gaps and weaknesses in the care OPs in Uganda. The candidate will therefore make a key recommendation for the MoH to play a central role in development of policies for OPs.

Such a recommendation may however be resisted by both ministries. The MoGLSD may resist the recommendation because they currently receive all the funds for the care of OPs and may not want to let go of these funds. MoH on the other hand may resist the recommendation on the ground that they do not have the funds to care for OPs. Strategies outlined above will be used to get buy-in from both Ministries.

It is however likely that the MoH will not resist the recommendations on the specific components of the services in the minimum health care package for OPs that should be improved as the adjustments required are minimal and can be done with little or no additional cost. Similarly, the change expected at the district and facility level will be minimal and less disruptive than the change expected at the Ministry level as it will mainly require HWs to improve their attitudes and practices regarding the care of OPs. We therefore do not anticipate much resistance from the districts and health facilities. Indeed, some HWs may use the excuse of the high caseload at the facilities to resist change. We are planning further studies to develop and evaluate simple tools that will enable the HWs to quickly screen OPs for the common ailments associated with ageing and provide them with appropriate care.

3.13. Funding

Funding for the study was received from WHO.

3.14. Data management

Questionnaires from the field were sent weekly to the PI through courier services operated by the public bus companies. Upon arrival, the questionnaires were manually checked by the PI for completeness and erroneous inputs such as typos, missing data, inconsistency and out of range entries. Where it was possible, the PI contacted the interviewers or the study participants (especially the HWs) to correct any errors; otherwise the data with errors were treated as missing data. The already checked questionnaires were then handed over to a Senior Data Manager in the statistics department of MRC/UVRI for data entry. A database was created and maintained in MS-ACCESS by the Senior Data Manager. All completed questionnaires were coded and double-entered into the database and kept under the same security arrangements of MRC/UVRI. Data entry was done by the Data Entry Officers and

supervised by the Senior Data Manager. Once entered, data were checked in STATA 11.0 for missing, inconsistent, out-of-range, and erroneous entries such as typos[231]. Where it was possible, the errors were corrected as described above; otherwise data with erroneous entries were treated as missing data.

3.15. The role of the candidate

With guidance from the supervisors and advisors, the candidate conceived and designed the study, wrote a grant proposal to fund the study, obtained approvals for the study, and held meetings with key officials from MoH and MoGLSD about the study. The candidate designed the questionnaires, questionnaire guides and the interviewer training manual, and recruited and trained the interviewers. In addition to supervising and coordinating the process of data collection, the candidate also interviewed study participants. Conducting interviews helped the candidate to compare responses he obtained with responses obtained by the other interviewers and address any deficiencies revealed by this analysis. Lastly, the candidate, cleaned data, conducted the analyses and wrote the study report and this thesis.

3.16. Data analysis

General overview

All analysis were carried out in STATA version 11.0 using methods that are appropriate for complex multistage surveys; adjusting for stratum (geographical zone and PCF level), and taking into account clustering at the district and PCF level. Sampling weights were applied to reflect the probability of selection at each stage of the sampling design. The Stata commands for survey data were used for all analyses. A detailed statistical analysis plan was developed before data analysis began.

Categorical variables were summarised as frequencies, proportions and 95% confidence intervals. Continuous variables were summarised by the mean and 95% confidence interval if normally distributed or median (IQR) if the distribution was skewed. Answers which were reported by the participant as "don't know" were summarised with n (%), but then treated as missing data for modelling purposes. Where categorical variables had some categories with low frequency, categories were combined for analysis where appropriate.

For each outcome of interest, associations with characteristics of the PCFs and of the study participants were investigated. In the initial unadjusted analysis, proportions were compared using design-corrected Chi-squared tests and means were compared using F-tests. Multivariable logistic (for binary outcomes) or linear (for continuous outcomes) regression models were used to examine associations with factors of interest, adjusting for potential confounders. PCF level, PFC location (urban/rural) and geographical zone were considered a priori confounders and adjusted for in all multivariable models.

For the multivariable analyses of knowledge, attitudes and practices of HW, and of OP perceptions and treatment, we applied a conceptual framework approach to evaluate the association of proximate determinants of the outcome, adjusted for more distal factors. This approach involves building a conceptual framework with explanatory variables assigned to several hierarchical levels. A general description of the modelling process is as follows: Variables at the most distal level (e.g. PCF characteristics) were assessed first; those that were associated with the outcome at $p<0.10$ were included in a multivariable regression

model and retained if they remained associated at p<0.10. Then, variables at the second level (less distal) were added to the model one by one and retained if they remained associated at p<0.10, after adjusting for more distal characteristics. Associations with variables at more proximate levels of the framework were determined in a similar way. This strategy allowed us to assess the effects of variables at each level of the framework, adjusted for more distal variables. A final model was obtained by excluding variables one at a time until all remaining variables were associated at p<0.10. For completeness, each of the omitted covariates were added to the final model to check that there were no other effects which were previously missed due to negative confounding (retaining those with p<0.10).

Analysis of availability of services

The main outcome was the proportion of PCFs that had all the services we enquired about. The proportion of PCFs with each of the services and items that are necessary for delivering the services was also reported.

Caseload due to older persons

The absolute number of visits made by OPs aged 50+ years (absolute caseload) and as a proportion of visits made by all patients (relative caseload) was calculated overall, and stratified by age-group, sex, PCF level, PCF location, and special clinics. PCF attendance per year of age was calculated by dividing the total number of attendances within an age range by the number of years of age in that range.

The prevalence of each disease diagnosis among OPs was determined. Based on the categories used in the global burden of disease report (WHO 2004 pg. 60-64)[16], diseases were then grouped into three broad categories, namely: “infectious illnesses”, “NCDs”, and “injuries”. The prevalence of each disease category was then calculated.

Attitudes of health workers

To assess the attitudes of HWs towards OPs, the proportion of HWs with negative, neutral, and positive attitudes was calculated and factors associated with the mean scores were examined. The proportions were calculated as follows: First, scores were coded from 1-5, with the highest score “5” representing positive attitudes and the lowest score “1”

representing negative attitudes. For the 23 questions, the highest potential score a participant could achieve was 115 points (i.e. 23x5) and the lowest was 23 points (i.e. 23x1). A participant who consistently scored at least 4 points on each question was classified as having positive attitudes towards OPs (i.e. at least 4 x 23 = 92 points). A participant who consistently scored no more than 2 points on each question was classified as having negative attitudes (i.e. 2 x 23 = 46 points). A participant who scored between 2 and 4 points on each question was classified as having neutral attitudes. The proportion of HWs with negative, neutral and positive attitudes was reported overall together with the 95% CI. Nearly all (97%) of the HWs were found to have neutral attitudes, with only 2% having positive attitudes; therefore the number was too small to justify examining the predictors of a positive attitude. Instead, the association of factors with the mean overall attitude score was examined using linear regression.

Knowledge of health workers

To assess the knowledge of HWs of the common ailments affecting OPs, the proportion of HWs with poor, satisfactory, and good knowledge was calculated and factors associated with the mean overall score were examined. 1 point was awarded to each correct answer and 0 point to each wrong or "I don't know" answer. For the 34 questions, the highest potential score a participant could achieve was 34 and lowest was 0. Due to the lack of a standardised tool that could be used to meet our study objective, classification of knowledge into "poor", "satisfactory" and "good" was based on the guidance provided by six senior medical officials in Uganda who were asked to independently set the cut-off points based on their perceived clarity of the questions and how easy they thought the questions were to answer. All the six thought the questions were easy and consequently set the cutoffs for an acceptable score quite high (Table 9). Therefore, using the cut-off points as a guide, we classified a participant who scored 0-24 points as having poor knowledge, 25-29 points as having satisfactory knowledge, and 30-34 points as having good knowledge. The proportion of HWs with poor, satisfactory and good knowledge was calculated. The association of factors with the mean overall score was examined using linear regression.

Table 9: How senior medical officials would classify knowledge as poor, satisfactory and good had they adminstered the questions themselves

	Poor	Satisfactory	Good
MRC/UVRI staff 1	<60%	60-80%	>80%
MRC/UVRI staff 2	<70%	70-80%	>80%
MRC/UVRI staff 3	<75%	75-90%	>90%
Tutor Nurses' training school	<50	50-75	>75
Lecturer Makerere University medical school	<80	80-90	>90
District Health Officer (supervisor of PCFs)	<60	60-75	>75
Average scores	**<65.8%**		**>81.7%**

Practices of health workers

To assess HW practices related to the care of OPs, the proportion of HWs with bad, neither-bad-nor-good, and good practices was calculated and factors associated with the mean overall score were examined. Scores for each response were coded from 1-4, with the highest score (4) representing a good practice and lowest score (1) representing a bad practice. The highest potential achievable score for the 33 questions was 132 points (4x33) and lowest was 33 points (1x33). A HW who consistently scored at least 3 points for each question (or at least 99 points (3x33) for all the questions) was classified as having good practices. A HW who consistently scored no more than 2 points for each question (or at most 66 points (2x33) for all the questions) was classified as having bad practices. A HW was classified as having neither-bad-nor-good practice if his/her overall score was between 66 and 99 points. The proportion of HWs with good, neither-bad-nor-good, and bad practices regarding the care of younger adults aged 35-49 years, OPs aged 50-59 years and OPs aged 60+ years was calculated overall and then by the core domains. A paired analysis was carried out to examine the differences in overall practice score comparing the treatment of younger adults, OPs aged 50-59 years and OPs aged 60+ years. Linear regression was used to examine the association of factors with the mean overall score of practices related to the care of OPs aged 50-59 years and OPs aged ≥60 years. However, because the association of factors with the mean overall score of practices related to the care of OPs 50-59 years (Annex 9.7) was similar to that of OPs ≥60 years, only the results for OPs ≥60 years was shown.

How older persons and younger adults were treated at the primary care facilities

First, the proportion of OPs and younger adults that received poor, neither-poor-nor-good, and good treatment was calculated. Analysis was similar to the analysis of HW practices (section 3.15.6). For the 41 questions, the highest potential score a participant could achieve was 164 points (4x41) and the lowest was 41 points (1x41). A score from 41-82 was classified as poor treatment, 83-122 as neither-bad-nor-good treatment, and 123-164 as good treatment. The proportion of OPs and younger adults that received poor, neither-poor-nor-good, and good treatment was calculated overall, and then by the core domains. Linear regression was used to examine whether the mean treatment score for OPs differed from the score for younger adults. The association of factors with the mean overall score for OPs was examined in a linear regression.

Perceptions of older persons and younger adults of the care they received from the primary care facilities

To assess the perceptions of the OPs and younger adults, the proportions of OPs with poor, neither-poor-nor-good and good perceptions was calculated and factors associated with the perceptions of OPs was examined. Analysis was similar to the analysis of HW attitudes (section 3.15.4). For the 7 questions, the total potential score a participant could achieve was 35 points and the lowest was 7 points. A score from 7-14 points was classified as poor, 15-27 as neither-poor-nor-good, and 28-35 as good perceptions. The proportion with poor, neither-poor-nor-good, and good perceptions was calculated overall, and then stratified by PCF level, urban/rural location, and geographical zone. The mean score for each domain was calculated to examine the variations in the perceptions by the domain. Linear regression was used to examine whether the mean perception score for OPs differed from the score for younger adults. The association of factors with the mean overall score for OPs was examined using linear regression.

Chapter 4: Results

4.1. Description of the primary care facilities

We aimed to survey 48 PCFs across 8 districts, two in each of the four geographical zones of Uganda (Northern, Eastern, Central and Western). This was achieved during the survey.

Table 10 describes the characteristics of the PCFs. Half (50%) of the PCFs surveyed were PCF IIs. The great majority of the PCFs (88%) were located in rural areas and of these, 4 (10%) were PCF IVs, 16 (38%) were PCF IIIs, and 22 (52%) were PCF IIs.

Table 10: Characteristics of the primary care facilities

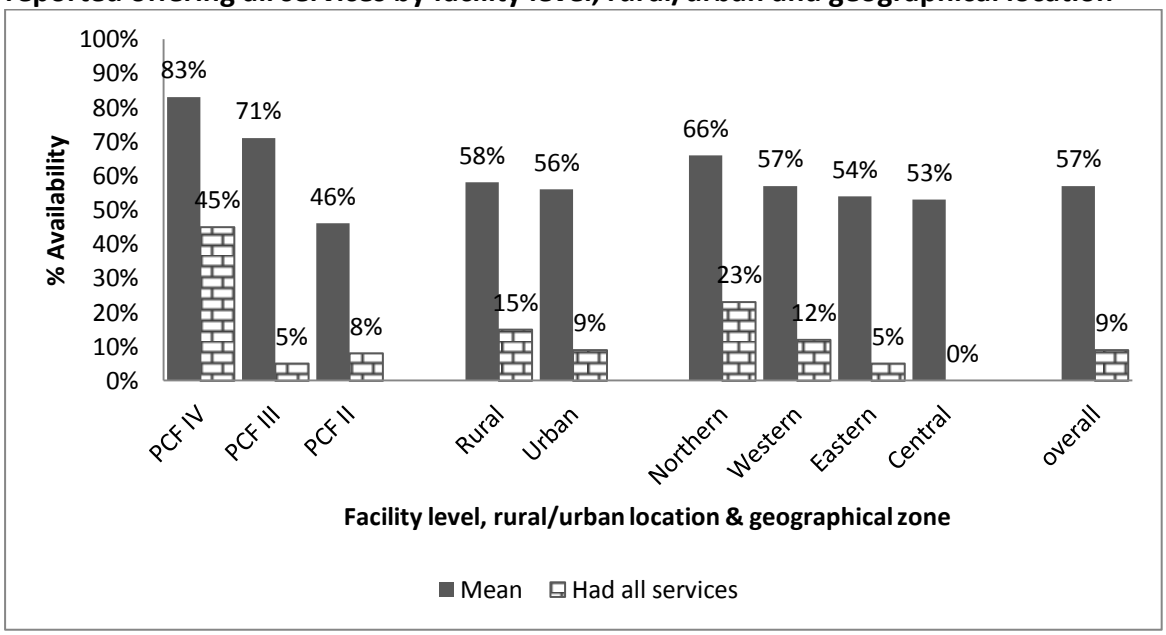
	Unweighted N[1]	Unweighted %[1]
Total number surveyed	**48**	**100%**
PCFs by level[2]		
PCF IV (higher-level PCF)	7	15%
PCF III (mid-level PCF)	17	35%
PCF II (lower-level PCF)	24	50%
PCFs by geographical zones		
Northern Uganda	12	25%
Eastern Uganda	12	25%
Central Uganda	12	25%
Western Uganda	12	25%
PCFs by location		
Urban	6	13%
Rural	42	88%
PCFs by type of service		
Outpatient only	27	56%
Both outpatient and inpatient	21	44%

[1]The figures are unadjusted for the survey design. [2]PCFs have been described in chapter 1 section 1.4.7, page 20

4.2. Availability of services

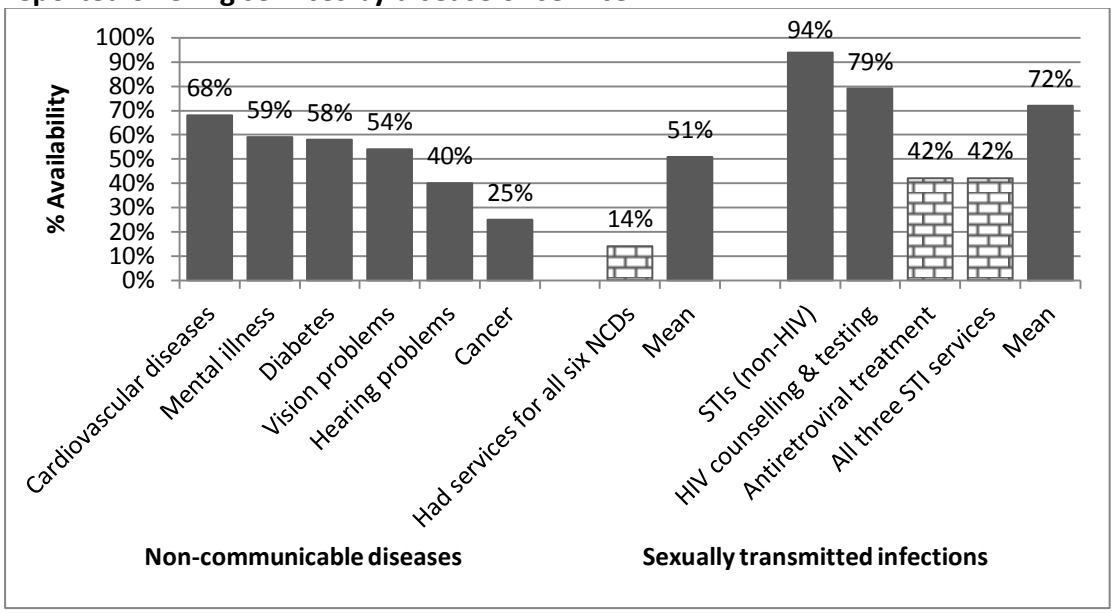
General overview

Figure 6: Mean percentage of services offered and the proportion of facilities that reported offering all services by facility level, rural/urban and geographical location



None of the facilities surveyed reported offering special geriatric care (Table 11). Of the nine specific services that were expected to be in the minimum health care package for OPs in Uganda and that were enquired about, only one in ten PCFs (9%; 95%CI: 4%, 21%) reported that they offered all of them (Figure 6), with the proportion that reported offering all the nine services being higher at PCF IV (45%; 95%CI: 16, 77) than at PCF III (5%; 95%CI: 1, 28) and PCF II (8%: 95%CI: 2, 27). This difference was statistically significant (p=0.03). There were no statistically significant differences in the proportion that reported offering all the nine services by rural/urban location (p=0.54) and geographical zone (p=0.20) (Annex 9.5.1). Overall, the PCFs offered on average 57% or five of the nine specific services that were enquired about (95%CI: 49%, 66%), with the mean decreasing with decreasing PCF level (Figure 6). This trend was statistically significant (coefficient for linear trend: –22; 95%CI: –32, –11; p-trend<0.001). Differences in the mean of services offered by urban/rural location and geographical zone were not statistically significant (p-values: 0.90 and 0.66, respectively). Generally, a higher proportion of PCFs reported offering services for STIs than for NCDs (Figure 7). Even within the specific disease domains, the proportion of facilities that reported offering services varied by the type of disease or service.

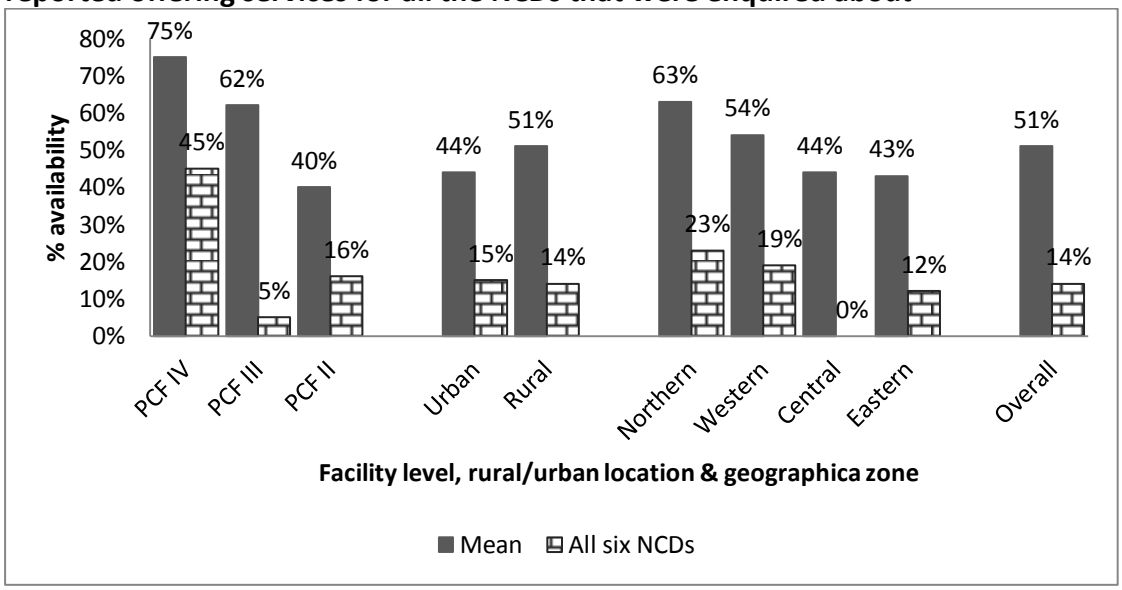
Figure 7: Mean percentage of services offered and the proportion of facilities that reported offering services by disease or service



Services for non-communicable diseases

Overall, only 14% (95%CI: 7%, 25%) of the PCFs reported offering services for all six NCDs that were enquired about, with the proportion being higher at PCF IV (45%; 95%CI: 16%, 77%) than at PCF III (5%; 95%CI: 1%, 28%) and PCF II (16%: 95%CI: 7%, 33%) (Figure 8). This difference was of borderline statistical significance (p=0.06) and there were no significant differences by urban/rural location (p=0.93) and geographical zone (p=0.29).

Figure 8: The mean percentage of services offered and the proportion of facilities that reported offering services for all the NCDs that were enquired about



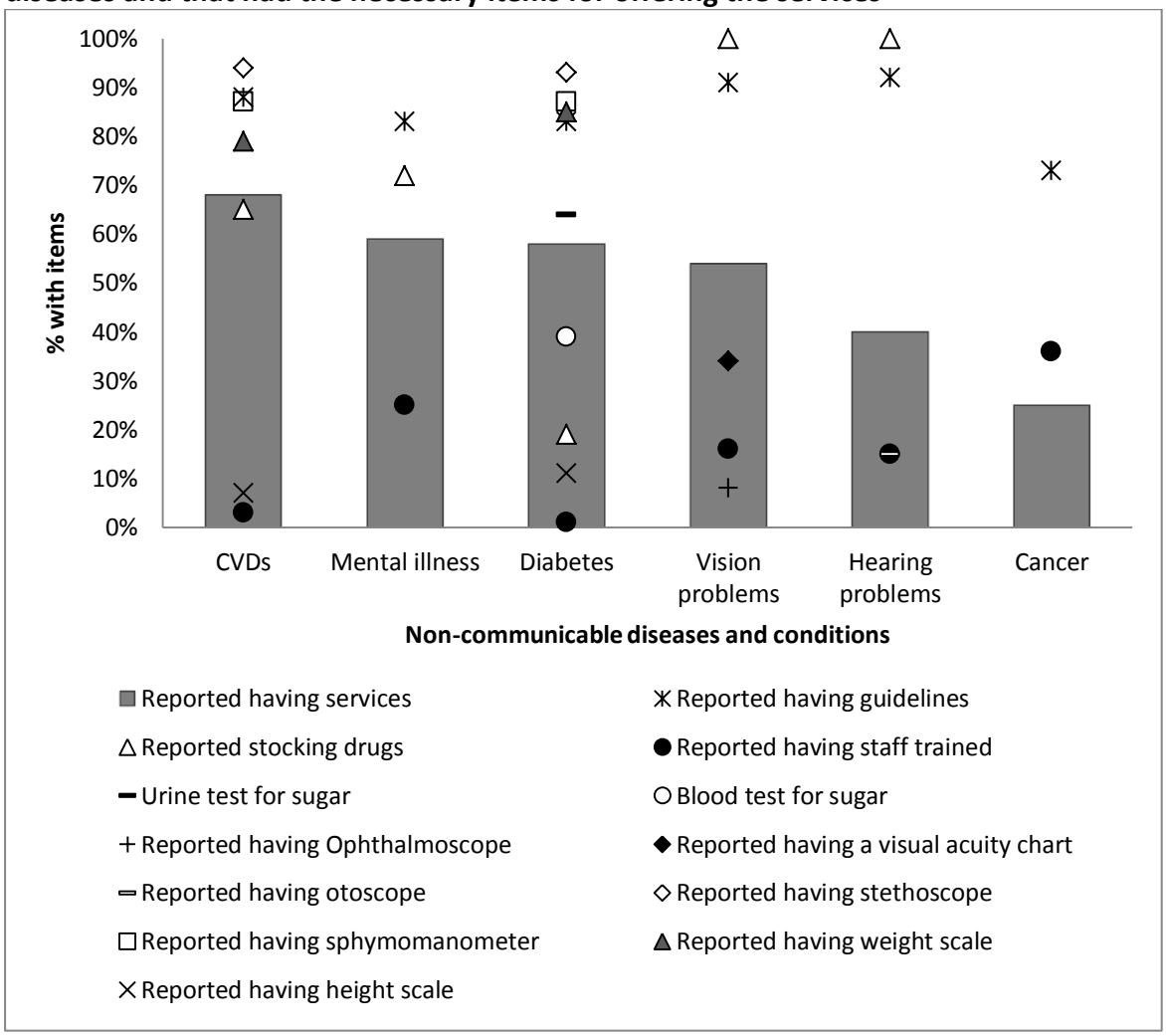
On average, the PCFs reported offering services for only three of the six NCDs (mean: 51% 95%CI: 41%, 60%), with the mean decreasing with decreasing PCF level (Figure 8). This trend was statistically significant (Coefficient for linear trend: –20; 95%CI: –33, –6; p-trend=0.01). There were no statistically significant differences in the mean by rural/urban location (p=0.68) and geographical zone (p=0.40).

As shown on figure 7, the availability of services differed by the type of NCD, with the proportion of PCFs that reported availability being highest for cardiovascular diseases (68%: 95%CI: 53%, 80%) and lowest for cancer (25%; 95%CI: 16%, 37%). Generally, the proportion of facilities that reported offering services for each NCD was highest in PCF IV and lowest in PCF II (Table 11). However, statistically significant differences were observed only for cardiovascular diseases (p<0.001), diabetes (p=0.01), and mental illness (p=0.01); with the odds of reporting the availability decreasing with decreasing PCF level for diabetes (OR for linear trend=0.22; 95%CI: 0.1, 0.7; p-trend=0.01) and mental illness (OR: 0.19, 95%CI: 0.1, 0.6, p-trend=0.01). The rural/urban differences in the proportion of facilities that reported offering services for each NCD were not statistically significant. Statistically significant geographical differences were only observed for cancer (p=0.04) and hearing problems (p=0.04) (Annex 9.5.1).

Availability of basic items for offering services for non-communicable diseases

Generally, the great majority of the facilities that reported offering services for each NCD also reported having guidelines and drugs (Figure 9), and in most facilities these items were seen by the study team (Table 11). In contrast however, the facilities generally lacked equipment and staff that had received specific training to care for the NCDs. The availability was particularly low for equipment for offering services for vision and hearing problems.

Figure 9: Percentage of facilities that reported offering services for non-communicable diseases and that had the necessary items for offering the services



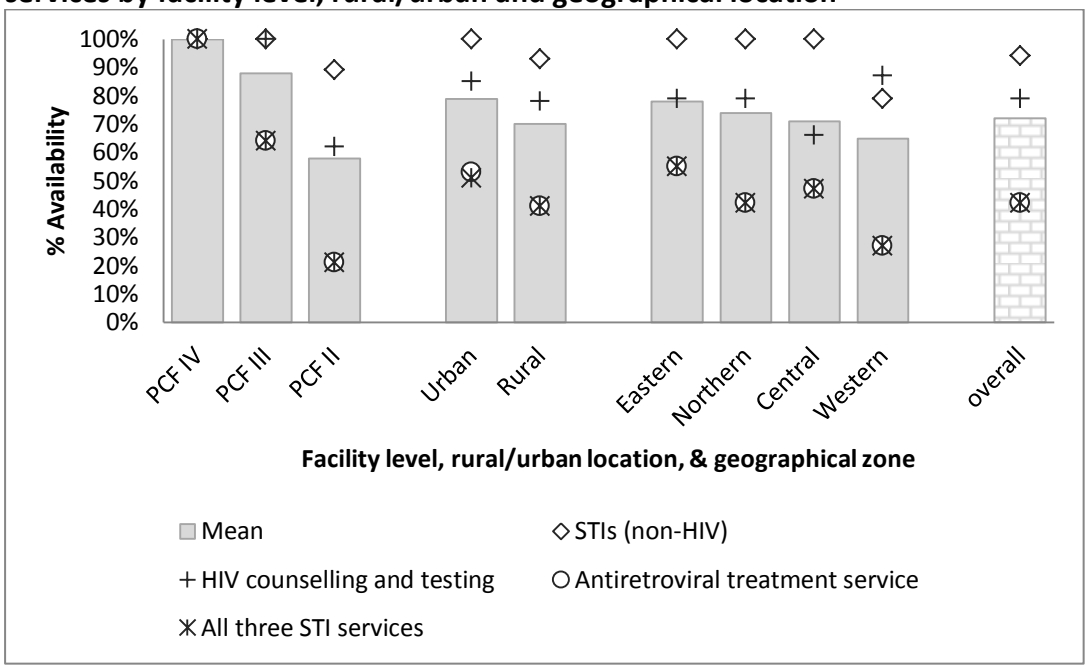
Services for sexually transmitted infections

As shown on figure 7 and 10, only 42% of the PCFs (95%CI: 29, 57) reported that they offered all the three STI services that were enquired about, with the proportion decreasing with decreasing PCF level. This trend was statistically significant (OR for linear trend=0.13; 95%CI: 0.04, 0.4; p-trend<0.001). Urban/rural and geographical differences were however not statistically significant (p-values: 0.59 and 0.49, respectively) (Annex 9.5.1).

On average, the PCFs offered two of the three STI services (mean: 71%; 95%CI: 62%, 81%), with the mean decreasing with decreasing PCF level (Figure 10). This trend was statistically significant (Coefficient for linear trend: –26; 95%CI: –37%, –15%; p-trend<0.001). Rural/urban and geographical differences in the mean of STI services offered were not statistically significant (p-values 0.42 and 0.79, respectively) (Annex 9.5.1).

The proportion of facilities that reported offering services for STIs differed by the type of service, with the proportion being highest for non-HIV STIs (94%: 95%CI: 77%, 98%) and lowest for life-long antiretroviral treatment services (42%: 95%CI: 29%, 57%) (Figure 10). Statistically significant differences by facility level were observed for HIV counselling and testing (p=0.03) and life-long antiretroviral treatment services (p=0.001) (Table 11). For life-long antiretroviral treatment services, the odds of reporting availability decreased with decreasing PCF level (OR for linear trend: 0.13; 95%CI: 0.04, 0.43; p-trend=0.001). As has been the case with most services, rural/urban and geographical differences in proportion of facilities reporting availability of STI services were not significant (Annex 9.5.1).

Figure 10: The mean of services and the proportion of facilities that reported offering STI services by facility level, rural/urban and geographical location

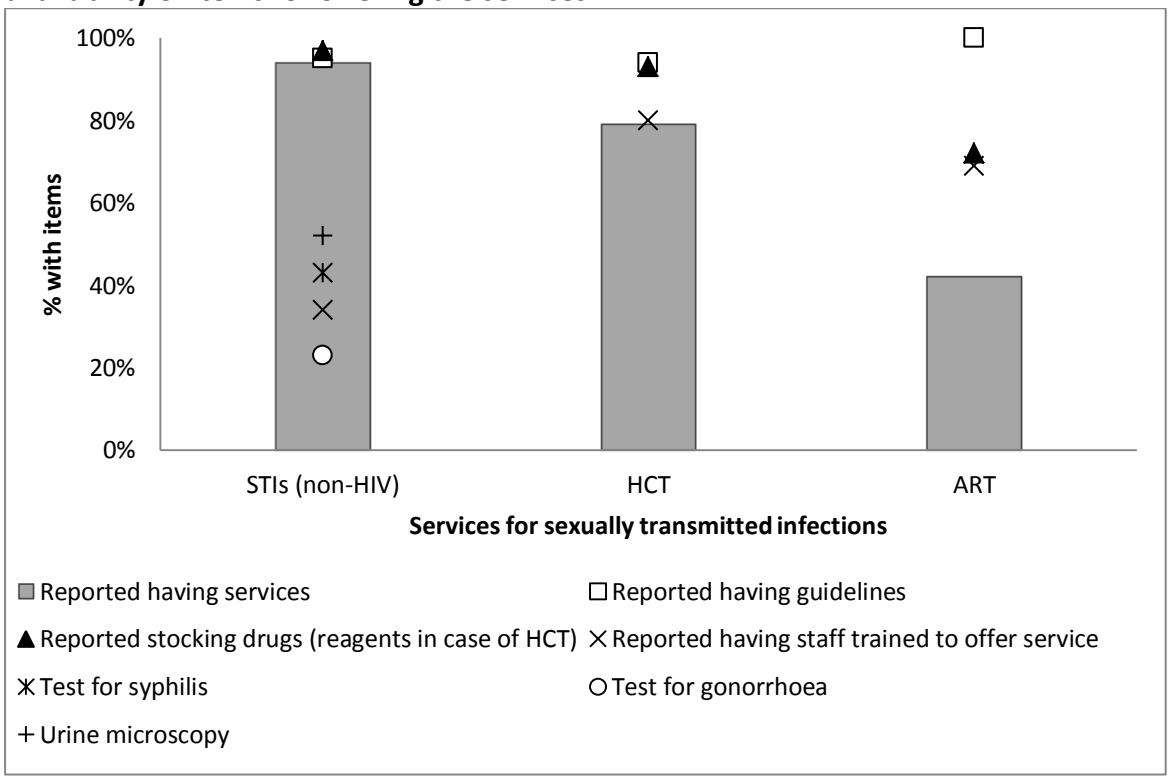


Availability of basic items for offering services for sexually transmitted infections

Generally, most of the facilities that reported offering STI services also reported having guidelines, drugs, and staff specifically trained to offer the service (Figure 11). In most cases, the guidelines and drugs were seen by the study team (Table 11). However, a low proportion of the facilities that offered non-HIV STI services reported offering tests for syphilis (43%; 95%CI: 28%, 59%), gonorrhoea (23%; 95%CI: 12%, 39%) and doing urine microscopy (52%; 36%, 67%) (Figure. 11).

In facilities that reported offering services for non-HIV STIs, the odds of reporting the availability of basic items decreased with decreasing PCF level for: trained staff (OR for linear trend: 0.4; 96%CI: 0.16, 0.79; p-trend=0.01); tests for syphilis (OR for linear trend: 0.09, 95%CI: 0.02, 0.52; p-trend=0.008), gram stain for gonorrhoea (OR for linear trend: 0.05; 95%CI: 0.01, 0.24; p-trend<0.001) and urine microscopy (OR for linear trend: 0.003; 95%CI: 0.0002, 0.05; p-trend<0.001). In facilities that reported offering HIV services, differences in the availability of basic items by facility level were not statistically significant except for availability of staff trained to offer HIV counselling and testing (p=0.05) (Table 11). For both non-HIV STI and HIV services, rural/urban differences in the availability of the basic items were not statistically significant. Geographical differences were only observed in the proportion of facilities that had guidelines (p<0.001), drugs (p=0.004), and trained staff (p=0.001) for offering services for non-HIV STIs (Annex 9.5.1).

Figure 11: Percentage of facilities that reported offering STI services and also reported availability of items for offering the services



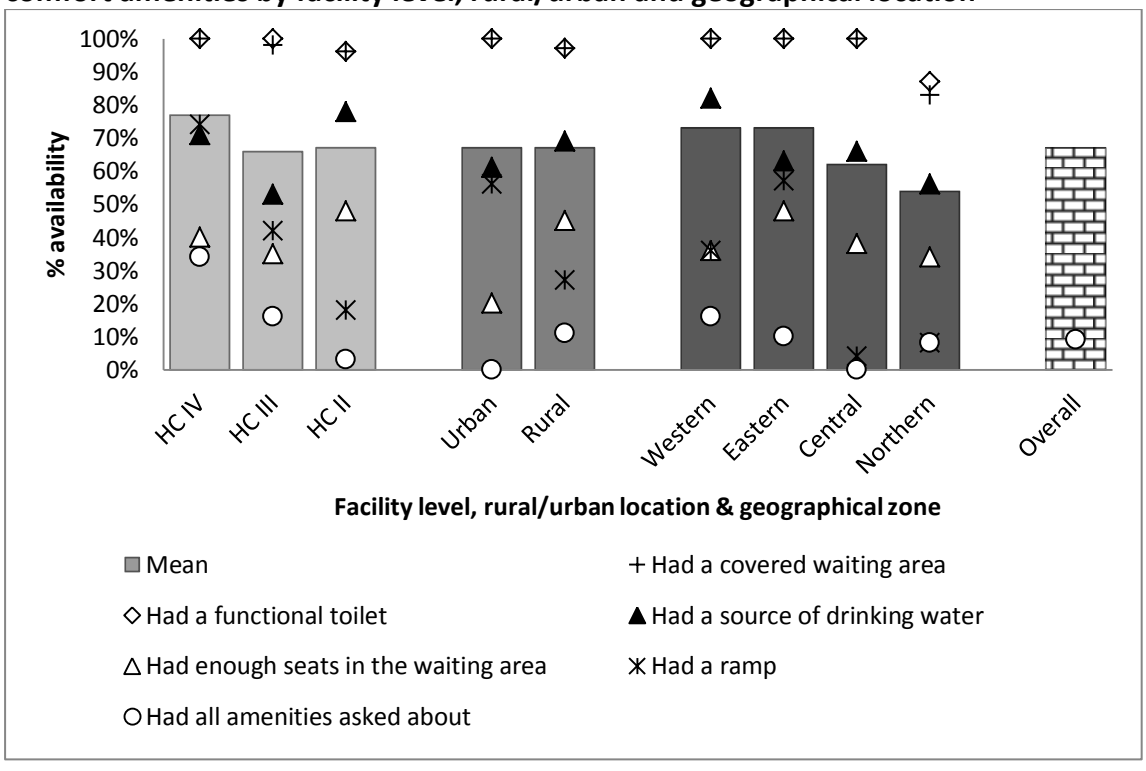
Basic comfort amenities

Of the five comfort amenities that were enquired about, only one in ten PCFs (9%; 95%CI: 4, 23%) had all of them (Figure 12). The odds of having all the five comfort amenities

decreased with decreasing PCF level (OR for linear trend: 0.22; 95%CI: 0.08, 0.61). The rural/urban and geographical differences were not statistically significant (p-values: 0.45 and 0.55, respectively) (Annex 9.5.2). Overall, the PCFs had three of the five comfort amenities available (mean: 67%; 95%CI: 62%, 72%) (Figure 12) and the mean differences by facility level (p=0.68) (Table 12), rural/urban location (p=0.98) and geographical zone (p=0.11) were not statistically significant (Annex 9.5.2).

All facilities (100%) had a waiting area that shielded patients from sun or rain, and almost all facilities had a functional toilet (98%; 95%CI: 87%, 100%). However, only 30% of the facilities had a ramp (95%CI: 20%, 43%) and 42% had enough seats in the waiting area (95%CI: 29%, 57%) (Table 12). Differences in the proportion of facilities that had each of the items by facility level (Table 12) and by rural/urban location (Annex 9.5.2) were not statistically significant. Statistically significant geographical differences were however observed in the proportion of facilities that had a waiting area (p=0.003), functional toilet (p=0.03) and a ramp (p=0.004) (Annex 9.5.2)

Figure 12: The mean percentage availability and the proportion of facilities that had comfort amenities by facility level, rural/urban and geographical location



Privacy

Generally, the proportion of facilities that had visual and auditory privacy was high, with the great majority of the facilities (86%, 05%CI: 75%, 93%) having both visual and auditory privacy (Figure 13). Differences in the proportion of facilities that had both visual and auditory privacy by facility level and rural/urban location were not statistically significant but a statistically significant difference was observed by geographical zone (p=0.05), with the proportion being highest in Western Uganda (100%) and lowest in Central Uganda (65%) (Annex 9.5.2).

Figure 13: Proportion of facilities that had visual and auditory privacy

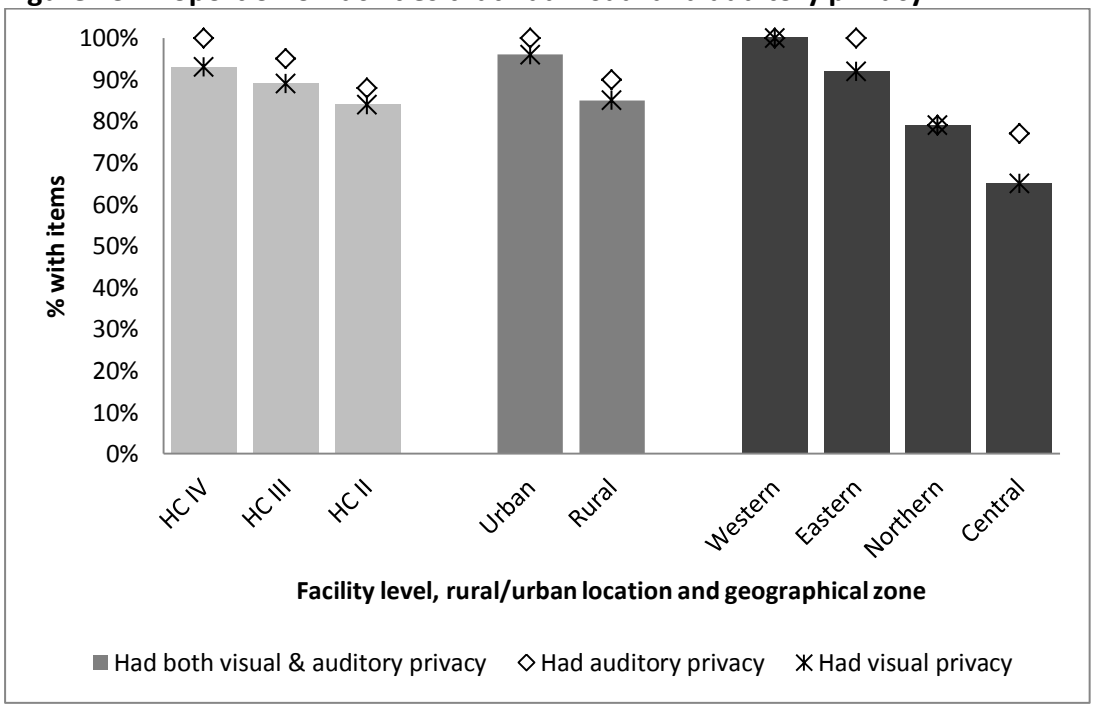


Table 11: Proportion of primary care facilities that reported availability of services

	Total N[1]	Total % [95%CI]	HC IV (%)	HC III (%)	HC II (%)	p-value	DEFF
Total surveyed n (%)	48	100	7 (15)	17 (35)	24 (50)		
Special geriatric services	0		0	0	0		
NON-COMMUNICABLE DISEASES							
Had service for one or more NCDs	40	83 [67, 92]	100	97	71	0.02	**1.18**
Cardiovascular diseases							
Reported offering service	33	68 [53, 80]	93	97	46	<0.001	1.0
Among those offering the service:							
Reported having guidelines	29	88 [72, 96]	78	97	79	0.19	0.96
*The guidelines seen in consultation area	26	94 [83, 98]	81	92	100	0.29	0.53
Reported stocking drugs	23	65 [47, 80]	100	100	9	<0.001	1.03
*Had some or all of the drugs in stock	22	92 [74, 98]	100	90	100	0.75	0.71
Reported having trained staff to offer service	1	3 [0,16]	0	6	0	0.51	0.77
Reported having stethoscope	32	94 [71, 99]	100	90	100	0.40	1.6
*A stethoscope seen in consultation area	32	100	100	100	100	n.a	n.a
Reported having Sphygmomanometer	30	87 [68, 95]	100	79	94	0.23	1.2
*Sphygmomanometer seen in consultation area	29	97 [82, 99]	100	93	100	0.44	0.8
*Reported having a weight scale	27	79 [59, 91]	86	84	71	0.55	1.2
*A weight scale seen in consultation area	24	87 [71, 95]	100	78	100	0.12	0.8
*Reported having a height scale	4	7 [3, 16]	48	5	0	<0.001	0.44
*Height scale seen in consultation area	3	75 [20, 97]	100	38	n.a	n.a	0.5
Reported having tape measure	9	28 [18, 42]	36	42	7	0.01	0.6
*Tape measure seen in consultation area	5	50 [24, 76]	100	50	0	0.14	0.66

	Total N[1]	Total % [95%CI]	HC IV (%)	HC III (%)	HC II (%)	p-value	DEFF
Diabetes							
Reported offering service	30	58 [42,71]	100	74	42	0.01	1.07
Among those offering the service:							
Reported having guidelines	24	83 [65,93]	72	81	87	0.76	0.9
*The guidelines seen in consultation area	22	97 [88,99]	81	97	100	0.06	0.33
Reported stocking drugs	10	19 [9,34]	100	17	0	<0.001	0.66
*Had some or all of the drugs in stock	7	72 [36,92]	93	45	n.a	0.04	0.58
Reported having trained staff to offer service	1	1 [0,9]	13	0	0	0.14	0.34
Reporting doing blood sugar	15	39 [23,57]	100	53	0	0.001	0.81
Reported doing urine sugar	20	64 [43,80]	100	92	12	<0.001	1.0
Reported having stethoscope	29	93 [67,99]	100	86	100	0.33	1.6
Stethoscope seen in consultation area	29	100	100	100	100	n.a	n.a
Reported having Sphygmomanometer	28	87 [65,96]	100	73	100	0.05	1.3
*A sphygmomanometer seen in consultation area	28	100	100	100	100	n.a	n.a
Reported having a weight scale	26	85 [66, 95]	87	79	92	0.46	1.0
*A weight scale seen in consultation area	24	90 [74, 97]	100	78	100	0.09	0.69
*Reported having a height scale	5	11 [5,22]	45	7	8	0.02	0.42
*Height scale seen in consultation area	4	82[32,98]	100	38	100	0.13	0.49
Reported having tape measure	7	22[13,34]	34	25	16	0.60	0.45
*Tape measure seen in consultation area	4	47 [20, 76]	100	30	50	0.24	0.54
Cancer							
Reported offering service	13	25 [16,37]	52	21	25	0.34	0.72
Among those offering the service:							
Reported having guidelines	9	73 [49,88]	60	47	90	0.16	0.6
*Guidelines seen in consultation area	8	87 [46,98]	100	100	81	0.64	0.93
Reported having trained staff to offer service	5	36 [17,60]	100	47	16	0.06	0.66

	Total N[1]	Total % [95%CI]	HC IV (%)	HC III (%)	HC II (%)	p-value	DEFF
Mental illness (e.g. depression)							
Reported offering service	29	59 [45,71]	93	80	41	0.01	0.8
Among those offering the service:							
Reported having guidelines	23	83 [70,91]	73	83	84	0.94	0.57
*Guidelines seen in consultation area	19	90 [74,96]	68	85	100	0.15	0.65
Reported stocking drugs	22	72 [54,86]	100	100	31	<0.001	0.93
*Had some or all of the drugs in stock	20	86 [66,95]	100	88	67	0.37	0.79
Reported having trained staff to offer service	9	25 [13,43]	74	28	10	0.04	0.63
Hearing problems							
Reported offering service	19	40 [27,54]	45	37	41	0.90	0.91
Among those offering the service:							
Reported having guidelines	17	92 [72,98]	54	86	100	0.06	0.77
*Guidelines seen in consultation area	14	89 [71,96]	100	78	94	0.43	0.58
Reported stocking drugs	19	100	100	100	100	n.a	n.a
*Had some or all of the drugs in stock	17	85 [57,96]	100	100	75	0.20	1.27
Reported having trained staff to offer service	2	15 [4,45]	0	27	10	0.51	1.37
Reported having otoscope	3	15 [5,35]	54	15	10	0.28	0.80
*Otoscope seen in consultation area	2	60 [13,94]	100	100	0	0.03	0.81
Vision problems							
Reported offering service	26	54 [40,67	67	63	46	0.32	0.94
Among those offering the service:							
Reported having guidelines	23	91 [76,97]	69	84	100	0.08	0.65
*Guideline seen in consultation area	19	93[81,98]	52	96	94	0.01	0.49
Reported stocking drugs	26	100	100	100	100	n.a	n.a
*Drugs seen in stock	23	88 [70,96]	100	100	75	0.07	0.89
Reported having trained staff to offer service	5	16 [6,34]	33	0	27	0.06	0.86

	Total N[1]	Total % [95%CI]	HC IV (%)	HC III (%)	HC II (%)	p-value	DEFF
Reported having Ophthalmoscope	3	8 [3, 23]	55	9	0	0.01	0.67
*Ophthalmoscope seen in consultation area	1	17 [2,69]	34	0	n.a	0.24	0.3
Reported having visual acuity chart	9	34 [19, 52]	69	50	15	0.07	0.82
*Visual acuity chart seen in consultation area	8	97 [84, 99]	79	100	100	0.30	0.20
Overall for non-communicable diseases and conditions							
Had services for all the six NCDs	7	14 [7,25]	45	5	16	0.05	0.81
Mean overall availability of services offered	n.a	50 [41, 60]	75	62	40	0.01	
Sexually transmitted infections (non-HIV							
Reported offering service	46	94 [77,98]	100	100	89	0.27	1.53
Among those offering the service:							
Reported having guidelines	43	95 [88,98]	100	95	94	0.84	0.45
*Guidelines seen in consultation area	38	92 [83,97]	100	89	94	0.63	0.57
Reported stocking drugs	44	97 [90,99]	100	100	94	0.30	0.52
*Drugs seen in stock	35	78 [64,88]	100	80	73	0.45	0.86
Reported having trained staff to offer service	19	34 [24,47]	100	35	26	0.01	0.67
Reported having laboratory tests for syphilis	20	43 [28, 59]	100	62	15	0.005	1
Reported doing gram stain for gonorrhoea	14	23 [12,39]	74	39	0	0.001	1
Reported doing urine microscopy	23	52 [36, 67]	100	92	4	<0.001	0.96
HIV services							
Reported offering at least one HIV service	40	81 [65,90]	100	100	66	0.001	1.16
HIV counselling and testing							
Reported offering the service	39	79 [63,89]	100	100	62	0.003	1.12
Among those offering the service:							
Reported having guidelines	37	94 [81,99]	100	95	93	0.87	0.93
*Guidelines seen in consultation area	33	91 [78,96]	100	84	95	0.32	0.7
Reported trained staff to do HIV counselling	30	71 [55,83]	100	79	57	0.12	0.86

	Total N[1]	Total % [95%CI]	HC IV (%)	HC III (%)	HC II (%)	p-value	DEFF
Reported having trained staff to do HIV testing	36	89 [71,97]	100	100	76	0.05	0.77
Reported stocking HIV test reagents	37	93 [78,98]	100	100	85	0.12	1.3
*Test reagents seen in stock	34	93 [80,98]	100	90	95	0.68	0.86
Life-long antiretroviral treatment							
Reported offering the service	22	42 [29,57]	100	64	21	0.001	1.0
Among those offering the service:							
Reported having guidelines	22	100	100	100	100		
*Guidelines seen in consultation area	20	89 [67,97]	100	80	100	0.92	0.27
Reported stocking antiretroviral drugs	18	72 [48,87]	100	76	48	1.01	0.76
*The drugs seen in stock	17	95 [83,99]	76	100	100	0.31	0.52
Reported having trained staff to offer service	16	69 [47,85]	93	73	48	0.91	0.73
Overall for sexually transmitted infections							
Had all three specific STI services	22	42[29,57]	100	64	21	0.001	0.97
Mean overall availability of services offered	n.a	71 [62, 81]	100	88	58	0.03	
Overall for all the nine specific services (STIs + NCDs)							
Had all nine services (for NCDs and STIs)	5	9 [4, 21]	45	5	8	0.03	0.86
Had at least five of the services	31	61 [46,74]	100	91	37	<0.001	1.0
Mean overall availability of services offered	n.a	57 [49, 66]	83	71	46	<0.001	

[1]Unweighted N. [2]values adjusted for survey design only. *Values calculated among the previous item. DEFF=Design Effect. n.a=not applicable

Table 12: Proportion of facility with basic comfort amenities and privacy

	N	Total	HC IV	HC III	HC II	p-value	DEFF
Number of facilities surveyed n (%)	48	100	7(15)	17(35)	24(50)		
Had waiting area that shielded patients from sun/rain	46	97 [89,99]	100	98	96	0.76	0.69
Had a functional toilet	47	98 [87,100]	100	100	96	0.53	0.92
Had a source of drinking water	32	68 [53,80]	71	53	78	0.11	1.01
Had enough seats in the waiting area	19	42 [29,57]	40	35	48	0.55	1.02
Had a ramp	14	30 [20,43]	74	42	18	0.04	0.76
Had all amenities asked about	**5**	**9 [4,23]**	**34**	**16**	**3**	**0.04**	**1.13**
Mean		**67 [62, 72]**	**77**	**66**	**67**	**0.68**	
Had auditory privacy	43	91 [81,96]	100	95	88	0.51	0.72
Had visual privacy	40	93 [75,93]	93	89	84	0.66	0.76
Had both visual & auditory privacy	40	86 [75,93]	93	89	84	0.66	0.76

[1]Unweighted N. [2]Values adjusted for survey design only

4.3. Caseload due to older persons

The absolute and relative caseloads

Table 13 and figure 14 show the number and percentage of visits made by all patients to the outpatient department during a period of three months. Overall, OPs contributed the smallest number of visits to the PCFs, with 11,847 out of 140,338 total visits (8.4%) made by OPs. There was no evidence of a difference by facility level in the percentage of visits made by OPs. The number and percentage of visits made by OPs differed by the type of outpatient clinic (P<0.001), with the percentage of visits being highest to the ART clinic (12.4%) and lowest to the eye clinic (<0.1%); and number of visits being highest to the outpatient clinic and lowest to the eye clinic. The percentage of OP-visits was higher in rural (8.8%) than in urban (6.9%) PCFs (p=0.06). The ratio in number of attendances per person per year was 1:1.5 (899:1380) for OPs vs. younger adults. As the age of patients increased, the total number of attendances per year of age decreased, with very small numbers of visits by people ≥80 years (Figure 15).

Table 13: Number (%) of outpatient-visits in the period January-March 2013

	[1]All-patient visits	[1]Visits by OPs n (%)			
		50 – 59yrs	60 – 79yrs	80+yrs	Total
Total visits	**140,338**	**5,862 (4.2)**	**5,157 (3.7)**	**828 (0.6)**	**11,847 (8.4)**
Visits per year of age[2]	**140,338**	**586**	**516**	**55**	
Sex					**p=0.83**
Males	51,779	2,095 (4.0)	1,936 (3.7)	381(0.7)	4,412 (8.5)
Females	88,559	3,767 (4.3)	3,221 (3.6)	447 (0.5)	7,435 (8.4)
PCF level					**p=0.62**
PCF IV	47,805	1,912 (4.0)	1,752 (3.7)	235 (0.5)	3,899 (8.2)
PCF III	46,682	2,004 (4.3)	1,838 (3.9)	246 (0.5)	4,088 (8.8)
PCF II	45,851	1,946 (4.2)	1,567 (3.4)	347 (0.8)	3,860 (8.4)
Clinic					**p<0.001**
General outpatient	130,614	5,380 (4.1)	4,831 (3.7)	810 (0.6)	11,021 (8.4)
HCT*	3,564	183 (5.1)	151 (4.2)	12 (0.3)	346 (9.7)
ART**	3,811	291 (7.6)	175 (4.6)	6 (0.2)	472 (12.4)
Eye	2,349	8 (0.3)	0 (0.0)	0 (0.0)	8 (<0.1)
PCF location					**p=0.06**
Urban	24,618	802 (3.3)	789 (3.2)	115 (0.5)	1,706 (6.9)
Rural	115,720	5,060 (4.4)	4,368 (3.8)	713 (0.6)	10,141 (8.8)

[1]Figures are unadjusted for the survey design. [2]Assumes the maximum age was 94 years. *HIV counselling and testing. **Life-long antiretroviral treatment

Figure 14: Age-specific number of visits to the outpatient department of the primary care facilities in the period January to March 2013

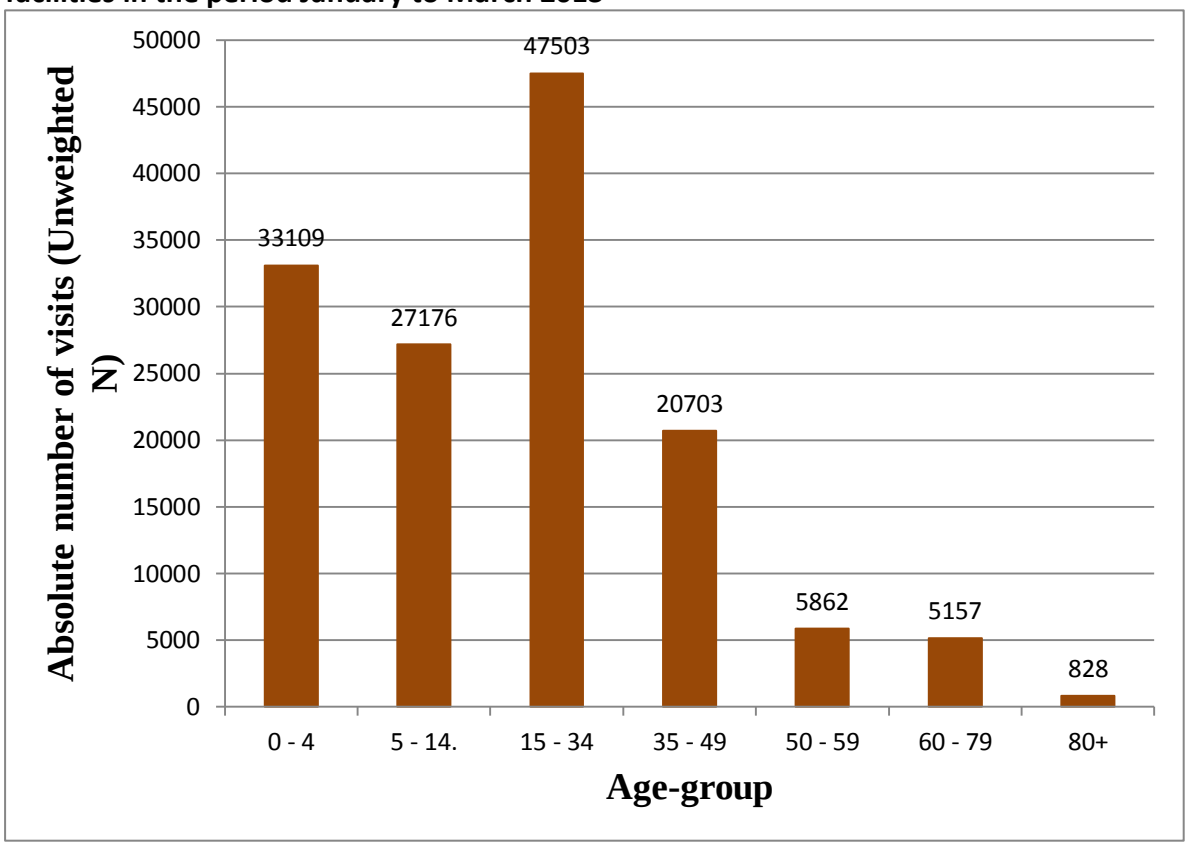
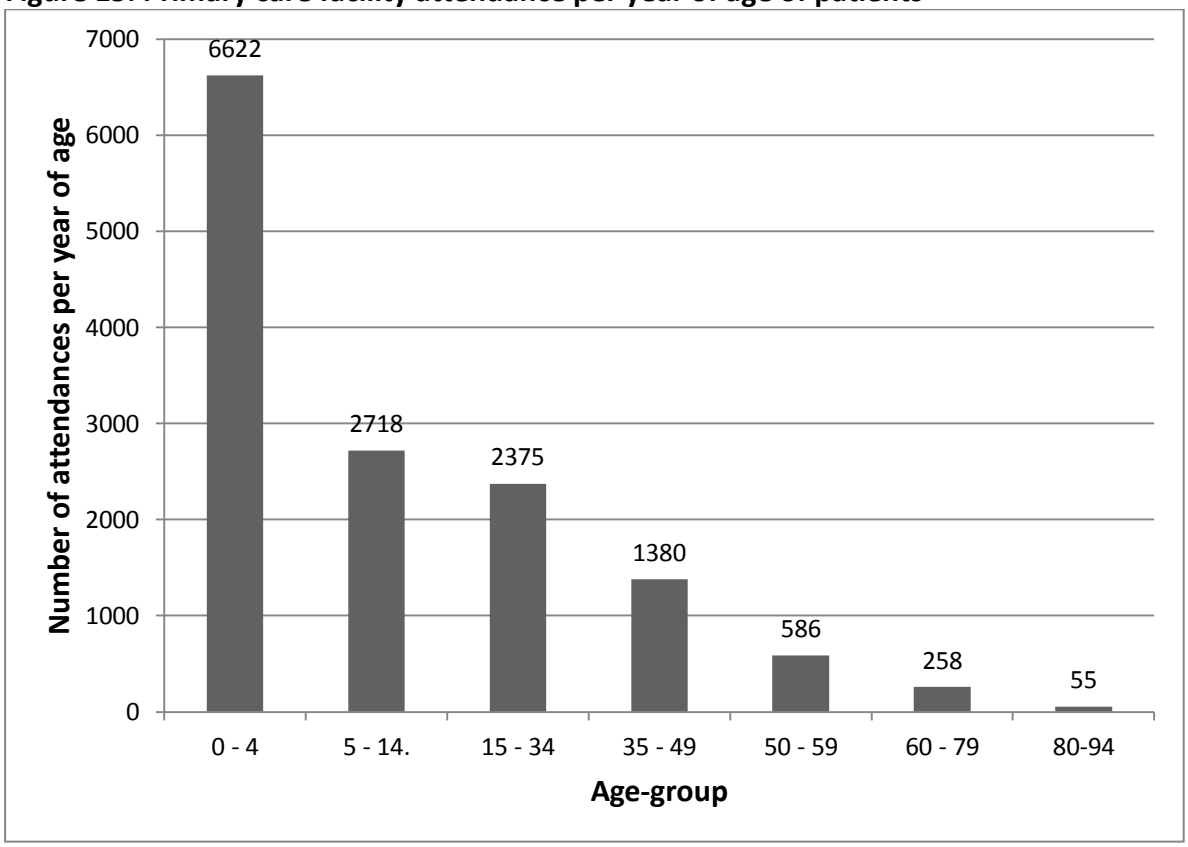


Figure 15: Primary care facility attendance per year of age of patients

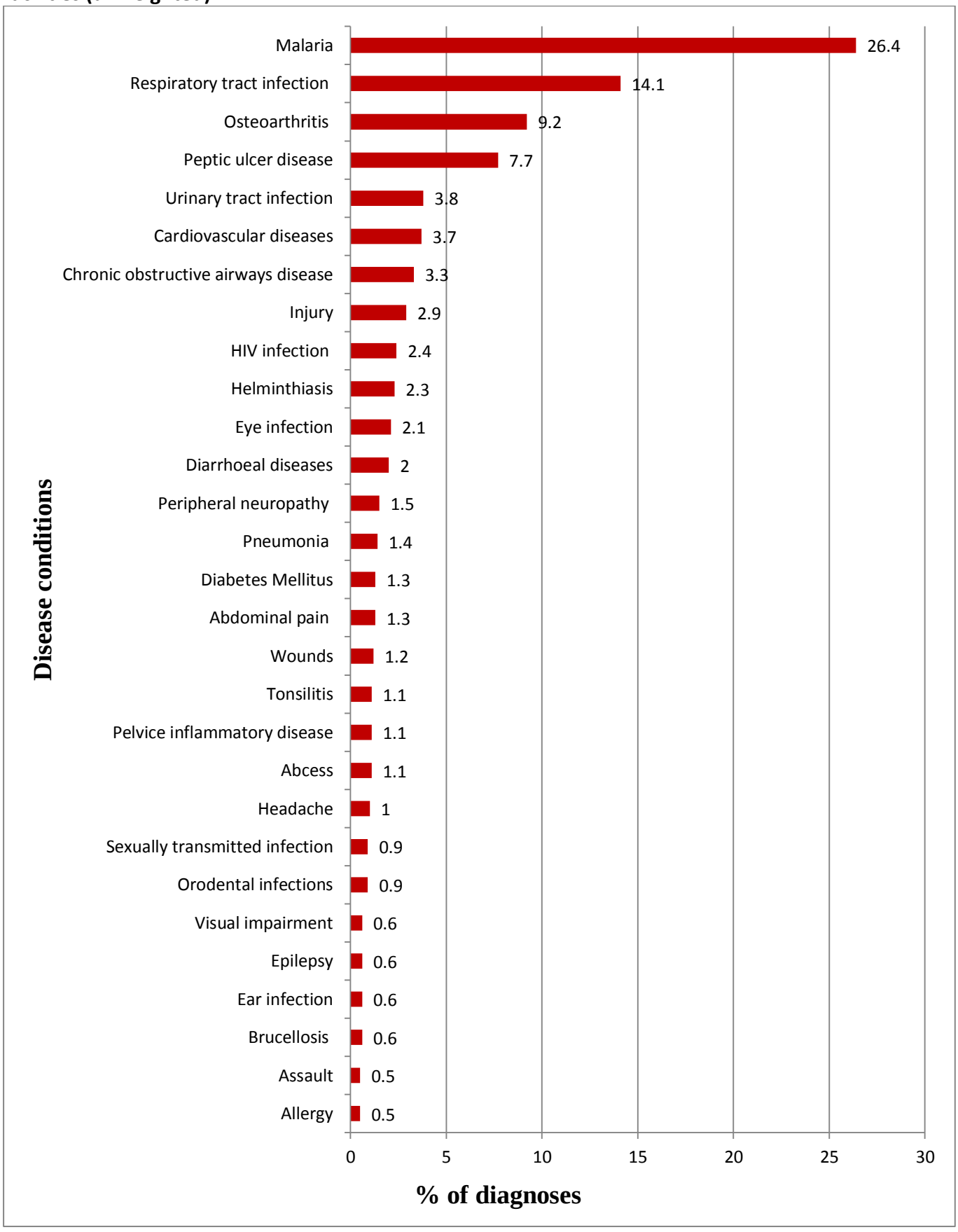


Diseases that were commonly diagnosed among the older persons

Disease records were available for 11,173 (94.3%) of the 11,847 visits by OPs. However, a further 969 (8.7%) of these records had a missing or unclear diagnosis, leaving 10, 204 disease records (91.3% of total records) for analysis, distributed as follows: 2,994 (29.3%) at PCF IV, 3,488 (34.2%) at PCF III and 3,722 (36.5%) at PCF II. Of the total records, 6,536 records (63.8%) were for females.

Infectious illnesses were the most commonly diagnosed illnesses among the OPs, accounting for 62.9% (95%CI: 54.9, 70.3) of the diagnoses. NCDs and injuries accounted for 32.4% (95%CI: 24.4, 41.5) and 3.4% (95%CI: 2.1, 5.5) of the diagnoses, respectively. Malaria and non-pneumonia respiratory tract infections were the most commonly diagnosed illnesses – accounting for 26.4% (95%CI: 16.9, 38.8) and 14.1% (95%CI: 8.8, 21.7) of the diagnoses respectively (Figure 16).

Figure 16: The common diseases that were diagnosed in older persons at the primary care facilities (unweighted)



Key: Only diagnoses with prevalence of ≥0.5% are shown. Detailed table is provided in annex 9.6

4.4. Knowledge, attitudes and practices of health workers regarding provision of health care to older persons

Description of the study participants

In each district, we aimed to interview 20 HWs, distributed as follows: 6 from PCF IV, 8 from PCF III (4 per PCF), and 6 from PCF II (2 per PCF). In Agago district where there was no PCF IV, we aimed to interview 18 HWs: 12 from PCF III (4 per PCF) and 6 from PCF II (2 per PCF). Therefore we aimed to interview 158 HWs. In practice, 145 HWs (92% of target) were interviewed. Reasons for not meeting the target number were an insufficient number of HWs being present in the PCFs (n=8), refusal (n=4) and being sick (n=1).

Of the 145 HWs for whom data were available, 38 (26.2%) were at PCF IV, 63 (43.5%) at PCF III and 44 (30.3%) were at PCF II. The majority were from PCFs in rural areas (n=124, 85.5%). The number from each geographical zone was similar: 35 HWs (24.1%) each in Northern and Eastern Uganda, 38 HWs (26.2%) in Central Uganda, and 37 HWs (25.5%) in Western Uganda. Their median age was 32 years (IQR: 27 – 39 years). Only 2 (1.4%) of those interviewed were doctors and a fifth (20.7%) were nurse aides (Table 14).

Table 14: Sociodemographic characteristics of the health workers

	Unweighted[1] N	Unweighted[1] %
Total interviewed	**145**	
Female sex	96	66.2
Age-group (years)		
<26	15	10.3
26 – 35	84	57.9
36 – 45	31	21.4
>45	15	10.3
Technical qualification		
Doctor	2	1.4
Clinical officer (physician assistant)	20	13.8
Registered nurse	21	14.5
Registered midwife	5	3.5
Enrolled nurse	49	33.8
Enrolled midwife	13	9.0
Nurse aide/assistant	30	20.7
Others	5	3.5
Trained in care of OPs	28	19.3
Felt they had sufficient knowledge to care for OPs	106	73.1

[1]Values are unadjusted for the survey design

4.4.1. Knowledge of the common ailments affecting older persons

Based on a priori classification of knowledge into "poor", "satisfactory" and "good"; a third (32.1%) of the HWs had poor knowledge, and only 6.7% had good knowledge of the common ailments that affect OPs (Table 15).

Table 15: Proportion of health workers with poor, satisfactory and good knowledge by characteristics of interest

Range of scores	Poor (%) (score: 0-24)	Satisfactory (%) (score: 25-29)	Good (%) (score: 30-34)
Overall % (95%CI)	**32.1 [25.0, 40.1]**	**61.1[52.4, 69.3]**	**6.7 [3.3, 13.4]**
PCF level			
IV	30.2	66.2	3.6
III	33.5	59.6	6.9
II	30.8	61.6	7.6
PCF Location			
Urban	12.0	85.6	2.4
Rural	35.9	56.5	7.6
Geographical zone			
Northern Uganda	27.4	67.3	5.3
Eastern Uganda	44.5	45.1	10.3
Central Uganda	13.2	79.5	7.3
Western Uganda	37.4	60.7	2.0
Technical qualification of HWs			
Clinicians	15.2	80.3	4.5
Nurses	34.9	57.0	8.1
Nurse aides	42.2	53.0	4.8
Trained in care of OPs			
Yes	23.1	76.9	0.0
No	34.2	57.5	8.3

Key: Figures shown are adjusted for the survey design only. DEFFs (poor knowledge=0.94; satisfactory knowledge=1.09; good knowledge=1.29)

Association of factors with the mean overall knowledge score

In the unadjusted analysis (Table 16), the mean overall knowledge score was positively associated with availability of services (p=0.02), decreasing level of qualification of the HWs (p=0.03), and sex (p=0.004). After adjusting for PCF level, PCF location and geographical zone (Table 17), the positive associations of the mean overall knowledge score with availability of services and qualification of the HWs became stronger while that with sex

remained. In addition, after adjusting, the positive association of the mean overall knowledge score with availability of guidelines and availability of equipment in the patient consultation area became statistically significant.

In the final model in which all independent predictors of the mean knowledge score that were associated at $p<0.10$ at the preceding level of the conceptual framework were adjusted for (Table 17, last column), availability of guidelines in the patient consultation area remained independently associated with the mean overall knowledge score ($p=0.02$), with the score for PCFs that had 6-7 of the guidelines being 1.22 points higher than PCFs that had 0-5 of the guidelines (coefficient: 1.22; 95%CI: 0.2, 2.3). The only HW characteristic that remained independently associated with the mean overall knowledge score was sex of the HW ($p=0.002$), with the mean score for females being lower compared to males.

Table 16: Association of factors with the mean knowledge score

	[1]N	Mean[2]	Unadjusted regression coefficient[2] [95%CI]	Adjusted regression coefficient[3] [95%CI]	Adjusted regression coefficient[4] [95%CI]
Total	**145**	**34**			
Overall mean score achieved		**25.7**			
PCF CHARACTERISTICS					
PCF level			**p=0.93**	**p=0.93**	**p=0.68**
IV	38	25.7	1	1	1
III	63	25.8	0.09 [–0.8, 1.0]	0.09 [–0.8, 1.0]	–0.28 [–0.8, 0.3]
II	44	25.6	–0.07 [–0.9, 0.8]	–0.07 [–0.9, 0.8]	0.04 [–1.0, 1.0]
PCF location			**p=0.41**	**p=0.41**	**p=0.47**
Urban	21	26.1	1	1	1
Rural	124	25.6	–0.47 [–1.6, 0.7]	–0.47 [–1.6, 0.7]	0.37 [–1.3, 2.0]
Geographical zone			**p=0.07**	**p=0.07**	**p=0.92**
Northern Uganda	35	25.5	1	1	1
Eastern Uganda	35	25.4	–0.15 [-1.1, 0.8]	–0.15 [–1.1, 0.8]	–0.52 [–1.5, 0.4]
Central Uganda	38	26.8	1.24 [0.1, 2.4]	1.24 [0.1, 2.4]	1.38 [–0.1, 2.9]
Western Uganda	37	25.2	–0.34 [–1.3, 0.6]	–0.34 [–1.3, 0.6]	–0.9 [–1.8, 0.1]
Caseload due to OPs			**p=0.39**	**p=0.14**	
≤300 patients/month	94	25.6	1	1	
>300 patient/month	51	26.0	0.35 [–0.5, 1.2]	0.84 [–0.3, 2.0]	
AVAILABILITY OF SERVICES, EQUIPMENT AND GUIDELINES					
Availability of services			**p=0.02**	**p<0.001**	
Had 0-6 of the services	57	25.3	1	1	
Had 7-8 of the services	56	26.4	1.09 [1.2, 2.0]	1.70 [0.9, 2.5]	
Had 9-10 of the services	32	25.1	–0.18 [–1.0, 0.7]	0.27 [–0.7, 1.2]	
Availability of guidelines**			**p=0.15**	**p=0.03**	**p=0.02**
Had 0-5 of the guidelines	92	25.5	1	1	1
Had 6-7 of the guidelines	39	26.0	0.54 [–0.5, 1.6]	1.16 [0.1, 2.2]	1.22 [0.2, 2.3]
Had 8-9 of the guidelines	14	26.0	0.56 [0.0, 1.1]	1.15 [0.1, 2.2]	1.14 [0.1, 2.2]
Availability of equipment**			**p=0.44**	**p=0.03**	
Had 0-4 of the equipment	82	25.7	1	1	
Had 5 of the equipment	31	26.3	0.55 [–0.8, 1.9]	0.74 [–0.7, 2.2]	
Had >5 of the equipment	32	25.4	–0.32 [–1.2, 0.5]	–0.40 [–1.4, 0.6]	
HW CHARACTERISTICS					
Qualification			**p=0.03**	**p=0.007**	
Clinician	27	26.7	1	1	
Nurse	88	25.5	–1.21 [–2.0, –0.3]	–1.27 [–2.2, –0.38	
Nurse aids/assistants	30	25.4	–1.27 [–2.3, –0.2]	–1.92 [–3.1, –0.8]	
Trained in care of OPs			**p=0.79**	**p=0.80**	
No	117	25.7	–0.14 [–1.2, 0.9]	0.14 [–1.0, 1.3]	
Age-group			**p=0.26**	**P=0.29**	
<26 years	15	26.3	1	1	
26 – 35 years	84	25.7	–0.56 [–1.7, 0.6]	–0.69 [–1.7, 0.3]	
36 – 45 years	31	25.2	–1.10 [–2.2, 0.0]	–1.02 [–2.1, 0.1]	
>45 years	15	26.4	0.15 [–1.3, 1.6]	–0.02 [–1.4, 1.4]	
Sex			**p=0.004**	**p=0.006**	**p=0.002**
Males	49	26.5	1	1	1
Females	96	25.4	–1.13 [–1.9, –0.4]	–1.09 [–1.9, –0.3]	–1.13 [–1.8, –0.4]

[1]Unweighted N. [2]Values only adjusted for the survey design. [3]Values adjusted for the survey design, PCF level, PCF location, & geographical zone. [4]Final model: values adjusted for the survey design, PCF level, PCF location, geographical zone and their interaction, and all independent predictors of the mean knowledge score that were associated at P<0.10 at the preceding level of the conceptual framework. **Availability of the items seen in the patient consultation area

4.4.2. Attitudes of health workers towards older persons

Based on the classification of attitude of HWs into "negative", "neutral" and "positive" towards OPs (section 4.15.4), nearly all HWs had neutral attitudes (Table 17).

Table 17: Proportion of health workers with positive, neutral or negative attitude towards older persons

	Range of scores	N[1]	% [95%CI] [2]
Positive attitude	92 – 115/115	4	2.0 [0.8,5.3]
Neutral attitude	47 – 91/115	140	97.0 [93.3,98.7]
Negative attitude	23 – 46/115	1	0.9 [0.1,5.7]

[1]Unweighted N. [2]Weighted % adjusted for survey design. DEFFs (negative attitudes=1.15; neutral=0.74; positive attitudes=0.69

Association of factors with the mean overall attitude score

In the unadjusted analysis (Table 18), the mean overall attitude score varied by geographical zone (p=0.03), sex (p=0.01), and technical qualification of the HWs (p=0.05). The mean score in PCFs with laboratory services was lower compared to PCFs without laboratory services although this difference was of borderline statistical significance (p=0.08).

After adjusting for PCF level, PCF location and geographical zone (Table 18), the positive association of the mean overall attitude score with sex and the technical qualification of the HWs remained. In addition, after adjusting, the positive association of the mean overall attitude score with increased total caseload (due to all patients), and with increased availability of equipment in the patient consultation area became statistically significant.

In the final model in which all the independent predictors of the mean overall attitude score that were associated at p<0.10 at the preceding level of the conceptual framework were adjusted for (Table 18, last column), PCF characteristics that remained independently associated with the mean overall attitude score were: decreasing PCF level (p=0.02), geographical zone (p=0.03), and availability of equipment (p=0.07). Sex was the only HW characteristic that remained independently associated with the mean overall attitude score (p=0.01), with the score for females being 4.7 points lower compared to males.

Table 18: Association of factors with the overall mean attitude score

	N[1]	Mean[2]	Unadjusted regression Coefficient[2] [95% CI]	Adjusted regression coefficient[3] [95%CI]	Adjusted coefficient[4] [95%CI]
Total	**145**	**115**			
Overall mean score achieved		**72.0**			
PCF CHARACTERISTICS					
PCF level			**p=0.25**	**p=0.25**	**p=0.02**
IV	38	72.3	1		1
III	63	70.7	–1.56 [–5.2, 2.0]	–1.56 [–5.2, 2.0]	0.21 [–3.7, 4.1]
II	44	73.9	1.57 [–1.7, 4.9]	1.57 [–1.7, 4.9]	4.68 [0.4, 8.9]
PCF location			**p=0.11**	**p=0.11**	**p=0.12**
Urban	21	73.5	1	1	1
Rural	124	71.7	–1.81 [–4.1, 0.5]	–1.81 [–4.1, 0.5]	0.21 [–3.1, 3.5]
Geographical zone			**p=0.03**	**p=0.31**	**p=0.03**
Northern Uganda	35	68.0	1	1	1
Eastern Uganda	35	70.7	2.77 [–2.3, 7.9]	2.77 [–2.3, 7.9]	3.38 [–1.2, 8.0]
Central Uganda	38	75.2	7.20 [2.0, 12.4]	7.20 [2.0, 12.4]	8.25 [3.0, 13.5]
Western Uganda	37	73.5	5.51 [–1.3, 12.3]	5.51 [–1.3, 12.3]	5.83 [0.5, 11.2]
Total caseload (due to all patients)			**p=0.49**	**p=0.02**	
≤4000patients/month	103	71.8	1	1	
>4,000patient/month	42	72.8	0.94 [–1.78, 3.7]	3.81 [0.8, 6.9]	
Caseload due to OPs only			**p=0.33**	**p=0.98**	
≤300 patients/month	94	72.8	1	1	
>300 patients/month	51	70.9	–1.95 [–5.9, 2.0]	–0.07 [–4.8, 4.7]	
AVAILABILITY OF SERVICES, EQUIPMENT, GUIDELINES AND AMENITIES					
Availability of services			**p=0.22**	**p=0.42**	
Had 0-6 of the services	57	73.8	1	1	
Had 7-8 of the services	56	71.0	–2.77 [–6.1, 0.6]	–2.22 [–5.8, 1.4]	
Had 9-10 of the services	32	70.8	–3.02 [–9.2, 3.1]	–1.74 [–7.1, 3.6]	
Availability of guidelines			**p=0.46**	**p=0.50**	
Had 0-5 of the guidelines	92	72.4	1	1	
Had 6-7 of the guidelines	39	71.9	–0.53 [–5.2, 4.2]	0.34 [–4.0, 4.7]	
Had 8-9 of the guidelines	14	70.2	–2.22 [–5.8, 1.3]	–2.22 [–6.3, 1.8]	
Availability of equipment in the consultation area			**p=0.15**	**p=0.01**	**p=0.07**
Had 0-4 of the equipment	82	71.1	1	1	1
Had 5 of the equipment	31	74.6	3.48 [–0.1, 7.0]	5.47 [2.3, 8.7]	4.97 [1.5, 8.5]
Had >5 of the equipment	32	73.6	2.50 [–1.6, 6.6]	3.51 [–0.6, 7.6]	2.63 [–2.0, 7.2]
Availability of laboratory services			**p=0.08**	**p=0.75**	
Available	132	71.6	–4.19 [–9.0, 0.6]	1.08 [–5.7, 7.9]	
Basic amenities			**p=0.27**	**p=0.75**	
Had 0-2 of the basic amenities	32	73.7	1	1	
Had 3 of the basic amenities	56	70.7	–2.98 [–6.7, 0.8]	1.08 [–5.7, 7.8]	
Had >3 of the amenities	57	72.4	–1.27 [–4.2, 1.6]	–2.34 [–6.0, 1.3]	

	N[1]	Mean[2]	Unadjusted regression Coefficient[2] [95% CI]	Adjusted regression coefficient[3] [95%CI]	Adjusted regression coefficient [95%CI][4]
HW CHARACTERISTICS					
Age-group			**p=0.27**	**p=0.36**	
<26 years	15	69.6	1	1	
26 – 35 years	84	72.3	2.75 [–4.1, 9.6]	1.83 [–5.5, 9.1]	
36 – 45 years	31	71.9	2.33 [–4.2, 8.8]	2.51 [–3.9, 8.9]	
>45 years	15	75.7	6.18 [–1.1, 13.4]	5.30 [–1.9, 12.5]	
Sex			**p=0.01**	**p=0.01**	**p=0.01**
Male	49	75.4	1	1	1
Female	96	70.5	–4.90 [–8.6, –1.2]	–5.06 [–8.6, –1.5]	–4.73 [–8.3, –1.1
Qualification			**p=0.05**	**p=0.26**	
Clinicians	27	73.6	1	1	
Nurses	88	70.5	–3.02 [–8.7, 2.7]	–3.27 [–9.3, 2.7]	
Nurse aids/assistants	30	75.1	1.53 [–5.8, 8.8]	–1.00 [–8.9, 6.9]	
Trained in care of OPs			**p=0.61**	**p=0.74**	
No	117	71.7	–1.57 [–7.7, 4.6]	–1.03 [–7.3, 5.2]	
Knowledge of HWs			**p=0.64**	**p=0.79**	
Poor	46	71.3	1	1	
satisfactory	88	72.2	0.91 [–2.4, 4.2]	0.10 [–3.2, 3.4]	
Good	11	73.1	1.75 [–2.0, 5.5]	1.23 [–2.9, 5.4]	

[1]Unweighted N. [2]Values only adjusted for the survey design. [3]Values adjusted for the survey design, PCF level, PCF location, and geographical zone. [4]Values adjusted for the survey design, PCF level, PCF location and geographical zone and their interaction, and all independent predictors of the mean attitude score that were associated at P<0.10 at the preceding level of the conceptual framework.

4.4.3. Practices of health workers regarding the care of older persons

Based on the classification of the activities the HWs said they did while attending to OPs and younger adults (35-49 years) into "bad", "neither-bad-nor-good", and "good" practices (Table 19); almost none of the HWs (0.5-1.2%) was classified as having bad practices overall, and about half were classified as having neither-bad-nor-good (51.3-53.0%) and good practices (46.4-48.1%). However, quite a substantial proportion of the HWs was classified as having bad practices with regard to providing prompt attention to patients (OPs and younger adults) (19.4-29.9%), giving patients autonomy (46.4-48.6%), targeting them for health education (15.4-34.6%), and screening them for diseases (14.2-16.7%) (Table 19).

Practices of the HW differed by age of patients. Compared to younger adults, the mean overall score of positive responses[4] given by HWs to questions on how they treated younger adults and OPs was lower for OPs aged 50-59 year (unadjusted coefficient: –0.60; 95%CI: –1.2, –0.0; p=0.05) and OPs aged ≥60 years (unadjusted coefficient: –1.07; 95%CI: –1.9, –0.2; p=0.02) (Table 20). However, the lower overall score for OPs obscured some differences in the specific practices areas. HWs had higher mean scores for OPs than younger adults on practices related to giving prompt attention to patients, ensuring clear communication with patients and screening patients for diseases. In contrast, HWs had lower scores for OPs on practices related to targeting patients for health education (Table 20).

Association[5] of factors with health worker practices related to the care of OPs (≥60 years)

In the unadjusted analysis (Table 21), the mean overall score related to how the HWs treated OPs aged 60+ years varied by urban/rural location (P=0.02), availability of auditory privacy (P<0.001), availability of visual privacy (P<0.001), and by the technical qualifications of the HWs (P=0.03). Although only of borderline statistical significance (P=0.09), the mean overall score decreased with increasing availability of equipment in the consultation area. After adjusting for PCF level, PCF location, and geographical zone (Table 21), the associations of the mean score with availability of auditory privacy and visual privacy remained strongly significant (P<0.001), while that with technical qualification of the HWs

[4] Positive responses refer to responses that affirm that activities that were considered particularly important for OPs were done, as expected, by the HWs.

[5] Associations with HWs practices related to the care of OPs aged 50-59 years was similar to that of OPs ≥60 years. Consequently, associations for ≥60 years are only shown. Refer to annex 9.7 for the association of practices related to the care of OPs 50-59 years.

and availability of equipment in consultation area became stronger. In addition, after adjusting, the association with the increased total caseload (due to all patients) became strongly significant (P<0.001), and with availability of services we enquired about in the study reached borderline statistical significance (P=0.05).

In the final model in which all the independent predictors of the mean score that were associated at p<0.10 at the preceding level of the conceptual framework were adjusted for (Table 21, last column), PCF characteristics that remained independently associated with the mean overall score were PCF location (p=0.01), with the mean score in rural PCFs being 2.8 points lower than in urban PCFs, and availability of visual privacy (P<0.001), with the score in PCFs with visual privacy being 12.8 points higher than in PCFs that lacked visual privacy. HW characteristics that remained independently associated with the mean score were decreasing level of qualification of the HWs (p<0.001), with the score for nurse aides being 11.3 points higher compared to clinicians (coefficient: 11.25; 95%CI: 5.8, 16.7), and increasing age of HWs (p=0.05), with the mean score for HWs aged >45years being 11.0 points lower compared to HWs aged <26 years (coefficient: –11.00; 95%CI: –17.8, –4.2).

Table 19: Proportion of health workers classified as having good, neither-good-nor-bad and bad practices regarding the care of older persons and younger adults

	Bad (%)[1]			**Neither-bad-nor-good (%)[1]**			**Good (%)[1]**		
Patient age (years)	35-49	50-59	60+	35-49	50-59	60+	35-49	50-59	60+
Ensuring dignity	1.5	1.5	0.1	10.6	9.7	11.1	87.9	88.8	88.7
Ensuring prompt attention	29.9	19.4	29.9	21.5	21.3	21.5	48.6	59.4	48.6
Communicating appropriately*	4.4	4.3	3.9	12.8	11.3	12.7	82.8	84.4	83.4
Giving autonomy	46.4	47.6	48.6	28.2	27.4	27.0	25.4	25.0	24.4
Ensuring privacy/confidentiality	2.8	2.8	3.3	1.9	1.9	1.9	95.3	95.3	94.9
Targeting for health education	15.4	25.9	34.6	20.6	33.4	34.4	64.0	40.8	31.1
Screening for diseases	16.7	14.2	15.5	62.5	62.0	56.7	20.9	23.7	27.8
Overall practice of the HWs	**1.2**	**0.5**	**0.6**	**52.1**	**53.0**	**51.3**	**46.7**	**46.4**	**48.1**

[1]Values shown are percentages of HWs, & are only adjusted for the survey design. *Communication done in a way that would enable patients to understand their illness and its management. DEFFs (bad practice=0.40-0.77; neither-bad-nor-good=0.97-1.27- and good=1.03-1.25).

Table 20: Comparison by age-group of patients of the activities the HWs said they did while attending to patients

Patient age-group (years)	Mean[1]			Regression coefficient[1] with younger adults as the reference group [95%CI]		Regression coefficient[1] with younger adults as the reference group [95%CI]		Regression coefficient[1] with OPs aged 50-59 years as the reference group [95%CI]	
	35-49	50-59	60+	50-59	p-value	60+	p-value	60+	P-value
Ensured dignity (score/16)	14.0	14.1	14.2	0.08 [–0.1, 0.2]	0.31	0.12 [–0.1, 0.3]	0.23	0.04 [–0.1, 0.2]	0.53
Promptly attended to patients (score/8)	5.2	5.7	6.3	0.49 [0.3, 0.6]	**<0.001**	1.09 [0.8, 1.4]	**<0.001**	0.60 [0.4, 0.9]	**<0.001**
Communicated clearly to patients* (score/16)	13.4	13.7	13.8	0.25 [0.0, 0.5]	**0.04**	0.39 [0.1, 0.7]	**0.03**	0.14 [–0.0, 0.3]	**0.05**
Gave autonomy (score/12)	7.1	7.1	7.0	–0.05 [–0.2, 0.0]	0.26	–0.08 [–0.2, 0.1]	0.24	–0.03 [–0.1, 0.0]	0.42
Ensured privacy & confidentiality (score/12)	11.4	11.4	11.4	0.04 [–0.0, 0.1]	**0.07**	0.03 [–0.1, 0.1]	0.44	–0.00 [–0.1, 0.1]	0.90
Targeted for health education (score/28)	20.7	18.6	17.3	–2.04 [–2.4, –1.7]	**<0.001**	–3.33 [–3.9, –2.8]	**<0.001**	–1.29 [–1.7, –0.9]	**<0.001**
Screened patients for diseases (score/40)	25.4	26.0	26.1	0.64 [0.4, 0.9]	**<0.001**	0.72 [0.2, 1.2]	**0.007**	0.08 [–0.3, 0.5]	0.66
Mean overall scores (score/132)	**97.1**	**96.6**	**96.1**	–0.60 [–1.2, –0.0]	**0.05**	–1.07 [–1.9, –0.2]	**0.02**	–0.47 [–1.1, 0.1]	0.13

[1]Values only adjusted for the survey design. *Communication done in a way that would enable patients to understand their illness and its management

Table 21: Association of factors with the mean overall score of positive responses related to how the health workers said they treated older persons aged 60+ years

	N[1]	Mean[2]	Unadjusted regression coefficient[2] [95%CI]	Adjusted regression coefficient[3] [95%CI]	Adjusted regression coefficien[4] [95%CI]
Overall	**145**	**132**			
Mean overall score achieved		**96.1**			
PCF CHARACTERISTICS					
PCF level			**p=0.40**	**p=0.40**	**p=0.54**
IV	37	98.1	1	1	1
III	63	95.0	–3.12 [–7.7, 1.5]	–3.12 [–7.7, 1.5]	–5.02 [–8.9, –1.1]
II	45	97.0	–1.14 [–6.5, 4.2]	–1.14 [–6.5, 4.2]	–3.52 [–8.5, 1.5]
PCF location			**p=0.02**	**p=0.02**	**p=0.01**
Urban	21	99.7	1	1	1
Rural	124	95.4	–4.28 [–8.0, –0.6]	–4.28 [–8.0, –0.6]	–2.78 [–8.1, 2.5]
Geographical zone			**p=0.94**	**p=0.94**	**P= 0.62**
Northern Uganda	35	95.5	1	1	1
Eastern Uganda	35	96.3	0.79 [–6.7, 8.3]	0.79 [–6.7, 8.3]	0.69 [–5.0, 6.4]
Central Uganda	38	96.9	1.37 [–5.8, 8.5]	1.37 [–5.8, 8.5]	2.78 [–4.9, 10.5]
Western Uganda	37	95.4	–0.16 [–7.2, 6.9]	–0.16 [–7.2, 6.9]	–0.32 [–6.4, 5.7]
caseload due to all patients			**p=0.45**	**p<0.001**	
≤4000patients/month	103	96.4	1	1	
>4000patients/month	38	94.0	–2.35 [–8.6, 3.9]	–9.87 [–14.8, –4.9]	
Caseload due to OPs			**p=0.98**	**p=0.44**	
≤300 patients/month	94	96.0	1	1	
>300 patients/month	51	95.9	–0.05 [–4.5, 4.4]	–1.61 [–5.8, 2.6]	
AVAILABILITY OF SERVICES, EQUIPMENT, GUIDELINES AND AMENITIES					
Availability of services			**p=0.38**	**p=0.05**	
Had 0-6 of the services	57	94.5	1	1	
Had 7-8 of the services	56	97.7	3.21 [–1.4, 7.8]	5.85 [1.0, 10.7]	
Had 9-10 of the services	32	95.6	1.10 [–4.0, 6.2]	2.03 [–2.9, 6.9]	
Guideline in consultation area			**p=0.24**	**p=0.59**	
Had 0-5 of the guidelines	92	95.8	1	1	
Had 6-7 of the guidelines	39	95.4	–0.36 [–5.2, 4.5]	1.78 [–3.4, 7.0]	
Had 8-9 of the guidelines	14	100.3	4.46 [–1.4, 10.3]	3.07 [–3.6, 9.8]	
Equipment in consultation area			**p=0.09**	**p<0.001**	
Had 0-4 of the equipment	82	97.4	1	1	
Had 5 of the equipment	31	93.4	–4.02 [–12.3, 4.2]	–5.95 [–13.3, 1.4]	
Had >5 of the equipment	32	93.2	–4.15 [–8.0, -0.3]	–6.63 [–9.6, –3.7]	
Laboratory services			**p=0.22**	**p=0.06**	
Available	132	96.6	5.74 [–3.5, 15.0]	9.59 [–0.6, 19.8]	
Auditory privacy			**p<0.001**	**p<0.001**	
Available	133	96.8	11.51 [5.7, 17.3]	13.17 [6.1, 20.2]	
Visual privacy			**p<0.001**	**p<0.001**	**p<0.001**
Available	121	97.2	10.08 [5.0, 15.2]	11.16 [6.9, 15.4]	12.83 [8.4, 17.3]
Amenities we enquired about			**p=0.52**	**p=0.17**	
Had 0-2 of the basic amenities	32	95.5	1	1	
Had 3 of the basic amenities	56	97.6	2.08 [–3.9, 8.0]	3.73 [–1.6, 9.1]	
>3 of the amenities	57	94.9	–0.57 [–7.0, 5.8]	–0.53 [–6.3, 5.3]	

	N[1]	Mean[2]	Unadjusted regression coefficient[2] [95%CI]	Adjusted regression coefficient[3] [95%CI]	Adjusted regression coefficient [95%CI][4]
			HW CHARACTERISTICS		
Age-group			**p=0.38**	**p=0.21**	**P=0.05**
<26 years	15	100.3	1	1	1
26 – 35 years	84	94.7	–5.62 [–12.1, 0.9]	–6.49 [–12.9, –0.0]	–7.64 [–13.2, –2.1]
36 – 45 years	31	97.1	–3.19 [–9.3, 3.0]	–4.07 [–11.3, 3.1]	–5.83 [–11.4, –0.3]
>45years	15	94.7	–5.60 [–12.9, 1.7]	–7.01 [–14.6, 0.6]	–11.0 [–17.8, –4.2]
Sex			**p=0.18**	**p=0.15**	
Male	49	93.6	1	1	
Female	96	97.2	3.65 [–1.8, 9.1]	3.93 [–1.5, 9.4]	
Qualification			**p=0.03**	**p=0.01**	**p<0.001**
Clinicians	27	91.0	1	1	1
Nurses	88	97.0	6.01 [0.1, 12.0]	7.90 [1.6, 14.2]	7.57 [1.9, 13.3]
Nurse aids/assistants	30	98.9	7.86 [2.3, 13.5]	9.57 [4.0, 15.2]	11.25 [5.8, 16.7]
Trained in care of OPs			**p=0.37**	**p=0.37**	
Yes	28	98.4	1	1	
No	117	95.5	–2.88 [–9.3, 3.6]	–2.94 [–9.4, 3.5]	
Knowledge of HWs			**p=0.97**	**p=0.97**	
Poor	46	95.8	1	1	
Satisfactory	88	96.2	0.47 [–3.4, 4.3]	–0.18 [–4.1, 3.7]	
Good	11	96.3	0.56 [–6.8, 7.9]	0.51 [–6.9, 7.9]	
Attitude of the HWs			**p=0.33**	**p=0.18**	
Each unit increase in attitude			–0.1 [–0.4, 0.1]	–0.17 [–0.4, 0.1]	

[1]Unweighted N. [2]Values only adjusted for the survey design. [3]Values adjusted for the survey design, PCF level, PCF location, and geographical zone. [4]Final model: Values adjusted for the survey design, PCF level, PCF location and geographical zone and their interaction, and all independent predictors of the mean overall score that were associated at P<0.10 at the preceding level of the conceptual framework.

4.5. How older persons were treated and their perceptions of services at primary care facilities

Description of the study participants

In each district, we aimed to interview 32 OPs: 8 from PCF IV, 12 from PCF III (6 per PCF), and 12 from PCF II (4 per PCF). In Agago district where there was no PCF IV, we aimed to interview 30 OPs: 18 from PCF III (6 per PCF) and 12 from PCF II (4 per PCF). This target was achieved in 6 of the 8 districts. The shortfall of 5 OPs in Arua district and 1 OP in Mpigi district was due to insufficient number of OPs during the 3-5 days that the team was in the PCF. In Arua district, the HWs in-charge attributed the low numbers of OPs to stock out of drugs that they said they had experienced for over three months. As a result, 248 OPs rather than the target of 254 (97.6%) were interviewed. Data were excluded for an additional four OPs who did not complete the interview: 1 in Mpigi district and 3 in Nakasongola district. Data were therefore available for 244 OPs (96.1% of target). In each district, we also aimed to interview 12 younger adults (two per PCF) and this was achieved in all the districts.

Table 22 shows the sociodemographic characteristics of the study participants. The median age for younger adults was 40 yrs (IQR 37.5 – 43) while that for OPs was 60 (IQR 53 – 69). About half of the OPs (46.3%) were aged 50-59 years. Farming was the main occupation and main source of cash income for both the younger adults and the OPs. About three quarters of the OPs and of the younger adults described their material situation as poor or very poor.

Health care access and utilisation by the older persons and younger adults

A great majority of the OPs (82.8 %) and of the younger adults (82.3%) lived within a 5-km radius of a PCF. Three quarters of the younger adults (74.0%) and a great majority of the OPs (88.5%) had used the PCFs as their main source of health care for over 2 years. Ease of access, “good health care”, availability of free medical services, and availability of drugs were the main reasons given by both the younger adults and the OPs for choosing the PCFs over other facilities. However in the previous twelve months, about half (52.1%) of the younger adults and 40.2% of the OPs had also sought health care elsewhere (Annex 9.8). The most common reasons mentioned for this were not receiving drugs during a previous visit, and being told by friends that there were no drugs at the PCF. Roughly one-third of both younger adults and OPs reported that they had not gone to a health facility when they

needed to within the past 12 months. The commonest reasons reported for this were lack of transport, being too sick to walk, and being told by friends that there were no drugs at the facility (Annex 9.8).

Table 22: Sociodemographic characteristics of the study participants

	[1]Younger adults		[1]OPs	
	N	**%**	**N**	**%**
Number surveyed in each group	**96**		**244**	
Sex				
Female sex	62	64.6	148	60.7
Age-group (years)				
35-49	96	100	0	0
50 – 59	0		113	46.3
60 – 69	0		72	29.5
70 – 79	0		37	15.2
80+	0		22	9.0
Marital status				
Married	73	76.0	138	56.6
Cohabiting/living with someone	4	4.2	7	2.9
Widowed	5	5.2	75	30.7
Separated/divorced	8	8.3	10	4.1
Single	6	6.3	14	5.7
Main Occupation				
Farming	78	81.3	187	76.6
Self-employment	9	9.4	22	9.0
Government/NGO employment	6	6.3	10	4.1
Retired	0	0.0	8	3.3
Unemployed	3	3.1	17	7.0
Main source of cash income				
Farming	70	72.9	160	65.6
Self-employment	14	14.6	46	18.9
Government/NGO employment	9	9.4	10	4.1
Retirement benefits	0	0.0	2	0.8
Donation	1	1.0	20	8.2
None	2	2.1	6	2.5
Material situation				
Comfortable	26	27.1	56	23.0
Poor	55	57.3	114	46.7
Very poor	15	15.6	74	30.3
Education				
Attended school	59	61.5	126	51.6
Level of education achieved**				
Ordinary level	45	76.3	113	89.7
Advanced level	10	17.0	9	7.1
Tertiary institution	4	6.8	4	3.2

[1]Unadjusted for the survey design. **sub-category with percentages calculated among those answering yes to the previous item.

4.5.1. How older persons and younger adults reported that they had been treated

Based on the classification of the treatment the OPs and younger adults said they had received into "good", "neither-poor-nor-good", and "poor"; overall, the majority of both OPs and younger adults (47.6-66.9%) were classified as having received neither-poor-nor-good treatment from the PCFs and 8.4-22.8% were classified as having received poor treatment (Table 23). However, a substantial proportion of both OPs and younger adults were classified as having received poor treatment with regard to having autonomy (74.5-79.8%), receiving prompt attention (55.9-76.4%), being screened for diseases (61.3-69.5%), receiving health education (25.3-50.6%), and being communicated to in a manner that would enable them to understand their illness and its management (17.1-22.1%) (Table 23).

Overall, there was no statistically significant difference between the treatment the OPs said they had received and that of younger adults (unadjusted coefficient: 1.37; 95%CI: –2.9, 5.6; p=0.52) (Table 24). However, OPs (≥50years) reported receiving prompt attention more often than younger adults (unadjusted coefficient: 0.35; 95%CI: 0.1, 0.6). Similarly, OPs aged ≥60years reported receiving prompt attention more often than younger adults (p=0.001) and OPs aged 50-59years (p=0.01). In contrast, OPs (≥60years) reported receiving health education less often than younger adults (p=0.04) and OPs aged 50-59years (p=0.04). Although there was heterogeneity of reported treatment by other domains, there was no evidence of a significant difference by age of the patients.

Association of factors with the mean overall score of positive responses given by older persons (≥50years) to questions related their treatment at the primary care facilities

In the unadjusted analysis (Table 25), the mean overall score varied by PCF characteristics; namely: geographical zone (p<0.001), availability of equipment in the consultation area (p=0.01), availability of auditory privacy (p=0.01), and availability of visual privacy (p<0.001). The mean score also varied by characteristics of the OPs; namely: sex (p=0.04), increasing poverty level (P=0.05), increased number of PCF visits (p=0.05), and increasing duration of use of the PCF (p=0.03).

After adjusting for PCF level, PCF location and geographical zone (Table 25), most of the associations became stronger – only the associations with sex and visual privacy remained. In addition, after adjusting, the association with increased caseload due to OPs, availability of guidelines in consultation area, and availability of laboratory services became statistically significant.

In the final model in which all the independent predictors of the mean overall score that were associated at $p<0.10$ at the preceding level of the conceptual framework were adjusted for (Table 25, last column); PCF characteristics that remained independently associated with the mean overall score were: decreasing level of PCF ($p=0.03$), geographical zone ($P<0.001$), increased caseload due to OPs ($P=0.01$), and availability of visual privacy ($P=0.04$). OP characteristics remaining independently associated were increasing level of education (0.004), increasing visits to the PCF ($P=0.03$), and increasing duration of facility use ($P=0.002$).

Table 23: Proportion of older persons and younger adults classified as having received good, neither-good-nor-poor, and poor treatment

	Poor (%)[1]				Neither-poor-nor-good (%)[1]				Good (%)[1]			
Patient age (years)	**35-49**	**50-59**	**60+**	**All OPs**	**35-49**	**50-59**	**60+**	**All OPs**	**35-49**	**50-59**	**60+**	**All OPs**
Total surveyed in each group (N)[2]	**96**	**113**	**131**	**244**	**96**	**113**	**131**	**244**	**96**	**113**	**131**	**244**
Treatment with dignity	4.2	6.2	0.2	3.1	29.6	15.1	33.4	24.6	66.2	78.7	66.4	72.3
Being screened for diseases	69.5	69.3	61.3	65.1	22.8	25.1	29.5	27.4	7.7	5.6	9.2	7.5
Receiving prompt attention	76.4	76.5	55.9	65.8	16.0	15.6	24.8	20.4	7.5	7.8	19.3	13.8
Being communicated to appropriately**	17.1	19.7	22.1	21.0	41.7	32.0	32.0	32.0	41.2	48.3	46.0	47.1
Having autonomy	79.8	64.3	74.5	69.6	4.5	17.2	12.5	14.7	15.8	18.5	13.0	15.7
Having privacy & confidentiality	5.9	1.7	4.1	2.9	3.9	5.7	5.2	5.4	90.2	92.6	90.7	91.6
Receiving health education	30.0	25.3	50.6	38.5	47.5	39.9	27.6	33.5	22.5	34.8	21.8	28.0
Not paying money unofficially (bribe)	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	98.6	100	100	100
Overall (all domains combined)	16.5	8.4	22.8	15.9	66.9	66.1	47.6	56.5	16.6	25.6	29.6	**27.7**

[1]Values shown are percentages of OPs and younger adults that received good, neither-good-nor-poor and poor treatment from the PCFs, and the values are adjusted for the survey design only. [2]Unweighted N. DEFFs (poor=0.90 – 0.94; neither-poor-nor-good=0.73 – 1.70; good=0.94 – 2.04)

Table 24: Comparison of the treatment the OPs said they received with that of younger adults

	OPs (aged ≥50 years) vs. younger adults (35-49years), with younger adults as reference group				OPs aged 50-59years vs. younger adults, with younger adults as reference group		OPs aged 60+year vs. younger adults, with younger adults as reference group		OPs aged 60+ years vs. OPs aged 50-59 years, with OPs aged 50-59 years as reference group	
	mean[1]		Regression coefficient[1] [95%CI]	p-value	Regression coefficient[1]	p-value	Regression coefficient[1]	p-value	Regression coefficient[1]	p-value
Patient age (Years)	35-59	50+	50+years		50-59years		60+years		60+years	
Treated with dignity (score/32)	25.4	26.1	0.77 [–0.2, 1.7]	0.12	0.97	0.18	0.58	0.22	–0.40	0.59
Screened for diseases (score/32)	12.8	13.6	0.72 [–0.7, 2.1]	0.31	0.99	0.32	0.47	0.59	–0.51	0.7
Attended to promptly (score/8)	3.7	4.0	0.35 [0.1, 0.6]	**0.01**	–0.03	0.87	0.70	**0.001**	0.74	**0.01**
Communicated to appropriately (score/24)	16.5	16.4	–0.05 [–0.8, 0.7]	0.89	0.25	0.69	–0.33	0.55	–0.58	0.53
Given autonomy (score/12)	5.0	5.3	0.30 [–0.2, 0.8]	0.22	0.71	**0.04**	–0.08	0.82	–0.79	0.10
Had privacy (score/12)	10.9	11.1	0.21 [–0.3, 0.7]	0.36	0.29	0.26	0.13	0.61	–1.16	0.53
Received health education (score/32)	19.5	18.4	–1.07 [–3.1, 1.0]	0.30	0.82	0.49	–2.81	**0.04**	–3.63	**0.02**
Did not pay bribe to a HW (score/8)	7.9	8.0	0.08 [–0.02, 0.2]	0.11	0.09	0.10	0.08	0.12	–0.01	0.50
Overall (all domains combined) (score/164)	105.1	106.5	1.37 [–2.9, 5.6]	0.52	4.19	0.20	–1.22	0.69	–5.4	0.24

Key: [1]Values are adjusted for the survey design only

Table 25: Association of factors with the mean overall score of positive responses related to how older persons said they were treated at the primary health care facilities

	N[1]	Mean[2]	Unadjusted regression coefficient[2] [95%CI]	Adjusted regression coefficient[3] [95%CI]	Adjusted regression coefficient[4] [95%CI]
Overall	**145**	**164**			
Mean overall score achieved		**106.5**			
			PCF CHARACTERISTICS		
PCF level			**p=0.40**	**p=0.40**	**p=0.03**
PCF IV	54	107.6	1	1	1
PCF III	100	103.4	–4.21 [–22.9, 14.5]	–4.21 [–22.9, 14.5	4.79 [–2.2, 11.8]
PCF II	90	110.2	2.54 [–17.9, 23.0]	2.54 [–17.9, 23.0]	13.53 [4.8, 22.2]
PCF location			**p=0.43**	**p=0.43**	**p=0.70**
Urban	34	110.7	1	1	1
Rural	210	106.0	–4.73 [–16.8, 7.4]	–4.73 [–16.8, 7.4]	7.03 [–2.6, 16.7]
Geographical zone			**p<0.001**	**p<0.001**	**p<0.001**
Northern	57	97.0	1	1	1
Eastern	64	100.7	3.71 [–2.9, 10.4]	3.71 [–2.9, 10.4]	1.00 [–12.4, 14.4]
Central	59	111.9	14.91 [6.4, 23.4]	14.91 [6.4, 23.4]	24.48 [11.4, 37.5]
Western	64	118.4	21.41 [10.4, 32.4]	21.41 [10.4, 32.4]	17.61 [2.6, 32.6]
caseload due to all patients			**p=0.94**	**p=0.77**	
≤4,000 patients/month	181	106.5	1	1	
>4,000 patients/month	63	105.9	–0.60 [–18.4, 17.2]	3.03 [–17.9, 24.0]	
Caseload due to OPs			**p=0.71**	**p=0.04**	**p=0.01**
≤300 patients/month	161	105.4	1	1	1
>300 patients/month	83	107.5	2.13 [–9.5, 13.8]	10.67 [0.4, 21.0]	12.91 [4.6, 21.3]
			HW CHARACTERISTICS		
Reported practices of HWs			**p=0.42**	**p=0.45**	
Each unit increase in practice			**–0.10 [-0.3, 0.1]**	–0.08 [-0.3, 0.1]	
Attitude of HWs			**p=0.10**	**p=0.76**	
Each unit increase in attitude			0.3 [–0.1, 0.7]	0.05 [–0.3, 0.4]	
Knowledge of HWs			**p=0.70**	**p=0.39**	
Poor	58	105.2	1	1	
Satisfactory	159	106.5	1.38 [–9.0, 11.7]	1.54 [–8.3, 11.4]	
Good	27	110.3	5.13 [–7.7, 18.0]	7.83 [–4.8, 20.5]	
			AVAILABILITY OF SERVICES, GUIDELINES, EQUIPMENT AND AMENITIES		
Availability of services			**p=0.84**	**p=0.13**	
Had 0-6 of the services	102	107.0	1	1	
Had 7-8 of the services	83	104.6	–2.48 [–14.7, 9.7]	–6.10 [–16.7, 4.5]	
Had 9-10 of the services	59	108.4	1.34 [–12.4, 15.0]	4.04 [–7.2, 15.3]	
Guideline in consultation area			**p=0.63**	**p=0.02**	
Had 0-5 of the guidelines	154	107.7	1	1	
Had 6-7 of the guidelines	60	103.0	–4.70 [–16.4, 7.0]	–13.18 [–23, –3.1]	
Had 8-9 of the guidelines	30	108.5	0.81 [–9.8, 11.4]	6.61 [–4.0, 17.3]	
Equipment in consultation area			**p=0.005**	**p<0.001**	
Had 0-4 of the equipment	143	105.4	1	1	
Had 5 of the equipment	48	95.0	–10.43 [–21.7, 0.9]	–7.81 [–16.2, 0.5]	
Had >5 of the equipment	53	116.6	11.24 [0.5, 22.0]	15.60 [8.3, 22.9]	
Amenities we asked about			**p=0.95**	**p=0.64**	
Had 0-2 of the amenities	47	104.9	1	1	
Had 3-4 of the amenities	166	106.9	1.96 [–11.1, 15.0]	4.03 [–4.5, 12.6]	
Had all the 5 of the amenities	31	106.3	1.39 [–21.2, 24.0]	2.20 [–10.8, 15.2]	

	N[1]	Mean[2]	Unadjusted regression coefficient[2] [95%CI]	Adjusted regression coefficient[3] [95%CI]	Adjusted regression coefficient[4] [95%CI
Auditory privacy			**p=0.006**	**p=0.001**	
Available	223	107.1	15.28 [4.8, 25.8]	17.96 [7.5, 28.5]	
Visual privacy			**P<0.001**	**P<0.001**	**p=0.05**
Available	207	107.8	18.76 [9.1, 28.4]	17.65 [11.6, 23.7]	12.84 [6.0, 19.7]
Laboratory services			**p=0.25**	**p=0.03**	
Available	218	106.9	5.55 [–4.1, 15.2]	11.07 [1.0, 21.1]	
OP CHARACTERISTICS					
Age			**p=0.66**	**p=0.69**	
50-59 years	113	109.3	1	1	
60-69 years	72	103.2	–6.09 [–16.8, 4.6]	–6.07 [–16.2, 4.0]	
70-79 years	37	103.5	–5.80 [–16.5, 4.9]	–4.11 [–13.8, 5.6]	
80+ years	22	106.3	–2.98 [–15.0, 9.0]	–2.62 [–12.3, 7.1]	
Sex			**p=0.04**	**p=0.03**	
Male	96	110.1	1	1	
Female	148	103.8	–6.24 [–12.2, –0.3]	–6.07 [–11, –0.7]	
Employment status			**p=0.07**	**p=0.45**	
Farming	187	105.8	1	1	
Self-employed	22	116.4	10.55 [2.5, 18.6]	7.07 [–2.0, 16.2]	
Government/NGO employed	10	109.2	3.38 [–8.7, 15.4]	6.29 [–5.6, 18.2]	
Retired	8	113.0	7.19 [–7.8, 22.2]	–0.14 [–11, 10.7]	
Unemployed	17	99.9	–5.90 [–18.2, 6.4]	–4.5 [–15.7, 6.7]	
Material/poverty situation			**p=0.05**	**p=0.003**	
Comfortable	56	113.1	1	1	
Poor	114	104.3	–8.72 [–15.6, –1.8]	–10.97 [–17, –5.0]	
Very poor	74	102.2	–10.83 [–23.4, 1.7]	–13.59 [–25, –1.4]	
Education status			**p=0.40**	**p=0.45**	
Attended school	126	107.9	1	1	
Never attended school	118	105.0	–2.90 [–9.9, 4.1]	–2.14 [–7.8, 3.5]	
Level of education			**p=0.31**	**p=0.08**	**p=0.004**
Primary	113	107.0	1	1	1
Secondary	9	113.8	6.83 [–8.7, 22.3]	12.04 [–2.6, 26.6]	14.60 [4.5, 24.7]
Tertiary	4	118.7	11.74 [–5.4, 28.9]	23.12 [–2.6, 48.8]	17.31 [–4.9, 39.5]
Number of visits in 12months			**p=0.05**	**p<0.001**	**p=0.03**
1-2 times	34	95.4	1	1	1
3-4 times	63	107.1	11.65 [0.9, 22.4]	16.73 [9.6, 23.9]	13.27 [0.8, 25.8]
>4 times	147	107.9	12.53 [2.6, 22.5]	15.98 [8.9, 23.0]	16.79 [5.7, 27.9]
Duration of PCF use			**p=0.03**	**p=0.001**	**p=0.002**
<12months	16	88.9	1	1	1
12-24 months	12	107.5	18.60 [–1.3, 38.5]	19.50 [–0.6, 39.6]	16.67 [–3.8, 37.2]
>24 months	216	107.4	18.50 [5.4, 31.6]	20.85 [10.5, 31.2]	20.08 [8.5, 31.7]
PCF is the main source of care			**p=0.60**	**p=0.80**	
No	19	103.7	–3.10 [–15.1, 8.9]	–1.38 [–12.5, 9.8]	
Received treatment that day			**p=0.09**	**p=0.27**	
Yes	233	105.7	–15.33 [–33.7, 3.0]	–10.46 [–29, 8.4]	

[1]Unweighted N. [2]Values adjusted for the survey design only. [3]Values adjusted for survey design, PCF level, PCF location and geographical zone. [4]Final model: values adjusted for the survey design, PCF level, PCF location and geographical zone and their interaction, and all independent predictors of the mean score of positive responses that were associated at P<0.10 at the preceding level of the conceptual framework.

4.5.2. Perceptions of older persons of the care they received from primary care facilities

Based on the classification of the overall perceptions of the OPs into "poor", "neither-poor-nor-good" and "good"; almost none of the OPs (1.1%) and younger adults (2.1%) had poor perceptions of the services they had received from the PCFs (Table 26). Both OPs and younger adults rated the dignity with which they were treated (score 4.2/5), clarity of communication with HWs (score 3.7-4/5), and privacy and confidentiality they were accorded (4.3-4.4/5) more highly than they rated prompt attention they received (3.6/5), being screened for diseases (3.7/5), and being given autonomy (3.6/5) (Table 27). Overall, there was no statistically significant difference in perceptions of OPs and younger adults (p=0.21) (Table 27). However, OPs rated the clarity of communication with HWs more highly than did the younger adults (p=0.01).

Table 26: Proportion of patients with poor, neither-poor-nor-good, and good perceptions

	Younger adults (n=96)	Older persons (n=244)
Poor	2.1 [0.6,7.7]	1.1[0.2,7.0]
Neither poor nor good	51.5 [38.6,64.2]	49.5 [42.7,56.3]
Good	46.4 [33.7,59.5]	49.3 [41.8,56.9]

Key: Values are only adjusted for the survey design. DEFFs (poor=0.87 – 2.35; neither-poor-nor-good=1.10 – 1.61; good=1.37 – 1.63)

Table 27: Comparison of the domain specific perceptions of older persons with that of younger adults

	Mean score (out of 5 points)		Coefficient [95%CI] (younger adults as reference group	P-value
	younger adults[1]	OPs[1]	OPs[1]	
Dignity	4.2	4.2	0.04 [–0.1, 0.2]	0.54
Disease screening[2]	3.7	3.7	–0.04 [–0.2, 0.1]	0.65
Prompt attention	3.6	3.6	–0.00 [–0.1, 0.1]	0.96
Communication	3.7	4.0	0.21 [0.1, 0.4]	**0.01**
Autonomy[3]	3.6	3.6	–0.09 [–0.3, 0.1]	0.25
Privacy and confidentiality	4.3	4.4	0.08 [-0.2, 0.3]	0.51
All the services received	4.1	4.2	0.10 [–0.1, 0.2]	0.18
Mean overall score	26.1	26.6	0.47 [–0.3, 1.2]	0.21

[1]Value adjusted for the survey design only. [2]Calculated among OPs who received physical examination.
[3]Calculated among OPs who had wanted to be involved in decisions regarding their care

Association of factors with the mean overall perception score

In the unadjusted analysis (Table 28), the mean overall perception score varied by geographical zone (p<0.001), availability of a waiting area that shields patients from sun or rain (P=0.07), availability of a functional toilet (P<0.001), availability of enough seats in the waiting area (P=0.07), and a ramp (p=0.09). The mean overall score was positively associated with increasing positive attitudes of HWs towards OPs (p=0.02) and increasing knowledge of common ailments that affect OPs (0.02). Similarly, the mean score was associated with OP characteristics, namely: reporting better treatment from the PCFs (p<0.001), employment status (P=0.01), level of education (p=0.002), and use of the PCFs as the main source of health care (P=0.001).

After adjusting for the PCF level, PCF location and geographical zone (Table 28), the positive associations with availability of functional toilet, enough seats in the waiting area, knowledge of HWs, reporting better treatment by OPs, education level of OPs, and use of the PCFs by OPs as their main source of health care remained or became stronger while the associations with availability of a ramp, waiting area that shields patients from sun or rain, HW attitudes, and employment status of OPs became statistically not significant. In addition, after adjusting, the association with the total caseload (due to all patients), sex and religion of OPs became statistically significant.

In the final model in which all the independent predictors of the mean overall perception score that were associated at p<0.10 at the preceding level of the conceptual framework were adjusted for (Table 28, last column); PCFs characteristics that remained independently associated were PCF location (P=0.04) and availability of functional toilet (p=0.001). Improving HW practices related to the care of OPs was the only HW characteristic that remained independently associated with the mean score (p<0.001). Characteristics of OPs that remained associated were age (p=0.01), religion (p=0.05), use of PCF as the main source of care (p<0.001) and duration of facility use (p<0.001).

Table 28: Association of factors with the mean overall perception score for older persons

	N[1]	Mean[2]	Unadjusted regression coefficient [95%CI][2]	Adjusted regression coefficient [95%CI][3]	Adjusted regression coefficient [95%CI][4]
Total	**244**	**35**			
Overall mean score achieved		**26.6**			
PCF CHARACTERISTICS					
PCF level			**p=0.16**	**p=0.16**	**p=0.19**
PCF IV	54	26.7	1	1	1
PCF III	100	25.7	–0.93 [–2.9, 1.1]	–0.93 [–2.9, 1.1	–0.36 [–1.8, 1.1]
PCF II	90	27.7	0.99 [–1.1, 3.1]	0.99 [–1.1, 3.1]	0.59 [–1.0, 2.2]
PCF location			**p=0.16**	**p=0.16**	**p=0.04**
Urban	34	27.6	1	1	1
Rural	210	26.4	–1.17 [–2.8, 0.5]	–1.17 [–2.8, 0.5]	0.15 [–1.0, 1.3]
Geographical zone			**p<0.001**	**p<0.001**	**p=0.93**
Northern	57	25.3	1	1	1
Eastern	64	25.6	0.36 [–0.7, 1.4]	0.36 [–0.7, 1.4]	0.05 [–1.2, 1.3]
Central	59	29.2	3.94 [3.1, 4.7]	3.94 [3.1, 4.7]	2.31 [1.3, 3.3]
Western	64	27.2	1.98 [–1.0, 4.9]	1.98 [–1.0, 4.9]	–0.36 [–2.9, 2.2]
Caseload due to all patients			**p=0.96**	**p=0.004**	
≤4,000 patients/month	181	26.6	1	1	
>4,000 patients/month	63	26.5	–0.04 [–1.7, 1.6]	1.4 [0.5, 2.3]	
Caseload due to older persons			**p=0.48**	**p=0.39**	
≤300 patients/month	164	26.9	1	1	
>300 patients/month	80	26.2	–0.65 [–2.5, 1.2]	0.70 [–0.9, 2.3]	
AVAILABILITY OF SERVICES, GUIDELINES, EQUIPMENT AND COMFORT AMENITIES					
Availability of services asked about			**p=0.85**	**p=0.74**	
Had 0-6 of the services	102	26.7	1	1	
Had 7-8 of the services	83	26.7	–0.02 [–2.7, 2.6]	0.42 [–2.2, 3.0]	
Had 9-10 of the services	59	26.3	–0.41 [–1.9, 1.1]	0.84 [–1.4, 3.1]	
Guidelines in consultation area			**p=0.90**	**p=0.42**	
Had 0-5 of the guidelines	154	26.7	1	1	
Had 6-7 of the guidelines	60	26.1	–0.59 [–3.7, 2.5]	–0.90 [–3.4, 1.6]	
Had 8-9 of the guidelines	30	26.9	0.21 [–1.9, 2.3]	1.04 [–0.9, 3.0]	
Equipment in consultation area			**p=0.80**	**p=0.56**	
Had 0-4 of the equipment	143	26.6	1	1	
Had 5 of the equipment	48	26.0	–0.58 [–2.8, 1.6]	–0.04 [–2.9, 2.8]	
Had >5 of the equipment	53	26.8	0.22 [–1.8, 2.2]	0.69 [–0.9, 2.3]	
Laboratory services			**p=0.12**	**p=0.19**	
Available	218	26.5	–1.40 [–3.20, 0.4]	1.36 [–0.7, 3.4]	
Waiting area that shields from rain/sun			**p=0.07**	**p=0.39**	
Available	234	26.7	2.86 [–0.2, 5.9]	1.9 [–2.6, 6.4]	
Availability of functional toilet			**p<0.001**	**p<0.001**	**p=0.001**
Available	240	26.6	5.14 [4.3, 6.0]	5.49 [3.6, 7.3]	1.08 [–0.6, 2.8]
Source of drinking water			**p=0.32**	**p=0.17**	
Available	163	26.9	1.22 [–1.2, 3.7]	1.45 [–0.6, 3.5]	
Enough seats in waiting area			**p=0.07**	**p=0.02**	
Available	94	27.5	1.64 [–0.1, 3.4]	2.19 [0.4, 3.9]	
Ramps			**p=0.05**	**p=0.11**	
Available	83	25.2	–2.08 [–4.1, –0.0]	–2.03 [–4.5, 0.4]	

	N[1]	Mean[2]	Unadjusted regression coefficient [95%CI][2]	Adjusted regression coefficient [95%CI][3]	Adjusted regression coefficient [95%CI][4]
Auditory privacy			**p=0.94**	**p=0.11**	
Available	223	26.6	–0.13 [–3.7, 3.4]	2.22 [–0.5, 5.0]	
Visual privacy			**p=0.92**	**p=0.53**	
Available	207	26.6	–0.12 [–2.4, 2.1]	0.64 [–1.4, 2.6]	
			HW CHARACTERISTICS		
Attitude of HWs			**p=0.02**	**p=0.38**	
Each unit increase in attitude			0.07 [0.01, 0.1]	0.03 [–0.04, 0.1]	
Knowledge of HWs			**p=0.02**	**p=0.05**	
Poor	56	25.4	1	1	
Neither poor nor good	156	26.8	1.44 [0.1, 2.8]	1.15 [–0.2, 2.5]	
Good	32	27.8	2.46 [0.8, 4.2]	1.68 [0.4, 3.0]	
			OP CHARACTERISTICS		
Treatment received at PCFs			**p<0.001**	**p<0.001**	**p<0.001**
Bad	38	21.7	1	1	1
Neither bad nor good	143	26.3	4.63 [3.3, 5.9]	4.22 [2.9, 5.6]	5.04 [3.6, 6.50]
Good	63	29.9	8.25 [6.5, 10.0]	7.77 [5.7, 9.8]	8.50 [6.5, 10.5]
Age			**p=0.28**	**p=0.23**	**p=0.01**
50-59 years	113	26.4	1	1	1
60-69 years	72	26.0	–0.40 [–2.2, 1.4]	–0.59 [–2.6, 1.4]	–0.20 [–1.5, 1.1]
70-79 years	37	27.2	0.76 [–1.0, 2.5]	0.43 [–1.4, 2.2]	1.00 [0.04, 2.0]
80+ years	22	28.3	1.89 [–0.04, 3.8]	1.88 [–0.1, 3.9]	1.64 [0.4, 2.9]
Sex			**p=0.11**	**p=0.06**	
male	96	27.1	1	1	
Female	148	26.2	–0.95 [–2.1, 0.2]	–1.00 [–2.1, 0.1]	
Marital Status			**p=0.99**	**p=0.75**	
Married or living with someone	145	26.6	1	1	
Single (widowed, divorced or never married)	99	26.6	0.01 [–1.6, 1.6]	–0.25 [–1.8, 1.3]	
Employment status			**p=0.01**	**p=0.12**	
Farming	187	26.3	1	1	
Self-employed	20	28.9	2.63 [1.2, 4.0]	1.39 [–0.2, 3.0]	
Government/NGO employed	7	28.3	1.99 [–0.5, 4.4]	1.63 [0.2, 3.0]	
Retired	8	28.2	1.83 [–2.0, 5.7]	0.63 [–3.0, 4.2]	
Unemployed	22	26.2	–0.11 [–2.6, 2.4]	0.16 [–2.3, 2.3]	
Material situation			**p=0.23**	**p=0.25**	
Comfortable	56	26.7	1	1	
Poor	114	27.2	0.43 [–0.8, 1.7]	–0.24 [–1.3, 0.8]	
Very poor	74	25.4	–1.32 [–4.0, 1.4]	–1.96 [–4.6, 0.6]	
Education status			**p=0.56**	**p=0.60**	
Attended school	126	26.8	1	1	
Never attended school	118	26.4	–0.34 [–1.5, 0.8]	–0.31 [–1.5, 0.9]	
Level of education			**p=0.002**	**p=0.06**	
Primary	113	26.8	1	1	
Secondary	9	25.6	–1.20 [–4.9, 2.5]	–0.48 [–3.1, 2.1]	
Tertiary	4	29.5	2.77 [1.3, 4.2]	4.36 [0.8, 7.9]	

	N[1]	Mean[2]	Unadjusted regression coefficient [95%CI][2]	Adjusted regression coefficient [95%CI][3]	Adjusted regression coefficient [95%CI][4]
Religion			**p=0.12**	**p=0.04**	**p=0.05**
Protestant	95	27.5	1	1	1
Catholic	108	26.1	–1.39 [–3.1, 0.3]	–1.19 [–2.4, 0.0]	–0.76 [–1.9, 0.4]
Others	41	25.8	–1.70 [–3.6, 0.2]	–2.03 [–3.8, –0.2]	–1.86 [–3.2, –0.5]
Distance from PCF			**p=0.42**	**p=0.43**	
<3km	127	26.9	1	1	
3-5km	75	26.1	–0.77 [–1.9, 0.4]	–0.56 [–1.4, 0.3]	
>5km	42	26.3	–0.58 [–1.9, 0.7]	–0.32 [–1.3, 0.7]	
PCF is main source of care			**p=0.001**	**p=0.001**	**p<0.001**
Yes	225	26.9	1	1	1
No	19	23.4	–3.45 [–5.4, –1.5]	–2.55 [–4.0, –1.2]	–3.33 [–4.7, –1.9]
Number of PCF visits in 12months			**p=0.94**	**p=0.72**	
1 – 5 times	34	26.3	1	1	
6 – 10 times	63	26.6	0.26 [–2.0, 2.6]	0.52 [–1.2, 2.2]	
>10 times	147	26.6	0.33 [–1.7, 2.4]	0.68 [–1.0, 2.3]	
Duration of PCF use			**p=0.94**	**p=0.83**	**p<0.001**
<12 months	16	26.8	1	1	1
12-24 months	12	26.1	–0.70 [–4.9, 3.5]	–0.71 [–4.4, 3.0]	–5.4 [–8.1, –2.7]
>24 months	216	26.6	–0.22 [–2.0, 1.5]	0.09 [–1.3, 1.5]	–4.72 [–6.9, –2.5]
Received treatment that day			**p=0.57**	**p=0.69**	
No	11	27.6	1	1	
Yes	233	26.5	–1.09 [–4.9, 2.7]	–0.71 [–4.3, 2.8]	

[1]Unweighted N. [2]Values adjusted for the survey design only. [3]Values adjusted for survey design, PCF level, PCF location and geographical zone. [4]Final model: values adjusted for the survey design, PCF level, PCF location and geographical zone and their interaction, and all independent predictors of the mean perception score that were associated at P<0.10 at the preceding level of the conceptual framework.

Chapter 5: Discussion

5.1. Introduction

The specific aim of this study was to evaluate the health care available and delivered to OPs through PCFs in Uganda in order to identify any gaps and weaknesses and to suggest potential solutions for improving health care for OPs in SSA. Specifically, the study evaluated the availability of services that were expected to be in the minimum health care package for OPs in Uganda and factors that influenced their availability (Figure 2). The study was conducted in 48 PCFs across 8 districts, two in each of the four geographical zones of Uganda (Northern, Eastern, Central and Western). It involved record reviews to determine the absolute and relative caseload due to OPs, and structured interviews with: 1) The HW in-charge of the PCFs to assess what health care was provided both overall and specifically to OPs, 2) HWs to assess their knowledge, attitudes and practices regarding provision of health care to OPs, and 3) OPs and younger adults (aged 35-49 years) to assess their perceptions of the health care services they have received from the PCFs. Study participants were selected through a multistage stratified random sampling method. Quantitative data were collected using tools developed based mainly on WHO's recommendations on "service availability and readiness", and "health system responsiveness". Data were analysed using methods appropriate for complex multistage surveys.

5.2. Availability of services

The study identified important gaps and weaknesses in the availability of services that were identified in the minimum health care package to be particularly important for the care of OPs in Uganda and that were enquired about. Firstly, as would be expected; special geriatric care was found to be non-existent at the PCFs (Table 11). Secondly, there was severe shortage of the specific services that were judged by the study team to be particularly important for the care of OPs and were enquired about in the study (Table 11). Availability was particularly low for chronic non-communicable diseases (NCDs) – suggesting that primary care in Uganda is built around the acute-care model, focusing on prevention and treatment of infectious illnesses. This finding is consistent with the government reports in East Africa[151, 152, 161], and WHO (2008)[109, 139] report on primary care services in Africa that

showed that primary care in Africa focuses on prevention and treatment of infectious illnesses.

As would be expected, availability of most services was highest at PCF IV (higher-level PCF) and lowest at PCF II (lower-level PCF) (Table 11), and similar between urban and rural PCFs, and geographical zones (Annex 9.5.1). OPs with NCDs were particularly unlikely to have access to appropriate services at PCF IIIs (mid-level PCFs) and PCF IIs and yet these PCFs constitute 34% and 60% of the PCFs in Uganda respectively (MoH 2011 pg. 3)[232] and potentially see many OPs.

Thirdly, there was shortage of the basic items of equipment that were judged by the study team to be particularly important for delivering services to OPs, namely: equipment, drugs, guidelines, and staff who had received specific training to care for the diseases and conditions that are particularly prevalent in OPs (Table 11). Availability of these items also differed by PCF level, with availability being high at PCF IV and less so at PCF III and PCF II. Although availability of equipment was generally low, it was particularly low for ophthalmoscope (4%), otoscope (9%) and visual acuity chart (19%) (Table 11) i.e. equipment that are vital for managing the two most common causes of disability in OPs – vision and hearing problems[16]. The shortage of vital equipment could indicate an important potential for missing or misdiagnosing diseases at the PCFs. Additionally, the shortage of guidelines in addition to the shortage of staff who had received specific training to care for the diseases could indicate an important potential for mismanaging patients at the PCFs.

Creating an age-friendly physical environment is one of the three principles designed by WHO to create an age-friendly environment for OPs in a health care system; the other two are adapting the health care system to the needs of the OPs, and building the capacity of HWs to care for OPs[113]. The study found that there was shortage of physical facilities that are vital for creating an age-friendly physical environment. While availability was high for some of the physical facilities such as a functional toilet (98%) and a covered waiting area (97%), it was low for "enough seats in waiting area" (42%) and a ramp (30%) (Table 12) – indicating that OPs with frailty or disability may face difficulties navigating the PCFs and finding a place to sit.

These findings have major policy implications because they suggest that a great majority of OPs in Uganda face important challenges in accessing age-appropriate health care. Given that the Uganda government, in 2002[119], ratified the global recommendations on the care of OPs[91, 92, 121] that called on governments to use PCFs as the model for addressing the consequences of ageing and particularly dealing with the increasing burden of NCDs, it is not clear why, over 10 years later, there are major gaps and weaknesses in the availability of suitable health care for OPs in Uganda. Perhaps, one needs not look further than policy-level implementation of programmes for OPs in Uganda. As discussed in section 1.5.2, the stewardship role for issues affecting OPs in Uganda is provided by MoGLSD with limited involvement of MoH – the Ministry mandated to lead health care service delivery. It is possible that the lack of central role played by the MoH in development of policies for OPs is a key factor impeding health care for OPs. Efforts aimed at improving health care for OPs should include, as a priority, a policy analysis to identify potential policy gaps and weaknesses that impede the care of OPs at health facilities in Uganda.

In conclusion, this study shows that there is severe shortage of services that are vital for OPs and yet OPs are particularly vulnerable to diseases[17, 199, 233] and their population in Uganda and elsewhere in SSA is increasing[15, 175]. Indeed, the shortage of services at PCFs affects other adult patients as well, but they are of particular significance to OPs because OPs are more vulnerable to diseases and require health care more often than younger adults[17, 199, 233]. OPs are also physically weaker and tend to be economically poorer than younger adults and so have less ability to access private health care or hospital services that are often located in urban areas – far from rural areas where most OPs live[114-117]. Efforts to build the capacity of PCFs to enable them to care for OPs closer to their homes are therefore urgently needed.

Although the study only included a relatively small proportion of all the government PCFs in Uganda (48/2,560 = 2%), an appropriate stratified random sampling method was used to select the PCFs, and adjustments were made for the survey design in the analysis. Furthermore, not much variability between the PCFs would be expected because, by design,

each facility within a given level of PCF in Uganda is supposed to provide similar services. We did not detect significant geographical differences in the availability of services.

5.3. The caseload and the common diseases diagnosed in older persons

With about one in ten patients attending services at PCFs being OPs (Table 13), results of the record review implied that the caseload due to OPs at PCFs was not yet very large but was not trivial. The relative caseload due to OPs (8.4%) (Table 13) was however higher than the percentage of OPs in the general population (6%). This implies that OPs in Uganda have a greater demand for health services than other age groups. The relative caseload is consistent with that of a Nigerian study on geriatric morbidity in hospitals that found that 8.8% of patients were OPs[57]. Surprisingly, the ratio in number of attendances per person per year was 1:1.5 for OPs vs. younger adults – implying that OPs in Uganda use health care services 1.5 times less often than younger adults. In England and Wales for example, national statistics show that the ratio in number of attendances at PCFs per person per year in 2007 was 2:1 for OPs vs. younger adults[199] – implying that OPs in England and Wales used primary care services 2 times more often than younger adults. Given that OPs in SSA are reported to be particularly vulnerable to diseases, this finding suggests that OPs in Uganda are using primary care services much less relative to Ugandan younger adults compared to OPs in England and Wales relative to younger adults in England and Wales. Also the proportion of visits to the eye clinic due to OPs was very low (Table 13), yet OPs have far more eye problems than younger age groups[16, 17, 20]. This finding could be because most PCFs lacked special eye clinics.

Infectious illnesses were found to be the most commonly diagnosed illness among OPs, with malaria and non-pneumonia respiratory tract infections being the most commonly diagnosed illnesses in OPs (Figure 16). These findings differ from reports that have indicated that NCDs are the leading cause of morbidity in OPs[16-18]. The prevalence of NCDs diagnosed by the PCFs was substantially lower than the prevalence of NCDs reported by similar facility-based studies in SSA. For example, the prevalence of cardiovascular diseases (3.7%) and vision problems (0.6%) reported by the PCFs (Figure 17) were substantially lower compared to the prevalence of cardiovascular diseases (30-65%)[36, 43, 45, 46]and vision problems (44%)[234] that have been reported by other studies in SSA. Similarly, some of the diseases in OPs

commonly reported by population-based burden of disease studies such as dementia (prevalence 4-12%)[27, 30, 50-52 53, 54] and depression (prevalence 7-60%)[26, 33, 35, 42] were never reported by the PCFs. Considering that most of the PCFs lacked services and items that are necessary for delivering services for NCDs, it could be that NCDs in PCFs were underdiagnosed. These findings point to the urgent need to build the capacity of PCFs to manage NCDs.

This record review will have missed OPs who needed care but failed to reach the PCFs. Doing a community-based survey to understand how many OPs need health care but do not access it within a specified period of time would be informative. Secondly, because we only reported what was in the records of the PCFs, we could not ascertain the validity of the diagnoses. The review however provides useful information that can be used for planning. It also provides a useful reference point for similar studies in the future. The possible under-diagnosis of NCDs at PCFs identified by this study can be used to advocate for improving care of NCDs at the PCFs.

5.4. Knowledge of health workers of common ailments affecting older persons

With two thirds of the HWs classified as having at least satisfactory knowledge of the common ailments affecting OPs (Table 15), knowledge of geriatrics among the HWs in PCFs in Uganda is relatively high. However, the fact that a third (32.1%) of the HWs was classified as having poor knowledge means that there is important room for improvement.

To the best of our knowledge, no previous study on knowledge of common ailments affecting OPs has been done among HWs in PCFs in SSA. Even among HWs in general, there is a paucity of research on knowledge of common ailments affecting OPs in SSA and in high-income countries. Most studies on knowledge of geriatrics done in high-income countries have been done among nursing students[215, 235-238] or have been done on specific ailments such as dementia[239] and oral health[240]; thereby rendering comparisons of findings difficult.

The proportion classified as having at least satisfactory knowledge found in the current study was slightly lower than that of a previous study on knowledge of geriatrics among 120 HWs in one hospital and one PCF IV in one district in Northern Uganda (Ajwang et al

2010)[162] (Table 29). This difference could well be due to a lower cutoff used by the previous study to define satisfactory or good knowledge[162] (Table 29), and to differences in the questions used, with most of our questions focusing on age-related diseases while the previous study[162] used *Palmore's facts on aging quiz-1*[218], with most of the questions focusing on the social aspects of ageing. Surprisingly, the mean overall knowledge score found in the current study (25.7/34x100=76%) was higher than that of a previous study in the United States of America that assessed emergency nurses' knowledge of common ailments affecting OPs (57%)[241]. However, once again, the questions used in the two studies were different, so the results may not be comparable.

Table 29: proportion of HWs with poor, satisfactory and good knowledge found in the current study and another study in Uganda

	Current study (%)		**Ajwang (%)[162]**	
	Range of scores (Total score: 34)	%	Range of scores (Total score: 25)	%
Poor	0-24	32	0-9	12
Satisfactory	25-29	61	10-14	69
Good	30-34	7	15-25	19

Knowledge of geriatrics was found to be similar between the PCF levels (unadjusted p=0.93; p=0.68 after adjusting for all independent predictors of knowledge) (Table 16). Although surprising, the lack of association of knowledge with PCF level is of particular significance because one of the reasons why certain services such as NCD services and life-long antiretroviral treatment services are never provided at PCF III and PCF II in Uganda is the expected limitations in HW knowledge at those levels. These results suggest that given the same range of geriatric services and items necessary for delivering the services, PCF IIs and IIIs might be capable of performing as well as PCF IVs. Knowledge was also not found to be associated with urban/rural location of PCF (p=0.41; adjusted p=0.47), geographical zone (p=0.07; adjusted p=0.92), and number of OPs seen in the PCFs (unadjusted p=0.39; p=0.14 after adjusting for PCF level, PCF location and geographical zone) (Table 16).

As would be expected, knowledge of HWs was found to be positively associated with increased availability of the services that were considered to be particularly important for the care of OPs and were enquired about in the study, and independently associated with increased availability of guidelines in the patient consultation area (Table 16). Unexpectedly however, having a high availability of items of equipment in the consultation area was found to be inversely associated with knowledge (Table 16). The reasons for this are unclear.

As would be expected, knowledge was found to be positively associated with increasing level of technical qualification of the HWs. This finding corroborates the findings of studies in Hong Kong[214], Bangladesh[242] and United States of America[243] that showed that greater training is positively associated with increased knowledge of geriatrics. Knowledge was also found to independently associated with sex, but the association of sex with knowledge, wherein males had better knowledge than females, was largely related to sex differences in training/occupation, and became statistically non-significant (p=0.14) after adjusting for HW qualification. While the increase in knowledge with increase in level of technical qualification is as would be expected; the mean knowledge score for clinicians was only 1.3 points higher than for nurses and 1.9 points higher than for nurse aides. Given the greater training of clinicians compared to nurses and nurse aides, one might have expected a bigger difference in the mean knowledge score between a clinician and a nurse aide for example. Nurse aides in Uganda are unqualified HWs who provide basic care (such as wound dressing, cleaning and drug distribution to patients) under the supervision of a qualified HW. However, due to shortage of HWs in Uganda, with only 63% of approved positions filled by 2013 (MoH 2013. pg.XIV)[193] – up from 42% in 2009 (AWHO. pg. 44)[192], nurse aides have received on-the-job training and have been allowed to prescribe treatment and even head some of the PCFs. In fact two of the PCF IIs that participated in this study had nurse aides only. This finding therefore suggests that knowledge among nurse aides is not that different from that of clinicians and programmes aiming to improve the care of OPs can train and use nurse aides. Surprisingly however, there was no evidence of association of knowledge of geriatrics with HWs reporting receiving training in the care of OPs (p=0.79; adjusted p=0.80) and age of HWs (p=0.26; adjusted p=0.29).

A major limitation to this study was the arbitrary cutoff points used for the classification of knowledge levels. However, these cutoffs were based on the expert opinions of six senior medical workers in Uganda. Secondly, our sample size was small. But because we used an appropriate sampling method to select the study participants and achieved a high response rate (92%), we believe that our findings are likely to be reasonably representative of knowledge of geriatrics among HWs in PCFs in Uganda.

In conclusion, this study has shown that knowledge of HWs in PCFs of common ailments affecting OPs is relatively high. However, with about a third of the HWs having poor knowledge and most of the HWs classified as having only satisfactory knowledge, there is a lot of room for improvement. HWs therefore need to be given training in geriatrics to enable them to care for OPs. To the best of our knowledge, basic geriatric principles have never been incorporated into the curriculum for training medical students, clinical officers and nurses in Uganda and neither has there ever been any specific on-the-job training in geriatrics for HWs. In the short term therefore, efforts to improve knowledge of geriatrics among HWs should include an advocacy with MoH to commission on-the-job training of HWs. In the long-term, such efforts should include advocacy with Ministry of Education and MoH to include geriatrics in the curriculum for training medical students, clinical officers and nurses.

5.5. Attitudes of health workers towards older persons

Results of the study on attitudes of HWs towards OPs showed that nearly all of the HWs (97%) had neutral attitudes towards OPs (Table 17). However, with only 2% of the HWs classified as having positive attitudes, this finding implies that there is an important room for improvement, as ideally HWs should have positive attitudes. Compared to developed countries, the proportions of HWs with positive or negative attitudes found in the current study were substantially lower than those reported by studies done among nurses in United Kingdom[104, 223, 226], Canada[222], and Australia[227, 244] (Table 30). The mean overall attitude score found in the current study was however consistent with the findings of two studies in Australia[227, 244] but substantially higher than that of another study in the UK[226] (Table 30).

Studies in SSA on HW attitudes towards OPs have been rare. Only one study that examined attitudes of HWs towards OPs in Uganda (Ajwang et al 2010)[162] was identified during literature review. The findings of the study are in stark contrast to the current study findings because it reported that the great majority (80%) of the HWs had positive attitudes towards OPs[162] (Table 30). However, the study[162] had a major analytical flaw in that it only classified as "neutral attitude" participants who scored the exact midpoint on the five-point *Kogan's attitude towards older people scale*[165] it used and may therefore have classified as positive or negative attitudes HWs who actually had neutral attitudes.

Table 30: Proportion of HWs classified as having negative, neutral or positive attitudes towards older persons by different studies

	Negative (%)	**Neutral (%)**	**Positive (%)**	**Mean overall score (%)**
Current study (Uganda)	1	97	2	63
Ajwang et al[162] (Uganda)	15	5	80	
Doherty et al[104] (UK)	0	53	47	
Gallagher et al[223] (UK)	68	-	42	
Furlan et al[222] (Canada)	43	9	48	
Kearney et al[226] (UK)	-	-	-	34
Myers et al[244] (Australia)	-	-	-	63
Mellor et al[227] (Australia)	-	-	-	68

Attitudes of the HWs were found to be independently associated with PCF level, with attitudes being more positive in the lower level than in the higher level PCF, and with geographical zone, with HWs in Northern Uganda having less positive attitudes than HWs in Eastern, Central and Western Uganda (Table 18). These associations could be due to the influence of the external and internal work environment on the attitudes of the HWs. It is thought that, because HWs are drawn from the general population, the degree of ageism ("the perverse systematic stereotyping of, and discrimination against OPs in societies"[245]) in the society (external work environment) directly influences their attitude towards OPs[103]. Studies conducted in middle and high income countries such as Jordan[225], Taiwan[246], UK[103], South Korea[105], Australia[247] and Canada[222] that found associations of attitudes of HWs with

the work environment have attributed it to increased exposure of HWs to OPs, professional socialisation, and the organisational culture that is influenced by its internal and external environment. However, the associations of attitudes of HWs towards OPs with their work environment have not been found consistently across studies. For example, studies that were conducted in USA[248], UK[223], Sweden[229] and Australia[244] did not find any association with work environment.

The current study did not find evidence of association of HW attitudes with urban/rural location of the PCF (unadjusted p=0.11; p=0.12 after adjusting for all independent predictors of attitude). Attitudes were found to be positively associated with the increased number of patients in the PCFs (unadjusted p=0.49; p=0.02 after adjusting for PCF level, PCF location and geographical zone) but there was no evidence of association with the number of OPs seen in the PCFs (p=0.33; adjusted p=0.98).

As would be expected, attitudes of HWs were found to be more positive in PCFs that had increased availability of items of the equipment in patient consultation area. This finding corroborates that of studies in the UK that suggested that availability of resources such as equipment have positive influence on HW attitudes and that such influence pervades to the care of OPs[249, 250]. There was however no evidence of association of HW attitudes with availability of other items that were considered to be particularly important for the care of OPs; namely: medical services (p=0.42; adjusted p=0.42), guidelines (p=0.46; adjusted p=0.50), laboratory services (p=0.08; adjusted p=0.75), and basic amenities (p=0.27; adjusted p=0.75) (Table 18).

Attitudes of the HWs were also found to be independently associated with sex of HWs, with males having more positive attitudes than females (Table 18). However, the association of HW attitudes with male sex has not been found consistently across studies, with some studies finding a positive association with male sex[224, 225, 251], while others have found an inverse association with male sex[220, 229, 252] or no significant association with sex[244, 247, 253]. Surprisingly, attitudes of HWs were not found to be associated with the other socio-demographic characteristics of the HWs such as age (p=0.27; adjusted p=0.36), technical qualification (p=0.05; adjusted 0=0.26), training in care of OPs (p=0.61; adjusted p=0.71),

and HW knowledge of geriatrics (p=0.64; adjusted p=0.79). However, the association of attitudes of HWs with socio-demographic characteristics such as age, qualification and training have also not been found consistently across studies, with some studies finding positive associations with increasing age[220, 224, 229], increasing knowledge of geriatrics[220, 227], increasing level of education[220, 222, 224, 229, 253], increasing level of technical qualification[227, 229, 254], and receiving training in the care of OPs[246], while others have found no associations with age[101, 222, 225, 244, 247, 253] and level of education[101, 225, 244, 251]or have found inverse association with increasing age[229, 252] – suggesting that associations of attitudes towards OPs with the socio-demographic characteristics of HWs are contingent upon other factors which may be environmental.

Findings of this study have important policy implications as they suggest that there are gaps and weaknesses in HW attitudes towards OPs. Although only 1% of the HWs were classified as having negative attitudes towards OPs, most of them were classified as having neutral attitudes. Having most HWs with positive attitudes towards OPs would be desirable because HW attitudes are a key determinant of HWs expressing a preference to work with OPs and of the quality of care they provide[103-105]. Efforts aimed at improving the attitudes of HWs towards OPs are therefore needed in Uganda. Although we did not find an evidence of association of HW attitudes with training in the care of OPs (p=0.61; adjusted p=0.71) and with increasing knowledge of common ailments affecting OPs (p=0.64; adjusted p=0.79), studies have shown that training of HWs improves HW attitudes towards OPs[202, 215, 242-244]. Efforts to improve HW attitudes should therefore include advocacy with MoH to commission on-the-job training of HWs in geriatrics in the short-term, and advocacy with the MoH and Ministry of education to commission inclusion of geriatrics in the curriculum for training medical students, clinical officers, and nurses in the long-term. While many studies have evaluated attitudes of HWs or nursing students towards OPs, studies that have evaluated strategies for directly improving attitudes towards OPs are largely unavailable. Consequently, specific evidence-based recommendations on how HW attitudes towards OPs can be improved are largely lacking. However, it should potentially be possible to improve HW attitudes towards OPs through regulation, creating awareness about the health care needs of OPs among HWs and in the general population, and through general improvement of the care of OPs at all levels of health service delivery. It would also be informative to

evaluate, in a research study, such approaches aimed at directly improving HW attitudes towards OPs.

A major limitation of this study was the use of a tool that has not been validated. However, many of the questions were developed based on *Kogan's attitude towards older people scale*[165] and *Plamore's facts on ageing quiz*[218] – both validated tools. Some of the questions were based on known stereotypes among HWs in Uganda. The questions were adjusted in light of the experience obtained during the pilot study. Secondly, a five-point Likert scale was chosen. While Likert scales are easily understood and produce a highly reliable scale as it allows participants to respond in a degree of agreement, they are potentially open to central tendency bias where participants avoid extreme response categories[255]. It is possible that the low proportion of HWs classified as having negative (1%) or positive (2%) attitudes may have been due to central tendency bias[255]. Similarly, the low proportion of HWs classified as having negative attitudes may be due to social desirability bias, a key feature of Likert scales whereby individuals portray themselves in a more socially favourable light rather than being honest[256]. Counteracting the effects of social desirability and central tendency bias is a major challenge, particularly in quantitative research. While time and financial constraints necessitated the use of structured questions to collect data for this study, future research in this area should include a qualitative design whereby the language, behaviour and interactions of HWs can be recorded through in-depth interviews and observations.

5.6. Practices of health workers regarding the care of older persons

With very few of the HWs classified as having bad practices regarding the care of younger adults (35-49years), OPs (50-59years) and OPs (≥60years) (Table 19), results of the study on practices of HWs implies that the overall reported practices were adequate. However, there are some domains where a substantial proportion of HWs were classified as having bad practices; namely: autonomy (46.4-48.6%), health education (15.4-34.6%), prompt attention (19.4-29.9%), and disease screening (14.2-16.7%) (Table 19) – pointing to the need to pay careful attention to these practices. Overall, although only 0.5-1.2% of the HWs were classified as having bad practices, over half (51.3-53.0%) were classified as having neither-bad-nor-good practices (Table 19). It would be desirable to have most of the HWs classified

as having good practices because HW practices affect the quality of care they provide (WHR 2006, pgs. 67-89)[107] and are among the factors that make health care inaccessible or harmful to patients[106]. For example, results of two community-based cross-sectional studies conducted in Uganda[83] and Kenya[82] among OPs to assess their vulnerability to malnutrition showed that many OPs (29% in the Kenyan study[82]) did not seek care when they needed to because they said the quality of services were poor and HWs often neglected them and did not give them prompt attention. Findings on "prompt attention" in the two studies in Uganda[83] and Kenya[82] should not be surprising because in 'health system responsiveness[6]' surveys in 41 countries (Valentine 2008)[257], OPs ≥60years ranked prompt attention as the most important non-clinical aspect of health care they wanted to be provided with, followed by dignity, communication, choice of provider, autonomy, confidentiality, and social support. Health system responsiveness is an important component of health care quality and is responsible for increasing and sustaining public confidence in a health system[94, 258]. Having a substantial proportion of HWs classified as having bad practices related to screening OPs for diseases and targeting them for health education are particularly worrying because OPs have increased vulnerability to chronic NCDs[17, 18, 20]. This implies that many OPs with NCDs may not have been identified at the PCFs, and many may not have received adequate health education about diseases.

To the best of our knowledge, no study has evaluated HW practices related to the care of OPs in PCFs or in any health service. However, qualitative studies conducted in five Asian countries (Cambodia, India, Indonesia, Singapore and Vietnam) that used experiences of OPs as a proxy assessment of HW practices concluded that HWs did not target OPs for health education and screen them for diseases[140]. Similar conclusions to the Asian studies[10] were also drawn by four other studies[142, 156, 157, 166] conducted among general patients (not OPs) attending primary care services in South Africa[115, 129, 130, 150] – suggesting that poor HW practices related to provision of medical services are not only limited to OPs or to PCFs in Uganda but are a general problem among HWs in low income countries.

[6] Health system responsiveness is a measure of how the health system responds to the non-clinical expectations of the patients that include: dignity, autonomy, prompt attention, confidentiality, clarity of communication, choice of provider, quality of basic amenities, and access to social support.

Comparison of the reported practices of the HWs by age of the patients (OPs vs. younger adults) showed that HWs reported targeting OPs for health education less often than they reported targeting younger adults, and the practices worsened with increasing age of the patients (Table 20). In contrast, the reported practices were better for OPs than for younger adults in the domains of prompt attention, disease screening, and communication, and the practices improved with increasing age of patients. For the domains of dignity, autonomy, and privacy and confidentiality however, the reported practices were similar for OPs and younger adults (Table 20). Contrary to the findings of studies in Kenya[32], Swaziland[259], Uganda[83] and Kenya[82] that reported that OPs were often discriminated against in health facilities; results of the current study imply that overt discrimination against OPs at the PCFs may not exist.

The reported HW practices related to the care of OPs aged ≥60years were not found to be associated with PCF level (unadjusted p=0.40; p=0.54 after adjusting for all independent predictors of HW practices) and geographical zone (p=0.94; adjusted p=0.62) but were found to be independently associated with PCF location, with reported practices being better in urban than in rural areas (Table 21). The positive association of HW practices with urban facilities could be because urban PCFs are usually located closer to the district headquarters or on easily accessible routes and are therefore better supported and supervised by the district health officials than rural PCFs.

The practices were found to worsen with increased number of patients (all patients) seen in the PCFs (unadjusted p=0.45; p<0.001 after adjusting for PCF level, PCF location and geographical zone) but there was no evidence of association with the number of OPs seen in the PCFs (p=0.98; adjusted p=0.44). The worsening reported practices with the increased number of patients could be due to shortage of resources and burnout among HWs resulting from severe shortage of HWs in the PCFs[192].

As would be expected, the reported HW practices improved significantly with increased availability of the services and items that were considered to be particularly important for the care of OPs and were enquired about in the study; namely: medical services, laboratory services, auditory privacy and visual privacy (Table 21). Unexpectedly however, an inverse

association was found with increased availability of equipment in the consultation area. The reason for this is not clear. Surprisingly, there was no evidence of association of the reported practices with availability of guidelines (p=0.24; adjusted p=0.59) and basic amenities (p=0.52; adjusted p=0.17).

The reported practices were found to be independently associated with age of the HWs, with the practices worsening with increasing age, and with technical qualification of the HWs, with the practices surprisingly being better among the lower cadre staff than among the higher cadre staff (Table 21). Nurse aides for example reported better practices than nurses and clinicians. With nurse aides forming about a third (29%) of the total health workforce in Uganda (AWHO 2009, pg. 30)[192], the significance of this finding is that, programmes aiming to improve the care of OPs can train and use nurse aides. We however do not have clear explanation for why reported practices would be better among the younger and lower cadre HWs than among the older and higher cadre HWs but potential reason for these associations could be that older and higher-cadre HWs tend to mainly play supervisory or administrative roles in the PCFs. There was no evidence of association with sex (p=0.18; adjusted p=0.15), training in the care of OPs (p=0.37; adjusted p=0.37), knowledge of geriatrics (p=0.97; adjusted p=0.97) and attitudes towards OPs (p=0.33; adjusted p=0.18).

We may have overestimated the proportion of HWs with good practices because this study was based on what the HWs said they did while attending to the OPs, not what we observed. It is possible that HWs may have reported an activity done when actually it was not done. Secondly, just as was the case with the HW attitudes, Likert scale format was used to obtain data. The questions asked how often HWs performed particular activities and they responded: “never”, “rarely”, “usually”, and “always”. Such responses are open to potential social desirability bias[256]. it is possible that the responses of the HWs, and therefore the low proportion of HWs classified as having bad practices, could have been influenced by the social desirability bias[256]. To get a true picture of the practices of the HWs, we also asked OPs and younger adults similar questions on how often they received particular services at the PCFs. If possible, future studies should include observation. However, the fact that even

the self-reported practices were suboptimal shows that there is a lot of room for improvement.

In conclusion, practices of HWs regarding the care of OPs and younger adults in PCFs were adequate but there is a lot of room for improvement as only less than half of the HWs were classified as having good practices, and a substantial proportion of HWs were classified as having bad practices related to the domains of prompt attention, autonomy, health education and disease screening.

5.7. How older persons reported that they had been treated at the primary care facilities

Results of the study of how OPs were treated at the PCFs showed that the great majority of OPs reported receiving at least neither-poor-nor-good treatment (Table 23). However, the proportion of OPs and younger adults classified as having received good treatment (16.6-27.7%) contrasts starkly with the proportion of HWs classified in the previous section as having good practices regarding the care of OPs and younger adults (46.4-48.1%) (Table 19). This finding underscores the importance of always getting patients' experiences when assessing the practices of HWs because people served by the system are the best source of information about their experience.

As was the case with the HW practices reported in the previous section, there are some domains where a relatively high proportion of OPs and younger adults were classified as having received poor treatment, namely: being screened for diseases (65.1-69.5%), receiving prompt attention (65.8-76.4%), having autonomy (69.6-79.8%), and receiving health education (30.0-38.5%) (Table 23). These findings corroborate the reports of community-based studies done among OPs in five Asian countries (Cambodia, India, Indonesia, Singapore and Vietnam)[140], Uganda[83] and Kenya[82], and among general patients in PCFs in South Africa[142, 156, 157, 166] that showed that the respondents were hardly targeted for health education, screened for diseases/disease risk factors or promptly attended to – suggesting that reporting not receiving these services is not unique to PCFs in Uganda or to OPs only but are a general problem in low income countries. Having a substantially high proportion of OPs reporting not being screened for diseases and given health education

indicates that many OPs with NCDs may not have been identified at the PCFs, and many may not have received health education about diseases. This is particularly worrying because OPs have increased vulnerability to NCDs[17, 18, 20]. It was however reassuring to find that none of the OPs reported having been asked for or paid a bribe at the PCFs. Incurring such costs would have been particularly problematic for many OPs because the majority of OPs in Uganda are chronically poor[197].

The comparison of how OPs and younger adults were treated at the PCFs showed that, overall, OPs were not treated differently from younger adults (p=0.52) (Table 24). However, OPs reported receiving prompt attention more often than did younger adults (p=0.01). These findings corroborate the findings of the previous section on HW practices and imply that overt discrimination against OPs in PCFs in Uganda may be very uncommon.

Unexpectedly, reporting better treatment by the OPs was independently associated with decreasing level of the PCFs (Table 25). Potential reason for this association could be because the lower level PCFs see fewer patients and are consequently able to meet their medical and non-medical expectations better than the higher level PCFs. Receiving poor or good treatment was not found to be associated with urban/rural location of the PCF (unadjusted p=0.43; p=0.70 after adjusting for all the independent predictors of positive responses given by OPs to questions related to their treatment) but was found to be independently associated with the geographical zone, with OPs in Northern and Eastern Uganda reporting poorer treatment than OPs in Central and Western Uganda. Similarly, reporting poor or good treatment was not found to be associated with the number of all patients seen by the PCF (unadjusted p=0.94; p=0.77 after adjusting for PCF level, PCF location and geographical zone) but was found to be independently associated with the number of OPs seen by the PCFs, with OPs in PCFs that saw >300 OPs/month reporting better treatment than those in PCFs that saw ≤300 OPs/month – potentially implying that OPs avoided PCFs where they received poor treatment.

Surprisingly, HW characteristics such as their reported practices (p=0.42; adjusted p=0.45), attitudes (p=0.10; adjusted p=0.76) and knowledge of geriatrics (p=0.70; adjusted p=0.39) were not found to be associated with OPs reporting better treatment (Table 25). However,

although not statistically significant, better knowledge of geriatrics and more positive attitudes of the HWs were positively associated with OPs reporting better treatment – thus pointing to the need to improve attitudes and knowledge of HWs.

Unexpectedly, reporting better treatment was not found to be associated with the availability of services (p=0.84; adjusted p=0.13) and amenities (p=0.95; adjusted p=0.64) that were considered to be particularly important for the care of OPs and were enquired about in the study. However, reporting better treatment was found to be associated with availability of guidelines and equipment in the patient consultation area, availability of auditory privacy, visual privacy, and laboratory services. It is important to note that even though some of the associations with availability of services and of the items necessary for delivering services to OP were not statistically significant, reporting better treatment was positively associated with availability of most of the services, thereby pointing to the need to improve these services for the care of OPs.

How OPs said that they were treated at the PCFs was not found to be associated with their age (p=0.66; adjusted p=0.69), employment status (p=0.07; adjusted p=0.45), and whether or not they attended school (education status) (p=0.40, adjusted p=0.45) but was found to be associated with sex, with males reporting better treatment than females, improving material situation, with poorer OPs reporting poorer treatment than the less poor, and increasing level of education (Table 25). Therefore, even though some of the associations with the socio-demographic characteristics of the OPs were not statistically significant, a clear pattern seems to have emerged where OPs of high socio-economic status generally reported better treatment than OPs of low socio-economic status. Because the majority of OPs in Uganda are peasant farmers and poor and with little education (UBOS 2010; pg. 138)[196]; such trends worryingly suggest that many OPs in Uganda may be receiving suboptimal care at least partly because of their poor socio-economic status.

How OPs reported that they were treated at the PCFs was found to be independently associated with increasing number of visits and with increasing duration of attendance at the PCFs (Table 25). We do not have clear explanations for these associations but the questions used to assess how the OPs were treated at the PCFs required them to report on

the services they had received over a 12 month period, including the day of the interviews. It is possible that the more the OPs interacted with the HWs at the PCFs, the more they received services we enquired about in the study.

It is possible that we may have underestimated the proportion of OPs who received poor treatment from the PCFs because interviews were done within the premises of the PCFs where OPs often got their care and many OPs may not have wanted to be critical as a result (potential social desirability bias[256]). As was the case with interviews with the HWs, the questions used to obtain data asked the OPs how often they received a particular service and they responded: “never”, “rarely”, “usually”, and “always”. In addition to such response options being open to potential social desirability bias[256], they are also open to potential central tendency bias where extreme categories are not chosen[255]. It is therefore possible that the high proportion of OPs classified as having received neither-good-nor-poor treatment may have been due to central tendency bias[255]. We however provided assurances of anonymity and confidentiality to the OPs and none of our interviewers came from areas that were covered by the PCFs. In addition, we were able to probe for responses from the OPs. We achieved high response rates and believe that the findings of this study are likely to be reasonably representative of the way OPs would report how they are treated in PCFs in Uganda. Secondly, our study questions required OPs to report about their treatment over a 12-month period thereby rendering it open to potential recall bias whereby participants might not have accurately remembered events of the past[260].

In conclusion, results of this study have shown that OPs received adequate treatment from the PCFs. However, there is a lot of room for improvement as only 28% of the OPs were classified as having received good treatment and there were domains where a relatively high proportion of OPs were classified as having received poor treatment. Therefore, because how patients are treated at health facilities influences their utilisation of health care services[167-169], these findings point to the need to improve the overall care of OPs in PCFs in Uganda and also to pay careful attention to the domains of disease screening, prompt attention, autonomy, and health education.

5.8. Perceptions of older persons of the care they received from the PCFs

Results of the study on perceptions of OPs of the care they received from the PCFs showed that very few of the OPs had poor perceptions of the services at PCFs. Half of the OPs were classified as having neither-poor-nor-good perceptions and another half were classified as having good perceptions (Table 26). Consistent with the findings of population-based studies conducted among OPs in South Africa[170] and China[261], OPs rated the dignity with which they were treated and privacy/confidentiality they were given during medical consultations more highly than receiving prompt attention, clarity of communication, and being involved in key decisions regarding their care (autonomy) (Table 27). Receiving thorough physical examination was also rated less highly than dignity and privacy/confidentiality. Overall, the perceptions of OPs did not differ significantly from that of younger adults (p=0.21) (Table 27). However, OPs rated the clarity of communication with HWs more highly than did the younger adults (p=0.01).

To the best of our knowledge, no study has been done in SSA to evaluate the perceptions of OPs of services at PCFs. However, the mean overall perception score (26.6/35 i.e. 76%) found in this study was higher compared to the mean overall perception score (69.5%) found in a population-based study in South Africa[170]. Potential reason for the difference in the perception scores could be because of differences in patient expectations of care rather than better treatment of OPs in Uganda compared to South Africa i.e. South Africa being a high middle income country, it is possible that OPs in South Africa have higher expectations of care services than their counterparts in a resource poor country like Uganda.

Perceptions of OPs were not found to be associated with the PCF level (unadjusted p=0.16; p=0.16 after adjusting for all independent predictors of perceptions) but were found to be independently associated with PCF location, with perceptions being better among OPs in urban than in rural PCFs (Table 28). The positive association with urban PCFs is consistent with the findings of a population based study in South Africa that showed that OPs rated urban facilities more highly than rural ones[170]. However, reason for the positive association with urban facilities is not clear but such a finding is worrying because most OPs in SSA reside in rural areas where PCFs are main source of health care. The association with geographical zone, wherein OPs in Northern Uganda had poorer perceptions than OPs in

other geographical zones became statistically not significant after adjusting for all independent predictors of the perception score. Perceptions were positively associated with increase in the number of patients seen in the PCFs, but there was no evidence of association with the number of OPs seen in the PCF (unadjusted p=0.48; adjusted p=0.39 after adjusting for PCF level, PCF location and geographical zone).

As would be expected, perceptions were found to be associated with availability of functional toilet and having enough seats in the waiting area – suggesting that OPs regard these comfort amenities as vital for their care. Surprisingly, there was no evidence of association with other services that were considered particularly important for OPs and were enquired about in the study, namely: availability of services (p=0.85; adjusted p=0.74), availability of guidelines in consultation area (p=0.90; adjusted p=0.42), availability of equipment in consultation area (p=0.80; adjusted p=0.56), availability of laboratory services (p=0.12; adjusted p=0.19), availability of a waiting area that shields patients from sun or rain (p=0.07; adjusted p=0.39), source of drinking water (p=0.32; adjusted p=0.17), a ramp (p=0.05; adjusted p=0.11), auditory privacy (p=0.94; adjusted p=0.11), and visual privacy (p=0.92; adjusted p=0.53) (Table 28). However, although not statistically significant, perceptions were positively associated with increased availability of most of these services – thus pointing to the need to improve these services for the care of OPs.

As would be expected, perceptions of OPs were positively associated with increasing knowledge of geriatrics among the HWs (Table 28). Unexpectedly however, the positive association of attitudes of HWs with perceptions of OPs became statistically not significant after adjusting for PCF level, PCF location, and geographical zone (p=0.02; adjusted p=0.38). As would be expected, the way OPs were treated at the PCFs was independently associated with their perceptions, with perceptions increasing with receiving better treatment – thus pointing to the need to improve practices of HWs at PCFs.

Perceptions of the OPs were found to generally increase with increase in their age (Table 28). Similar associations with patient-age have consistently been reported by studies in South Africa[170] and USA[262-264]; each finding a linear trend of increasing perception with increasing age. The current study did not however find a linear trend, but found that OPs

aged ≥80years had the highest perception score while those aged 60-69 years had the lowest score. The authors of the study in South Africa posit that the age differences could be due to differences in expectations rather than to any preferential treatment of older OPs[170]. However, attributing such a systematic difference to patient expectations alone misses the inherent cultural reality, particularly in traditional Sub-Saharan Africa society, that older age-groups are generally accorded more respect and tend to be given preferential treatment than the younger age-groups. Perceptions were found to be positively associated with employment status and level of education but these associations became statistically not significant after adjusting for PCF level, PCF location and geographical zone. There was no evidence of association with sex (p=0.11; adjusted p=0.06), marital status (p=0.99; adjusted p=0.75), material situation (p=0.23; adjusted p=0.25), and education status (p=0.56; adjusted 0.60) (Table 28). However, although some of the associations were not statistically significant, perceptions were generally positively associated with the socio-economic status of the OPs i.e. the higher the socio-economic status, the better the perceptions. Studies in South Africa [265] and USA[265] have attributed the differences in the perceptions by socio-economic status to differences in expectations of the patients rather than preferential treatment. However, based on our experience of having worked in SSA, we know that giving preferential treatment to people of a higher socio-economic status and male sex is a common practice in SSA and therefore posit this as the potential explanation for differences observed in this study. Had it been for the differences in expectations, OPs of a higher socio-economic status would have had a poorer perception than OPs of a lower socio-economic status because the quality of services at PCFs, as this study has shown, are suboptimal. In fact this finding also corroborates our observation in the earlier section (section 5.7, pg. 108) that OPs of higher socio-economic status reported better treatment at the PCFs than those of lower socio-economic status.

Perceptions were found to be independently associated with religion, with Protestants having better perceptions than Catholics and other religions (Table 28). We do not have clear explanation for the association of perceptions with religion. Studies done among patients in the USA[266, 267] that found similar associations did not also offer any explanation for the associations[253, 254]. Although such religious differences could be due to patient experiences with and expectations of health services, my experience as a physician in

Uganda is that religious differences or discrimination of individuals based on religion are almost non-existent to offer any plausible explanation for this association. However, the association with religion has not been consistent across studies. For example, the study in South Africa that was conducted among OPs did not find any significant differences by religion[170].

OPs who used the PCFs as their main source of care had better perceptions of the services than OPs who did not use the PCFs as their main source of care (Table 28). Perceptions of OPs also declined with increase in duration of use of the PCFs. Potential reasons for these associations could be the differences in experiences and expectations of the OPs i.e. OPs who did not use the PCFs as their main source of care might have experienced care elsewhere and developed expectations based on those experiences and were able to compare their experiences of care at the PCFs with the experiences they had from other health service providers. However, this might only be a partial explanation of the difference because it is also possible that OPs who used the PCF as their main source of care had also used other health facilities because there is no gatekeeping in Uganda's health services.

There has also been consistency across studies[170, 263, 264, 267-272] that patients in better health often have better perceptions of the health care services than those in poorer health[154, 250, 251, 254-259]. We did not collect data on the health status of the OPs to examine this association which might have confounded our findings. Future studies should examine this association. We may also have overestimated the proportion of OPs who had good or neither-good-nor-poor perceptions of the care they received from the PCFs because interviews were done within the premises of the PCFs where OPs often got their care from. The health unit environment, reinforced by the use of a five-point Likert, might have rendered the responses open to potential social desirability bias[256]. It is also possible that the low proportion of OPs classified as having poor perceptions may have been due to a central tendency bias[255]. It would be informative for future research in this area to include a qualitative design whereby the language, behaviour and interactions of OPs can be recorded through in-depth interviews and observations. Secondly, we might have overestimated the proportion of OPs with good perceptions because the study only involved OPs who had sought care probably because they perceived the quality of care to be good. Understanding

of the perceptions of OPs who did not access care services would be informative for developing strategies to improve their care. Future studies should therefore include a community-based survey.

In conclusion, this study has shown that perceptions of OPs of the care they received from the PCFs were generally good. However, although only a small minority were classified as having poor perceptions, about half were classified as having neither-poor-nor-good perceptions. Because perceptions of patients are a key determinant of care utilisation[167-169], it would be desirable to have most OPs classified as having good perceptions of the services. Secondly, there were some domains that were rated less highly, namely: prompt attention, disease screening, autonomy and communication. These therefore imply that, there is important room for improvement of the care of OPs at PCFs. The MoH should therefore commission improvement of the care of OPs in the PCFs.

Chapter 6: Study limitations

This thesis has both some strengths and limitations. To the best of our knowledge, this was the first study on health care available and delivered to OPs through PCFs in Sub-Saharan Africa. We used quantitative methods to obtain data from a relatively large number of respondents (OPs: n=248, younger adults: n=96, HWs: n=145, and health facility in-charges: n=48) in a short time and were able to quantify a lot of information about the strengths and gaps and weaknesses in the health care available and delivered to OPs. We also used appropriate statistical methods to analyse the data. Although the study included a relatively small proportion of all the government PCFs in Uganda (48/2,560 = 2%), an appropriate stratified random sampling method was used to select the PCFs and adjustments were made for the survey design in the analysis to make the findings nationally representative. Besides, not much variability between the PCFs was expected because, by design, each facility within a given level of PCF in Uganda is supposed to provide similar services. All the sampled facilities were assessed and we did not detect significant geographical differences in the availability of services. Overall, we achieved high response rates and believe that the findings of this study are likely to be reasonably representative of the knowledge, attitudes and practices of HWs in Uganda, and of what OPs would report about their treatment and their perceptions of the services in PCFs in Uganda.

However, while time and financial constraints necessitated the use of quantitative methods for the study, the limitations in scope of the structured questions did not allow us to observe and record some forms of information such as emotions, feelings, behaviour, and personal stories of the respondents as well as the actual interaction between the OPs and the HWs. Some of the responses we obtained on attitudes and practices of the workers, and on the treatment the OPs said they received and their perceptions of the services they had received could have usefully been explored further; something that was not possible using structured questions with precoded answers. In order to increase the validity and credibility, and capture a more complete, holistic and contextual portrayal of our results, it would have been appropriate if we had triangulated the data collection methods to include qualitative designs (specifically in-depth interviews and observational methods). Methodological triangulation entails combining both quantitative and qualitative data collection methods, based on the rationale that a single data collection method is insufficient to provide

adequate and accurate research results[273]. Future research in this area should therefore include a qualitative design to help complement the statistical data in understanding the health care available and delivered to OPs in PCFs.

The cross-sectional study design enabled us to obtain data on many variables and compare them at a little cost and in a short period of time. Because the PCFs were sampled from all eligible PCFs, we were able to calculate the national estimates of the strengths and gaps and weaknesses in the health care available and delivered to OPs. However, we were only able to examine the health care available and delivered to OPs in a 12-month period and were therefore unable to infer causality as we do not know what happened before the 12-month period or after the data collection.

Data for assessing the caseload due to OPs was obtained through record review.
The record review will have missed OPs who needed care but failed to reach the PCFs. Additionally, because we only reported what was in the records of the PCFs, we could not ascertain the validity of the diagnoses. The review however provides useful information that can be used for planning and as a reference point for similar studies in the future. The possible under-diagnosis of NCDs at PCFs identified by this study can be used to advocate for improving care of NCDs at the PCFs. Arbitrary cutoff points were used for the classification of knowledge levels. However, these cutoffs were based on the expert opinions of six senior medical workers in Uganda.

The study used tools that have not been validated. However, many of the questions were developed based on validated tools such as WHO's service availability and readiness assessment tool[274] and health system responsiveness tool[94], *Kogan's attitude towards older people scale*[165] and *Palmore's facts of ageing quiz*[218]. Some of the questions were based on known stereotypes among HWs in Uganda. All the questions were piloted and adjustments were made in light of the experience obtained during the pilot study.

Questions in Likert scale format were used to assess the attitudes and practices of HWs, and to assess how the OPs said they were treated in the PCFs and their perceptions of the services they had received. While such Likert scale-format questions are easily understood

and produce a highly reliable scale as it allows participants to respond in a degree of agreement, they are potentially open to central tendency bias where participants avoid extreme response categories[255]. It is possible that the high overall proportion of HWs and of OPs and younger adults classified in the neutral category may have been due to central tendency bias. Another key feature of Likert-format questions is the social desirability bias whereby individuals portray themselves in a more socially favourable light rather than being honest[256]. It is therefore possible that the low overall proportion of HWs and of OPs and younger adults classified in the "poor" category may have been due to social desirability bias[256]. Counteracting the effects of central tendency and social desirability bias is a major challenge in quantitative research but we provided assurances of anonymity and confidentiality to the respondents and none of our interviewers came from areas that were covered by the PCFs. In addition, we were able to probe for responses.

We only examined the health system and some of the individual level factors that influence the availability of health care for OPs (Figure 2). The policy- and family/community-level factors were not examined. While the findings and recommendations of our study can be used to develop strategies, including setting the policy agenda, for improving health care services for OPs in Uganda, our understanding of availability of health care for OPs in Uganda remains incomplete without studying the influence of the policy- and community-level factors on the availability of health care services for OPs. For example, effective strategies to make the MoH take charge of health care issues that affect OPs can only be developed if we understand how much the MoH has been involved at policy level and why, their level of awareness and knowledge of the health problems that affect OPs, and their interest and position regarding improvement of health care for OPs. Furthermore, due to the chronic nature of the health care problems affecting OPs, a lot of the health care support for OPs requires the involvement of the OPs themselves and their family and community members. To be able to develop strategies to empower and involve families and communities to provide a sustainable supportive environment for OPs, it would be vitally important that we understand the OPs' and their family/community members' level of awareness and knowledge of health care problems affecting OPs, their beliefs and practices regarding illnesses, their capacity to demand for services, their capacity to respond to their health care needs, their perceptions of health care services, and availability of accessible

formal health care services (Figure 2). Understanding the family and community level factors would then guide the development of strategies to build the capacity of the OPs and their families/communities to provide a sustainable supportive environment for OPs. This would include strengthening the community-based care of OPs – focusing on what OPs and their families and communities can do themselves to support OPs, with government and non-government organisations playing only a supportive role – through 1) guiding the OPs and their families and communities in identifying their own strengths and coming up with innovations to strengthen support to the OPs; and 2) strengthening community-based referral system through for example training community-based HWs to create awareness and educate community members about the health care needs of OPs, identify OPs who need health care, refer OPs who need health care to health facilities, and offer continuum of care to OPs who have been referred to the communities by the health facilities. Development of basic tools to enable communities and community-based HWs to screen for OPs who need health care and provide immediate support, including referral to a health facility would form a key component of such strategy.

Last but not least, we did not examine the availability of services for some of the geriatric giants such as falls/immobility, incontinence, and frailty). The initial assumption based on our knowledge and experience of having worked with the PCFs was that PCFs in Sub-Saharan Africa do not offer these services. This was therefore an important omission in the study as ideally gaps and weaknesses in the availability of such services should be documented and used to make recommendations for improving the quality of care for OPs. However the availability of services for mental illnesses such as depression and knowledge of HWs regarding falls were assessed. The list of equipment, drugs, etc. that were checked for each health condition were not necessarily comprehensive. Certain critical items were selected in an effort to strike a balance between being comprehensive and the checks being unwieldy.

Lastly, for the assessment of HW practices and for the interviews with OPs and younger adults, the study questions required the respondents to report about events that occurred over a 12-month period. Potential recall bias, whereby participants might not have accurately remembered events of the past[260], cannot be ruled out.

Chapter 7: Conclusions, policy implications and recommendations

7.1. Conclusions

Five major conclusions can be drawn from the results of this study: *Firstly*, this study has shown that PCFs in Uganda have fundamental deficiencies in the services available and delivered to OPs. Relative to the care of infectious illnesses, the care of chronic NCDs in the PCFs in Uganda is particularly weak. OPs with NCDs are particularly unlikely to get appropriate services at the mid-level (PCF III) and lower-level (PCF II) PCFs. Strengthening the services for NCDs at all levels will be particularly important for the care of OPs because OPs have a particularly increased vulnerability to NCDs and its consequent disabilities. *Secondly,* although the caseload due to OPs was not very large, the relative caseload due to OPs was higher than the percentage of OPs in the general population (6%). This implies that OPs in Uganda have a greater demand for health services than other age groups. *Thirdly,* infectious illnesses were the most commonly reported illnesses among OPs and yet the available evidence indicates that NCDs are the leading cause of morbidity among OPs. Because PCFs lack the necessary services and items for delivering the services, it is possible that NCDs are underdiagnosed at the PCFs. There is therefore an urgent need to strengthen the capacity of the PCFs to enable them to diagnose and manage NCDs. *Fourthly,* the knowledge, attitudes and practices of most HWs regarding the care of OPs were neither poor nor good, but only a relatively small proportion were classified as having "good" knowledge, attitudes or practices. This implies that there is important room for improvement. *Lastly*, although only a small minority of OPs and younger adults reported they had received poor treatment and a small minority perceived that they had received a poor service, there is room for improvements as there are some aspects of the care received that many of the clients (OPs and younger adults) thought were poor; namely: being screened, receiving prompt attention, having autonomy, and receiving health education.

7.2. Policy implications

Having limited services for NCDs at PCFs implies that OPs in Uganda face important challenges accessing age-appropriate health care. This has a lot of implications for the health of OPs in Uganda and elsewhere in SSA because available evidence indicates that OPs

are particularly vulnerable to NCDs and its consequent disabilities[16-18]. More worrying is the fact that more and more OPs with NCDs will need health care in the coming years because projections show that the absolute population of OPs in Uganda[173, 175] and elsewhere in SSA is increasing rapidly[15159, 161]. Uganda for example is projected to have over 3 million OPs by 2010[173], and SSA in general is projected to have over 140 million OPs (11% of the total population of SSA) by 2030 and over 270 million in 2050 – up from 73 million in 2006[15]. Because most OPs in Uganda[114, 185] and elsewhere in SSA live in rural areas[114-117] and PCFs are the main source of health care for people who reside in rural areas in SSA, those with ailments are more likely to present to PCFs than hospitals because PCFs in Uganda and elsewhere in SSA are the most available source of health care for people who reside in rural areas. Hospitals and private health care services where OPs can get services for NCDs are often located in urban centres, and distances to them are long and public transport infrastructure is poor and relatively expensive. Access to hospitals and private clinics is therefore difficult for most OPs in Uganda and elsewhere in SSA – thus creating an imperative to make services available for OPs in PCFs. Indeed, it can be argued that the shortage of services for NCDs at PCFs affects other adult patients as well, but they are of particular significance to OPs because OPs are more vulnerable to diseases and require health care more often than younger adults[17, 199, 233]. OPs are also physically weaker and tend to be economically poorer than younger adults and so have less ability to access private health care or hospital services. The implications of not having age-appropriate care go beyond the health and wellbeing of OPs because OPs in SSA play vital roles within their families and communities such as caring for children orphaned by HIV/AIDS[123, 171, 200-208].

The knowledge, attitudes and practices of HW affect the quality of care they provide (WHR 2006, pgs. 67-89)[107] and are among the factors that make health care inaccessible or harmful to patients[106]. In this study, the knowledge, attitudes and practices of most HWs in the PCFs were neither bad nor good. Consequently, the perceptions of most of the OPs of the services they had received were also neither bad nor good – implying that there are important gaps and weaknesses in the care of OPs in PCFs in Uganda. This finding has a lot of implications for the health of OPs because the way patients are treated at health facilities and their perceptions of the treatment and of the services they receive are a key determinant of their utilization of the health services[167-169]. For example, results of two

community-based cross-sectional studies conducted in Uganda[83] and Kenya[82] among OPs to assess their vulnerability to malnutrition showed that many OPs (29% in the Kenyan study[82]) did not seek care when they needed to because they perceived that they had been poorly treated at the health facilities during their previous visits. The way OPs were treated and their perceptions of the services could be a potential explanation for the ratio in number of attendances per person per year found in this study (1:1.5 for OPs vs. younger adults).

Results of this study therefore make the case to improve the care of OPs. Improving the care of OPs will also be in line with the basic principles of human rights[275] and the United Nations Principles for OPs, adopted by the General Assembly in resolution 46/91 on 16 December 1991[276] that stated that "OPs should have access to health care to help them to maintain or regain the optimum level of physical, mental and emotional well-being and to prevent or delay the onset of illness".

7.3. Recommendations

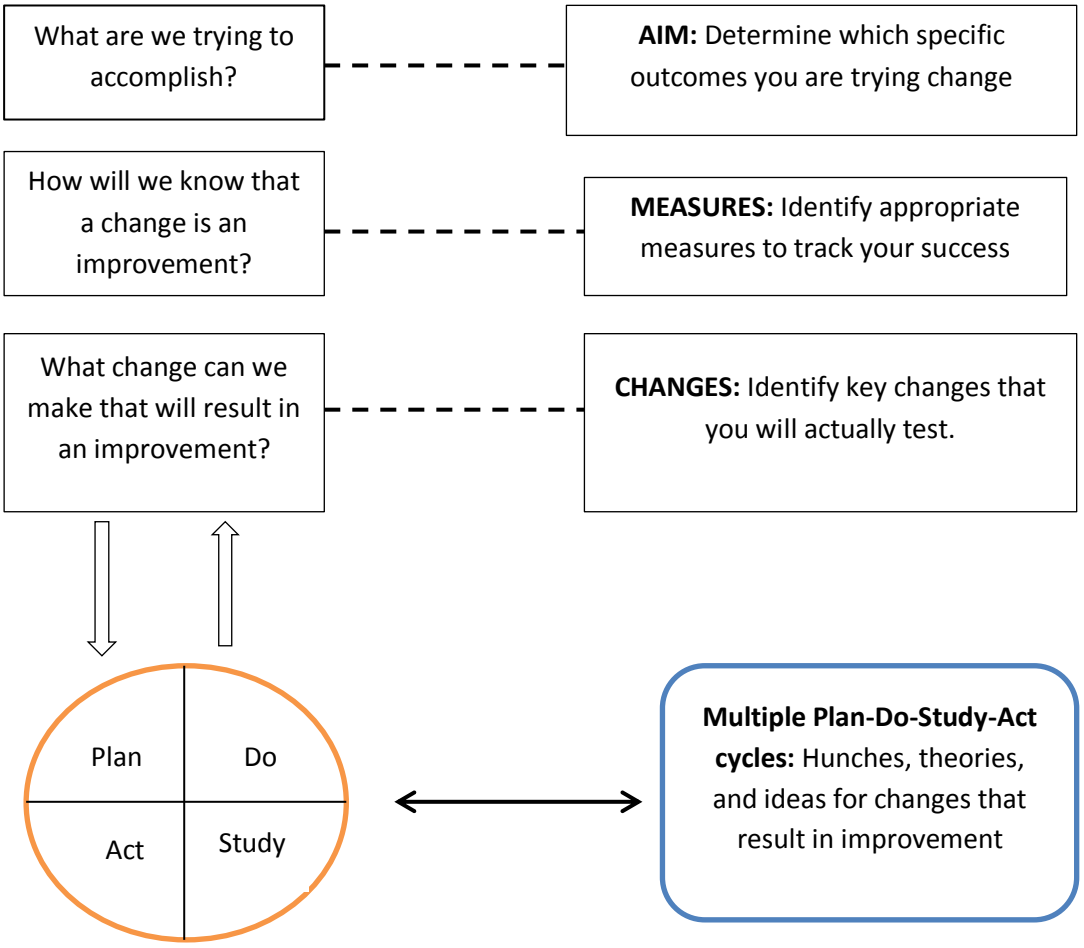
Recommendations to improve the care of OPs have the potential to draw upon the approaches that have been used in health care quality improvement[3, 277-281]. Quality improvement is a "systematic, data-guided activity designed to achieve desired health outcomes of individuals and populations in particular settings"[282, 283]. Quality improvement entails continuous efforts to achieve health care that is safe, effective, efficient, patient-centred, equitable, and timely[284].

7.3.1. Quality improvement approaches used in health care:

There are several approaches used to improve the quality of health care and most have their origins in the manufacturing industry[285]. The *root-cause-analysis* for example has been used extensively in engineering[286] to identify and understand the underlying causes of an event and design strategies to address the gaps and weaknesses[277]. The *lean methodology* meanwhile is used by Japanese car manufacturers, including Toyota, to identify customer needs and improve processes by removing activities that add no value to the system. It uses the a root-cause-analysis to investigate errors and then address the errors to improve quality[278]. Similar to the *lean methodology* is the *six sigma approach* developed within the electronics industry to minimize or eliminate waste while optimizing customer satisfaction and increasing financial stability through improving, designing, and monitoring processes[279, 280]. *"Six sigma"* uses customers' definition of 'defects' within its products and feedback from the customers to address factors that customers would define as being critical to quality[279, 280]. *Total quality management* on the other hand focuses on quality and the role of the people within an organisation to develop changes in culture, processes and practice – encompassing factors such as leadership, customer focus, evidence-based decision making and a systematic approach to management and change[281]. Although these approaches have been used to improve health care quality, the Plan-Do-Study-Act cycle[287, 288] is the most commonly used health care quality improvement approach (Figure 17). Commonly used by the Institute for Healthcare Improvement[3], the Plan-Do-Study-Act cycle focuses on testing the effects of small changes i.e. one identifies problems, designs small changes and evaluates their effects in a small scale in a part of a system (e.g. in a department of hospital or in a few health units in a district etc.) and then introduces these changes system-wide (e.g. to all departments of a hospital or to all facilities in a district etc.) if they are found to

be useful[287, 288]. Broadly, the Plan-Do-Study-Act cycles first begin by answering three key questions about what the quality improvement effort is trying to accomplish; how the effort can be measured to show whether or not there is an improvement; and what changes can be undertaken to ensure quality improvement. Quality improvement teams then introduce and test changes designed to achieve the improvement aims using successive Plan-Do-Study-Act cycles until they arrive on a change they believe will produce the desired results and is ready for system-wide implementation[287, 288].

Figure 17: Model for improvement; the Plan-Do-Study-Act cycle



Source: Langley et al[3]

The plan-do-study-act approach has been successfully used to improve the nutrition care, support and treatment in HIV clinics in Malawi[289], and client flow in male medical circumcision program in Uganda[290]. In both instances, a quality improvement team was formed in each health facility and given training about the health problem they wanted to

have quality improvement for. The team then reviewed their facility records to identify gaps/weaknesses in the care of the patients and reasons for the gaps/weaknesses. The record review enabled the team to identify the priority areas for intervention. The team then proposed ideas for addressing the gaps/weaknesses and tested these ideas in plan-do-study-act cycles. Changes that worked were adopted and implemented and those that didn't were adjusted and revaluated or dropped and new changes were tried.

Central to the quality improvement approaches is a formalized, continuous and repetitive investigation and problem-solving approach, focused on identifying and understanding the underlying causes of an event and working to address them to improve quality. The essential parts of quality improvement are the shift in focus from individuals to processes, having a clear scope and goal of quality improvement, strong institutional/organisational leadership, understanding the customers' needs and demands, and empowering and involving key stakeholders in designing and implementing quality improvement interventions[285, 287, 288].

Evaluations during quality improvement can be undertaken using a representative sample[285]. This is possible through a "Lot Quality Assurance Sampling (LQAS)" – a method for assessing a program by analysing the data produced by a small sample[291]. In LQAS, a program catchment area is usually divided into four or five lots i.e. smaller areas which deliver health services such as supervision areas. Within each lot, 19 individuals are then sampled for assessment. By combining data from five lots, managers can determine coverage proportions of the entire catchment area with 95% confidence intervals of $\pm$10% for multiple indicators. If 4 lots are included in the assessment, the 95% Confidence Interval is still acceptable as it does not exceed 11%[291].

7.3.2. Improving the quality of care for older persons:

The scope

Broadly, the key gaps and weaknesses in the care of OPs identified by this thesis are the lack of central role played by the MoH in development of policies for OPs, severe shortage of basic services and items for providing the services that are essential for caring for OPs, and

the gaps/weaknesses in the knowledge, attitudes and practices of HWs regarding the care of OPs. In order to achieve the ultimate goal of improving the quality of care for OPs in Uganda, these gaps/weaknesses should be addressed. These require different interventions at multiple levels and involving multiple stakeholders.

Addressing the leadership gap

Because a strong leadership support is vital for successful quality improvement efforts[292-295], the first goal of improving the quality of health care for OPs in Uganda is to ensure that the MoH plays a central role in development of policies and establishment of a culture of quality of health care for OPs in Uganda. As discussed in section 3.12, such a call for major change is disruptive and may be resisted[296, 297]. The candidate will take key steps to ensure that the MoH actively participates in the development of policies for OPs in Uganda. As discussed in section 3.12, these steps will involve getting buy-in from key stakeholders through publishing the findings of the thesis, writing policy briefs, making presentations in conferences, and holding follow-up meetings with the key individuals at MoH and MoGLSD that gave their support and approval for the study at inception. If these approaches do not give an assurance that health care for OPs will improve, the candidate will mobilise and build a coalition of interest groups such as relevant civil society organisation (e.g. HelpAge International, Uganda Reach the Aged Association, and Health Nest Uganda) and the media to push for such improvement. A policy analysis to identify sources and reasons for resistance and development of strategies to counter these will form a key component of efforts to ensure that the MoH plays a central role in efforts to improve the care of OPs.

Addressing the gaps and weaknesses in the availability of services

The gaps and weaknesses in the care of OPs identified by this study result mostly from the limited scope of services offered at the PCFs. The second goal of quality improvement is therefore to ensure that services that meet the health care needs of OPs are provided at all levels of health care delivery in Uganda. MoH should therefore commission the provision of age-appropriate care that includes the care of NCDs at all levels of PCFs. This would enable OPs to be treated closer to their homes and reduce the cost of accessing health care for them and improve adherence to treatment for OPs who are receiving life-long chronic care. For effective delivery of the services, the MoH should also ensure availability of items such

as equipment, guidelines, drugs, and staff that are necessary for offering the services. As a key principle for prevention and care of NCDs, interventions to improve the care of OPs should take a life-course approach where healthy behaviours that prevent the risk of occurrence of NCDs are promoted for all ages[91].

Furthermore, provision of an age-friendly physical environment for the care of OPs is a key recommendation of WHO[113] and *the Global Forum on Ageing in the 21st Century*[11]. The MoH should therefore provide basic amenities in all PCFs. This should include construction of ramps to enable OPs with frailty or disability to navigate the PCFs, availing enough seats in the waiting area so OPs, particularly with frailty and disability, do not have difficulties with finding a place to sit, constructing a waiting area that shields patients from sun or rain, and constructing a functional toilet to enable OPs, particularly with incontinence, to find a place to ease themselves. As discussed in section 3.12, it is likely that the MoH will not resist recommendations for providing services identified in the minimum health care package for OP because the adjustments required are minimal and can be done with little or no additional cost. The MoH should biannually commission evaluations, using LQAS methods, to assess whether services that meet the health care needs of OPs are provided at all levels, and design strategies to address any gaps and weaknesses.

Improving the knowledge, attitudes and practices of HWs regarding the care of OPs

Because knowledge, attitudes and practices of HWs are a key determinant of the quality of care they provide to patients and of patient's perceptions of care services[98-107], the third goal of improving the quality of care for OPs is to address the gaps in knowledge, attitudes and practices of HWs regarding the care of OPs. Given that training HWs in geriatrics has been found to improve their knowledge, attitudes and practices regarding the care of OPs[215, 228, 298-300], the MoH should in the short term, provide on-the-job training for HWs in PCFs in the general principles of geriatrics. While emphasising the care of OPs, such a training should in principle cover the life-course approach for managing NCDs described above, and health system responsiveness[94] aimed at addressing the non-clinical expectations of the patients. The training should emphasise the specific areas of concern that were identified by this study; namely: providing health education to OPs, screening patients for NCDs and risk factors for NCDs, prompt attention, autonomy, and

communication. For continuous improvement of knowledge, attitudes and practices of HWs regarding the care of OPs, training of HWs should be followed with a routine supportive supervision[301], continuous evaluation and improvement (using LQAS methods) of knowledge, attitudes and practices of HWs, and development of policies and guidelines to give purpose and direction and enable HWs to provide appropriate care to OPs. Given that there is currently no manual for training HWs in SSA, the MoH should commission an intervention study to develop and evaluate a simple training manual for HWs. Such a manual should include a simple tool for screening and treating OPs. The MoH and Ministry of Education should also take key steps to ensure adequate inclusion of geriatrics in the curriculum for training medical students, clinical officers and nurses.

Lastly, the HWs in each health facility should establish a quality improvement team to ensure that all OPs presenting at their clinics receive proper assessment for the common health problems and their risk factors and are appropriately treated. The team should routinely do a root-cause-analysis[286] to identify and understand the weaknesses/gaps in the care of OPs. For example, because management of NCDs in OPs should take a life-course approach, the team should do a review of their facility records and conduct exit interviews with the patients to determine whether all adolescent and adult patients receive blood pressure, weight, and height measurement, have their body mass index calculated, are screened for alcohol and cigarettes use, are screened for the common health problems in OPs and receive appropriate treatment. Once the weaknesses/gaps have been identified and understood, the team should then identify the priority areas for intervention, and propose and test ideas for addressing the gaps/weaknesses using the plan-do-study-act cycles[287, 288]. This might include twice-yearly or at least annual cycles that include an audit of the key quality indicators mentioned above. Ideas that bring about quality improvement should be adopted and implemented and those that don't should be adjusted and revaluated further or dropped and new ideas should be proposed and tested. The team should ensure that the culture for continuous quality improvement for all patients is entrenched in their health facility. A key factor in success will be "ownership" of the QI objectives and process by the managers and staff of the health facilities. If the ownership remains solely with the higher-level officers, such as members of the district health

management team, health workers will see QI as yet another set of meaningless tasks imposed on them from above.

Involving OPs, their family members and communities in quality improvement efforts

Most quality improvement approaches emphasise the need to take into account consumer value and opinions and involving them in defining what would constitute quality, and in designing and implementing strategies to achieve successful quality improvement[285, 287, 288, 293, 302, 303]. As discussed in chapter 6, due to the chronic nature of the common health problems in OPs, a lot of the health care support to OPs comes from OPs themselves, their families and communities. The last goal of quality improvement is therefore to involve OPs, their families and communities in defining what to them would constitute quality health care, map out what the OPs and their families/communities can do for themselves and then involve them in developing and implementing strategies that will empower and build their capacity to provide a sustainable supportive environment for OPs. Strategies for involving families/communities in the care of OPs should involve a community based study to further understand the burden of disease among OPs and its causes, and the reasons why OPs do or do not utilize services at PCFs, and their thoughts on what services should be provided to them. This study should then lead to another study to develop and evaluate a low cost strategy to enhance community involvement in the care of OPs. This should include development and evaluation of basic tools and community training programmes aimed at building their capacity to identify OPs in need of health care, referring them for treatment, and supporting OPs who are on life-long treatment. These might involve using LQAS or other methods, such as pilot studies.

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9. Annexes

9.1. Systematic literature review

A systematic literature search for primary studies published in English language between January 2000 and December 2013 was undertaken to understand what health care was available and delivered to OPs at PCFs in SSA. The systematic search, using key search terms (Box 1), was conducted in PUBMED, MEDLINE, EMBASE, Global Health, Africa Wide Information, and health system evidence between June 2012 and 31st October 2013. Articles were included if they reported on health care services for older persons in PCFs; caseload due to OPs and common diseases diagnosed among OPs; knowledge, attitudes and practices of HWs in PCFs regarding the care of OPs; and perceptions of OPs of the services they received from the PCFs.

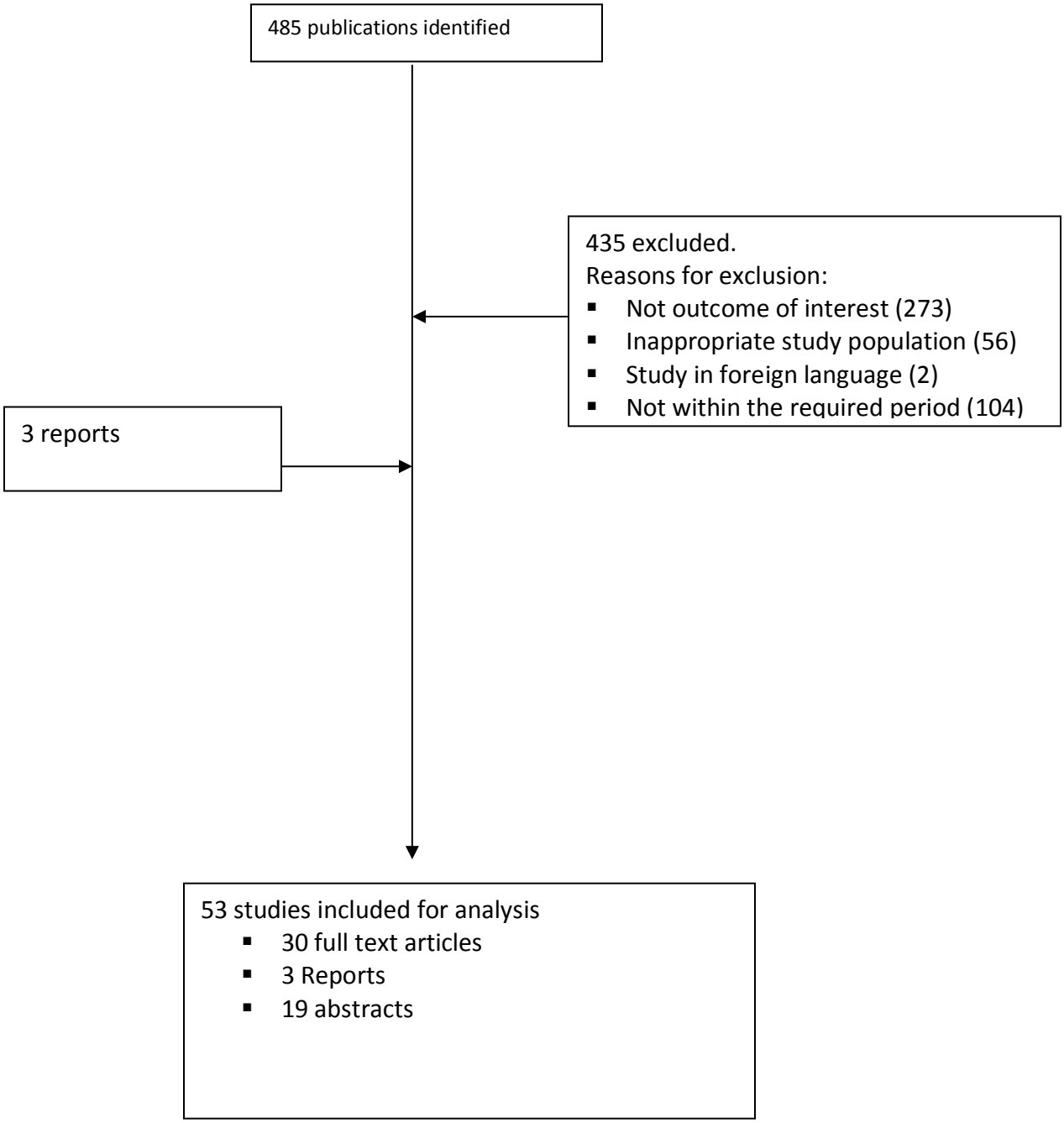
The titles, abstracts and full-texts of all identified studies were reviewed and those that did not meet the inclusion criteria were excluded. Study quality was assessed using tools provided by Effective Practice and Organisation of Care Group[73]. The tool considers seven quality criteria: concealment of allocation, follow-up, blinding, baseline measurement, reliability of primary outcomes measures, and protection against contamination. These individual quality components were used to rate the studies as being of high (low risk of bias), good (moderate risk of bias), or fair quality (high risk of bias). Data extraction and further quality check was done using a checklist provided by Centres for Reviews and Dissemination[72].

Data were obtained on the author, year, country, intervention, study population, age, sex, study design, follow-up period, services available for OPs, caseload and diseases diagnosed among OPs, knowledge, attitudes and practices of HWs, perceptions of OPs of the services. It was not possible to do a meta-analysis due to heterogeneity in study methods and outcomes; a descriptive synthesis of data was instead done and results summarized in tables.

9.1.1. Key words used for the literature search

Health care or health service$ or medical care or care or geriatr* **[1418710]**
Older person$ or elderly or old people or old adult$ or older adults or aged **[161411]**
Primary care or community care or primary care facilit* **[61654]**
Sub-Saharan Africa or Sub Saharan Africa or South Africa or Southern Africa or Western Africa or West Africa or East Africa or Eastern Africa or Angola or Benin or Botswana or Burkina Faso or Burundi or Cameroon or Cape Verde or Central African Republic or Chad or Comoros or Congo or Congo Brazzaville or Cote or Ivory Coast or Democratic Republic of Congo or Zaire or Equatorial Guinea or Eritrea or Ethiopia or Gabon or Gambia or Ghana or Guinea or Guinea Bissau or Guinea-Bissau or Kenya or Lesotho or Liberia or Madagascar or Malawi or Mali or Mozambique or Namibia or Niger or Nigeria or Rwanda or Soa Tome and Principe or Senegal or Seychelles or Sierra Leone or Somalia or Republic of South Africa or Swaziland or Togo or Uganda or Tanzania or United Republic of Tanzania or Zanzibar or Zambia or Zimbabwe **[141179]**
Illness* or disease* or sick* or ailment* or health and wellbeing or morbidity or mortality
Health worker$ or health provider$ or medical practitioner$ or health service providers or nurses or doctors or allied health professionals or clinical workers or clinician$ **[222893]**
Health knowledge and attitude or health knowledge or attitude **[63597]**
Perception or satisfaction or views or complaints **[78965]**
Vision problems or vision disorders or visual impairment or blind or blindness **[21828]**
Hearing problems or hearing disorders or hearing loss or hearing impairment or deaf or deafness **[54728]**
Hypertension **[350234]**
Cardiovascular diseases **[97992]**
Diabetes **[380053]**
Non-communicable diseases or chronic diseases **[218283]**
Cancer **[1053542]**
HIV **[16324]**
Mental illness or mental disorders **[124517]**
Neurocognitive disorders or cognitive disorders **[49405]**
Dementia **[36223]**
Alzheimer's disease **[2]**
Depression **[254464]**
Key word combinations:
1 and 2 and 3 and 4 = 13 articles (none met the inclusion criteria)
2 and 3 and 4 and 6 = 0
1 and 2 and 3 and 4 and 8 = 0
2 and 4 and 5 = 263
2 and 4 and 9 = 39
2 and 4 and 10 =17
2 and 4 and 11 = 129
2 and 4 and 12 = 9
2 and 4 and 13 =7
2 and 4 and 14 =4
2 and 4 and 15=3
2 and 4 and 16 = 8
2 and 4 and 17 =0
2 and 4 and 18=3
2 and 4 and 19=0
2 and 4 and 20 =3

9.1.2. Prisma flow chart to study selection of studies on common diseases among older persons



9.1.3. Prevalence of the common diseases among older persons

Ref, year location,	Type of study	Population, age, sex	Findings	Comments/conclusion
		CARDIOVASCULAR DISEASES		
Adebusoye et al[29] 2011. *African Journal of Primary Health Care and Family Medicine; 2011. 3: 1, Article ID 211.* **Nigeria**	Cross sectional study of OPs who presented to a clinic between 2004 – 2005	N: 500 Elderly	Hypertension: 40.0%	High prevalence of NCDs, with hypertension being the most prevalent
Sanya et al[47] 2011 *Annals of African Medicine; 2011. 10: 4, 278-283.* **Nigeria**	Prospective study of patients who have died in the hospital	N: 297 60+ yrs M: 59%	Cause of death: -Stroke: 19.8%	Stroke and infectious diseases are leading causes of death.
Raouf et al[43] 2003 *Medecine d'Afrique Noire; 2003. 50: 3, 125-128.* **Gabon, Libreville**	Medical survey of individuals admitted to hospital to document the causes of admission	N: 1124 Age: 60+ yrs M: 730 (64.9%)	Hypertension: 33.5%	
Ejim et al[44] 2011 *Journal of Tropical Medicine; 2011. 2011: Article ID 308687***. Nigeria**	Cross sectional survey to assess the prevalence of cardiovascular diseases	N: 858 Age 40-70 yrs M: 247 (28.8%)	Hypertension: 46.4%,	CVD risk factors was highest in older persons aged 65-70 yrs
Clausen et al[35] 2005 *Journal of Nutrition, Health & Aging; 2005. 9: 6, 455-461* **Botswana**	National Cross sectional survey including clinical exams to assess the prevalence of common health conditions in OPs	N: 372 Age: 60-109 M: 189	- Hypertension: 42%	A large number of OPs in Botswana suffer from one or more age-associated NCDs
Nyaruhucha et al[46] 2001 *East African Medical Journal; 2001. 78: 9, 489-492* **Tanzania**	Cross sectional assessment of the nutritional and health status of older persons admitted to Morogoro hospital	N: 121 Age: elderly	- cardiovascular diseases: 30%	Cardiovascular diseases were more prevalent among women than men while the respiratory diseases were opposite.
Onwuchekwa et al[45] 2009 *Ethnicity & Disease; 2009. 19: 3, 359-362.* **Nigeria**	Review of medical records of geriatric patients	N: 1122 Age: 60+ yrs	- cardiovascular diseases s: 43.7%	Chronic diseases were responsible for the majority of morbidity and mortality in OPs
Ogunniyi et al[36] 2001 West African Journal of Medicine20: 4, 227 – 231. **Nigeria**	Review of medical records	N: 613 Elderly patients M: 215 (35.1%)	- Hypertension: 27.8%	cardiovascular diseases were the most common reason for admission with hypertension being the major cause of morbidity
Allain et al[31] Age and Ageing 1997(26): 115-121. **Zimbabwe**	Cross sectional survey of Morbidity and disability in elderly Zimbabweans		cardiovascular diseases: 69%	

Negin et al[37] 2011 *Tropical Medicine and International Health volume 16 no 5 pp 640–646 may 2011* **Rwanda, Malawi and Tanzania**	Cross sectional survey in three rural sites in Malawi, Rwanda and Tanzania to obtain data on NCDs and its risk factors	N:193 50+ yrs M: 93 (48%)	Hypertension: M: 36.6%; F: 41%	
Scholten et al[42] 2011 *BMC Public Health 11:886.* **Uganda**	Cross sectional community-based study of health wellbeing of older persons living with or affected by HIV/AIDS	N: 510 50+ yrs M: 198 (38.8%)	-Diagnosed with at least one chronic NCD: 35%; -Hypertension M: 31%; F: 35% -Only 46% of those with HT were told they had it	Basic health problems are very common at older ages and poorly addressed by existing health services.
Toure et al[304] 2008 *African Journal of Neurological Sciences; 2008. 27: 2* **Senegal**	A two-wave process of data was collected among elderly persons attending a university teaching hospital.	N: 872 Mean age: 67.2 yrs	Hypertension was among the common health conditions reported.	
Oye et al[56] 2008 *JAGS 56:2033–2038, 2008* **Nigeria**	Interviews with OPs (multi-stage sampling) to assess for chronic pain and medical disorders	N: 2152 65+ yrs	Hypertension: 10.3%	OPs with major depressive disorders also had other co-morbidities
Fanou et al[49] 2004 HelpAge International[25] **Benin**	Cross sectional survey to determine the prevalence of under and over nutrition and common diseases in OPs	N: 465 Age: 60+ yrs	Self-reported hypertension: 22%	
		DIABETES		
Ejim et al[44] 2011 *Journal of Tropical Medicine; 2011. 2011: Article ID 308687.* **Nigeria**	Cross sectional survey to assess the prevalence of cardiovascular diseases	N: 858 Age 40-70 yrs M: 247 (28.8%)	Diabetes: 4.4%	
Toure et al[304] 2008 ***African Journal of Neurological Sciences; 2008. 27: 2*** Senegal	A two-wave process of data was collected among elderly persons attending a university teaching hospital.	N: 872 Mean age: 67.2 yrs	Diabetes was among the main health conditions reported.	
Fanou et al[49] 2004 HelpAge International[25] **Benin**	Cross sectional survey to determine the prevalence of under and over nutrition and common diseases in OPs	N: 465 Age: 60+ yrs	Diabetes: 4.1%	
Ayah et al[48] 2013 BMC Public Health 13: 371 Kenya	Population-based household survey of prevalence of diabetes and correlates in an urban slum community in Nairobi	N: 2061 (all ages) N: 364 (age ≥45years)	Prevalence of diabetes: 45-54years: 10.5% 55-65years: 7.7% ≥65years: 20%	

VISION PROBLEMS				
Waweru et al[32] 2003 *East African Medical Journal 80: 2, 63-67* **Nairobi, Kenya**	Cross sectional done thru questionnaire based interviews and FGDs	N: 400 Age: 60+ yrs M: 124(31%)	- Vision problems: 44%	
Abdulraheem[305] 2007 *Annals of African Medicine: 6: 2, 58-63* **Nigeria**	Household survey to obtain info on the health needs and determine health seeking behaviour	N: 756 Age: 60+ yrs	- Poor sight (78.2%)	
Adebusoye et al[29] 2011. *African Journal of Primary Health Care and Family Medicine; 2011. 3: 1, Article ID 211.* **Nigeria**	Cross sectional study of older persons who presented to a clinic between 2004 – 2005	N: 500 Elderly	Cataract: 39.4%	
Clausen et al[35] 2005 *Journal of Nutrition, Health & Aging; 2005. 9: 6, 455-461* **Botswana**	National Cross sectional survey including clinical exams to assess the prevalence of common health conditions in OPs	N: 372 Age: 60-109 M: 189	- Blindness: 11%	
Ogunniyi et al[36] 2001 West African Journal of Medicine20: 4, 227 – 231. **Nigeria**	Review of medical records	N: 613 Elderly patients M: 215 (35.1%)	- Visual impairment: 12.1% (mainly due to cataract)	
Allain et al[31] Age and Ageing 1997(26): 115-121. **Zimbabwe**			Visual problems: 67%	
Cumming et al[27] Online article. **Uganda**	Report of common health problems in older persons		Poor vision: 54%	
Scholten et al[42] 2011 *BMC Public Health 11:886.* **Uganda**	Cross sectional study of health wellbeing of older persons living with or affected by HIV/AIDS	N: 510 50+ yrs M: 198 (38.8%)	Poor vision M: 25%; F: 21%	Basic health problems are very common in OPs and poorly addressed by health services.
Toure et al[304] 2008 *African Journal of Neurological Sciences; 2008. 27: 2* **Senegal**	A two-wave process of data was collected among OPs attending a university teaching hospital.	N: 872 Mean age: 67.2 yrs	Cataract was among the main health conditions reported.	
Lindfield R et al[38] 2012. ***PLoS ONE 7(6): e38483.*** Zambia	Cross sectional survey. Rapid assessment to establish the prevalence and causes of blindness.	N: 3629 Age: 50+ yrs	-Blind with best correction: 2.2%; -Blind with available correction: 2.29; -Severe visual impairment: 1.74%; -Visual impairment: 7.0%; -Total: 11.0% -Cataract was the main cause (39.8%) followed by posterior	Blindness in this part of Zambia is mainly avoidable and there is a need for comprehensive eye care services that can address both cataract and posterior segment disease in the population

			segment disease (34.9%)	
Kalua K et al[40] 2011 *PLoS ONE 6(4): e19226*. **Malawi**	Population-based survey in 7 district in Southern Malawi	N: 3,583 Age: 50+ yrs	-Blind: 3.3% -Severe visual impairment: 2.7% -Visual impairment: 9.5% -Cataract was the main cause for severe visual impairment (57.4%) and visual impairment (46.3%)	Lower than expected prevalence of blindness and visual impairment in persons age 50 and above in southern Malawi, with the majority of causes being avoidable.
Cockburn et al[306] 2012 ***PLoS ONE 7(2): e30718.*** South Africa, Cape Town	Rapid assessment through cross sectional population based survey to assess for avoidable blindness	N: 2,70 Age: 50+ yrs	-Prevalence of bilateral blindness: 1.4%; -Severe visual impairment: 0.9% -Visual impairment: 4.9% **Cause:** -Posterior segment diseases: 65%; -Cataract: 27% -Diabetic retinopathy: 8% - Glaucoma accounts: 11% -The remaining posterior segment diseases included age related macular degeneration, optic atrophy, trauma and macular hole.	The prevalence of blindness in people 50+ years in Cape Town was lower than expected probably because of high cataract surgery coverage.
Courtright et al[307] 2003 ***Br J Ophthalmol 2003;87:1079–1082*** Malawi	Population based cross sectional survey where visual acuity and cause of visual loss were recorded	N: 1384 Age: 50+ yrs	-Bilateral visual acuity <6/60 M: 4.8%; F: 6.1% -Bilateral visual acuity <3/60 M: 3.3%; F: 4.0% -Unilateral visual acuity<6/60 M: 10.2%; F: 8.3% -Cataract as the cause: 61%	
Mathenge et al[39] 2007 ***PLoS Med 4(7):e217.*** Rwanda	Population based cross sectional survey	N: 2,206 Age: 50+ yrs	-Bilateral blindness: 1.8% -Severe visual impairment: 1.3%;-Visual impairment (5.3%); -Most bilateral blindness (65%) was due to cataract.	Overall, the vast majority of cases of blindness (80.0%), severe visual impairment (67.9%), and visual impairment (87.2%) were avoidable
Mathenge et al[308] 2007 *Ophthalmology 114(3): 599-605.*	Comprehensive ophthalmic exams done at home of participants	N: 3,503 Age: 50+ yrs	-Bilateral blindness: 2.0% -Bilateral visual impairment:	avoidable (i.e.. due to cataract, refractive error, aphakia,

Kenya, Nakuru			5.8%;-Cataract was major cause of blindness (42%) and visual impairment (36%)	trachoma, or corneal scar) responsible for 69.6% of bilateral blindness and 74.9% of bilateral visual impairment
Aga[309] 2001 *Ethiopian Journal of Health Development; 2001. 15: 2, 139-144.* **Ethiopia, Addis**	Cross sectional survey. Participants underwent extensive eye examination including visual acuity test and intraocular pressure measurements	N: 571 Age: 50+ yrs	-Blind (visual acuity <3/60): 9%;Visual impairment (visual acuity >3/60 but <6/18): 18% **Causes:** **-**Cataract: 48%; -Glaucoma: 15.3%; -Trachoma: 11.5%; -Post-operative aphakia: 11.5% -Age-related maculopathy: 5.8%	Most (86%) of blindness was due to avoidable causes
Fanou et al[49] 2004 HelpAge International[25] **Benin**	Cross sectional survey to determine the prevalence of under and over nutrition and common diseases in OPs	N: 465 Age: 60+ yrs	Poor eye sight: 30% (urban areas: 39%; rural areas: 35.9%)	
Sibetcheu et al[310] 2004, HelpAge **Cameroon**	Cross sectional community-based study to assess nutritional status and socio-economic vulnerability of older people in Bangoua, Western Province.	N: 531 Age: 55 to 120 years M: 37%; F: 63%	-Poor eye sight: 18.8% -Blindness: 1%	
Wagah et al[82] 2004 HelpAge[25] **Kenya**	Cross sectional study undertaken to establish the vulnerability of older persons and to determine the risk factors to malnutrition	N: 375 Age: 50+ yrs	-Eye problems 45%	
Ousseynou KA[311] 2004 Help Age[25] **Senegal**	A cross sectional study undertaken to identify and compare the nutritional status and health problems of OPs	N: 400 Age: 60+ yrs M: 53.5%	-Cataracts: 51.2%	
Tesfaye et al[312] 2004 HelpAge International[25] **Ethiopia**	Cross sectional survey to assess nutritional status of older people in Central Ethiopia	N: 250 Age: 60+ yrs	-Visual impairment: 58.4%;	
Dedan et al[313] 2004. HelpAge International[25] **Tanzania**	Cross sectional survey to assess the nutritional and health status of older persons	N:819 Age: 60+ yrs	-Visual impairment: 61%	
Tembo et al[83] 2004 HelpAge International[25] **Uganda**	Cross sectional study to describe the nutritional status and risk factors for nutritional vulnerability	N: 362 Age: 50+ yrs	-Poor eyesight: 56.7%	
Adebusoye et al[234] 2011 West African	Cross sectional study of visual	n=500	-impaired vision: 44.8%; -	

Journal of Medicine 30(2): 118-120. **Nigeria**	morbidities among elderly patients presenting at a primary care clinic in Nigeria	F: 311 M:189	abnormal sensations in the eyes: 12.8%; -Cataract: 39.7%; pterygium: 6.4%	
		HEARING PROBLEMS		
Ogunniyi et al[36] 2001 West African Journal of Medicine20: 4, 227 – 231. **Nigeria**	Review of medical records	N: 613 Elderly patients M: 215 (35.1%)	- Most frequent neurological disorders were hearing impairment	
Allain et al[31] Age and Ageing 1997(26): 115-121. **Zimbabwe**	Cross sectional survey of morbidity and disability in elderly Zimbabweans		Hearing problems: 20%	
Ousseynou KA[311] 2004 Help Age[25] **Senegal**	A cross sectional study undertaken to identify and compare the nutritional status and health problems of OPs	N: 400 Age: 60+ yrs M: 53.5%	-Hearing disabilities: 21.5%	
		MUSCULO-SKELETAL DISEASES		
Waweru et al[32] 2003 *East African Medical Journal 80: 2, 63-67* **Nairobi, Kenya**	Cross sectional done thru questionnaire based interviews and FGDs	N: 400 Age: 60+ yrs M: 124(31%)	- Musculoskeletal diseases: 80%	Effects of aging, low socio-economic status and poor access to care contribute to poor health in OPs
Adebusoye et al[29] 2011. *African Journal of Primary Health Care and Family Medicine; 2011. 3: 1, Article ID 211.* **Nigeria**	Cross sectional study of older persons who presented to a clinic between 2004 – 2005	N: 500 Elderly	Osteoarthritis: 26.8%	The prevalence of chronic medical illness was high among elderly patients.
Abdulraheem[305] 2007 *Annals of African Medicine: 6: 2, 58-63* **Nigeria**	Household survey to obtain info on the health needs and determines of health seeking behaviour	N: 756 Age: 60+ yrs	-Body pain (89.5%); -Joint pain (86.4%0; - Body weakness and fatigue (81.5%); - Decreased mobility (65.8%)	Socioeconomic indicators and nature of illness are the most pervasive determinants of health care seeking behaviour
Igumbor et al[314] 2001 ***Journal of Rural and Tropical Public Health; 2011. 10: 61-69*** South Africa	Cross sectional study to assess the socio-demographic characteristic, general health status and presence of chronic pain	N: 394	Chronic pain: 42.9% Common sites of chronic pain included: back, knee, ankle, head and shoulders.	Being older than 50 years was associated with increased risk of chronic pain
Clausen et al[35] 2005 *Journal of Nutrition, Health & Aging; 2005. 9: 6, 455-461* **Botswana**	National Cross sectional survey including clinical exams to assess the prevalence of common health conditions in older persons	N: 372 Age: 60-109 M: 189	- Musculoskeletal pain in more than two locations: 68%	A large number of older persons in Botswana suffer from one or more age-associated chronic diseases that may impair function and quality of life.

Ogunniyi et al[36] 2001 West African Journal of Medicine20: 4, 227 – 231. **Nigeria**	Review of medical records	N: 613 Elderly patients M: 215 (35.1%)	- Osteoarthritis: 6.7% - Most frequent neurological disorders were movement disorders
Allain et al[31] Age and Ageing 1997(26): 115-121. **Zimbabwe**	Cross sectional survey of Morbidity and disability in elderly Zimbabweans		Body pain: 97%; Joint pain: 69%; Head pain: 72; Back pain: 59%; Chest pain: 46%
Cumming et al[27] Online article Uganda	Report of common health problems in older persons		Back and bone pains: 81% Arthritis: 73%
Toure et al[304] 2008 ***African Journal of Neurological Sciences; 2008. 27: 2*** Senegal	A two-wave process of data was collected among elderly persons attending a university teaching hospital.	N: 872 Mean age: 67.2 yrs	Arthritis was among the main health conditions reported.
Oye et al[56] 2008 *JAGS 56:2033–2038, 2008* **Nigeria**	Interviews done with older persons (multi-stage sampling) to assess for chronic pain and medical disorders	N: 2152 65+ yrs	Arthritis: 69.1% Back or neck pain: 50.6%
Nadia L.M. et al[49] 2004 HelpAge **Benin**	Cross sectional survey to determine the prevalence of under and over nutrition and common diseases in OPs	N: 465 Age: 60+ yrs	Backaches: F: 39.6%; M: 29.6%
Sibetcheu et al[310] 2004, HelpAge **Cameroon**	Cross sectional community-based study to assess nutritional status and socio-economic vulnerability of older people in Bangoua, Western Province.	N: 531 Age: 55 to 120 years M: 37%; F: 63%	-Joint pains/arthritis: 66.8% -Back pain: 37.7% Kyphosis: 14.9%
Tesfaye et al[312] 2004 HelpAge International[25] **Ethiopia**	Cross sectional survey to assess nutritional status of older people in Central Ethiopia	N: 250 Age: 60+ yrs	Joint pains: 54.4%
Wagah et al[82] 2004 HelpAge[25] Kenya	Cross sectional study undertaken to establish the vulnerability of older persons and to determine the risk factors to malnutrition	N: 375 Age: 50+ yrs	-Joint pains: 16.8%
Tembo et al[83] 2004 HelpAge International[25] **Uganda**	Cross sectional study to describe the nutritional status and risk factors for nutritional vulnerability	N: 362 Age: 50+ yrs	-Joint pain/arthritis: 54.2%
	RESPIRATORY DISEASES		
Waweru et al[32] 2003 *East African Medical Journal 80: 2, 63-67*	Cross sectional done thru questionnaire based interviews and	N: 400 Age: 60+ yrs	- Respiratory diseases: 68%

Nairobi, Kenya	FGDs	M: 124(31%)		
Sanya et al[47] 2011 *Annals of African Medicine; 2011. 10: 4, 278-283.* **Nigeria**	Prospective study of patients who have died in the hospital admitted to University of Ilorin Teaching Hospital	N: 297 60+ yrs M: 59%	Lower respiratory tract disease: 8.1%	Hospital mortality is high amongst older people. Stroke and infectious diseases are leading causes of death.
Nyaruhucha et al[46] 2001 *East African Medical Journal; 2001. 78: 9, 489-492* **Tanzania**	Cross sectional assessment of the nutritional and health status of older persons admitted to Morogoro hosp	N: 121 Age: elderly	- Respiratory tract diseases: 28%	
Allain et al[31] Age and Ageing 1997(26): 115-121. **Zimbabwe**	Cross sectional survey of Morbidity and disability in elderly Zimbabweans		Cough: 51% Breathing problems: 25% Wheeze: 10%	
Cumming et al[27] **Online article** **Uganda**	Report of common health problems in older persons		Asthma: 39%	
Toure et al[304] 2008 ***African Journal of Neurological Sciences; 2008. 27: 2*** Senegal	A two-wave process of data was collected among elderly persons attending a university teaching hospital. Interviews as well as clinical exams were done	N: 872 Mean age: 67.2 yrs	Respiratory diseases were among the main health conditions reported.	
Oye et al[56] 2008 *JAGS 56:2033–2038, 2008* **Nigeria**	Interviews done with older persons (multi-stage sampling) to assess for chronic pain and medical disorders	N: 2152 65+ yrs	Asthma: 7.4%	
Sibetcheu et al[310] 2004, HelpAge **Cameroon**	Cross sectional community-based study to assess nutritional status and socio-economic vulnerability of older people in Bangoua, Western Province.	N: 531 Age: 55 to 120 years M: 37%; F: 63%	-Respiratory infections: 14.1%	
Wagah et al[82] 2004 HelpAge[25] Kenya	Cross sectional study undertaken to establish the vulnerability of older persons and to determine the risk factors to malnutrition	N: 375 Age: 50+ yrs	-Coughs and chest pains: 30.5%	
		ORO-DENTAL PROBLEMS		
Waweru et al[32] 2003 *East African Medical Journal 80: 2, 63-67* **Nairobi, Kenya**	Cross sectional done thru questionnaire based interviews and FGDs	N: 400 Age: 60+ yrs M: 124(31%)	- Dental problems: 40%%	
Clausen et al[35] 2005 *Journal of Nutrition, Health & Aging;*	National Cross sectional survey including clinical exams to assess the	N: 372 Age: 60-109	- Dental problems: 36%	

2005. 9: 6, 455-461 **Botswana**	prevalence of common health conditions in older persons	M: 189		
Allain et al **" Age and Ageing** 1997**(26): 115-121** Zimbabwe	Cross sectional survey of Morbidity and disability in elderly Zimbabweans		-Chewing difficulty: 36%	
Cumming et al[27] **Online article** **Uganda**	Report of common health problems in older persons		-Dental problems: 79%	
Tesfaye et al[312] 2004 HelpAge International[25] **Ethiopia**	Cross sectional survey to assess nutritional status of older people in Central Ethiopia	N: 250 Age: 60+ yrs	-Chewing difficulty: 48%	
Wagah et al[82] 2004 HelpAge[25] Kenya	Cross sectional study undertaken to establish the vulnerability of older persons and to determine the risk factors to malnutrition	N: 375 Age: 50+ yrs	- Dental problems: 49.1%	
Dedan et al[313] 2004. HelpAge International[25] **Tanzania**	Cross sectional survey to assess the nutritional and health status of older persons	N:819 Age: 60+ yrs	-Chewing problems: 53.1%	
		NUTRITIONAL PROBLEMS		
Adebusoye et al[29] 2011. *African Journal of Primary Health Care and Family Medicine; 2011. 3: 1, Article ID 211.* **Nigeria**	Cross sectional study of older persons who presented to a clinic between 2004 – 2005	N: 500 Elderly Gender distribution (no info)	Obesity: 51.8%	The prevalence of chronic medical illness was high among elderly patients.
Ejim et al[44] 2011 *Journal of Tropical Medicine; 2011. 2011: Article ID 308687.* **Nigeria**	Cross sectional survey to assess the prevalence of cardiovascular diseases	N: 858 Age 40-70 yrs M: 247 (28.8%)	Obesity besity as determined by BMI: 30% Abdominal obesity: 31%, Hypercholesterolaemia: 3.7%	CVD risk factors was highest in older persons aged 65-70 yrs
Nyaruhucha et al[46] 2001 *East African Medical Journal; 2001. 78: 9, 489-492* **Tanzania**	Cross sectional assessment of the nutritional and health status of older persons admitted to Morogoro hosp	N: 121 Age: elderly	- Chronic energy deficiency: 26%	
Allain et al[31] Age and Ageing 1997(26): 115-121. **Zimbabwe**	Cross sectional survey of Morbidity and disability in elderly Zimbabweans		Weight loss: 39%	
Negin et al 2011 ***Tropical Medicine and International***	Cross sectional survey in three rural sites in Malawi, Rwanda and Tanzania	N:193 50+ yrs	Overweight: M: 7.7%; F: 14.9	

Health volume 16 no 5 pp 640–646 may 2011 Rwanda, Malawi and Tanzania	to obtain data on NCDs and its risk factors	M: 93 (48%)		
Blaney et al[315] 2009 Public Health Nutrition 12(10): 1711-1725 **Gabon**	Cross- sectional community-based study to assess nutritional status of OPs		Under nutrition: 26% Obesity: 54.1%	
Cheserek et al[65] 2012 SAJCN - South African Journal of Clinical Nutrition 25(2): 67-72 **Lake Victoria Basin (Uganda, Kenya, Tanzania)**	Cross- sectional community-based study to assess nutritional status of OPs		Under nutrition: 26.1% Over weight: 10.8 Obesity: 4.5%	
Zverev et al[69] 2004 Annals of Human Biology 31(1): 29-37 **Malawi**	Cross- sectional community-based study to assess nutritional status of OPs		Under nutrition: 22.7%	
Kikafunda et al[63] 2002	Cross sectional community based study to assess the nutritional status of OPs	N:100 OPs ≥60	Under nutrition: 33.3 based on BMI<18.5 & 52% based on MUAC<24cm. 68% of women were undernourished (body mass index < 18.5 kg/m(2)) compared with 32.4% of men.	A large percentage of older men and women are malnourished
Marais et al[67] 2007 SAJCN - South African Journal of Clinical Nutrition 20(3): 102-108 South Africa	Cross-sectional assessment of the nutritional status of OPs		Under nutrition: 6%	
		ANAEMIA		
Adebusoye et al[29] 2011. *African Journal of Primary Health Care and Family Medicine; 2011. 3: 1, Article ID 211.* **Nigeria**	Cross sectional study of older persons who presented to a clinic between 2004 – 2005	N: 500 Elderly	Anaemia: 8%. F: 11.2%; M: 2.6%)	.
Onwuchekwa et al[45] 2009 *Ethnicity & Disease; 2009. 19: 3, 359-362.* **Nigeria**	Review of medical records of geriatric patients	N: 1122 Age: 60+ yrs	- Anaemia: 2.5%	
Cumming et al[27] **Online article** **Uganda**	Report of common health problems in older persons		-Anaemia: 32%	

Endocrine diseases				
Onwuchekwa et al[45] 2009 *Ethnicity & Disease; 2009. 19: 3, 359-362.* **Nigeria**	Review of medical records of geriatric patients	N: 1122 Age: 60+ yrs	- Endocrine diseases: 15.4%	
		MALIGNANCIES		
Onwuchekwa et al[45] 2009 *Ethnicity & Disease; 2009. 19: 3, 359-362.* **Nigeria**	Review of medical records of geriatric patients	N: 1122 Age: 60+ yrs	- Malignancies: 3.7%	
		RENAL DISEASES		
Onwuchekwa et al[45] 2009 *Ethnicity & Disease; 2009. 19: 3, 359-362.* **Nigeria**	Review of medical records of geriatric patients	N: 1122 Age: 60+ yrs	- Renal diseases: 3.4%	
Allain et al[31] Age and Ageing 1997(26): 115-121. **Zimbabwe**	Cross sectional survey of Morbidity and disability in elderly Zimbabweans		-Genito-urinary problems: 55% -Dysuria: 23%; -Dribbling: 21%; -Hesitancy: 10%; -Haematuria: 5% -Urine incontinence: 9%	
		INFECTIONS (NON-SPECIFIC)		
Sanya et al[47] 2011 *Annals of African Medicine; 2011. 10: 4, 278-283.* **Nigeria**	Prospective study of patients who have died in the hospital admitted to University of Ilorin Teaching Hospital	N: 297 60+ yrs M: 59%	-Sepsis (16.5%) Infectious diseases (38.2%)	Hospital mortality is high amongst older people. Stroke and infectious diseases are leading causes of death.
Abdulraheem[305] 2007 *Annals of African Medicine: 6: 2, 58-63* **Nigeria**	Household survey to obtain info on the health needs and determines of health seeking behaviour	N: 756 Age: 60+ yrs	- Fever (71.3%)	
Onwuchekwa et al[45] 2009 *Ethnicity & Disease; 2009. 19: 3, 359-362.* **Nigeria**	Review of medical records of geriatric patients	N: 1122 Age: 60+ yrs	- Infections: 18.8%	
		MALARIA		
Nyaruhucha et al[46] 2001 *East African Medical Journal; 2001. 78: 9, 489-492* **Tanzania**	Cross sectional assessment of the nutritional and health status of older persons admitted to Morogoro hosp	N: 121 Age: elderly	- Malaria: 15%	

Fanou et al[49] 2004 HelpAge International[25] **Benin**	Cross sectional survey to determine the prevalence of under and over nutrition and common diseases in OPs	N: 465 Age: 60+ yrs	Malaria/fever (40%)
Sibetcheu et al[310] 2004, HelpAge **Cameroon**	Cross sectional community-based study to assess nutritional status and socio-economic vulnerability of older people in Bangoua, Western Province.	N: 531 Age: 55 to 120 years M: 37%; F: 63%	-Fever/malaria: 18.5%
Wagah et al[82] 2004 HelpAge[25] Kenya	Cross sectional study undertaken to establish the vulnerability of older persons and to determine the risk factors to malnutrition	N: 375 Age: 50+ yrs	-Malaria: 11.6%
Tembo et al[83] 2004 HelpAge International[25] **Uganda**	Cross sectional study to describe the nutritional status and risk factors for nutritional vulnerability	N: 362 Age: 50+ yrs	-Fever/malaria: (45.3%)
Iloh et al[57] 2012 Nigerian Journal of Medicine: Journal of the National Association of Resident Doctors of Nigeria 21(2): 231-236 **Nigeria**	Cross sectional hospital based study to describe the common geriatric morbidities from communicable diseases	N:872 Age: ≥65years	Caseload due to OPs: 8.8% Had communicable diseases: 61: Top five diseases: -Malaria: 67.1% Skin infections: 43.6% Urinary tract infections: 36.0% Intestinal helminthiasis: 20.6% Gastroenteritis: 17.9%
	HIV		
Negin et al[61] 2012 AIDS 2012, 26 (Suppl 1):S55–S63 **South Africa**	Longitudinal studies on OPs (SAGE)	N: 4227	HIV prevalence 6.4% (M: 4.9%; F: 7.5%)
Bendavid et a[60]l 2012 AIDS 26 Suppl 1: S85-91 Sub-Saharan Africa	**Systematic review of HIV in elderly in SSA		11%
Negin J et al[58] 2010 **World Health Organisation. 2010;** 2010**(88): 847-53.**	Review of demographic and health survey data of countries in Sub-Saharan Africa		HIV prevalence among OPs≥50years 4.0% 3million OPs living with HIV
Ministry of Health[62] 2011 Uganda	Uganda AIDS Indicator survey		50-54 years: 7.7%; 55-59: 5.5%
Mills et al[24] 2012	Report		HIV prevalence among OPs

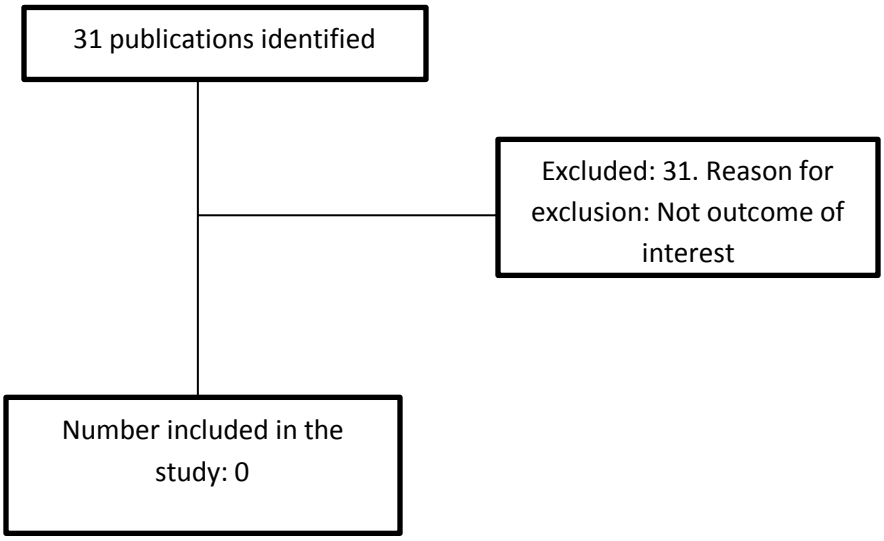
New england journal of medicine 366;14 nejm.1270 org april 5, 2012			≥50years: 1% from DRC to 15% in Botswana and South Africa	
		MENTAL ILLNESSES		
Abdulraheem[305] 2007 *Annals of African Medicine: 6: 2, 58-63* **Nigeria**	Household survey to obtain info on the health needs and determines of health seeking behaviour	N: 756 Age: 60+ yrs	- Irritability, anger, and nervous tension (70%); - Listlessness, depressions and head ache (60%)	Socioeconomic indicators and nature of illness are the most pervasive determinants of health care seeking behaviour among the elderly
Clausen et al[35] 2005 *Journal of Nutrition, Health & Aging; 2005. 9: 6, 455-461* **Botswana**	National Cross sectional survey including clinical exams to assess the prevalence of common health conditions in older persons	N: 372 Age: 60-109 M: 189	-Cognitive impairment: 9% - Depression: 7%	A large number of older persons in Botswana suffer from one or more age-associated chronic diseases that may impair function and quality of life.
Cumming et al[27] Online article Uganda	Report of common health problems in older persons		Memory problems: 12%	
Scholten et al[42] 2011 *BMC Public Health 11:886.* **Uganda**	Cross sectional study of health wellbeing of older persons living with or affected by HIV/AIDS	N: 510 50+ yrs M: 198 (38.8%)	Depression: 15%	Basic health problems are very common in OPs and poorly addressed by health services.
Oye et al[316] 2007. ***Lancet 2007; 370: 957–64*** Nigeria	Interviews done with older persons (multi-stage sampling) to assess for major depressive disorder	N: 2152 65+ yrs	Prevalence depressions: -Lifetime: 26.2%; -12-month: 7.15%; -more common in females; -Only 37% received Rx	2.2%
Oye et al[33] 2008 ***JAGS 56:2033–2038, 2008*** Nigeria	Interviews done with older persons (multi-stage sampling) to assess for major depressive disorder	N: 2152 65+ yrs	Depression: 7.0%	
Oye et al[317] 2011 ***JAGS 59:869–874, 2011*** Nigeria	Longitudinal study where older persons were followed up for three years and incidence of dementia measured	N: 1225	-Prevalence of dementia: 7.6% -Incidence: 21.5/1,000 person yrs. The incidence increased with age e.g. for 75-84 yrs: 2.84; 85+ yrs: 4.13	Incidence of dementia is high among older persons in Nigeria
Guerchet et al[52] 2010 ***Dementia and Geriatric Cognitive***	Multi-centre cross sectional study in Bangui and Brazzaville	N: 1016 (Bangui: 496; Brazzaville	Prevalence of dementia: Bangui: 8.1%	The prevalence of dementia in urban areas of Central Africa is

Disorders; 2010. 30: 3, 261-268. Central Africa Republic Congo Brazzaville		520) Age: 65+ yrs	Brazzaville: 6.7%	close to those observed in high-income countries.
Guerchet et al[318] 2012 ***JAD, Journal of Alzheimer's Disease; 2012. 29: 1, 15-24.*** Central Africa Republic Congo Brazzaville	Two cross sectional survey done in representative samples in Bangui and Brazzavile	N: 977 Age: older persons	-Prevalence of dementia: 7.6%	Factors associated with dementia in African countries seem different from established factors in high-income countries and require further investigation.
Guerchet et al[319] 2009 **Dementia and Geriatric Cognitive Disorders; 2009. 27: 1, 34-41.** Benin	Cross sectional doo-to-door survey to screen older persons for dementia and cognitive impair	N: ? 65+ yrs	Cognitive impairment: 10.4% Dementia: 2.6%	Prevalence of dementia in the population was lower than in developed countries
Paraiso et al[320] 2011 ***Neuroepidemiology; 2011. 36: 4, 245-251.*** Benin	Cross sectional study	N: ? Age: 65+ yrs	Prevalence of Dementia: 3.7% Prevalence increased with age and was higher among women	Dementia was slightly more prevalent than previously reported in a rural area of Benin, but the rate was similar to that recorded in other cities in developing countries
Toure et al[304] 2008 ***African Journal of Neurological Sciences; 2008. 27: 2*** Senegal	A two-wave process of data was collected among elderly persons attending a university teaching hospital.	N: 872 Mean age: 67.2 yrs	Prevalence of dementia: 6.6%	
Coume et al[53] 2012 Geriatrie Et Psychologie Neuropsychiatrie Du Vieillissement 10(1): 39-46 **Senegal**	Cross sectional survey among OPs utilizing socio-health and university centre	N: 872 Age:≥55	Had cognitive impairment: 10.8%	
Mbelesso et al[54] 2012 Bulletin de la Societe de Pathologie Exotique 105(5): 388-395 **Central African Republic**	A cross-sectional study to understand the prevalence and risk factors of dementia among people over 65years	N:496 Age: ≥65years	188 (38%) had a cognitive disorder. 40 of these (21%) had dementia Prevalence of dementia: 8%	
		DERMATOLOGICAL CONDITIONS		
Clausen et al[35] 2005 *Journal of Nutrition, Health & Aging; 2005. 9: 6, 455-461* **Botswana**	National Cross sectional survey including clinical exams to assess the prevalence of common health conditions in older persons	N: 372 Age: 60-109 M: 189	- Dermatological problems: 32%	

GASTRO-INTESTINAL PROBLEMS			
Allain et al[31] Age and Ageing 1997(26): 115-121. **Zimbabwe**	Cross sectional survey of Morbidity and disability in elderly Zimbabweans		-GIT problems: 77; -Diarhoea: 40%; -Constipation: 22%; -Faecal incontinence: 7%
Toure et al[304] 2008 ***African Journal of Neurological Sciences; 2008. 27: 2*** Senegal	A two-wave process of data was collected among elderly persons attending a university teaching hospital.	N: 872 Mean age: 67.2 yrs	Gastrointestinal diseases were among the main health conditions reported.
Fanou et al[49] 2004 HelpAge International[25] **Benin**	Cross sectional survey to determine the prevalence of under and over nutrition and common diseases in OPs	N: 465 Age: 60+ yrs	-PUD: 8.4%; -Dehydration: 34% (rural: 41.3%; Urban: 26.6%; F: 37.3%; M: 29.1%)
Sibetcheu et al[310] 2004, HelpAge **Cameroon**	Cross sectional community-based study to assess nutritional status and socio-economic vulnerability of older people in Bangoua, Western Province.	N: 531 Age: 55 to 120 years M: 37%; F: 63%	-Dehydration: 14.9% -Abdominal pains: 13.0%
Tembo et al[83] 2004 HelpAge International[25] **Uganda**	Cross sectional study to describe the nutritional status and risk factors for nutritional vulnerability	N: 362 Age: 50+ yrs	-Abdominal pains (41.6%)

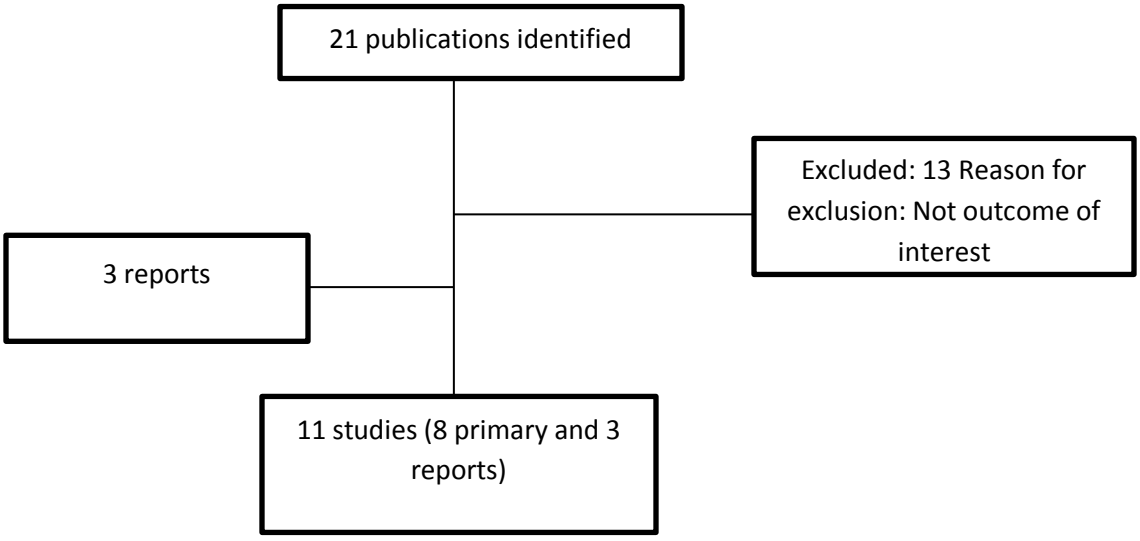
9.1.4. Services for older persons at primary care facilities in Sub-Saharan Africa

Prisma flow chart to study selection



A systematic search for availability of health care services for OPs in PCFs facilities in SSA did not identify any article. A review of services provided by the PCFs in SSA was instead undertaken in order to understand whether the services matched the recommended health care for OPs.

Prisma flow chart to selection of studies on services provided by primary care facilities



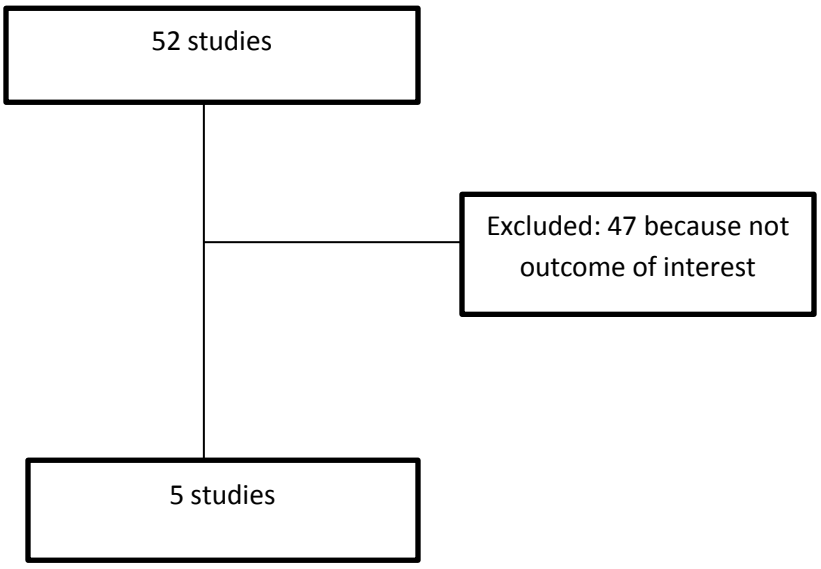
Ref, year, country	Study type and method	Study population	Findings	Conclusion
Availability of services				
Toda et al[159]. 2012 International Journal for Equity in Health 2012, 11:75. Kenya	Cross sectional study of HCs & dispensaries for availability of: Infrastructure Equipment Staffing Commodities Services	National survey of all the 8 provinces	- PCFs with laboratory services: 38.1% - PCFs with HCT: 85.2%	Availability of services equitable Availability of some services was very high
Parker 2012[156] Cape Town South Africa. BioMed Central 2012, 12: 503 South Africa	Multi-centre cross sectional study	PCFs: n = 30	- All PCFs facilities had services for: hypertension, diabetes, Nutrition	
Deventer et al[157] 2009 African Journal of Primary Health Care and Family Medicine 2009(1): 1 South Africa	Cross sectional study of PCFs	PCFs: n=?	- Services were available for: Chronic illnesses such as hypertension, asthma/chronic airways obstructive disease, diabetes, epilepsy	
Deventer et al[141] 2008. South African Journal of Psychiatry 2008 14: 4, 136-140 South Africa	Cross sectional survey of PCFs	PCFs: n=?	- Mental health services were available	
Phaswana-Mafuya[321] 2011. African Journal of physical education, recreation and dance 17: 3, 502-516 South Africa	Cross sectional survey of PCFs	PCFs: n=15	- Services were available for chronic illnesses such as DM, HT, Geriatric care, rehabilitation services, oral and mental health, HIV/AIDS care, and services for infectious illnesses such as malaria and RTI. - Clinics disability friendly	
Bachman et al[166]. **2004 International Journal of STD and AIDS 2004; 15: 388-394 South Africa**	Cross-sectional study with simulated patient visits	PCFs: n=42	STD services were available in all PCFs	
Rayner B et al[158] 2007. SAMJ- South African Medical Journal; 2007 97: 4, 280-284	Cross-sectional study of PCFs for services for hypertension	PCFs: n=2	Hypertension services were available	
Essential medicines and equipment				
Chukwuani et al[144]. Health Policy 77 (2006) 182–201 **Nigeria**	Cross-sectional. Auditing of PCFs	116 PCFs	- 12.2% had essential medicines and supplies. - had adequate number of skilled HWs: 37.5%	All the PCFs have stock-out of drugs
Toda et al[159]. 2012 ***International Journal for Equity in Health 2012, 11:75.*** Kenya	Cross sectional study of HCs & dispensaries for availability of: Infrastructure Equipment Staffing	National survey of all the 8 provinces	- At least 15/18 essential medicines available: 62%	

	Commodities Services			
Parker 2012[156] Cape Town South Africa BioMed Central 2012, 12: 503 **South Africa**	Multi-centre cross sectional study	PCFs: n = 30	**PCFs with:** - Adult weighing scales: 100% - Height scales: 87%; - BMI Charts: 57%; -Tape measures: 73%; - Haemoglobinometers: 70%; - Glucometers: 100%; - Baumonometer: 100%; - Sphygmomanometer: 100%; - Visual acuity charts: 100%; Ophthalmoscope: 100%; Television: 90%; Video machines: 87%; Guidelines for NCD were; either not available or available in 3.3% of the PHC facilities - Drugs available	
Deventer et al[141] 2008. South African Journal of Psychiatry 2008 14: 4, 136-140 South Africa	Cross sectional survey of PCFs	PCF; n=?	Infrastructure poor	
Bachman et al[166]. 2004 International Journal of STD and AIDS 2004; 15: 388-394 **South Africa**	Cross sectional survey of PCFTI services with simulated patients	PCFs: n=42	- STI Guidelines available in the patient consultation areas: 54% - Walled partitions: 86%	
MoH[154] 2007	Assessment of essential medicines list		Drugs for NCDs are not shown on the essential medicines list for mid and lower level PCFs. The list for higher level PCFs contains drugs for NCDs	
MoH[153], 2011 **Uganda**	Assessment of essential medicines list		Drugs for NCDs are not shown on the essential medicines list for mid and lower level PCFs. The list for higher level PCFs contains drugs for NCDs	
MoH[155] 2008 **Nigeria**	Assessment of essential medicines list		Drugs for NCDs are not shown on the essential medicines list for mid and lower level PCFs. The list for higher level PCFs contains drugs for NCDs	
		Staffing		
Chukwuani et al[144]. Health Policy 77 (2006) 182–201 **Nigeria**	Cross-sectional. Auditing of PCFs	116 PCF	- Had required number of HWs: 28.9%	There are not enough health workers with the right skills in the facilities according to the standard requirements
Toda et al[159]. 2012 ***International Journal for Equity in Health 2012, 11:75.*** Kenya	Cross sectional study of HCs & dispensaries for availability of: Infrastructure Equipment Staffing	National survey of all the 8 provinces	At least 4 staff with medical qualification: 46.6	

	Commodities Services		
Parker 2012[156] Cape Town South Africa BioMed Central 2012, 12: 503 South Africa	Multi-centre cross sectional study	PCFs: n=30	Trained staff available
Deventer et al[141] 2008 South African Journal of Psychiatry 2008 14: 4, 136-140 South Africa	Cross sectional survey of PCFs	PCF; n=?	Human resource constraints
Quality of services			
Chukwuani et al[144]. Health Policy 77 (2006) 182–201 **Nigeria**	Cross-sectional. Auditing of PCFs	116 PCFs	**Rating of quality of services:** Poor or fair: 55.8% Good or very good: 44.2%

9.1.5. Studies that evaluated the knowledge, attitudes and practices of Health Workers

Prisma flow chart to the selection of selection of studies

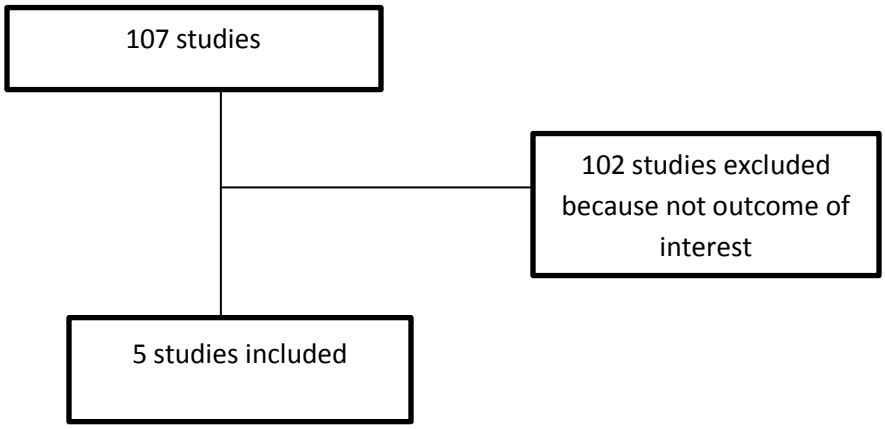


Ref	Study	Study population	Findings	Conclusion
Mary Ajwang[162] 2010 Uganda AJHPE Vol. 2 No2	Cross-sectional study to assess knowledge and attitude toward older persons. Kogan's attitude scale used for analysis	HWs in rural health facilities. N= 240 M: 122(50.8%) Mean age: 33	T**rained**: Yes: 25%; No: 69%; don't know: 6% **Geriatric Knowledge:** Good:11.7% Fair: 69.1% Poor: 19.2% **Confidence level:** Very confident: 25.8% Somewhat confident: 42.5% Not confident: 31.7% **Attitude towards older persons:** Positive: 80%; Neutral: 5%; Poor: 15%	HWs have deficits in geriatric knowledge.
Parker 2012[156] Cape Town South Africa BioMed Central 2012, 12: 503	Cross-sectional study to assess service availability for chronic illnesses and practice in PHC facilities	Patients: n = 580 M: 171(29%); F: 409(71%). Mean age 55 yrs HWs: n =14 PHC: n = 30	**Practice of HWs:** BP measured: 97.6%; Weight measured: 88.3%; Urine testing: 85.7%; Height measurement: 50%; ECG: 26.4% Retinal screening: 20%; Diabetic foot screening: 20%; Cholesterol tests: 18% Reflex tests: 17% Chest X-ray: 12.1% RFT: 11.4% Waist circumference measurement: 7.4% Referral to hospital: 15.9%	Screening for NCDs is not comprehensive enough. HWs are inclined to focus more on acute care of the patients
Deventer[157] 2009 South Africa. African Journal of Primary Health Care and Family medicine 2009(1): 1. (abstract)	Cross sectional survey of PHC for control of hypertension	N = ?	HT controlled in only 50% of patients	Regular assessment of patients with chronic illness was poorly done
Phaswana-Mafuya[321] 2011 B African Journal of physical education, recreation and dance 17: 3, 502-516	Cross-sectional survey of how patients are treated in PHC facilities	Patients N = 836 F: 73% PHC facilities: 12	**HW attitude and practice:** Respected privacy of patients: 75% Gave enough time to patients: 50% Gave return dates: 36% Asked for permission before physical exams: 75%. Referred patients when unable to treat: 71%	
Bachman [166]2004 International Journal of STD and AIDS 2004; 15: 388-394 South Africa	Cross sectional survey of PHC facilities for management of STIs using simulated patients		Correct diagnosis: 90% Correct treatment: 80% Correct management: 39% HWs rarely asked most of the important questions in STI management. However, relevant advice was given to most patients 50% of patients were offered condoms 2.6% were shown how to use condoms	

9.1.6. Perception of patients of the health care they received from primary care facilities

No study identified. A review undertaken to assess perceptions of OPs of health services in general (not just services in PCFs)

Prisma flow to selection of studies on perceptions of older persons of health services



Ref	Study	Study population	Findings
Peltzer et al[170] 2012. *Global Health Action 5(18545).* **South Africa**	A national population-based cross-sectional study to assess perceived responsiveness of health services	3,840 participants who had attended health services in the previous 3 years Age: : ≥50years	**Variation of perceptions of OP of outpatient services by domains of responsiveness** **Government** / **Private** Prompt attention 53.6% 70.2% Dignity 67.2% 80.8% Communication 66.9% 80.% Autonomy 627 76.6% uality of basic amenities 75.1% 72.1% confidentiality 67.8% 81.0% Access 65.1% 80.2% Overall perceived responsiveness 65.1% 79.0% **Conclusion** Overall, perceived healthcare responsiveness was higher in private than in public healthcare facilities. Prompt attention, autonomy, communication and access experiences were identified as priority areas for actions to improve responsiveness
Mabuza et al[259] 2006 Curationis 33(1): 23-32 **Botswana**	Cross sectional survey focus group discussions	OPs: n = 30 M: 8 (26.7%) Age: 60+ years	**Why OPs didn't seek health care:** - Unkind treatment by HWs - Lack of health care for elderly - Lack of organisational structure for older persons
Waweru et al[322] 2003 Nairobi Kenya East African Medical Journal vol 80, No.2; Feb 2003, Kenya	Cross sectional study and FGDs	OPs: n = 400 M: 124(31%) Age: 65+yrs	**Why OPs didn't seek healthcare** - Poor attitude of HW: 3% - No faith in health care: 1.25% - Feeling being disregarded in favour of younger adults - Free medicine

Waga et al[82] 2004. **HelpAge International[25]** **Kenya**	Community-based cross-sectional study to assess nutritional status of OPs. Both quantitative and qualitative	OPs: n= 374 Age: ≥50years F: 277	71.4% sought medical attention: 71%. Of these, 48.3% sought care government facilities, while 48.1% utilized private clinics. **<u>OPs who attended government facilities said:</u>** The quality of care was unsatisfactory The cost of health care was unaffordable Distances to health facilities were too long Queues were too long Drugs were unavailable HW attitudes were negative HWs neglected them
Tembo et al[83] 2004 **HelpAge International[25]** **Uganda**	Community-based cross-sectional study to assess nutritional status of OPs. Both quantitative and qualitative	OPs: n=362 Age: ≥50years	Older persons prefer to attend private health facilities: Due to neglect they experience in public facilities To avoid queuing. Because they perceive the quality of the services to be poor

9.2. Results of the pilot study

9.2.1. Proportion of primary care facilities that reported availability of services

Services	PCF IV (%)	PCF III (%)	PCF II (%)	Total %[CI]	p-value
Total surveyed in each group n (%)	6 (22)	11 (41)	10 (37)	27	
≥one NCD	100	60	7	40 [25, 56]	0.001
Had services for diabetes	100	6	7	19 [12,29]	<0.001
Had services for cardiovascular diseases	100	53	36	52 [31,72]	0.12
Had services for mental illnesses such as depression	100	67	31	54 [33,74]	0.06
Had services for hearing problems	100	100	100	100	
Had services for vision problems	100	100	100	100	
Had services for all five NCDs	**100**	**6**	**0**	**16 [12,22]**	**<0.001**
Had STI services	100	100	88	94 [64, 99]	0.31
Had HIV counselling and testing services	100	100	45	73 [54,87]	0.01
Had life-long antiretroviral treatment services	100	67	7	42 [29,57]]	0.001
Basic diagnostic services and equipment					
Had laboratory diagnostic services	100	81	7	48 [38, 57]	<0.001
Had adult weighing scale	100	94	57	77 [54, 90]	0.04
Had adult sphygmomanometer	81	94	76	83 [59, 94]	0.49
Had stethoscope	88	80	76	79 [53, 93]	0.84
Had patient exam couch	100	80	88	87 [60,97]	0.66
Had wheel chair	62	0	7	12 [5, 26]	0.004
Had ophthalmoscope	12	7	0	4 [1, 18]	0.33
Had otoscope	24	15	0	9 [4, 18]	0.04
Had adult height scale	50	31	12	24 [10, 49]	0.39
Basic amenities					
Had protected patient-waiting area	100	87	100	95 [83,99]	0.06
Had enough seats in the waiting area	31	66	50	53 [31,75]	0.55
Had functioning toilet	100	94	100	98 [83,100]	0.22
Had a water source for drinking	100	100	100	100	
Privacy					
Had auditory privacy	62	72	43	57 [34, 77]	0.42
Had visual Privacy	77	80	74	77 [52, 91]	0.96

9.2.2. Proportion of health workers that gave positive response to questions on how they treated older persons in primary care facilities

	HC IV (%)	HC III (%)	HC II (%)	Total %(CI)
Responsiveness of HWs to patients				
Treated OPs with respect	75	77	79	76 [71, 81]
Promptly attended to OP	82	91	100	87 [64,96]
Ensured clarity of communication with OPs	84	84	90	85 [81, 89]
Involved OPs in key decisions regarding their care	56	52	75	56[38, 74]
Ensured privacy and confidentiality of patients	88	82	73	85 [76, 95]]
Mean overall score for responsiveness	**75**	**74**	**80**	**75 [68, 82]**
Disease screening services				
Screened for NCDs	30	28	0	27 [13,48]
Screened for mental illness	30	10	10	22 [7,51]
Screened for alcohol use	29	59	64	41 [22,64]
Screened for smoking	38	60	68	47 [29,66]
Measured blood pressure	76	82	74	78 [45,94]
Measured weight	51	50	81	53 [31,73]
Measured height	6	10	0	7 [3,15]
Calculated BMI	6	0	0	4 [0,29]
Screened for hearing loss	60	73	55	64 [26,90]
Screened for visual loss	57	48	39	53 [32,72]
Encouraged OP to go for HIV counselling & testing	56	43	79	53 [41,65]
Screened for abnormal genital discharge	18	10	0	14 [3,44]
Asked about number of sexual partners	23	19	26	22 [15,32]
Asked OP about when they last had sex with someone who isn't their wife/husband	12	0	10	8 [2,23]
Health education				
Targeted OPs for any health education	18	29	26	22 [9,44]
Targeted OPs for health education about NCDs	35	38	32	36 [28,44]
Targeted for HIV education	18	0	18	12 [1,60]
Targeted OP for non-HIV STI education	24	32	16	26 [10,54]
Targeted OP for education on condom use	18	3	19	13 [2,55]
Offered condoms to Ops	9	19	10	10 [2,45]

9.2.3. Proportion of older persons that gave positive responses to questions related to their treatment at the primary care facilities

	HC IV %	HC III %	HC II %	Total (%), CI
Domains of responsiveness				
Treated with respect and dignity	61	63	68	64 [59, 68]
Promptly attended to	45	48	47	46 [35,58]
Received clear communication about their illness	46	41	48	45 [40, 51]
Involved in key decisions regarding their care	15	10	12	13 [9, 16]
Their privacy was ensured during consultation	83	81	72	79 [74, 85]
Mean overall score of perceived responsiveness	**54**	**51**	**55**	**54 [50, 57]**
Important screening services				
Examined by HWs	36	31	23	31 [19, 47]
Height measured	3	0	0	1 [0, 9]
Weight was measured	26	16	12	20 [8, 40]
Blood pressure was measured	37	21	22	28 [16,45]
Encouraged to go for HIV counselling and testing	42	11	11	25 [14, 39]
Cost of treatment				
Never incurred financial cost	95	92	98	95 [92, 98]
Received all drugs for free	92	86	96	92 [81,96]
Was never asked to buy drugs	92	84	94	90 [79,96]
Was never asked to pay bribe	97	100	100	99 [91,100]
Was never asked to pay official user fees	100	100	98	100 [96,100]
Health Education (HE) over the previous one year				
Received any HE	24	20	12	19 [10,35]
Received HE on HIV	29	11	9	21 [11,35]
Received HE on non-HIV STIs	23	13	13	15 [7,30]
Were offered condoms to go home with	20	0	0	9 [3,23]
Received HE about NCDs	13	7	4	9 [2, 31]

9.2.4. Proportion of older persons that gave positive rating to the primary care facilities

	Level IV (%)	Level III(%)	Level II (%)	Total %[CI]
Respect	67	75	73	71 [67, 75]
Prompt attention	60	62	67	63 [57, 68]
Communication	67	69	72	69 [65, 74]
Autonomy	43	42	49	45 [39, 50]
Basic quality of the waiting rooms	65	67	63	65 [60, 70]
Cleanliness of the toilets	50	50	56	52 [47, 56]
Cleanliness of the health unit surrounding	66	70	70	68 [64, 72]
Thoroughness of physical examination of patients	60	53	54	57 [51, 62]
Availability of drugs	71	67	70	70 [64, 76]
Privacy and confidentiality	68	64	69	67 [64, 71]
Overall mean rating score for the PHC facilities	**63**	**63**	**65**	**63 [61, 67]**

9.3. Selection of the primary care facilities

NORTHERN UGANDA						
Name of Health Centre	**Level of Health Centre**			**Totals**		
	PCF IV	**PCF III**	**PCF II**	**Tot**	**Cum To**	
Adjumani	1	7	19	27	27	
Arua	4	19	22	45	72	
Koboko	1	5	6	12	84	
Maracha	0	9	2	11	95	
Moyo	1	9	24	34	129	
Nebbi	1	13	17	31	160	
Yumbe	1	6	9	16	176	**Selection procedure**
Zombo	0	6	7	13	189	SI = 466/2 = 233
Apac	1	9	16	26	215	disp 1 + (233* run iform( ))
Lira	2	8	5	15	230	RS = 32.91729
Pader	1	11	11	23	253	RS+S1 = 32.91729+233 = 265.91729
Agago	0	8	26	34	287	
Amolatar	1	3	6	10	297	
Dokolo	1	4	7	12	309	
Amuru	1	5	9	15	324	
Gulu	2	13	30	45	369	
Kole	1	4	5	10	379	
Nwoya	0	3	9	12	391	
Kitgum	1	8	8	17	408	
Oyam	1	3	18	22	430	
Lamwo	2	7	10	19	449	
Otuke	1	4	2	7	456	
Alebtong	1	4	5	10	466	
Total	**25**	**168**	**273**	**466**		
EASTERN UGANDA						
Mayuge	2	5	26	33	33	
Tororo	3	17	36	56	89	
Bugiri	1	9	21	31	120	
Busia	1	7	14	22	142	
Butaleja	0	12	9	21	163	
Manafwa	2	10	4	16	179	
Kaliro	1	5	7	13	192	
Kamuli	2	10	18	30	222	
Iganda	2	13	20	35	257	
Jinja	5	12	33	50	307	
Pallisa	1	11	7	19	326	
Sironko	2	12	8	22	348	**Selection procedure**
Name of Health	**Level of Health Centre**			**Totals**		

centre	PCF IV	PCF III	PCF II	Total	Cum Total	
Budaka	1	9	3	13	361	SI = 738/2 = 369
Namutumba	1	5	17	23	384	disp 1 + (369* run iform( ))
Bududa	0	7	4	11	395	RS = 51.547125
Ngora	0	7	2	9	404	RS+SI = 51.547125+369 = 420.547125
Kaberamaido	1	7	6	14	418	
Kumi	1	5	4	10	428	
Soroti	2	10	10	22	450	
Amuria	2	8	15	25	475	
Bukwo	0	3	10	13	488	
Kaabong	1	6	15	22	510	
Serere	2	6	7	15	525	
Abim	0	3	13	16	541	
Nakapiripirit	2	7	2	11	552	
Katakwi	1	5	11	17	569	
Moroto	0	2	4	6	575	
Kotido	1	5	10	16	591	
Napak	0	7	2	9	600	
Kween	1	4	7	12	612	
Kapchorwa	0	6	6	12	624	
Amudat	0	1	1	2	626	
Bukedea	1	5	1	7	633	
Kibuku	1	7	4	12	645	
Bulambuli	1	8	3	12	657	
Mbale	4	13	11	28	685	
Buyende	1	4	5	10	695	
Luuka	1	5	16	22	717	
Namayingo	1	4	16	21	738	
Total	**48**	**282**	**408**	**738**		
			CENTRAL UGANDA			
Kampala	3	8	3	14	14	
Kiboga	1	5	11	17	31	
Mpigi	1	10	8	19	50	
Kayunga	2	8	9	19	69	
Buvuma	1	2	3	6	75	
Mukono	2	13	20	35	110	
Builkwe	0	9	10	19	129	
Wakiso	5	21	36	62	191	
Gomba	1	4	10	15	206	**Selection procedure**
Bukomansimbi	1	3	3	7	213	SI = 560/2 = 280
Butambala	0	5	7	12	225	disp 1 + (280* run iform( ))
	Level of Health centre			**Totals**		

Name of Health Centre	PCFIV	PCF III	PCF II	Total	Cum Tot	
Masaka	2	6	16	24	249	RS = 39.355542
Rakai	1	19	43	63	312	RS+SI = 39.355542 + 280 = 319.355542
Nakasongola	1	10	16	27	339	
Luweero	3	14	22	39	378	
Ssembabule	2	4	14	20	398	
Kyankwanzi	1	4	8	13	411	
Nakaseke	2	5	10	17	428	
Kalungu	1	6	4	11	439	
Lwengo	3	4	5	12	451	
Kalangala	2	6	2	10	461	
Lyantonde	0	4	14	18	479	
Mityana	2	8	21	31	510	
Mubende	2	12	36	50	560	
Total	**39**	**190**	**331**	**560**		
Bundibugyo	2	5	14	21	21	
Hoima	2	20	19	41	62	
Kabarole	3	16	21	40	102	
Kasese	0	19	47	66	168	
Kibaale	3	15	16	34	202	
Masindi	1	7	22	30	232	**Selection procedure**
Kamwenge	2	7	17	26	258	SI = 796/2 = 398
Kyenjojo	1	8	6	15	273	disp 1 + (398* run iform( ))
Buliisa	1	1	5	7	280	RS: 55.519663
Kyegegwa	1	6	7	14	294	SI+RS = 398+55.519663 = 453.519663
Kiryandongo	0	5	12	17	311	
Ntoroko	1	2	3	6	317	
Mbarara	4	13	31	48	365	
Ntungamo	3	10	25	38	403	
Bushenyi	2	6	15	23	426	
Kabale	7	13	67	87	513	
Kisoro	3	13	14	30	543	
Rukungiri	3	9	31	43	586	
Kanungu	2	8	14	24	610	
Ibanda	2	7	28	37	647	
Isingiro	4	14	31	49	696	
Kiruhura	2	10	24	36	732	
Mitooma	1	6	7	14	746	

Name of	Level of Health	Totals	

Health Centre	**Centre**				
	PCF IV	**PCF III**	**PCF II**	**Total**	**Cum Total**
Buhweju	1	3	8	12	758
Sheema	2	4	19	25	783
Rubirizi	1	3	9	13	796
Total	**54**	**230**	**512**	**796**	

Selected Districts are highlighted

9.4. Study tools

9.4.1. Form 1: Health unit in charges

Find the health facility in-charge. Introduce yourself and the purpose of your visit. Read the information sheet and ask for consent. If consent is received, proceed to ask the following questions:

Part 1: Interviewer Identification

Qno	Questions and Filters	Coding categories	Codes
1.	Interviewer Initials	Write your initials ☐☐☐	**IDNO**
2.	Interviewer signature	Sign here: _____	
3.	Date	☐☐☐☐☐☐☐☐ d d m m y y y y	**INTDATE**
4.	Do I have your agreement to begin the interview?	**Yes** 1 **No** 2 >>>stop	**AGREE**
5.	Interview Start time (write time in 12-hour format)	Hour ☐☐ Minutes ☐☐	**STAHR** **STAMI**

Part 2: Facility identification

Qno	Questions and Filters	Coding categories	Codes
6.	Name of District		**DNAM**
7.	District code	Write code ☐☐	**DCODE**
8.	Name of facility		**FNAM**
9.	Facility code	Write code ☐☐	**FCODE**
10.	Level of facility	Level IV 1 Level III 2 Level II 3	**FLEV**
11.	Location of facility	Urban 1 Rural 2	**FLOC**
12.	How would you categorise the type of service provided at this health facility?	Outpatient only 1 Both in-and out-patient 2	**FTYP**
13.	How many days each week is this health facility open for routine outpatient curative services?	Number of days ☐	**DAOP**

Part 3: Information about specialised care of older persons

Qno	Questions and filters	Coding categories	Codes
14.	On average, how many older persons (i.e. people aged 50+ years) does this facility receive in a day?	Num of older persons ☐☐☐	**NOP**
15.	Does this facility provide specialised healthcare for older persons (that is; health care that is specifically meant for older persons)?	Yes 1 **>>17** No 2 Don't know 8 **>>17**	**GER1**

16.	If no, which of the following would you say best describes why you do not provide specialized healthcare to older persons (*Circle all those that apply*	We are not meant to provide the service	1	**GER01**
		We do not have staff trained to provide the service	2	**GER02**
		We do not have the necessary drugs	3	**GER03**
		We do not have the necessary equipment	4	**GER 04**
		We do not receive patients with chronic illnesses	5	**GER05**
		Apart from the above reasons, are there other reasons why you do not provide specialized health care for older persons? (specify)	6	**GER06**
		Specify other reasons here:		**SGER06**
17.	Has any staff of this facility been specifically trained to provide specialised healthcare for older persons?	Yes No Don't know	1 2 **>>19** 8 **>>19**	**GER2**
18.	Has (have) the staff received any refresher training to provide specialised healthcare for older persons during the past 2 two years	Yes No Don't know	1 2 8	**GER4**
19.	Do you have a specific guideline for providing healthcare to older persons	Yes No Don't know	1 2 **>>21** 8 **>>21**	**GER4**
20.	Is the guideline available in the patient consultation area? If yes, may I please see it?	Yes & seen Yes but not seen No	1 2 3	**GER5**

Part 4: Health services for non-communicable diseases

In the next series of questions, I would like to ask you about the specific healthcare services offered by this health facility for non-communicable diseases such as diabetes, cardiovascular diseases (e.g. hypertension, heart disease), chronic obstructive airways disease, and cancer

Part 4.1: General information

21.	Does this facility offer **<u>any</u>** service (eg. education, diagnosis, management) for **any** non-communicable disease such as diabetes, cardiovascular diseases (e.g. hypertension, heart disease), chronic obstructive airways disease, and cancer?	Yes No Don't know	1 **>>23** 2 8 **>>53**	**NCD1**
22.	If no, which of the following would you say best describes why you do not provide services for non-communicable diseases (NCDs) (*Circle all those that apply)* **>>53**	We are not meant to provide the service	1	**CHRN1**
		We do not have staff trained to provide the service	2	**CHRN2**
		We do not have the necessary drugs	3	**CHRN3**
		We do not have the necessary equipment	4	**CHRN4**
		We do not receive patients with non-communicable diseases	5	**CHRN5**
		Apart from the reasons above, are there other reasons why you do not provide services for NCDs? (specify)	6	**CHRN6**
		Specify other reason(s) here		**SCHRN**

23.	Does this facility provide health education to patients about any non-communicable disease such as diabetes, cancer, chronic obstructive airways disease, and cardiovascular diseases (e.g. hypertension, stroke, heart disease)?		Yes 1 **>>25** No 2 Don't know 8 **>>25**	**CHR1**
24.	If no, which of the following would you say best describes why you do not provide health education about any non-communicable disease within the facility? (*Circle all those that apply)*	We are not meant to provide health education about non-communicable diseases	1	**CHR01**
		We do not know that we are supposed to provide health education about non-communicable diseases	2	**CHR02**
		We do not have the necessary knowledge and skills	3	**CHR03**
		We do not have the necessary education materials	4	**CHR04**
		Apart from the reasons above, are there other reasons why you do not provide health education about non-communicable diseases? (please specify)	5	**CHR05**
		Specify other reason here:		**SCHR05**

Part 4.2: Diabetes:

25.	Does this facility provide services for diabetes mellitus, such as health education, diagnosis and management?		Yes 1 **>>27** No 2 Don't know 8 **>>27**	**DM1**
26.	If no, which of the following would you say best describes why you do not provide services for diabetes mellitus (*Circle all those that apply)* **>>35**	We are not meant to provide the service	1	**DM01**
		We do not have staff trained to provide the service	2	**DM02**
		We do not have the necessary drugs	3	**DM03**
		We do not have the necessary equipment	4	**DM04**
		We do not receive patients with diabetes	5	**DM05**
		Apart from the reasons mentioned above, are there other reasons why you do not provide services for diabetes? Other reasons (specify)	6	**DM06**
		Specify other reasons here		**SDM0**
27.	Does this facility have any guideline for managing diabetes?		Yes 1 No 2 **>>29** Don't know 8 **>>29**	**DM2**
28.	Is the guideline available in the patient consultation area? If yes, may I please see it?		Yes & Seen 1 Yes but not seen 2 No 3	**DM3**
29.	Does this facility stock drugs for treating diabetes?		Yes 1 No 2 **>>31** Don't know 8 **>>31**	**DM4**

30.	Are some or all of the drugs you usually stock available today?	Yes No Don't know	1 2 8	**DM5**
31.	Does this facility have any of its staff specifically trained to manage diabetes?	Yes No Don't know	1 2 **>>33** 8 **>>33**	**DM6**
32.	If yes, has (have) the staff received refresher training related to managing diabetes during the past 2 years?	Yes No Don't know	1 2 8	**DM7**
33.	Does this facility provide health education about diabetes?	Yes No Don't know	1 **>>35** 2 8 **>>35**	**DM10**
34.	If no, which of the following would you say best describes why you do not provide health education about diabetes within the facility? (*Circle all those that apply)*	We are not meant to provide health education about diabetes	1	**DM101**
		We do not know that we are supposed to provide health education about diabetes	2	**DM102**
		We do not have the necessary knowledge and skills	3	**DM103**
		We do not have the necessary education materials	4	**DM104**
		Other reasons (specify)	5	**DM105**
		Please specify other reason here:		**SDM104**

Part 4.3: Cardiovascular Diseases

35.	Does this facility provide services for diagnosis and management of cardiovascular diseases such as hypertension, stroke, and heart diseases?	Yes No Don't know	1 **>>37** 2 8 **>>37**	CVD1
36.	If no, which of the following would you say best describes why you do not provide services for cardiovascular diseases (*Circle all those that apply)* **>>45**	We are not meant to provide the service	1	CVD01
		We do not have staff trained to provide the service	2	CVD02
		We do not have drugs	3	CVD03
		We do not have the necessary equipment	4	CVD04
		We do not receive patients CVDs	5	CVD05
		Other reasons (specify)	6	CVD06
		Specify other reasons here		SCVD0
37.	Does this facility have any guideline for managing cardiovascular diseases?	Yes No Don't know	1 2 **>>39** 8 **>>39**	CVD2
38.	Is the guideline available in the patient consultation area? If yes, may I please see it?	Yes & Seen Yes but not seen	1 2	CVD3

		No	3	
39.	Does this facility stock drugs for treating cardiovascular diseases such as hypertension?	Yes No Don't know	1 2 **>>41** 8 **>>41**	CVD4
40.	Are some or all of the drugs you usually stock available today?	Yes No Don't know	1 2 8	CVD5
41.	Does this facility have any of its staff trained to specifically manage cardiovascular diseases such as hypertension, stroke, and heart disease?	Yes No Don't know	1 2 **>>43** 8 **>>43**	CVD6
42.	Has any of the staff received refresher training during the past 2 years in the management of cardiovascular diseases?	Yes No Don't know	1 2 8	CVD7
43.	Does this facility provide health education about cardiovascular diseases (e.g. about the causes or risk factors, treatment etc)?	Yes No Don't know	1 **>>45** 2 8 **>>45**	CVD12
44.	If no, which of the following would you say best describes why you do not provide health education about hypertension? (*Circle all those that apply)*	We are not meant to provide health education about hypertension	1	CVD0A
		We do not know that we are supposed to provide health education about hypertension	2	CVD0B
		We do not have the knowledge and skills	3	CVD0C
		We do not have the necessary education materials	4	CVD0D
		Other reasons (specify)	5	CVD0E
		Please specify other reason here:		SCVD0E

Par 4.4: Services for diagnosis and management of cancer

45.	Does this facility screen patients for cancer (e.g. do routine breast examination in women, routine visual inspection of the cervix, etc)?	Yes No Don't know	1 **>>47** 2 8 **>>47**	CAN1
46.	If no, which of the following would you say best describes why you do not screen patients for cancer (*Circle all those that apply)* **>>53**	We are not meant to provide the service	1	CAN01
		We do not have staff trained to provide the service	2	CAN2
		We do not have the necessary equipments	4	CAN4
		Other reasons (specify)	6	CAN5
		Specify other reasons here		SCAN5
47.	Does this facility have any guideline for screening patients for cancer?	Yes No Don't know	1 2 **>>49** 8 **>>49**	CAN6

48.	Is the guideline available in the patient consultation areas? If yes, may I please see it?	Yes & Seen Yes but not seen No	1 2 3	CAN7
49.	Does this facility have any of its staff trained to specifically screen patients for cancer?	Yes No Don't know	1 2 **>>51** 8 **>>51**	CAN8
50.	Has any of the staff received refresher training during the past 2 years in screening of patients for cancer?	Yes No Don't know	1 2 8	CAN9
51.	Does this facility provide health education about cancers (e.g. about the causes or risk factors, treatment/management etc)?	Yes No Don't know	1 **>>53** 2 8 **>>53**	CAN10
52.	If no, which of the following would you say best describes why you do not provide health education about cancers? (*Circle all those that apply)*	We are not meant to provide health education about cancers	1	CAN 0A
		We do not know that we are supposed to provide health education about cancer	2	CAN 0B
		We do not have the knowledge and skills	3	CAN 0C
		We do not have the necessary education materials	4	CAN 0D
		Other than the reasons mentioned above, are there other reasons why you do not provide health education about cancer (specify)	5	CAN 0E
		Please specify other reason here:		CAN0E

Part 5: Disabilities:

In the next series of questions, I would like to ask you about the specific healthcare services offered by this health facility for disabilities such as mental health, hearing problems, and visual problems

Part 5.1: General information

53.	Does this facility offer **<u>any</u>** service (eg. education, diagnosis, management) for **<u>any</u>** disability such as mental health, hearing problems, and visual problems?	Yes No Don't know	1 **>>55** 2 8 **>>55**	**DISA**
54.	If no, which of the following would you say best describes why you do not provide services for disabilities (*Circle all those that apply)* **>>87**	We are not meant to provide the service	1	**DIS1**
		We do not have staff trained to provide the service	2	**DIS2**
		We do not have the necessary drugs	3	**DIS 3**
		We do not have the necessary equipment	4	**DIS4**
		We do not receive patients with disabilities	5	**DIS5**
		Other than the reasons mentioned above, are there other reasons why you do not	6	**DIS6**

		provide services for disability? (specify)		
		Specify other reason(s) here		**SDISN**
55.	Does this facility provide health education to patients about any disability such as mental health, hearing problems, and visual problems?	Yes No Don't know	1 **>>57** 2 8 **>>57**	**CHR1**
56.	If no, which of the following would you say best describes why you do not provide health education about disabilities within the facility? (*Circle all those that apply)*	We are not meant to provide health education about disabilities	1	**CHR01**
		We do not know that we are supposed to provide health education about disabilities	2	**CHR02**
		We do not have the necessary knowledge and skills	3	**CHR03**
		We do not have the necessary education materials	4	**CHR04**
		Other than the reasons mentioned above, are there other reasons why you do not provide health education about disabilities (please specify)	5	**CHR05**
		Specify other reason here:		**SCHR05**

Part 5.2: Mental Health

57.	Does this facility provide services for diagnosis and management of mental illnesses such as depression or anxiety?	Yes No Don't know	1 **>>59** 2 8 **>>59**	MEN1
58.	If no, which of the following would you say best describes why you do not provide services for Mental illness (*Circle all those that apply)* **>>67**	We are not meant to provide the service	1	MEN01
		We do not have staff trained to provide the service	2	MEN02
		We do not have drugs	3	MEN03
		We do not receive patients with mental illness	4	MEN04
		Other than the reasons mentioned above, are there other reasons why you do not provide services for mental illness (specify)	5	MEN05
		Specify other reasons here		SMEN0
59.	Does this facility have any guideline for managing mental illnesses?	Yes No Don't know	1 2 **>>61** 8 **>>61**	MEN2
60.	Is the guideline available in the patient consultation area? If yes, may I please see it?	Yes & Seen Yes but not seen No	1 2 3	MEN3
61.	Does this facility stock drugs for treating mental illnesses?	Yes No Don't know	1 2 **>>63** 8 **>>63**	MEN4
62.	Are all or some of the drugs you usually stock available today?	Yes No Don't know	1 2 8	MEN5
63.	Does this facility have any of its staff trained to	Yes	1	MEN6

	specifically manage mental illnesses?	No Don't know	2 **>>65** 8 **>>65**	
64.	Has (have) the staff received refresher training during the past 2 years in the management of mental illnesses?	Yes No Don't know	1 2 8	MEN7
65.	Does this facility provide health education about mental illness?	Yes No Don't know	1 **>>67** 2 8 **>>67**	MEN
66.	If no, which of the following would you say best describes why you do not provide health education about mental illness? (*Circle all those that apply)*	We are not meant to provide health education about mental illness	1	MEN0A
		We do not know that we are supposed to provide health education about mental illness	2	MEN0B
		We do not have the knowledge and skills	3	MEN0C
		We do not have the necessary education materials	4	MEN0D
		Other than the reasons mentioned above, are there other reasons why you do not provide health education about mental illness (specify)	5	MEN0E
		Specify other reasons here:		SMEN0E

Part 5.3: Ear Problems:

67.	Does this facility provide services for diagnosis and management of ear problems such as hearing impairment?	Yes No Don't know	1 >>69 2 8 **>>69**	EAR
68.	If no, which of the following would you say best describes why you do not provide services for diagnosis and treatment of ear problems (*Circle all those that apply)* **>>>77**	We are not meant to provide the service	1	EAR 01
		We do not have staff trained to provide the service	2	EAR 02
		We do not have drugs	3	EAR 03
		We do not have the necessary equipment	4	EAR 04
		We do not receive patients with ear problems	5	EAR 05
		Other than the reasons mentioned above, are there other reasons why you do not provide services for ear problems? (specify)	6	EAR 06
	Specify other reasons here			EAR 06
69.	Does this facility have any guideline for managing ear problems?	Yes No Don't know	1 2 **>>71** 8 **>>71**	EAR 1
70.	Is the guideline available in the patient consultation area? If yes, may I please see it?	Yes & Seen Yes but not seen No	1 2 3	EAR 2
71.	Does this facility stock drugs for treating ear	Yes	1	EAR 3

	infections?		No	2 **>>73**	
			Don't know	8 **>>73**	
72.	Are some or all of the drugs you usually stock for treating ear infections available today?		Yes	1	EAR 4
			No	2	
			Don't know	8	
73.	Does this facility have any of its staff trained to specifically manage ear problems?		Yes	1	EAR 5
			No	2 **>>75**	
			Don't know	8 **>>75**	
74.	Has any of the staff received refresher training during the past 2 years in the management of ear problems?		Yes	1	EAR 6
			No	2	
			Don't know	8	
75.	Does this facility provide health education about ear problems?		Yes	1 **>>77**	EAR11
			No	2	
			Don't know	8 **>>77**	
76.	If no, which of the following would you say best describes why you do not provide health education about ear problems? (*Circle all those that apply)*	We are not meant to provide health education about ear problems		1	EAR11A
		We do not know that we are supposed to provide health education about ear problems		2	EAR11B
		We do not have the knowledge and skills		3	EAR11C
		We do not have the necessary education materials		4	EAR11D
		Are there other reasons (specify)		5	EAR11E
	Please specify other reason here:				SEAR11E

Part 5.4: Visual Problems:

77.	Does this facility provide services for diagnosis and management of visual problems?		Yes	1 **>>79**	VS
			No	2	
			Don't know	8 **>>79**	
78.	If no, which of the following would you say best describes why you do not provide services for diagnosis and treatment of visual problems (*Circle all those that apply)* **>>87**	We are not meant to provide the service		1	VS01
		We do not have staff trained to provide the service		2	VS02
		We do not have drugs		3	VS03
		We do not have the necessary equipments		4	VS04
		We do not receive patients with visual problems		5	VS05
		Are there other reasons (specify)		6	VS06
	Specify other reasons here				VS06
79.	Does this facility have any guideline for managing visual problems?		Yes	1	VS1
			No	2 **>>81**	
			Don't know	8 **>>81**	
80.	Is the guideline available in the patient consultation area? If yes, may I please see it?		Yes & Seen	1	VS2
			Yes but not seen	2	
			No	3	

81.	Does this facility stock drugs for treating visual problems?	Yes No Don't know	1 2 **>>83** 8 **>>83**	VS3
82.	Are some or all of the drugs you usually stock for treating visual problems available today?	Yes No Don't know	1 2 8	VS4
83.	Does this facility have any of its staff trained to specifically manage visual problems?	Yes No Don't know	1 2 **>>85** 8 **>>85**	VS5
84.	Has any of the staff received refresher training during the past 2 years in the management of visual problems?	Yes No Don't know	1 2 8	VS6
85.	Does this facility provide health education about visual problems?	Yes No Don't know	1 **>>87** 2 8 **>>87**	VS11
86.	If no, which of the following would you say best describes why you do not provide health education about visual problems? (*Circle all those that apply)*	We are not meant to provide health education about visual problems	1	VS11A
		We do not know that we are supposed to provide health education about visual problems	2	VS11B
		We do not have the knowledge and skills	3	VS11C
		We do not have the necessary education materials	4	VS11D
		Are there other reasons (specify)	5	VS11E
	Please write other reason here:			S VS11E

Part 6: STI services:

In the next series of questions, I would like to ask you about the specific healthcare services offered by this health facility for sexually transmitted infections such as gonorrhoea, and syphilis but excluding HIV

87.	Does this facility provide any services for diagnosis and management of sexually transmitted infections (STIs) (including syndromic management of STIs)?	Yes No Don't know	1 **>>89** 2 8 **>>89**	STD1
88.	If no, which of the following would you say best describes why you do not provide services for STIs (*Circle all those that apply)* **>>>97**	We are not meant to provide the service	1	STD1A
		We do not have staff trained to provide the service	2	STD1B
		We do not have drugs	3	STD1C
		We do not have the necessary equipment	4	STD1D
		We do not receive patients with STIs	5	STD1E
		Are there other reasons (specify)	6	STD1F
	Specify other reasons here			SSTD1F
89.	Does this facility have any guideline for managing STIs?	Yes No	1 2 **>>91**	STD2

		Don't know	8 **>>91**	
90.	Is the guideline available in the patient consultation area? If yes, may I please see it?	Yes & Seen	1	STD3
		Yes but not seen	2	
		No	3	
91.	Does this facility stock drugs for treating STIs?	Yes	1	STD4
		No	2 **>>93**	
		Don't know	8 **>>93**	
92.	Are some or all of the drugs you usually stock for treating STIs available today?	Yes	1	STD5
		No	2	
		Don't know	8	
93.	Does this facility have any of its staff trained to specifically manage STI?	Yes	1	STD6
		No	2 **>>95**	
		Don't know	8 **>>95**	
94.	Has (have) the staff received refresher training during the past 2 years in the management of STIs?	Yes	1	STD7
		No	2	
		Don't know	8	
95.	Does this facility provide health education about STIs?	Yes	1 **>>97**	STD10
		No	2	
		Don't know	8 **>>97**	
96.	If no, which of the following would you say best describes why you do not provide health education about STIs within the facility? (*Circle all those that apply)*	We are not meant to provide health education about STIs	1	STD10A
		We do not know that we are supposed to provide health education about STIs	2	STD10B
		We do not have the knowledge and skills	3	STD10C
		We do not have the necessary education materials	4	STD10D
		Other reasons (specify)	5	STD10E
	Specify other reasons here			S STD10E

Part 7 HIV services:

In the next series of questions, I would like to ask you about the specific healthcare services offered by this health facility for HIV. This includes services for HIV prevention, treatment and care and support.

97.	Does this facility provide any HIV service?	Yes	1>>99	HIVS
		No	2	
		Don't know	8 **>>99**	
98.	If no, which of the following reasons best describes why you do not provide HIV services? >> 123	We are not meant to provide HIV services	1	
		We do not have staff trained to provide HIV services	2	
		We do not have supplies		
		Other (specify)	3	
	Specify other reason(s) here			

Part 7.1: HIV Counseling and Testing services

99.	Does this facility provide services for HIV counseling and testing?		Yes 1 **>>101** No 2 Don't know 8 **>>101**	HCT1
100.	If no, which of the following would you say best describes why you do not provide services for HIV counseling and testing? (*Circle all those that apply)* **>>>115**	We are not meant to provide the service	1	HCT01
		We do not have staff trained to provide the service	2	HCT02
		We do not reagents or test kits	3	HCT03
		Are there other reasons (specify)	4	HCT04
	Specify other reasons here			SHCT04
101.	Does this facility have any guideline for HIV counseling and testing?		Yes 1 No 2 **>>103** Don't know 8 **>>103**	HCT2
102.	Is the guideline available in the patient consultation area? If yes, may I please see it?		Yes & Seen 1 Yes but not seen 2 No 3	HCT3
103.	Does this facility have any staff trained to provide HIV counseling?		Yes 1 No 2 **>>105** Don't know 8 **>>105**	HCT4
104.	Has (have) the staff received refresher training during the past 2 years		Yes 1 No 2 Don't know 8	HCT5
105.	Does this facility have any of its staff trained to do HIV testing?		Yes 1 No 2 **>>107** Don't know 8 **>>107**	HCT6
106.	Has (have) the staff received refresher training during the past 2 years in HIV testing?		Yes 1 No 2 Don't know 8	HCT7
107.	Does this facility usually stock reagents or test kits for diagnosis of HIV?		Yes 1 No 2 **>>109** Don't know 8 **>>109**	HCT8
108.	Are some or all of the reagents or test kits available today?		Yes 1 No 2 Don't know 8	HCT9
109.	Does this facility usually stock male condoms?		Yes 1 No 2 **>>111** Don't know 8 **>>111**	HCT10
110.	Are the male condoms available today?		Yes 1 No 2 Don't know 8	HCT11
111.	Does this facility usually stock female condoms?		Yes 1 No 2 **>>113**	HCT12

		Don't know	8 **>>113**	
112.	Are the female condoms available today?	Yes	1	HCT13
		No	2	
		Don't know	8	
113.	Does this facility provide health education about HIV?	Yes	1 **>>115**	HIV
		No	2	
		Don't know	8 **>>115**	
114.	If no, which of the following would you say best describes why you do not provide health education about HIV within the facility? (*Circle all those that apply)*	We are not meant to provide health education about HIV	1	HIV01
		We do not know that we are supposed to provide health education about HIV	2	HIV02
		We do not have the knowledge and skills	3	HIV03
		We do not have the necessary education materials	4	HIV04
		Are there other reasons (specify)	5	HIV05
	Specify other reasons here			SHIV05

Part 7.2: ART services

115.	Does this facility provide services for antiretroviral treatment of HIV (ART) such as preparation of patients for ART initiation, initiation of patients on ART, and prescription and follow-up of patients who are on ART? **>>>137**	Yes	1 **>>117**	ART1
		No	2	
		Don't know	8 **>>117**	
116.	If no, which of the following would you say best describes why you do not provide ART services? (*Circle all those that apply)* >>123	We are not meant to provide the service	1	ART01
		We do not have staff trained to provide the service	2	ART02
		We do not have drugs	3	ART03
		We do not have the necessary equipment	4	ART04
		We do not receive patients with chronic illnesses	5	ART05
		Are there other reasons (specify)	6	ART06
	Specify other reasons here			SART0
117.	Does this facility have any guideline for providing ART services?	Yes	1	ART2
		No	2 **>>119**	
		Don't know	8 **>>119**	
118.	Is the guideline available in the patient consultation area? If yes, may I please see it?	Yes & seen	1	ART3
		Yes but not seen	2	
		No	3	
119.	Does this facility stock ARV drugs?	Yes	1	ART4
		No	2 **>>121**	
		Don't know	8 **>>121**	

120.	Are some or all of the ARV drugs you usually stock available today?	Yes 1 No 2 Don't know 8	ART5
121.	Does this facility have any of its staff trained to specifically provide ART services?	Yes 1 No 2 **>>123** Don't know 8 **>>123**	ART6
122.	Has (have) the staff received refresher training during the past 2 years in ART?	Yes 1 No 2 Don't know 8	ART7

Part 8: Basic Equipment:

In the next series of questions, I would like to ask you about the specific medical equipment that are necessary for diagnosis of certain diseases in older persons.

123.	Does this facility have a stethoscope?	Yes 1 No 2 **>>125** Don't know 8 **>>125**	EQ1
124.	Is the stethoscope available in the patient consultation area? If yes, may I please see it?	Yes & seen 1 Yes but not seen 2 No 3	EQ1S
125.	Does this facility have an adult blood pressure machine?	Yes 1 No 2 **>>127** Don't know 8 **>>127**	EQ2
126.	Is the blood pressure machine available in the patient consultation area? If yes, may I please see it?	Yes & seen 1 Yes but not seen 2 No 3	EQ2S
127.	Does this facility have adult weighing scales?	Yes 1 No 2 **>>129** Don't know 8 **>>129**	EQ3
128.	Is the weighing scale available in the patient consultation area? If yes, may I please see it?	Yes & seen 1 Yes but not seen 2 No 3	EQ3S
129.	Does this facility have adult height scale(s)	Yes 1 No 2 **>>131** Don't know 8 **>>131**	EQ4
130.	Is the adult height scale available in the patient consultation area? If yes, may please see it?	Yes & seen 1 Yes but not seen 2 No 3	EQ4S
131.	Does this facility have an adult tape measure?	Yes 1 No 2 **>>133** Don't know 8 **>>133**	EQ5
132.	Is the tape measure available at the patient consultation area. If yes, may I please see it?	Yes & seen 1 Yes but not seen 2 No 3	EQS
133.	Does this facility have an ophthalmoscope?	Yes 1 No 2 **>>135** Don't know 8 **>>135**	EQ6

134.	Is the ophthalmoscope available in patient consultation area? If yes, may I please see it?	Yes & seen 1 Yes but not seen 2 No 3	EQ6S
135.	Does this facility have an otoscope?	Yes 1 No 2 **>>137** Don't know 8 **>>137**	EQ7
136.	Is the otoscope available in patient consultation area? If yes; may I please see it?	Yes & seen 1 Yes but not seen 2 No 3	EQS
137.	Does this facility have a visual acuity chart?	Yes 1 No 2 **>>139** Don't know 8 **>>139**	EQ8
138.	Is the visual acuity chart in the patient consultation area? If yes; may I please see it?	Yes & seen 1 Yes but not seen 2 No 3	EQ8S
139.	Does this facility have a wheel chair?	Yes 1 No 2 **>>141** Don't know 8 **>>141**	EQ9
140.	Is the wheel chair available in the patient consultation area? If yes; may I please see it?	Yes & seen 1 Yes but not seen 2 No 3	EQ9S
141.	Does this facility have a patient examination couch?	Yes 1 No 2 **>>143** Don't know 8 **>>143**	EQ10
142.	Is the examination couch available in patient consultation area? If yes; may I please see it?	Yes & seen 1 Yes but not seen 2 No 3	EQ10S

Part 9 : Diagnostic services:

In the next series of questions, I would like to ask you about the specific diagnostic services provided by this health facility such as imaging services (e.g. X-ray and ultra sound) and basic laboratory services

143.	Does this facility provide any of the following imaging or laboratory services:	Yes	No	I don't know	
144.	X-ray services	1	2	8	XRAY
145.	Ultrasound services	1	2	8	USOU
146.	Any laboratory services	1	2 >>162	8	LAB
147.	Testing for anaemia	1	2	8	LAB1
148.	CD4 count	1	2	8	LAB2
149.	Full blood count	1	2	8	LAB3
150.	Erythrocyte sedimentation rate (ESR)	1	2	8	LAB4
151.	Blood Glucose level	1	2	8	LAB5
152.	Urine protein	1	2	8	LAB6
153.	Urine sugar	1	2	8	LAB7

154.	Urine microscopy	1	2	8	LAB8
155.	Blood slide for malaria	1	2	8	LAB9
156.	Syphilis tests	1	2	8	LAB10
157.	Gram stain for gonorrhoea	1	2	8	LAB11
158.	ZN stain for TB	1	2	8	LAB12
159.	Test for cryptococcal meningitis e.g. (cerebro-spinal fluid) CSF test, cryptococcal antigen test	1	2	8	LAB13
160.	Stool microscopy	1	2	8	LAB14
161.	Are there any other laboratory tests that you do in this health facility that have not been mentioned in the list above?? If so, what other tests do you do?				
	Other tests done: _____ _____ _____				O LAB

162.	Which of the following statements would you say best describes what you do about tests you are unable to perform at this facility	Take specimens and send them to another facility Refer patients to another facility Neither refer sample nor patient to another facility Other (specify)	1 2 3 4	TESTNO
163.	Does this facility have any of its staff specifically trained to provide X-ray services	Yes No Don't know	1 2 >>165 8 >>165	XRAY2
164.	If yes, has (have) the staff received refresher training during the past 2 years?	Yes No Don't know	1 2 8	XRAY3
165.	Does this facility have a manual or guideline for providing X-ray services	Yes No Don't know	1 2 >>167 8 >>167	XRAY4
166.	Is the manual or guideline available in the X-ray room? If yes, may I please see it?	Yes and seen Yes but not seen No	1 2 3	XRAY5
167.	Does this facility have all or some of the supplies (including x-ray films) that you usually stock for providing x-ray	All are available Some are available None is available Don't know	1 2 3 8	XRAYS
168.	Does this facility have any of its staff specifically trained to provide ultra-sound services?	Yes No Don't know	1 2 >>170 8 >>170	USOU1
169.	If yes, has (have) the staff received refresher training during the past 2 years?	Yes No Don't know	1 2 8	USOU2
170.	Does this facility have a manual or guideline for providing ultrasound services	Yes No Don't know	1 2 >>172 8 >>172	USOU3
171.	Is the manual or guideline available in the ultrasound room? If yes, may I please see it?	Yes and seem Yes but not seen No	1 2 3	USOU4

172.	Does this facility have all or some of the supplies including the ultrasound gel that you usually stock for providing ultrasound services	All are available 1 Some are available 2 None is available 3 Don't know 8	USOUS
173.	Does this facility have any of its staff specifically trained to provide basic laboratory services?	Yes 1 No 2 >>175 Don't know 8 >>175	LABW1
174.	If yes, has the staff received refresher training during the past 2 years?	Yes 1 No 2 Don't know 8	LABW2
175.	Does this facility have a manual or guideline for providing lab services	Yes 1 No 2 >>177 Don't know 8 >>177	LABM
176.	Is the manual or guideline available in the lab room? If yes, may I please see it?	Yes and seen 1 Yes but not seen 2 No 3	LABM1
177.	Does this facility have all or some of the laboratory supplies that you usually stock for providing laboratory services	All are available 1 Some are available 2 None is available 3 Don't know 8	LABR

Part 10: Staffing of the health facility

In the next series of questions, I would like to ask you about the number of staff you have in this health facility

	How many staff belonging to the following categories do you have?			**Codes**
178.	Medical Doctors.	Total Num	☐☐☐	**STAFF1**
179.	Paramedics (e.g. clinical officers).	Total Num	☐☐☐	**STAFF2**
180.	Registered nurses (including comprehensive registered nurses)	Total Num	☐☐☐	**STAFF3**
181.	Registered midwives	Total Num	☐☐☐	**STAFF4**
182.	Enrolled nurses (including comprehensive enrolled nurses.	Total Num	☐☐☐	**STAFF5**
183.	Enrolled midwives.	Total Num	☐☐☐	**STAFF6**
184.	Degree nurse	Total Num	☐☐☐	**STAFF7**
185.	Nurse assistant and Nurse aide.	Total Num	☐☐☐	**STAFF8**
186.	Laboratory scientist, or technician or assistant.	Total Num	☐☐☐	**STAFF9**
187.	HIV counselor.	Total Num	☐☐☐	**STAFF10**
188.	Cleaners	Total Num	☐☐☐	**STAFF11**
189.	Security guards	Total Num	☐☐☐	**STAFF12**

190.	Other staff (List):			**STAFF13**
191.	**Total number of staff**	Total Num		**Staff14**

Part 11: Client comfort amenities

In the next series of questions, I would like to ask you about the basic amenities in this health facility. By amenities, we mean things that make the patients feel comfortable while they are here at the clinic.

192.	Is there a waiting area for patients/clients that protects them from the sun and rain? If yes, may please see it? *(NB: this must be in the main patient waiting area).*	Yes 1 No 2	**AMN1**
193.	Does this facility have a functional toilet? If yes, may I please see it?	Yes 1 No 2	**AMN2**
194.	Does the facility have a source of drinking water for patients? If yes, may I please see it	Yes 1 No 2	**AMN3**
195.	Does the facility have enough seats in the patients waiting area? If yes, may I please see it?	Yes 1 No 2	**AMN4**
196.	Does the facility have a ramp (eg. for a wheelchair)? If yes, may I please see it?	Yes 1 No 2	**RAMP**

Part 12: Privacy and Confidentiality.

	Ask to be shown the place where patients are seen and examined by the health workers and make the following observations		
197.	Auditory privacy	Yes 1 No 2	PRV1
198.	Visual privacy	Yes 1 No 2	PRV2
199.	Is a patient examination couch available?	Seen 1 Not seen 2	**COUCH**

200.	Interview end time (write time in 12-hour format)	Hour Minute		**ENDHR** **ENDMI**

Thank you for your participation in this study

9.4.2. Form 2: Caseload assessment form

(*Fill this form for the past three months i.e. for each month, fill one form. The form should also be filled separately for patients attending specific clinics within the health facility such as general outpatients, ART clinic, VCT, antenatal etc*)

Health Unit_____

Month_____

Clinic_____ *(e.g. ART clinic, general outpatient)*

Part 1: Fill this section for all patients seen by the health facility in the month

Number of Patients seen in the month	**Males**	**Females**	**Total**	
0-4 years				Age1
5 – 14 years				Age2
15 – 34 years				Age3
35 -49 years				Age4
50 – 59 years				Age5
60 – 79 years				Age6
80+ years				Age7
Total				

Part 2: Fill this section only for patients aged ≥50 years seen in the health facility in the month

ID NO	Date	Sex	Age	Diagnosis	Treatment

9.4.3. Form 3: Health Workers' knowledge, attitudes and practices

Part 1: General Information

Qno	Questions and Filters	Coding categories	Codes
1.	Interviewer Initials	Write your initials ☐☐☐	**INTNAME**
2.	Interviewer signature		
3.	Date	☐☐☐☐☐☐☐☐ D D M M Y Y Y Y	**INTDATE**
4.	Do I have your agreement to begin the interview?	**Yes** 1 **No** 2 **>>>stop**	**AGREE**
5.	Interview Start time (use 12-hour format)	Hour ☐☐ Minutes ☐☐	**STATHR** **STATMI**

Part 2: Facility Identification

Qno	Questions and Filters	Coding categories	Codes
6.	District code :	☐☐ District code	DCODE
	Codes: 1 = Agago; 2 = Arua; 3 = Hoima; 4 = Kabale; 5 = Kumi; 6 = Tororo; 7 = Mpigi; 8 = Nakasongola		
7.	Name of facility		FNAM
8.	Facility code *(Refer to the attached facility list for the facility code)*	☐☐ Write facility Code	FCODE
9.	Level of facility	Level IV 1 Level III 2 Level II 3	FLEV
10.	Location of facility	Urban 1 Rural 2	FLOC
11.	How would you categorise the type of service provided at this health facility?	Outpatient only 1 Both in-and out-patient 2	FTYP

Part 3: Socio-demographic Information

Qno	Questions and filters	Coding categories	Codes
12.	Participant identification number	☐☐☐ Write participant number	**IDNO**
13.	Sex	Male 1 Female 2	**SEX**
14.	What is your date of Birth?	☐☐☐☐☐☐☐☐ d d m m y y y y ***Write 99 for day, 999 for month and 9999 for year if date of birth is unknown***	**DOB**
15.	How old are you?	☐☐☐ Years	**AGE**
16.	What is your main technical qualification:	Doctor 1 Clinical Officer 2 Registered Nurse or Registered comprehensive nurse 3 Registered midwife 4 Enrolled nurse or enrolled comprehensive nurse 5 Enrolled midwife 6 Nurse aide or nurse assistant 7 Other staff (specify) 8	**QUAL**
	Specify other staff here:		**SQUAL**

Part 4: Attitudes of Health Workers towards Older Persons

In the next series of questions, I would like to find out what you think of an Older Person (i.e. a person you would refer to as an old person). I will read some questions to you and I would like you to tell me whether you strongly disagree, disagree, are neutral (i.e. neither agree nor disagree), agree or strongly agree with the question.

	Strongly disagree = 1 **Disagree = 2** **Neutral (neither disagree nor agree) = 3** **Agree = 4** **Strongly agree = 5**	Strongly disagree = 1	Disagree = 2	Neutral = 3	Agree = 4	Strongly agree = 5	
1.	It would probably be better if most older persons lived on their own, away from younger people						ATT1
2.	Most older persons are as easy to understand as younger people.						ATT2
3.	While memory loss is common among older persons, most older persons can remember things perfectly well						ATT3
4.	Most older persons speak with unclear words and are difficult to understand						ATT4

5.	While sexual problems are common among older persons, many older persons are sexually active.						ATT5
6.	Most older persons can't look after themselves						ATT6
7.	While some older persons need the help and support of others, many can take care of themselves and of other people as well.						ATT7
8.	Most older persons are capable of new adjustments when the situation demands it.						ATT8
9.	Most older persons tend to leave their homes dirty and unattractive.						ATT9
10.	Most older persons are clean and neat in appearance.						ATT10
11.	People grow wiser with the coming of old age.						ATT11
12.	Being with an older person makes me feel uneasy.						ATT12
13.	Most older persons are relaxing to be with.						ATT13
14.	Most older persons bore me by their insistence on talking about the "good old days."						ATT14
15.	As people get old, most become selfish or self-centered						ATT15
16.	In order to maintain a nice residential neighborhood, it would be best if many older persons did not live in it.						ATT16
17.	There are a few exceptions, but in general most older persons are pretty much alike and behave the same.						ATT17
18.	Most older persons are irritable, bad tempered, always complaining, and unpleasant.						ATT18
19.	As people become old, most behave like children.						ATT19
20.	Older persons conduct themselves maturely.						ATT20
21.	When older persons come to the clinic, they are usually as patient as anyone else.						ATT21
22.	Most older persons are lazy about doing any work and like depending on other people.						ATT22
23.	Providing health care to older persons is obviously a waste of our scarce health resources						ATT23

Part 5: Practice of Health workers with regard to provision of Healthcare to Older Persons

In the next series of questions, I would like to know what you often did in the past 12 months (including today) when adults aged 35 - 49 years, between 50 and 59 years, and aged 60 years or more came to this health facility. The potential responses are "Never"; "Sometimes"; "Usually"; or Always. I will also ask you to explain some of the answers that you give.

Use Codes: 1 = Never; 2 = sometimes (rarely); 3 = most times (usually); 4 = always. ***During the past 12 months (including today) how often did you:***							
	DIGNITY						
24.	Welcome patients of the following age groups	35-49yrs	1	2	3	4	**WLC1**

	when they arrived at the facility?	50-59	1	2	3	4	**WLC2**
		60+yrs	1	2	3	4	**WLC3**
25.	Offer seats to the following age groups of patients when they arrived at the health facility?	35-49yrs	1	2	3	4	**SIT1**
		50-59yrs	1	2	3	4	**SIT2**
		60+yrs	1	2	3	4	**SIT3**
26.	Examine the following age groups of patients in a respectful way?	35-49yrs	1	2	3	4	**XP1**
		50-59yrs	1	2	3	4	**XP2**
		60+yrs	1	2	3	4	**XP3**
27.	Ask for permission from the following age groups of patients before carrying out a physical examination?	35-49yrs	1	2	3	4	**PMS1**
		50-59yrs	1	2	3	4	**PMS2**
		60+yrs	1	2	3	4	**PMS3**
	Can you please explain your answer to Qn 27 (*i.e. Are there particular reasons <u>why you never</u> or <u>why you rarely</u> or <u>why you usually</u> or <u>why you always</u> ask for permission from patients aged* **…….** *before carrying physical exams?* 35 – 49 years _____ _____ _____ _____ _____ _____ _____ 50 – 59 years _____ _____ _____ _____ _____ _____ _____ 60+ years _____ _____ _____ _____ _____						**EX271** **EX272** **EX273**
Use Codes: 1 = Never; 2 = sometimes (rarely); 3 = most times; 4 = always. ***During the past 12 months (including today) how often did you:***							
	PROMPT ATTENTION						

28.	Attend to patients in the following age groups as soon as they arrived?	35-49yrs	1	2	3	4	**PAT1**
		50-59yrs	1	2	3	4	**PAT2**
		60+yrs	1	2	3	4	**PAT3**
29.	Invite patients in the following age groups to be seen ahead of other patients even when they arrived after other patients?	35-49yrs	1	2	3	4	
		50-59yrs	1	2	3	4	**INV1**
		60+yrs	1	2	3	4	**INV2**
	COMMUNICATION						
30.	Explain their illness to patients in the following age groups?	35-49yrs	1	2	3	4	**XEC1**
		50-59yrs	1	2	3	4	**XEC2**
		60+yrs	1	2	3	4	**XEC3**
	Can you please explain your answer to Qn 30 (*i.e. Are there particular reasons <u>why you never</u> or <u>why you rarely</u> or <u>why you usually</u> or <u>why you always</u> explain to patients aged* **…….** *their illness?)* 35 – 49 years _____ _____ _____ _____ _____ _____ _____ 50 – 59 years _____ _____ _____ _____ _____ _____ _____ 60+ years _____ _____ _____ _____ _____ _____						**EX301** **EX302** **EX303**

	_____						
Use Codes: 1 = Never; 2 = sometimes (rarely); 3 = most times; 4 = always. ***During the past 12 months (including today) how often did you:***							
31.	Allow or encourage patients in the following age groups to ask questions about their illness?	35-49yrs	1	2	3	4	**AQN1**
		50-59	1	2	3	4	**AQN2**
		60+yrs	1	2	3	4	**AQN3**
	Can you please explain your answer to Qn 31 (*i.e. Are there particular reasons <u>why you never</u> or <u>why you rarely</u> or <u>why you usually</u> or <u>why you always</u> allow or encourage patients aged …….. To ask question about their illness?)* 35 – 49 years _____ _____ _____ _____ _____ _____ _____ 50 – 59 years _____ _____ _____ _____ _____ _____ _____ 60+ years _____ _____ _____ _____ _____ _____ _____						**EX311** **EX312** **EX313**
32.	Allow patients in the following age groups as	35-49yrs	1	2	3	4	**TES1**

	much time to explain their illness as they wanted?	50-59	1	2	3	4	**TES2**
		60+yrs	1	2	3	4	**TES3**
33.	Take as much time as was necessary to explain things to patients in the following age groups so that they could understand?	35-49yrs	1	2	3	4	**TTM1**
		50-59	1	2	3	4	**TTM2**
		60+yrs	1	2	3	4	**TTM3**
	AUTONOMY						
34.	Explain to patients in the following age groups the various treatment options for their illness?	35-49yrs	1	2	3	4	**OPT1**
		50-59	1	2	3	4	**OPT2**
		60+yrs	1	2	3	4	**OPT3**
Use Codes: 1 = Never; 2 = sometimes (rarely); 3 = most times; 4 = always. ***During the past 12 months (including today) how often did you:***							
35.	Involve patients in the following age groups in discussions to decide their treatment or overall management?	35-49yrs	1	2	3	4	**DIS1**
		50-59	1	2	3	4	**DIS2**
		60+yrs	1	2	3	4	**DIS3**
	Can you please explain your answer to Qn 35 (*i.e. Are there particular reasons why you never or why you rarely or why you usually or why you always involve patients aged ……. In discussions about their treatment?* 35 – 49 years _____ _____ _____ _____ _____ _____ 50 – 59 years _____ _____ _____ _____ _____ _____ 60+ years _____ _____ _____ _____ _____ _____						**EX351** **EX352** **EX353**
36.	Allow or encourage patients in the following	35-49yrs	1	2	3	4	**ALL1**

	age groups to choose their treatment or management option/plan?	50-59	1	2	3	4	**ALL2**
		60+yrs	1	2	3	4	**ALL3**
	PRIVACY AND CONFIDENTIALITY						
37.	Ensure that the patients in the following age groups were attended to in a room where people who are not involved in their care could not see you or them?	35-49yrs	1	2	3	4	**PVY1**
		50-59	1	2	3	4	**PVY2**
		60+yrs	1	2	3	4	**PVY3**
38.	Ensure that you attended to patients in the following age groups in a room where people who are not involved in their care could not hear your conversation with them?	35-49yrs	1	2	3	4	**PVY4**
		50-59	1	2	3	4	**PVY5**
		60+yrs	1	2	3	4	**PVY6**
39.	Ensure that the personal medical files (or medical records) of patients in the following age groups were stored in a place where people who are not involved in their care could not see or access them?	35-49yrs	1	2	3	4	**FIL1**
		50-59	1	2	3	4	**FIL2**
		60+yrs	1	2	3	4	**FIL3**
Use Codes: 1 = Never; 2 = sometimes (rarely); 3 = most times; 4 = always. ***During the past 12 months (including today) how often did you:***							
	Health education and promotion						
40.	Specifically target patients in the following age groups for health education about any disease?	35-49yrs	1	2	3	4	**HIL1**
		50-59	1	2	3	4	**HIL2**
		60+yrs	1	2	3	4	**HIL3**
41.	Specifically target patients in the following age groups for health education about HIV?	35-49yrs	1	2	3	4	**THI1**
		50-59	1	2	3	4	**THI2**
		60+yrs	1	2	3	4	**THI3**
	Can you please explain your answer to Qn 41 (*i.e. Are there particular reasons <u>why you never</u> or <u>why you rarely</u> or <u>why you usually</u> or <u>why you always</u> target patients aged …. for HIV education?)* 35 – 49 years _____ _____ _____ _____ _____ _____ _____ 50 – 59 years _____ _____ _____						**EX411** **EX412**

	_____ _____ _____ _____ 60+ years _____ _____ _____ _____ _____ _____ _____						**EX413**
42.	Specifically target patients in the following age groups for health education about other STIs (i.e. other than HIV)?	35-49yrs 50-59 60+yrs	1 1 1	2 2 2	3 3 3	4 4 4	**TST1** **TST2** **TST3**
43.	Specifically target patients in the following age groups for health education on condom use for prevention of HIV and STIs?	35-49yrs 50-59 60+yrs	1 1 1	2 2 2	3 3 3	4 4 4	**TCD1** **TCD2** **TCD3**
Use Codes: 1 = Never; 2 = sometimes (rarely); 3 = most times; 4 = always. ***During the past 12 months (including today) how often did you:***							
44.	Encourage patients in the following age-group to go home with condoms	35-49yrs 50-59yrs 60+yrs	1 1 1	2 2 2	3 3 3	4 4 4	**TCD4**
	Can you please explain your answer to Qn 44 (*i.e. Are there particular reasons <u>why you never</u> or <u>why you rarely</u> or <u>why you usually</u> or <u>why you always</u> encourage patients aged ……. To go home with condoms?)* 35 – 49 years _____ _____ _____ _____ _____ _____ _____ 50 – 59 years						**EX441**

	_____ _____ _____ _____ _____ _____ _____ 60+ years _____ _____ _____ _____ _____ _____ _____						**EX442** **EX443**
45.	Specifically target patients in the following age groups for health education about non-communicable diseases such as hypertension, diabetes, chronic obstructive airways disease, and cancer?	35-49yrs 50-59 60+yrs	1 1 1	2 2 2	3 3 3	4 4 4	**NC1** **NC2** **NC3**
46.	Provide health education about abuse of older persons to patients in the following age-groups?	35-49yrs 50-59 60+yrs	1 1 1	2 2 2	3 3 3	4 4 4	**EAE1** **EAE2** **EAE3**
Use Codes: 1 = Never; 2 = sometimes (rarely); 3 = most times; 4 = always. ***During the past 12 months (including today) how often did you:***							
	SCREENING OF OLDER PERSONS FOR DISEASE AND RISK FACTORS						
47.	Examine patients in the following age groups?	35-49yrs 50-59 60+yrs	1 1 1	2 2 2	3 3 3	4 4 4	**PE1** **PE2** **PE3**
48.	Ask or encourage patients in the following age groups to go for HIV counselling and testing?	35-49yrs 50-59 60+yrs	1 1 1	2 2 2	3 3 3	4 4 4	**VCT1** **VCT2** **VCT3**
49.	Screen patients in the following age groups for non-communicable diseases such as diabetes and hypertension even when they presented with a different complaint?	35-49yrs 50-59 60+yrs	1 1 1	2 2 2	3 3 3	4 4 4	**SCR1** **SCR2** **SCR3**
	Can you please explain your answer to Qn 49 (*i.e. Are there particular reasons <u>why you never</u> or*						

	<u>why you rarely</u> or <u>why you usually</u> or <u>why you always</u> screen patients aged ……. for non-communicable diseases) 35 – 49 years _____ _____ _____ _____ _____ _____ _____ 50 – 59 years _____ _____ _____ _____ _____ _____ _____ 60+ years _____ _____ _____ _____ _____ _____ _____						**EX491** **EX492** **EX493**
Use Codes: 1 = Never; 2 = sometimes (rarely); 3 = most times; 4 = always. ***During the past 12 months (including today) how often did you:***							
50.	Measure the blood pressure of patients in the following age groups?	35-49yrs 50-59 60+yrs	1 1 1	2 2 2	3 3 3	4 4 4	**TBP1** **TBP2** **TBP3**
51.	Measure the height of patients in the following age groups?	35-49yrs 50-59 60+yrs	1 1 1	2 2 2	3 3 3	4 4 4	**THT1** **THT2** **THT3**

52.	Measure the weight of patients in the following age groups?	35-49yrs	1	2	3	4	**TWT1**
		50-59	1	2	3	4	**TWT2**
		60+yrs	1	2	3	4	**TWT3**
53.	Calculate the body mass index of patients in the following age groups?	35-49yrs	1	2	3	4	**BM1**
		50-59	1	2	3	4	**BM2**
		60+yrs	1	2	3	4	**BM3**
54.	Measure the mid-upper arm circumference of patients in the following age groups?	35-49yrs	1	2	3	4	**MUA1**
		50-59	1	2	3	4	**MUA2**
		60+yrs	1	2	3	4	**MUA3**
55.	Ask patients in the following age groups about whether they smoke cigarettes?	35-49yrs	1	2	3	4	**CGR1**
		50-59	1	2	3	4	**CGR2**
		60+yrs	1	2	3	4	**CGR3**
56.	Ask patients in the following age groups whether they drink alcohol?	35-49yrs	1	2	3	4	**EWA1**
		50-59	1	2	3	4	**EWA2**
		60+yrs	1	2	3	4	**EWA3**
57.	Assess patients in the following age groups for abuse whenever you suspect they had been abused	35-49yrs	1	2	3	4	**EAB1**
		50-59yrs	1	2	3	4	**EAB2**
		60+yrs	1	2	3	4	**EAB3**
58.	Taken action, including referral to appropriate institutions such as the police whenever you detected a patient was suffering abuse	35-49yrs	1	2	3	4	**EAB4**
		50-59yrs	1	2	3	4	**EAB5**
		60+yrs	1	2	3	4	**EAB6**

PART 6: BASIC KNOWLEDGE OF HEALTH WORKERS ON DISEASE CONDITIONS ASSOCIATED WITH OLD AGE

I would like to ask you about diseases in older persons:

59.	Have you received any training on diseases related to old-age?	Yes 1 No 2>>59			**TRAINO**
60.	How many years ago did you complete this training?	Years ago |__|__|__| Months ago |__|__|__|			**YRCOMP** **MOAGO**
61.	If an older person comes to the clinic, do you feel that you have the knowledge to provide adequate care to him/her?	Yes 1 No 2			**KNOWLG**
	In the next series of questions, I am going to read to you a statement about a disease or condition in older people. Please tell me whether the statement is true or false	True	False	Don't Know	
62.	Ageing can increase the susceptibility of older persons to non-communicable diseases (NCDs).	1	2	8	**QN01**
63.	Older persons are not at risk of acquiring sexually transmitted HIV.	1	2	8	**QN02**
64.	Due to the high degree of respect accorded to	1	2	8	**QN03**

	older people in Ugandan societies, abuse of older people is not common.				
65.	**In order to keep their bones strong, older people should be advised to eat foods rich in:**				**QN04**
a	Carbohydrates.	1	2	8	**QN04a**
b	Potassium.	1	2	8	**QN04b**
c	Magnesium.	1	2	8	**QN04c**
d	Vitamin D.	1	2	8	**QN04d**
e	Calcium.	1	2	8	**QN04e**
f	Essential fats.	1	2	8	**QN04f**
g	Water.	1	2	8	**QN04g**
66.	**The following physical examination of older people should be done routinely at every outpatient visit whether they have a related complaint or not.**				**QN05**
a	Blood pressure measurement.	1	2	8	**QN05a**
b	Rectal examination.	1	2	8	**QN05b**
c	Weight measurement.	1	2	8	**QN05c**
d	Height measurement.	1	2	8	**QN05d**
e	Genital examination.	1	2	8	**QN05e**
67.	**The following statement is true about the skin of older people.**				**QN06**
a	Their skin has a very good blood supply.	1	2	8	**QN06a**
b	The skin is often dry and flaky.	1	2	8	**QN06b**
c	It is more common to find chronic wound infections in the skin of older people than in the skin of younger people.	1	2	8	**QN06c**
68.	**Which of the following statements are accurate regarding falls in older people?**				**QN07**
a	Poor hearing can cause falls.	1	2	8	**QN07a**
b	Poor sight is associated with falls.	1	2	8	**QN07b**
c	Muscle weakness can cause falls.	1	2	8	**QN07c**
d	Because older people walk slowly they are less prone to falls than younger people.	1	2	8	**QN07d**
		True	**False**	**Don't know**	
69.	**Which of the following is a risk factor for cardiovascular disease in older persons?**				**QN08**
a	Alcohol consumption.	1	2	8	**QN08a**
b	Cigarette smoking.	1	2	8	**QN08b**
c	Physical exercise.	1	2	8	**QN08c**
d	Reduced consumption of high calorie foods.	1	2	8	**QN08d**
70.	**Which of the following statements is true about old people in Uganda?**	**1**	**2**	**8**	**QN09**
a	Because old people are weak, they are not productive in Ugandan societies.	1	2	8	**QN09a**
b	It is often difficult to deal with older people	1	2	8	**QN09b**

	because their understanding of issues is very poor.				
c	Many diseases afflicting older people are chronic and cannot be treated in primary care facilities.	1	2	8	**QN09c**
71.	**Which of the following conditions increase the risk of heart disease in older people?**				**QN010**
a	Cigarette smoking.	1	2	8	**QN010a**
b	Obesity.	1	2	8	**QN010b**
c	Diabetes.	1	2	8	**QN010c**
d	High cholesterol levels.	1	2	8	**QN010d**
e	High blood pressure.	1	2	8	**QN010e**

72.	**Interview end time (use 12-hour format**	**Hour |_____|_____|**	**ENDHR**
		Minute |_____|_____|	**ENDMI**

Thank you for your participation

CHECK THAT ALL QUESTIONS ARE ANSWERED AS REQUIRED

9.4.4. Form 4: Older persons and younger adults

Part 1: General Information

Qno	Questions and Filters	Coding categories	Codes
17.	Interviewer Initials	Write your initials ☐☐☐	**INTNAME**
18.	Interviewer signature		
19.	Date of interview	☐☐☐☐☐☐☐☐ d d m m y y y y	**INTDATE**
20.	Do I have your agreement to begin the interview?	**Yes** 1 **No** 2 **>>>stop**	**AGREE**
21.	Interview Start time (use 12-hour format)	Hour ☐☐ Minutes ☐☐	**STATHR** **S TATMI**

Par 2: Facility identification *(fill this section without asking the study participants)*

Qno	Questions and Filters	Coding categories	Codes
22.	District code	☐☐ District code	**DCODE**
23.	Name of facility		**FNAM**
24.	Facility code	☐☐ Write facility Code	**FCODE**
25.	Level of facility	Level IV 1 Level III 2 Level II 3	**FLEV**
26.	Location of facility	Urban 1 Semi-urban 2 Rural 3	**FLOC**
27.	How would you categorise the type of service provided at this health facility?	Outpatient only 1 Both in-and out-patient 2	**FTYP**

Part 3: Socio-demographic characteristics

Qno	Questions and filters	Coding categories	Codes
	Category	Older person 1 Younger adult 2	**CATE**
28.	Participant identification number	Write ID number ☐	**IDNO**

29.	Sex	Male 1 Female 2	**SEX**
30.	What is your date of Birth?	☐☐☐☐☐☐☐☐ d d m m y y y y ***Write 99 for day, 999 for month and 9999 for year if date of birth is unknown***	**DOB**
31.	How old are you?	☐☐☐ Years	**AGE**
32.	What is your marital status?	Married 1 Cohabiting/living with someone 2 Widowed 3 Separated/divorced 4 Single 5	**MSTA**
33.	Which of the following would you say is your main occupation	Farmer 1 Businessman/woman 2 Government employee 3 Non-government employee 4 Self employed 5 Retired 6 Part-time employment 7 Unemployed (able to work) 8 Other work (specify) 9 ***Specify here:***	**OCUP**
34.	Which of the following would you say is your main source of cash income currently	Farming 1 Business 2 Government employment 3 Non-Government employment 4 Part-time employment 5 Retirement benefits 6 Donations 7 None 8 >> Other (specify) 9 ***Specify here:***	**INCO**
35.	Which of the following would you say best describes your current material situation or level of wealth/poverty?	Very wealthy 1 Wealthy 2 Comfortable 3 Poor 4 Very poor 5 Destitute 6	**MATSIT**
36.	Have you ever attended	Yes 1	**EDU1**

	formal education?	No 2 **>>621**	
37.	What is the highest level of formal education that you attended?	Primary 1 O-Level 2 A-Level 3 Tertiary 4 University 5	**EDU2**
38.	What is your religion?	Protestant 1 Catholic 2 Muslim 3 Pentecostal 4 Seventh Day Adventist 5 Other (specify) 6	**DINI** **SDINI**

Part4: Healthcare access and utilization

	I now would like to ask you about your use of this health facility		
39.	How far away do you live from this health facility?	Less than 3km away 1 3-5Km away 2 More than 5km away 3	**DIST**
40.	Is this the health facility you usually (most times) come to whenever you need healthcare	Yes 1 No 2	**MAINC**
41.	For how long have you used this health facility as a source of your healthcare?	☐☐☐☐☐ Write in months – enter 00000 if <1 month	**FUSE**
42.	In the past 12 months (including today), how many times have you come to this health facility for healthcare?	Number of times ☐☐☐	**VISNO1**
43.	Which of the following would you say describes the main reason or reasons why you come to this facility instead of other health facilities *(Circle all those that apply)*	Because it is near or easily accessible 1	**ACC**
		Because I receive good care whenever I come here 2	**GCAR**
		Because service is cost free 3	**FREE**
		Because I get drugs whenever I come 4	**DRUG**
		Because I have a relative working here 5	**RELA**
		Because the health workers here are good 6	**HWGD**
		Other reasons (please specify): 7	**OHCU**
		Specify other reason(s) here:	**ROHCU**
44.	In the past 12 months, have you gone to another health facility instead of this facility for healthcare services?	Yes 1 No **2>>629**	**VISNO2**
45.	Which of the following reasons would you say best describes	I was harshly treated (e.g. abused, and shouted at) by the health workers 1	**VISA1**

	why you went to another health facility instead of coming to this health facility when you needed healthcare? *(circle all those that apply)* ***For responses 1 – 13, begin with "because during my previous visits":***	There was no health worker on duty	2	**VISA2**
		Health workers at this facility kept me waiting too long	3	**VISA3**
		The queues at this facility were very long	4	**VISA4**
		I was not allowed to explain my illness	5	**VISA5**
		I was not allowed to ask questions about my illness	6	**VISA6**
		I was not examined	7	**VISA7**
		I was not thoroughly examined	8	**VISA8**
		My illness was not investigated in the lab	9	**VISA9**
		I did not receive treatment or drugs	10	**VISA10**
		I was not in this area when I fell sick	11	**VISA11**
		I was asked to pay money	12	**VISA12**
		Because I was told drugs were not available health facility	13	**VISA13**
		Other reasons	14	**VISA14**
		Specify other reasons here		**VISA15**
46.	Have there been any times within the past 12 months when you felt you needed healthcare but you did not go to a health facility?	Yes 1 No **2>>631**		**NOV**
47.	Which of the following would you say best describes why you did not access healthcare from a health facility? (circle all those that apply) ***For responses 1 – 6, begin with "because during my previous visits":***	Because I lacked transport (or lacked money for transport)	1	**NOV1**
		Because I was too sick to walk	2	**NOV2**
		Because I was told there were no drugs	3	**NOV3**
		Because I was treated badly by the health workers when I last visited	4	**NOV4**
		The condition I had is better treated by a traditional healer	4	**NOV5**
		The condition I had is better treated by taking traditional herbs	5	**NOV6**
		The condition I had is better treated by buying drugs from a pharmacy	6	**NOV7**
		Other reasons (specify)	7	**NOV8**
		Specify other reasons here:		**S NOV8**
48.	What time did you arrive at the health facility?	Estimate Hour ☐☐		**ARHR**
		Estimate minutes ☐☐		**ARMIN**
49.	What is your reason of coming to the facility today?			**PC1**
50.	Ask to look at the participant's case book/note. Write the reason of attendance that appears in the book clearly (this will usually the presenting			

	complaint or the of their illness)		
51.	Can you please tell me whether you received the treatment you came for today at this health facility?	Yes 1 No 2	**TREAT**

Part: 5

In the next series of questions, I would like to ask you about the services you received from this health facility and how the health workers of this facility have treated you during the past 12 months (including today). Explain to the participant that by a health worker, we mean **all staff** who work at the health facility including the cleaners, askaris (security guards), and receptionists (or those who register patients)

	Dignity: ***Now, I would like to ask you about whether or not health workers in this facility have treated you with respect during the past 12 months including today.***					
Use Codes: 1 = Never; 2 = sometimes (rarely); 3 = most times (usually); 4 = always. ***In your visit(s) to this facility during the past 12 months (including today)*** *How often have the health workers:*						
52.	Welcomed you?	1	2	3	4	**RES1**
53.	Offered you a seat while you waited to be seen?	1	2	3	4	**RES2**
54.	Shouted at or abused you?	1	2	3	4	**RES3**
55.	Treated you in a way that made you believe you were discriminated against because of your age?	1	2	3	4	**RES4**
56.	Made mean comments about you because of your age?	1	2	3	4	**RES5**
57.	Made you feel that you have been addressed or treated with respect?	1	2	3	4	**RES6**
58.	Overall, how would you rate this facility for the respect or dignity with which you have been treated during the past 12 months (including today)?	Very poor 1 Poor 2 Neither poor nor good 3 Good 4 Very good 5				**REX**
	Important physical exams: ***Now, in the next series of questions, I would like to ask you about whether or not health workers in this health facility have examined you during the past 12 months (including today)***					
Use Codes: 1 = Never; 2 = sometimes (rarely); 3 = most times (usually); 4 = always. ***In your visit(s) to this facility during the past 12 months (including today):***						
59.	How often have the health workers examined you during your visits to this health facility?	1 >> 651	2	3	4	**PE1**
60.	During each of those times when you have been examined, how often have the health worker(s) asked for your permission before they examined you?	1	2	3	4	**PE2**
61.	How often have you felt the health worker(s) have treated you in a respectful way during the examination e.g. ensuring that other people have not seen you being examined by the health worker?	1	2	3	4	**PE3**
62.	How often have you felt the health worker(s) have examined you thoroughly?	1	2	3	4	**PE4**
63.	How often have the health workers measured in your blood pressure?	1	2	3	4	**PE5**
64.	How often have the health workers measured your weight?	1	2	3	4	**PE6**

65.	Has a health worker ever measured your height and recorded it in your medical book or medical form?	Yes 1 No 2				**PE7**
66.	How often have the health workers measured the thickness of your arm (your mid-upper arm circumference)?	1	2	3	4	**PE9**
67.	Overall, how would you rate this facility for how thorough the health workers have examined you during your visits to this facility?	Very poor 1 Poor 2 Neither poor nor good 3 Good 4 Very good 5				**RPE9**
	Prompt Attention: ***In the next series of questions, I would like to ask you about whether or not the health workers in this health facility have attended to you quickly whenever you come to this facility.***					
Use Codes: 1 = Never; 2 = sometimes (rarely); 3 = most times (usually); 4 = always. ***In your visit(s) during the past 12 months (including today); how often have the health workers:***						
68.	Attended to you as quickly as you would have liked?	1	2	3	4	**QA1**
69.	Invited you to be seen ahead of other patients because of your age even when you arrived after other patients?	1	2	3	4	**QA2**
70.	Overall, how would you rate this facility for how quickly they have attended to you during your visits over the past 12 months (including today)?	Very poor 1 Poor 2 Neither poor nor good 3 Good 4 Very good 5				**RQA**
	COMMUNICATION: ***In the next series of questions, I would like to ask you about whether or not the health workers in this health facility have communicated with you a way that enables you to understand your illness and its treatment.***					
Use Codes: 1 = Never; 2 = sometimes (rarely); 3 = most times (Usually); 4 = always. ***In your visit(s) during the past 12 months (including today):***						
71.	How often have the health workers allowed you to explain your illness?	1>>Q657	2	3	4	**CO1**
72.	During each of those times you have been allowed to explain your illness, how often have the health workers given you as much time to explain your illness as you would have liked to?	1	2	3	4	**CO2**
73.	During each of those times you have been allowed to explain your illness, how often have the health worker(s) listened attentively while you explained your illness?	1	2	3	4	**CO3**
74.	How often have the health worker(s) explained to you what they thought you were suffering from?	1>>Q659	2	3	4	**CO4**
75.	During each of those times the health workers have explained to you what they thought you were suffering from, how often have the health worker's explanation(s) enabled you to understand important issues regarding your illness (such as the cause, treatment, prevention, and likely complications of	1	2	3	4	**CO5**

	your illness)?					
76.	How often have you wanted to ask health workers questions about your illness during the past 12 months?	1>>Q661	2	3	4	**CO6**
77.	During each of those times you have wanted to ask health workers questions, how often have the health workers allowed or encouraged you to ask questions?	1	2	3	4	**CO7**
78.	Overall, how would you rate this facility for how clear the health workers' communication(s) with you have been during the past 12 months (including today)? By "clear" we mean, the health workers' communications enabled you to understand more about your illness.	Very poor 1 Poor 2 Neither poor nor good 3 Good 4 Very good 5				**RCO**
	AUTONOMY. ***In the next series of questions, I would like to ask you about whether or not the health workers in this health facility have involved you in key decisions about your health.***					
Use Codes: 1 = Never; 2 = sometimes (rarely); 3 = most times (usually); 4 = always. ***In your visit(s) during the past 12 months (including today):***						
79.	How often have you been given or prescribed treatment, such as drugs, dressings, surgery?	1>>Q665	2	3	4	**ATN1**
80.	During each of those times you have been prescribed or given treatment, how often have the health worker(s) discussed with you or explained to you the different treatment options for your illness?	1	2	3	4	**ATN2**
81.	During each of those times you have been prescribed or given treatment, how often have the health workers involved you in making the decision on what treatment you should receive?	1	2	3	4	**ATN3**
82.	How often have the health workers taken samples such as blood, stool, urine, sputum etc for laboratory tests?	1>>Q667	2	3	4	**ATN4**
83.	During each of those times health workers have taken samples from you, how often have the health workers discussed with you whether or not the samples should be taken for laboratory investigations, as opposed to just telling you?	1	2	3	4	**ATN5**
84.	Overall, how would you rate this facility for the way the health workers have involved you in making key decisions about your health during the past 12 months (including today).	Very poor 1 Poor 2 Neither poor nor good 3 Good 4 Very good 5				**RATN**
	PRIVACY and CONFIDENTIALITY: ***In the next series of questions, I would like to ask you about whether or not the health workers in this health facility have ensured that you are attended to in an environment where people who have nothing to do with your illness do not see or hear what goes on between you and the health worker.***					
Use Codes: 1 = Never; 2 = sometimes (rarely); 3 = most times (usually); 4 = always. ***In your visit(s) during the past 12 months (including today); how often have the health workers:***						
85.	Attended to you in a room where you believe no one, except those directly involved in your care, could see	1	2	3	4	**PRC1**

	you with the health worker(s)?					
86.	Attended to you in a room where you believe no one, except those directly involved in your care, could hear your conversation with the health worker(s)?	1	2	3	**4**	**PRC2**
87.	Exposed your health information to other people who are not concerned with your treatment (either by talking to other people about your illness without your permission or by storing your medical files in a way that other people who are not concerned with your treatment could look at them)?	1	2	3	**4**	**PRC2**
88.	Overall, how would you rate this facility for privacy and confidentiality they have accorded to you during the past 12 months (including today)?	Very poor 1 Poor 2 Neither poor nor good 3 Good 4 Very good 5				**RPRC**
	HEALTH EDUCATION: ***In the next series of questions, I would like to ask you about whether or not the health workers in this health facility have given you health education in your visits to this facility during the past 12 months (including today).***					
In your visit(s) to this facility during the past 12 months (including today) *have you ever:*				**Yes**	**NO**	
89.	Received health education about any disease?			**1**	**2**	HED1
90.	Received health education about HIV/AIDS?			**1**	**2**	HED2
91.	Received health education about other sexually transmitted infections such as gonorrhea and syphilis?			**1**	**2**	HED3
92.	Been encouraged to have a test for HIV?			**1**	**2**	HED4
93.	Received health education about high blood pressure, diabetes, or cancer			**1**	**2**	HED5
94.	Received health education about condom use?			**1**	**2**	HED6
95.	Been asked by a health worker whether you would like to have condoms			**1**	**2**	HED7
96.	Received health education about violence against older persons?			**1**	**2**	HED8
97.	Been asked whether you smoke cigarettes?			**1**	**2**	RISK1
98.	Been asked whether you drink alcohol?			**1**	**2**	RISK2
	COST OF TREATMENT: ***In the next series of questions, I would like to ask you about whether or not you have incurred costs while seeking health care from this health facility***					
Use Codes: 1 = Never; 2 = sometimes (rarely); 3 = most times (usually); 4 = always. ***In your visit(s) during the past 12 months (including today); how often have:***						
99.	The health workers asked you to pay money	1	2	3	4	**PAY1**
100.	You paid money	1	2	3	4	**PAY2**
101.	You paid money where you got a receipt?	1	2	3	4	**PAY3**
102.	You paid money where you got no receipt (in other words, an "under the table" payment)?	1	2	3	4	**PAY4**
103.	Overall, how would you rate this health facility for all the services you received during the past 12 months, including the way you were treated by members of the staff of this facility?	Very poor 1 poor 2 Neither poor nor good 3 Good 4 Very good 5				**RATF**

104.	Overall, which of the following answers would you say best describes how you feel about the way you have been treated by the staff of the health facility during your visit in the past 12 months (including today)?	Very upset upset Neither happy nor upset happy Very happy	1 2 3 4 5	**FEELIN**
105.	Overall, how satisfied are you with all the health services you received from this health facility in the past 12 months including today?	Very dissatisfied Dissatisfied Neither dissatisfied nor satisfied Satisfied Very Satisfied	1 2 3 4 5	**SATI**
106.	Given your experiences of attending healthcare at this facility, would you be happy to continue to come to this health facility?	Yes No	1 2	**UTL1**
107.	Given your experiences of attending healthcare at this facility, would you recommend this health facility to other older persons?	Yes No	1 2	**UTL2**

108.	**Interview end time**	**Hour**	**ENDH**
		Minutes	**ENDM**

Thank you for your participation

9.5. Availability of services by urban/rural location and geographical zone

9.5.1. Proportion of primary care facilities (PCFs) that reported offering services and had items for offering services for non-communicable diseases and sexually transmitted infections by rural/urban location and geographical zone

	Total N	Total % [95%CI]	Urban (%)	Rural (%)	p-value	Northern (%)	Eastern (%)	Central (%)	Western (%)	p-value	DEFF
Total surveyed n (%)	48	100	6 (13)	42 (88)		12 (25)	12 (25)	12 (25)	12 (25)		
Special geriatric services	0		0	0		0	0	0	0		
NON-COMMUNICABLE DISEASES											
Had service for one or more NCDs	40	83 [67, 92]	67	84	0.42	71	89	93	76	**0.49**	**1.18**
Cardiovascular diseases											
Reported offering service	33	68 [53, 80]	65	68	0.89	58	55	81	76	0.43	1.0
Among those offering the service:											
Reported having guidelines	29	88 [72, 96]	100	87	0.44	86	100	100	73	0.09	0.96
*The guidelines seen in consultation area	26	94 [83, 98]	100	94	0.54	62	100	100	100	0.001	0.53
Reported stocking drugs	23	65 [47, 80]	76	64	0.61	64	88	58	56	0.43	1.03
*Had some or all of the drugs in stock	22	92 [74, 98]	100	91	0.55	100	74	100	100	0.08	0.71
Reported having trained staff to offer service	1	3 [0,16]	0	3	n.a	0	0	11	0	n.a	0.77
Reported having stethoscope	32	94 [71, 99]	100	94	0.68	100	100	100	84	0.21	1.6
*A stethoscope seen in consultation area	32	100	100	100	n.a	100	100	100	100	n.a	n.a
Reported having Sphygmomanometer	30	87 [68, 95]	100	85	0.4	100	100	91	68	0.07	1.2
*Sphygmomanometer seen in consultation area	29	97 [82, 99]	100	96	0.68	100	100	88	100	0.23	0.8
*Reported having a weight scale	27	79 [59, 91]	100	77	0.28	82	88	91	64	0.33	1.2
*A weight scale seen in consultation area	24	87 [71, 95]	100	86	0.39	100	74	88	92	0.45	0.8
*Reported having a height scale	4	7 [3, 16]	22	5	0.07	7	9	0	10	0.55	0.44
*Height scale seen in consultation area	3	75 [20, 97]	100	63	0.4	100	100	n.a.	52	0.44	0.5
Reported having tape measure	9	28 [18, 42]	31	28	0.86	0	67	42	5	<0.001	0.6
*Tape measure seen in consultation area	5	50 [24, 76]	100	44	0.13	n.a	48	62	0	0.56	0.66

	Total N	Total % [95%CI]	Urban (%)	Rural (%)	p-value	Northern (%)	Eastern (%)	Central (%)	Western (%)	p-value	DEFF
Diabetes											
Reported offering service	30	58 [42,71]	69	56	0.6	50	59	54	63	0.93	1.07
Among those offering the service:											
Reported having guidelines	24	83 [65,93]	94	81	0.22	79	82	79	88	0.95	0.90
*The guidelines seen in consultation area	22	97 [88,99]	100	96	0.59	79	100	100	97	0.05	0.33
Reported stocking drugs	10	19 [9,34]	35	17	0.24	38	26	8	10	0.29	0.66
*Had some or all of the drugs in stock	7	72 [36,92]	83	69	0.54	23	100	59	100	0.04	0.58
Reported having trained staff to offer service	1	1 [0,9]	0	2	0.72	0	0	0	4	0.66	0.34
Reporting doing blood sugar	15	39 [23,57]	78	33	0.06	53	47	79	10	0.04	0.81
Reported doing urine sugar	20	64 [43,80]	78	62	0.5	75	47	79	67	0.61	1.0
Reported having stethoscope	29	93 [67,99]	100	93	0.64	100	100	100	81	0.21	1.6
Stethoscope seen in consultation area	29	100	100	100	n.a	100	100	100	100	n.a	n.a
Reported having Sphygmomanometer	28	87 [65,96]	100	85	0.42	100	100	100	61	0.02	1.3
*sphygmomanometer seen in consultation area	28	100	100	100	n.a	100	100	100	100	n.a	n.a
Reported having a weight scale	26	85 [66, 95]	100	83	0.36	79	86	100	77	0.53	1.0
*A weight scale seen in consultation area	24	90 [74, 97]	100	89	0.41	100	76	100	92	0.21	0.69
*Reported having a height scale	5	11 [5,22]	21	10	0.33	8	20	0	12	0.39	0.42
*Height scale seen in consultation area	4	82[32,98]	100	77	0.52	100	100	n.a.	52	0.28	0.49
Reported having tape measure	7	22[13,34]	30	21	0.61	0	52	22	6	0.01	0.45
*Tape measure seen in consultation area	4	47 [20, 76]	100	37	0.1	n.a	38	100	0	0.11	0.54
Cancer											
Reported offering service	13	25 [16,37]	19	26	0.6	31	45	2	19	0.04	0.72
Among those offering the service:											
Reported having guidelines	9	73 [49,88]	100	71	0.35	41	83	100	79	0.32	0.60
*Guidelines seen in consultation area	8	87 [46,98]	100	85	0.63	100	100	100	50	0.17	0.93
Reported having trained staff to offer service	5	36 [17,60]	100	31	0.06	41	39	100	21	0.68	0.66
Mental illness (e.g. depression)											
Reported offering service	29	59 [45,71]	49	60	0.66	84	46	48	63	0.21	0.80
Among those offering the service:											
Reported having guidelines	23	83 [70,91]	100	82	0.37	65	100	79	88	0.15	0.57

	Total N	Total % [95%CI]	Urban (%)	Rural (%)	p-value	Northern (%)	Eastern (%)	Central (%)	Western (%)	p-value	DEFF
*Guidelines seen in consultation area	19	90 [74,96]	29	97	<0.001	85	100	59	100	0.03	0.65
Reported stocking drugs	22	72 [54,86]	100	70	0.24	60	72	79	80	0.78	0.93
*Had some or all of the drugs in stock	20	86 [66,95]	100	84	0.42	75	62	100	100	0.09	0.79
Reported having trained staff to offer service	9	25 [13,43]	71	21	0.02	33	33	33	10	0.53	0.63
Hearing problems											
Reported offering service	19	40 [27,54]	15	43	0.07	75	18	32	45	0.04	0.91
Among those offering the service:											
Reported having guidelines	17	92 [72,98]	100	92	0.72	86	100	100	91	0.71	0.77
*Guidelines seen in consultation area	14	89 [71,96]	100	88	0.64	65	100	100	100	0.06	0.58
Reported stocking drugs	19	100	100	100	n.a	100	100	100	100	n.a	n.a
*Had some or all of the drugs in stock	17	85 [57,96]	100	85	0.6	100	64	100	71	0.21	1.27
Reported having trained staff to offer service	2	15 [4,45]	0	16	0.62	17	0	0	27	0.55	1.37
Reported having otoscope	3	15 [5,35]	100	11	0.004	17	27	29	0	0.42	0.8
*Otoscope seen in consultation area	2	60 [13,94]	100	47	0.32	0	100	100	n.a.	0.03	0.81
Vision problems											
Reported offering service	26	54 [40,67	49	54	0.82	79	37	48	59	0.2	0.94
Among those offering the service:											
Reported having guidelines	23	91 [76,97]	100	90	0.52	73	100	100	93	0.12	0.65
*Guideline seen in consultation area	19	93[81,98]	88	93	0.63	79	100	95	96	0.23	0.49
Reported stocking drugs	26	100	100	100	n.a	100	100	100	100	n.a	n.a
*Drugs seen in stock	23	88 [70,96]	100	87	0.49	90	53	100	100	0.01	0.89
Reported having trained staff to offer service	5	16 [6,34]	12	16	0.78	32	0	5	17	0.27	0.86
Reported having Ophthalmoscope	3	8 [3, 23]	29	6	0.09	0	34	0	4	0.02	0.67
*Ophthalmoscope seen in consultation area	1	17 [2,69]	0	26	0.54	n.a	0	n.a.	100	0.003	0.3
Reported having visual acuity chart	9	34 [19, 52]	41	33	0.76	24	34	5	58	0.1	0.82
*Visual acuity chart seen in consultation area	8	97 [84, 99]	71	100	0.003	100	100	0	100	0.002	
Overall for non-communicable diseases and conditions											
Had services for all the six NCDs	7	14 [7,25]	15	14	0.93	23	12	0	19	0.29	0.81
Mean overall availability of services offered	n.a	50 [41, 60]	44	51	0.67	63	43	44	54	0.4	

	Total N	Total % [95%CI]	Urban (%)	Rural (%)	p-value	Northern (%)	Eastern (%)	Central (%)	Western (%)	p-value	DEFF
Sexually transmitted infections (non-HIV											
Reported offering service	46	94 [77,98]	100	93	0.6	100	100	100	79	0.04	1.53
Among those offering the service:											
Reported having guidelines	43	95 [88,98]	100	94	0.49	73	100	100	100	<0.001	0.45
*Guidelines seen in consultation area	38	92 [83,97]	100	91	0.41	69	100	93	95	0.02	0.57
Reported stocking drugs	44	97 [90,99]	100	96	0.6	84	100	100	100	0.004	0.52
*Drugs seen in stock	35	78 [64,88]	84	77	0.65	60	70	76	100	0.09	0.86
Reported having trained staff to offer service	19	34 [24,47]	51	32	0.33	4	55	61	8	0.001	0.67
Reported having laboratory tests for syphilis	20	43 [28, 59]	24	45	0.23	50	45	28	44	0.84	1.0
Reported doing gram stain for gonorrhoea	14	23 [12,39]	24	23	0.93	24	14	22	33	0.71	1.0
Reported doing urine microscopy	23	52 [36, 67]	53	51	0.94	45	45	78	48	0.45	0.96
HIV services											
Reported offering at least one HIV service	40	81 [65,90]	85	80	0.79	79	79	76	87	0.91	1.16
HIV counselling and testing											
Reported offering the service	39	79 [63,89]	85	78	0.68	79	79	66	87	0.71	1.12
Among those offering the service:											
Reported having guidelines	37	94 [81,99]	100	94	0.59	100	100	86	91	0.37	0.93
*Guidelines seen in consultation area	33	91 [78,96]	66	94	0.07	82	100	65	100	0.01	0.70
Reported trained staff to do HIV counselling	30	71 [55,83]	100	67	0.14	68	84	86	53	0.2	0.86
Reported having trained staff to do HIV testing	36	89 [71,97]	100	88	0.48	84	100	85	85	0.61	0.77
Reported stocking HIV test reagents	37	93 [78,98]	63	97	0.01	100	86	85	100	0.27	1.30
*Test reagents seen in stock	34	93 [80,98]	100	93	0.55	85	100	77	100	0.07	0.86
Life-long antiretroviral treatment											
Reported offering the service	22	42 [29,57]	53	41	0.59	42	55	47	27	0.49	1.0
Among those offering the service:											
Reported having guidelines	22	100	100	100	n.a	100	100	100	100	n.a	
*Guidelines seen in consultation area	20	89 [67,97]	100	87	0.46	75	100	72	100	0.27	0.27
Reported stocking antiretroviral drugs	18	72 [48,87]	100	68	0.21	70	77	80	52	0.15	0.76
*The drugs seen in stock	17	95 [83,99]	73	100	0.01	100	88	100	100	0.08	0.52
Reported having trained staff to offer service	16	69 [47,85]	92	66	0.08	61	77	76	52	0.18	0.73

	Total N	Total % [95%CI]	Urban (%)	Rural (%)	p-value	Northern (%)	Eastern (%)	Central (%)	Western (%)	p-value	DEFF
Overall for sexually transmitted infections											
Had all three specific STI services	22	42[29,57]	51	41	0.58	42	55	47	27	0.49	0.97
Mean overall availability of services offered	n.a	71 [62, 81]	79	71	0.43	74	78	71	65	0.79	
Overall for all the nine specific services (STIs + NCDs)											
Had all nine services (for NCDs and STIs)	5	9 [4, 21]	15	9	0.54	23	5	0	12	0.2	0.86
Had at least five of the services	31	61 [46,74]	53	62	0.71	71	61	50	63	0.81	1.0
Mean overall availability of services offered	n.a	57 [49, 66]	56	58	0.9	67	55	53	58	0.66	

9.5.2. Proportion of primary care facilities with privacy and comfort amenities

	Total N	Total % [95%CI]	Urban	Rural	p-value	Northern	Eastern	Central	Western	p-value	DEFF
	48	**100**	**6 (13)**	**42 (88)**		**12 (25)**	**12 (25)**	**12 (25)**	**12 (25)**		
Had a protected waiting area	46	97 [89,99]	100	97	0.64	83	100	100	100	0.003	0.69
Had a functional toilet	47	98 [87,100]	100	97	0.71	87	100	100	100	0.03	0.92
Had a source of drinking water	32	68 [53,80]	61	69	0.71	56	63	66	82	0.56	1.01
Had enough seats in the waiting area	19	42 [29,57]	20	45	0.18	34	48	38	36	0.89	1.02
Had a ramp	14	30 [20,43]	56	27	0.18	8	57	4	36	0.004	0.76
Had all amenities asked about	**5**	**9 [4,23]**	**0**	**11**	**0.45**	**8**	**10**	**0**	**16**	**0.55**	**1.13**
Mean		**67 [62, 72]**	**67**	**67**	**0.98**	**54**	**73**	**62**	**73**	**0.11**	
Had auditory privacy	43	91 [81,96]	100	90	0.39	79	100	77	100	0.02	0.72
Had visual privacy	40	93 [75,93]	96	85	0.16	79	92	65	100	0.05	0.76
Had both visual & auditory privacy	**40**	**86 [75,93]**	**96**	**85**	**0.16**	**79**	**92**	**65**	**100**	**0.05**	**0.76**

9.6. Prevalence of diseases diagnosed in older persons

Diseases	Unweighted %
Malaria	26.0
Respiratory tract infection (non-pneumonia)	12.3
Peptic ulcer disease (PUD)	7.2
Osteoarthritis	4.3
Cardiovascular diseases	4.1
Urinary tract infection	3.3
COPD (e.g. asthma & chronic bronchitis	3.1
HIV infection	3.0
Lumbago	3.0
Injury	2.8
Helminthiasis	2.8
Unknown or missing diagnosis	2.6
Peripheral neuropathy	1.8
Eye infection	1.8
Diarrhoeal diseases	1.7
Musculoskeletal pain	1.6
Orodental infections	1.6
Pneumonia	1.5
Wounds	1.2
Pelvic inflammatory diseases (PID)	1.1
Diabetes Mellitus	1.1
Abdominal pain	1.0
Sexually transmitted infection (STIs)	0.9
Abscess	0.9
Visual impairment	0.9
Tonsillitis	0.8
Headache	0.7
Ear infection	0.6
Brucellosis	0.6
Allergy	0.5
Assault	0.5
Epilepsy	0.5
Typhoid fever	0.4
Tuberculosis	0.4
Fatigue	0.4
Cellulitis	0.3
Hernia	0.3
Taenia infection	0.3
Dermatitis	0.2
Chest pain	0.2
Vaginal candidiasis	0.2
Renal disease	0.1

Sinusitis	0.1
Hearing problem	0.1
Mental illness (depression, schizophrenia)	0.1
Anaemia	0.1
Lymphadenitis	0.1
Mastitis	0.1
Orchitis	0.1
Anxiety	0.1
Herpes zoster	0.1
Chicken pox	0.1
Family planning	0.1
Liver cirrhosis	0.1
Constipation	0.0
Dehydration	0.0
Oral candidiasis	0.0
Urine retention	0.0
Appendicitis	0.0
Haemoptysis	0.0
Haemorrhoids	0.0
Insect bite	0.0
Oesophagitis	0.0
Pyrexia of unknown origin (PUO)	0.0
BPH	0.0
Epistaxis	0.0
Foreign body in eye	0.0
Herpes simplex	0.0
Leprosy	0.0
Lipoma	0.0
Osteomyelitis	0.0
Snake bite	0.0
Spondylitis	0.0
Anal fissure	0.0
Anorexia	0.0
Chest fibrosis	0.0
Foreign body in nose	0.0
Gangrene	0.0
Hi cup	0.0
Hydrocoele	0.0
Meningitis	0.0
Ovarian cyst	0.0
Splenomegaly	0.0
Varicose veins	0.0

Prevalence of diseases diagnosed among older persons in primary care facilities by level, urban/rural location and geographical zone

Disease	Total (n = 10, 477)	HC II (n =3,574) (34%)	HC III (n=3,848) (37%)	HC IV (n = 3,055) (29%)	Rural n = 8,455 (80.7)	Urban n=2,022 (19.3)	Central 2,289 (21.9)	Eastern 3,539 (33.8)	Northern 2,760 (26.3)	Western 1,889 (18.0)
overall n(%)	10,477(100)									
Malaria	2,719 (26.0)	839 (23.5)	1,208 (31.4)	672 (22)	1,985 (23.5)	734 (36.3)	785 (34.3)	1,184 (33.5)	585 (21.2)	165 (8.7)
Respiratory tract infection (non-pneumonia)	1,293 (12.3)	462 (12.9)	601 (15.6)	230 (7.5)	1,114 (13.2)	179 (8.9)	225 (9.8)	365 (10.3)	409 (14.8)	294 (15.6)
Peptic ulcer disease	753 (7.2)	317 (8.9)	257 (6.7)	179 (5.9)	661 (7.8)	92 (4.6)	108 (4.7)	222 (6.3)	264 (9.6)	159 (8.4)
Osteoarthritis	453 (4.3)	183 (5.1)	162 (4.2)	108 (3.5)	360 (4.3)	93 (4.6)	104 (4.5)	134 (3.8)	129 (4.7)	86 (4.6)
cardiovascular diseases	428 (4.1)	142 (4.0)	77 (2.0)	209 (6.8)	281 (3.3)	147 (7.3)	166 (7.3)	83 (2.4)	68 (2.5)	111 (5.9)
Urinary tract infection	350 (3.3)	138 (3.9)	101 (2.6)	111 (3.6)	266 (3.2)	84 (4.2)	39 (1.7)	223 (6.3)	49 (1.8)	39 (2.0)
COPD	327 (3.1)	138 (3.9)	93 (2.4)	96 (3.1)	323 (3.8)	4 (0.2)	31 (1.4)	97 (2.7)	110 (4.0)	89 (4.7)
HIV infection	314 (3.0)	76 (2.1)	50 (1.3)	188 (6.2)	219 (2.6)	95 (4.7)	110 (4.8)	61 (1.7)	29 (1.1)	114 (6.0)
Lumbago	313 (3.0)	70 (2.0)	152 (4.0)	91 (3.0)	286 (3.4)	27 (1.3)	63 (2.8)	111 (3.1)	105 (3.8)	34 (1.8)
Injury	292 (2.8)	119 (3.3)	101 (2.6)	72 (2.4)	241 (2.9)	51 (2.5)	29 (1.3)	121 (3.4)	99 (3.4)	43 (2.3)
Helminthiasis	289 (2.8)	103 (2.9)	103 (2.7)	83 (2.7)	275 (3.3)	14(0.7)	41 (1.8)	90 (2.5)	125 (4.5)	33 (1.8)
Peripheral neuropathy	193 (1.8)	83 (2.3)	29 (0.8)	81 (2.7)	124 (1.5)	69 (3.4)	72 (3.2)	44 (1.2)	69 (2.5)	8 (0.4)
Eye infection	183 (1.8)	58 (1.6)	87 (2.3)	38 (1.2)	170 (2.0)	13 (0.6)	30 (1.3)	32 (0.9)	45 (1.6)	76 (4.0)
Diarrhoeal diseases	173 (1.7)	55 (1.5)	86 (2.2)	32 (1.05)	151 (1.8)	22 (1.1)	33 (1.4)	25 (0.7)	44 (1.6)	71 (3.8)
Musculoskeletal pain	166 (1.6)	46 (1.3)	52 (1.4)	68 (2.2)	147 (1.7)	19 (0.9)	23 (1.0)	32 (0.9)	36 (1.3)	75 (4.0)
Orodental infections	163 (1.6)	23 (0.6)	24 (0.6)	116 (3.8)	139 (1.6)	24 (1.2)	36 (1.6)	100 (2.8)	23 (0.8)	4 (0.2)
Pneumonia	161 (1.5)	54 (1.5)	66 (1.7)	41 (1.3)	138 (1.6)	23 (1.1)	57 (2.5)	43 (1.2)	54 (2.0)	7 (0.4)
Wounds	120 (1.2)	48 (1.3)	50 (1.3)	22 (0.7)	95 (1.1)	25 (1.2)	33 (1.4)	37 (1.1)	40 (1.5)	10 (0.5)
Pelvic inflammatory disease	111 (1.1)	51 (1.4)	29 (0.8)	31 (1.0)	85 (1.0)	26 (1.3)	22 (1.0)	58 (1.6)	28 (1.0)	3 (0.2)
Diabetes Mellitus	110 (1.1)	7 (0.2)	48 (1.3)	55 (1.8)	96 (1.1)	14 (0.7)	12 (0.5)	10 (0.3)	4 (0.1)	84 (4.5)
Abdominal pain	107 (1.0)	17 (0.5)	53 (1.4)	37 (1.2)	94 (1.1)	13 (0.6)	18 (0.8)	19 (0.5)	6 (0.2)	64 (3.4)
STIs	98 (0.9)	44 (1.2)	24 (0.6)	30 (1.0)	81 (1.0)	17 (0.8)	19 (0.8)	39 (1.1)	19 (0.7)	21 (1.1)
Abscess	94 (0.9)	23 (0.6)	40 (1.0)	31 (1.0)	85 (1.0)	9 (0.5)	11 (0.5)	18 (0.5)	17 (0.6)	48 (2.5)
Visual impairment	89 (0.9)	12 (0.3)	15 (0.4)	62 (2.0)	89 (1.1)	0 (0)	1 (0.0)	9 (0.3)	4 (0.1)	75 (4.0)
Tonsillitis	85 (0.8)	30 (0.8)	35 (0.9)	20 (0.7)	79 (0.9)	6 (0.3)	18 (0.8)	13 (0.4)	14 (0.5)	40 (2.1)
Headache	77 (0.7)	18 (0.5)	33 (0.9)	26 (0.9)	64 (0.8)	13(0.6)	12 (0.5)	6 (0.2)	6 (0.22)	53 (2.8)
Ear infection	66 (0.6)	33 (0.9)	16 (0.4)	17 (0.6)	55 (0.7)	11 (0.5)	11 (0.5)	24 (0.7)	17 (0.6)	14 (0.7)
Brucellosis	65 (0.6)	10 (0.3)	3 (0.1)	52 (1.7)	13 (0.2)	52 (2.6)	2 (0.1)	56 (1.6)	3 (0.1)	4 (0.2)
Allergy	52 (0.5)	21 (0.6)	16 (0.4)	15 (0.5)	38 (0.5)	14 (0.7)	14 (0.6)	22 (0.6)	12 (0.4)	4 (0.2)
Assault	49 (0.5)	23 (0.6)	6 (0.2)	20 (0.7)	30 (0.4)	19 (0.9)	10 (0.4)	29 (0.8)	100.4)	0 (0)
Epilepsy	49 (0.5)	40 (1.1)	6 (0.2)	3 (0.1)	46 (0.5)	3 (0.1)	3 (0.1)	29 (0.8)	16 (0.6)	1 (0.1)

9.7. Association of factors with the mean overall score of positive responses given by HWs to questions related to how they treated older persons aged 50-59years

	N[1]	Mean[2]	Unadjusted regression coefficient[2] [95%CI]	Adjusted regression coefficient[3] [95%CI]	Adjusted regression coefficien[4] [95%CI]
Overall	**145**	**132**			
Mean overall score achieved		**96.6**			
PCF CHARACTERISTICS					
PCF level			**p=0.03**	**p=0.03**	**p=0.99**
IV	37	101.3	1	1	1
III	63	94.8	–6.52 [–11.3, –1.7]	–6.52 [–11.3, –1.7]	–9.76 [–15.5, –4.0]
II	45	97.43	–3.90 [–9.5, 1.7]	–3.90 [–9.5, 1.7]	–6.86 [–13.5, –0.2]
PCF location			**p=0.01**	**p=0.01**	**p=0.01**
Urban	21	100.4	1	1	1
Rural	124	95.8	–4.61 [–8.0, –1.2]	–4.61 [–8.0, –1.2]	–2.41 [–7.9, 3.1]
Geographical zone			**p=0.98**	**p=0.98**	**p=0.95**
Northern Uganda	35	95.2	1	1	1
Eastern Uganda	35	96.7	1.5 [–7.4, 10.5]	1.5 [–7.4, 10.5]	1.19 [–5.9, 8.2]
Central Uganda	38	97.0	1.86 [–6.8, 10.6]	1.86 [–6.8, 10.6]	3.90 [–5.2, 13.0]
Western Uganda	37	96.8	1.64 [–7.1, 10.3]	1.64 [–7.1, 10.3]	0.93 [–6.3, 8.1]
caseload due to all patients			**p=0.91**	**p=0.002**	**p=0.04**
≤4000patients/month	103	96.3	1	1	1
>4000patients/month	38	96.7	0.38 [–6.6, 7.4]	–8.17 [–13.2, –3.2]	–0.50 [–6.1, 5.1]
Caseload due to OPs			**p=0.77**	**p=0.24**	
≤300 patients/month	94	96.7	1	1	
>300 patients/month	51	96.0	–0.66 [–5.4, 4.0]	–2.87 [–7.8, 2.0]	
AVAILABILITY OF SERVICES, EQUIPMENT, GUIDELINES AND AMENITIES					
Availability of services			**p=0.35**	**p=0.04**	
Had 0-6 of the services	57	94.8	1	1	
Had 7-8 of the services	56	98.2	3.32 [–1.2, 7.9]	5.75 [1.0, 10.5]	
Had 9-10 of the services	32	96.2	1.32 [–5.3, 8.0]	1.57 [–4.1, 7.2]	
Guideline in consultation area			**p=0.11**	**p=0.59**	
Had 0-5 of the guidelines	92	96.1	1	1	
Had 6-7 of the guidelines	39	95.9	–0.27 [–5.1, 4.6]	1.57 [–4.1, 7.2]	
Had 8-9 of the guidelines	14	101.8	5.6 [–0.2, 11.5]	3.60 [–3.7, 10.9]	
Equipment in consultation area			**p=0.41**	**p=0.001**	
Had 0-4 of the equipment	82	97.6	1	1	
Had 5 of the equipment	31	94.1	–3.44 [–11.5, 4.6]	–6.5 [–13.0, 0.1]	
Had >5 of the equipment	32	94.5	–3.05 [–8.2, 2.1]	–6.48 [–9.7, –3.2]	
Laboratory services			**p=0.21**	**P=0.06**	
Available	132	97.1	5.9 [–3.4, 15.1]	9.87 [–0.4, 20.1]	
Auditory privacy			**p=0.001**	**p=0.001**	
Available	133	97.3	12.8 [5.9, 19.6]	13.9 [5.9, 21.9]	
Visual privacy			**p<0.001**	**p<0.001**	**p<0.001**
Available	121	97.7	10.26 [5.0, 15.6]	10.97 [6.4, 15.6]	13.06 [6.6, 19.5]

	N[1]	Mean[2]	Unadjusted regression coefficient[2] [95%CI]	Adjusted regression coefficient[3] [95%CI]	Adjusted regression coefficient [95%CI][4]
Amenities we enquired about			**p=0.75**	**p=0.22**	
Had 0-2 of the basic amenities	32	95.6	1	1	
Had 3 of the basic amenities	56	97.6	2.0 [–4.4, 8.4]	3.36 [–2.7, 9.5]	
>3 of the amenities	57	96.0	0.36 [–6.3, 7.1]	–0.64 [–6.8, 5.5]	
			HW CHARACTERISTICS		
Age-group			**p=0.15**	**p=0.05**	**p=0.02**
<26 years	15	102.6	1	1	1
26 – 35 years	84	94.6	–7.99 [–15.1, –0.9]	–9.72 [–16.8, –2.6]	–11.19 [–17.5, –4.9]
36 – 45 years	31	97.7	–4.9 [–11.6, 1.7]	–6.51 [–14.2, 1.2]	–8.08 [–14.3, –1.9]
>45years	15	94.6	–8.03 [–15.8, –0.3]	–10.41 [–18.7, –2.1]	–14.55 [–21.8, –7.3]
Sex			**p=0.08**	**p=0.06**	
Male	49	93.4	1	1	
Female	96	98.0	4.67 [–0.6, 9.9]	5.03 [–0.1, 10.2]	
Qualification			**p=0.05**	**p=0.005**	**p<0.001**
Clinicians	27	91.3	1	1	1
Nurses	88	97.7	6.36 [0.6, 12.2]	8.66 [3.1, 14.2]	7.61 [3.4, 11.8]
Nurse aids/assistants	30	98.9	7.60 [1.5, 13.7]	9.76 [4.0, 15.5]	11.26 [6.6, 16.0]
Trained in care of OPs			**p=0.28**	**p=0.28**	
Yes	28	99.5	1	1	
No	117	95.9	–3.68 [–10.5, 3.1]	–3.65 [–10.4, 3.1]	
Knowledge of HWs			**p=0.92**	**p=0.99**	
Poor	46	96.3	1	1	
Satisfactory	88	96.8	0.50 [–3.4, 4.4]	–0.11 [–4.0, 3.8]	
Good	11	95.6	–0.71 [–7.4, 5.9]	–0.48 [–7.2, 6.2]	
Attitude of the HWs			**p=0.41**	**p=0.18**	
Each unit increase in attitude			–0.12 [–0.4, 0.2]	–0.17 [–0.4, 0.1]	

[1]Unweighted N. [2]Values only adjusted for the survey design. [3]Values adjusted for the survey design, PCF level, PCF location, and geographical zone. [4]Final model: Values adjusted for the survey design, PCF level, PCF location and geographical zone and their interaction, and all independent predictors of the mean overall score that were associated at P<0.10 at the preceding level of the conceptual framework.

9.8. Health care access and utilisation by the study participants

	younger adults [1]		OPs[1]	
	N	%s	N	%s
Number surveyed in each group	**96**		**244**	
Distance from PCF				
<3km away	47	49.0	127	52.1
3-5km away	32	33.3	75	30.7
>5km away	17	17.7	42	17.2
Often sought health care from the PCF	92	95.8	225	92.2
Duration of use of the PCF				
<12 months	7	7.3	16	6.6
12-24 months	18	18.8	12	4.9
>24 months	71	74.0	216	88.5
Number of times care was sought in the past 12 months				
1-2 times	19	19.8	34	13.9
3-4 times	25	26.0	63	25.8
≥5 times	52	54.2	147	60.3
Reason(s) for preferring the PCF instead of others				
Ease of access (proximity)	72	75.0	190	77.9
PCF provides good care	66	68.8	188	77.1
Free services	67	69.8	196	80.3
Drugs availability	66	68.8	174	71.3
Relative works at PCF	1	1.0	7	2.9
Good HWs	50	52.1	132	54.1
Others	5	5.2	8	3.3
Sought health care from elsewhere in the past 12 months	50	52.1	98	40.2
*Reason(s) for seeking health care from elsewhere***				
Harsh treatment by HWs during previous visit(s)	0	0.0	1	1.0
Didn't find HWs on duty during previous visit(s)	3	6.0	3	3.1
Didn't receive prompt attention during previous visit(s)	2	4.0	4	4.1
Long queues during previous visit(s)	2	4.0	5	5.1
Wasn't allowed to explain illness during previous visit(s)	2	4.0	0	0.0
Wasn't allowed to ask questions about his/her illness(s)	2	4.0	0	0.0
Wasn't examined during previous visit(s)	3	6.0	6	6.1
Wasn't thoroughly examined during previous visit(s)	4	8.0	3	3.1
Laboratory investigations were not done during previous visit(s)	4	8.0	3	3.1
Didn't receive treatment or drugs during previous visit(s)	10	20.0	17	17.4
Wasn't in the area when health care was needed	17	34.0	30	30.6
Was asked to pay money during previous visit(s)	0	0.0	1	1.0
Was told by colleagues that drugs were not available at the PCF	13	26.0	23	23.5
Other reasons	17	34.0	36	37.8
Among those who gave other reasons				
Official referral to another facility	5	10.0	24	66.7
Preferred a higher level facility (self-referral)	10	20.0	12	33.3
Preferred a traditional healer	0	0.0	1	0.0
Was given wrong prescription during a previous visit	1	2.0	0	0.0
Was told by colleagues that there were no HWs on duty	1	2.0	0	0.0
Needed health care in the past 12 months but didn't go to a PCF	36	37.5	91	37.3
*Reason(s) for not going to a facility for treatment***				
Lacked transport	20	55.6	51	56.0
Was too sick to walk	19	52.8	62	68.1

	[1] younger adults		[1]OPs	
	N	%s	N	%s
*Reason(s) for not going to a facility for treatment (continued)***				
Was told by colleagues that drugs were not available at the facility	13	36.1	13	14.3
Preferred a traditional healer	1	2.8	1	1.1
Preferred traditional herbs	1	2.8	2	2.2
Preferred buying drugs from the pharmacy	6	16.7	19	20.9
Other reasons (considered illness minor, and had no one with whom they could the orphans they care for)	2	5.6	6	6.6
Received treatment	95	99.0	233	95.5

[1]Figures shown are unadjusted for the survey design. **=sub-category calculated among those answering yes to the previous item.