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Determinants of health care utilisation among the elderly population in rural Ghana

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DETERMINANTS OF HEALTH CARE UTILISATION AMONG THE ELDERLY POPULATION IN RURAL GHANA

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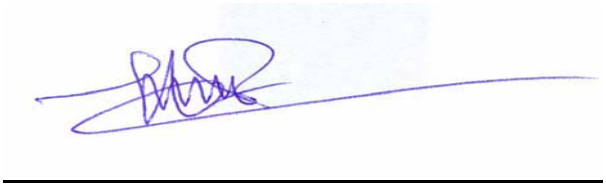
A research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, in partial fulfillment of the requirements for the degree of Master of Science in Medicine in Population-based Field Epidemiology

Johannesburg, 2010

DECLARATION

I, AMON EXAVERY**,** declare that this research report is my own work. It is being submitted for the degree of Master of Science in Medicine (Population-Based Field Epidemiology) in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other University.



20th day of **October**, **2010**

Dedicated with love to my adorable family;

*My wife (**Jovitha R.**)*

and

*daughter (**Alyssa A.**)*

ABSTRACT

Introduction: As people age, they become more vulnerable to ill-health from acute and increasingly chronic diseases. This has elevated health care demand and utilisation in the elderly especially in the developed countries. In developing countries, ageing so far has not been a serious public health concern because of smaller number of older people in these countries. Recently however, the number of older adults in Sub-Saharan Africa has increased rapidly, projected to stand at 130 million by 2050 from 30 million in 2000. This increase mirrors health related problems and has obvious public health implications. Thus, there is an urgent need to recognise and respond to health needs of the ageing populations in Africa.

Objectives: To describe health care utilisation, health status and compare the proportions of adults aged 50+ years with moderate and poor health status to those with good health status. Another objective was to identify factors associated with health care utilisation among the elderly population in Kassena-Nankana district, Ghana in 2007.

Methods: Secondary analysis was performed on a cross-sectional dataset collected between February and July 2007 through face-to-face interviews within the settings of the Navrongo DSS in Ghana. A total of 594 adults aged 50+ years participated in this study. The outcome variable was health care utilisation occurring in the last three years. Explanatory variables were grouped as predisposing, enabling and need-related factors according to the behavioural model of health services utilisation. The predisposing variables were age, sex, marital status, ethnic background, education and smoking or use of smokeless tobacco. Occupation and financial position were included as enabling factors. Medical history of chronic conditions, self-reported health status, difficulty with self-care (e.g. bathing, washing, dressing etc), difficulty with picking up things in the last 30 days and cognitive impairment were grouped as need-related factors. Logistic

univariate and multivariate regression analyses were conducted. STATA 10 statistical software was used to carry out this process.

Results: The proportion of study participants reporting poor, moderate and good health status were 14.2%, 43.3% and 42.5% respectively. About one-third (31%) of the study participants reported to have utilised health care services in the last 3 years. The following factors were identified as determinants of health care utilisation among the elderly rural Ghanaians: a medical history of at least one chronic condition (OR = 2.36; 95% CI = [1.49 – 3.75]; p < 0.001), self-perceived health (OR = 2.00; 95% CI = [1.11 - 3.59]; p = 0.021), age group (OR = 1.68; 95% CI = [1.07 - 2.64]; p = 0.025), cognitive impairment (OR = 1.26; 95% CI = [1.02 – 1.56]; p = 0.032) and difficulty with picking up things in the last 30 days (OR = 0.76; 95% CI = [0.61 - 0.96]; p = 0.021).

Conclusion: Medical history of at least one chronic condition and poor perceived health status were the most pervasive determinants of health care utilisation. In addition, age group (60-69 years), severe cognitive impairment and severe difficulty with picking up things in the last 30 days presented a significant influence on health care utilisation among the elderly population in rural Ghana.

Recommendations: Provision of home-based health care services could facilitate their accessibility for the elderly especially those with various difficulties. These factors could help health policy makers and health service providers identify and understand the situation of the elderly rural Ghanaians and consequently create conducive environment for providing appropriate health care services.

Key words: Elderly, health care utilisation, determinants, rural Ghana.

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TABLE OF CONTENTS

DECLARATION ii
ABSTRACT iv
ACKNOWLEDGEMENTS vi
LIST OF FIGURES x
LIST OF TABLES xi
ACRONYMS xii
PREFACE xiii
1.0 INTRODUCTION 1
1.1 Background 1
1.2 Statement of the problem 2
1.3 Justification for the study 3
1.4 Literature review 3
1.5 Definition of terms 6
1.6 Aims and objectives 6
1.6.1 Aim of the study 6
1.6.2 Research question 7
1.6.3 Objectives 7
2.0 METHODOLOGY 8
2.1 Study design 8
2.1.1 The primary study 8
2.2 Study area 10
2.3 Study population 11
2.4 Sampling technique and sample size 11
2.4.1 Inclusion and exclusion criteria 12
2.5 Variables 12
2.5.1 Explanatory variables 12
2.5.2 Outcome variable 14
2.6 Data processing methods and analysis 14

2.6.1 Data processing 14
2.6.2 Data analysis 15
2.6.2.1 Descriptive statistics 15
3.6.2.2 Inferential statistics 16
2.6.2.2.1 Univariate analysis 16
2.6.2.2.2 Multivariate analysis 17
2.7 Ethical consideration 18
3.0 RESULTS 19
3.1 Descriptive results 19
3.1.1 Demographic characteristics 19
3.1.2 Health status descriptions 21
3.1.4 Prevalence of chronic conditions 22
3.1.3 Health care utilisation 23
3.2 Inferential results 25
3.2.1 Predisposing variables and health care utilisation 25
3.2.2 Enabling variables and health care utilisation 27
3.2.3 Need variables and health care utilisation 28
3.2.4 Univariate Logistic regression 30
3.2.4 Multivariate Logistic regression 33
3.2.4.1 Model adequacy 37
4.0 DISCUSSION, LIMITATIONS AND CONCLUSIONS 38
4.1 Discussion 38
4.2 Generalisability, validity and reliability 45
4.3 Limitations 46
4.4 Conclusions and recommendations 48
REFERENCES 51
APPENDICES 56
APPENDIX A Approval of research title 56
APPENDIX B1 Ethical clearance certificate, HREC (Wits) 57
APPENDIX B2 Ethical clearance, IRB (NHRC) 58

LIST OF FIGURES

FIGURE 2.1 Map of Africa Showing Ghana and the location of the NHDSS 10

FIGURE 2.2 Andersen's model of health service utilisation 13

FIGURE 3.1 Percentage distribution of health status descriptions among the elderly rural Ghanaians, Navrongo HDSS, 2007. (N = 594) 21

FIGURE 3.2 Prevalence of chronic conditions among the elderly rural Ghanaians, Navrongo HDSS, 2007. (N = 594) 22

FIGURE 3.3 (a) Percentage distribution of health care utilisation by chronic condition (specific), Navrongo HDSS, 2007, (N=594) ……24

FIGURE 3.3 (b) Percentage distribution of health care utilisation by chronic condition (grouped), Navrongo HDSS, 2007, (N = 594) ……24

FIGURE 4.1 A pragmatic model of health care utilisation among the elderly population in the Navrongo HDSS, 2007..... 44

LIST OF TABLES

TABLE 3. 1 Demographic characteristics of the study sample, Navrongo HDSS, Ghana, 2007. (N = 594) ……20

TABLE 3. 2 Distribution of the predisposing variables for health care utilisation in the last 3 years among the elderly in the Navrongo HDSS, Ghana, 2007, (N = 594) 26

TABLE 3.3 Distribution of enabling variables for health care utilisation in the last 3 years among the elderly in the Navrongo HDSS, Ghana, 2007, (N = 594) 27

TABLE 3.4 Distribution of the indicators for the need of health care services in the last 3 years among the elderly in the Navrongo HDSS, Ghana, 2007, (N = 594)..... 29

TABLE 3.5 Univariate logistic regression analysis of factors associated with health care utilisation in the last 3 years among the elderly population in the Navrongo HDSS, Ghana, 2007. (N = 594) 32

TABLE 3.6 Multivariate Logistic regression analysis of factors associated with health care utilisation in the last 3 years among the elderly population in the Navrongo HDSS, Ghana, 2007. (N = 594) 34

ACRONYMS

ADL	Activities of Daily Living
AIDS	Acquired Immunodeficiency Syndrome
AMA	American Medical Association
DSA	Demographic Surveillance Area
DSS	Demographic Surveillance System
HIV	Human Immunodeficiency Virus
HREC	Human Research Ethics Committee
INDEPTH	International Network of sites with continuous Demographic Evaluation of Populations and their Health
IHI	Ifakara Health Institute
IRB	Institutional Review Board
MDS	Minimum Data Set
NHRC	Navrongo Health Research Centre
SAGE	Study on Global Ageing and Adult Health
SPH	School of Public Health
USA	United States of America
WHO	World Health Organisation

PREFACE

Being in need can solely stand as a reason for health care utilisation among people, regardless of their age or background. But how does this need for health care vary given variable circumstances such as age, sex, socio-economic status, backgrounds and the like? It is obvious that the pattern of health care utilisation of people in vulnerable groups such as children, the elderly, people with HIV infections etc is not the same as that of healthy people. Differences also still exist between one vulnerable group and the other. At this juncture, several questions can arise and one in particular is, “What are the determinants of health care utilisation among elderly?”

1.0 INTRODUCTION

1.1 Background

As people age, they become more vulnerable to ill-health and more dependent[1] with chronic diseases among them emerging as a serious problem.[2] In terms of growth of health care expenditure, ageing is often cited as the main contributor[3], notably in the developed countries. Self-perceived health status has consistently been found to be associated with the occurrence of hospital admissions among the elderly both in developed countries[4;5] and developing countries.[6] An individual's decision to utilise health care services is a result of a complex interaction of factors relating to the person's health and self-perceived health status, and to the availability of the health care services on offer.[7] One's experience, values and beliefs with the health care systems also play a role in the decision making about health care seeking.[8]

Researchers have shown an increased interest in studying factors which determine the utilisation of health services. This is generally meant to identify cultural, social, psychological and economic factors that affect variation in the utilisation of health services. Generally**,** the explanatory variables have been found to be personal attributes which may predispose individuals to seek care, need for services as evidenced by illness and enabling factors such as financial capability to pay for care, ability to get to places where services are offered, and knowledge about the service network in the community.[8]

Identifying and treating the elderly population preventively, would lead to an enormous gain in the welfare of their health.[4] It is therefore noteworthy to evidently identify and act accordingly to these influencing factors so that appropriate health care services can be made available for them at hospital, community and household level.[4;9]

1.2 Statement of the problem

Recently, studies have shown that the elderly population tends to utilise a larger share of health resources[3] as a result of increasing frequency of episodes of ill-health and associated disease morbidity with age. Data from the USA indicate that 33% of health care expenditure is required by this population.[10] In Spain, the elderly account for 40% of general practitioner activity, 25-65% of home visits and 52% of the medications prescribed at the primary care level. These estimates are three to five times what would be expected according to the percentage of elderly in the community.[11;12]

Evidence from Sub-Saharan Africa shows an exponential increase of the number of older people in the next few decades.[13] Their number is projected to stand at 130 million by 2050 from 30 million in 2000.[14] In Ghana, the number of older people is significantly increasing despite the fact that the aspects of their health and health needs are currently under-researched.[15;16] This increase implies a greater number of health-related problems, thus leading to a higher demand for health care services within this group.[17-21]

1.3 Justification for the study

Older people in Sub-Saharan Africa are affected by growing inadequacies in customary family support systems, vulnerability to poverty and exclusion from health services.[22] This is happening in the context of increasing demand of their responsibility to their communities. Older people make critical contributions to the welfare of younger generations in their families and communities, most prominently as care-takers of children especially grandchildren diseased or orphaned by HIV/AIDS[22] and of course other causes. Very little (e.g. studies, interventions etc) has been done to recognize and emphasize the urgent need to respond to the ageing population in Africa.

1.4 Literature review

Ageing is accompanied by increasing risk of diseases, morbidity and ultimately mortality. A study by Wan & Odell[8] shows that people's response to their health and illness levels predominantly determines the utilisation of personal health care services.

The determinants of health service utilisation among the elderly can be grouped in three broad categories according to Wan and Odell[8] using the Andersen behavioural model. These are (1) personal attributes which may predispose individuals to seek care; (2) need for care as evidenced by both subjective (perceived or self-reported) health status and objective (assessed by a physician) health status; and (3) enabling factors such as financial capability to pay for care, ability to get to places where services are offered, and knowledge about the services available.

The predisposing variables according to this model have the most effect on the utilisation of dental services. These factors include social-structural and demographic factors which influence health care attitudes and beliefs. Enabling factors such as knowledge of services and financial capability are most relevant to the utilisation of health care services.

Need for care factors have been identified as the leading determinants of health care utilisation. These include poor or ill health, chronic conditions and limited physical activity performance. Need for health care is usually measured by symptoms of illness perceived by the individual, their responses and medical assessment of the condition by the physician.[8]

Studies have shown that the utilisation of most health services increases in the elderly and, among people who do not have partners or who live alone.[23;24] This has also been observed among the inactive and people with low levels of education.[8] It is also associated with better access, availability and access to health insurance.[24]

A study in the Netherlands found that health care demands are driven mainly by ageing and various disabilities closely associated with ageing.[25]

Population-based studies in developed countries have shown that predictive characteristics for hospital admissions in the ageing population include variables such as poor self-perceived health status, more advanced age, greater number of visits to a doctor in the previous year, greater number of medications utilised, inability to perform

some activities of daily living (ADL) and presence of certain diseases, such as coronary heart disease and diabetes.[4;26;27]

A cross-sectional study carried out in Mexico found that more advanced age, inability to work during the previous week, access to social security, and report of previous diagnosis of any disease were associated with utilisation of health services.[28] In Brazil, a study carried out in the city of Rio de Janeiro observed that the factors associated with the utilisation of health services by the elderly were female sex, access to private health plan, residence in richest areas of the city and history of prior diagnosis of any disease.[29]

Unlike the developed countries, a recent study done in Ghana concluded that in rural areas of the developing countries, distance has been acknowledged as a key factor in the utilisation of health services especially in vulnerable groups such as the aged, illiterate, poor, females, and the sick.[30] This is probably due to the fact that in these areas, patients are farther away from health facilities.

In Nigeria, one study concluded that socio-economic indicators (particularly poverty) and nature of illness were the persistent determinants of health care utilisation among the elderly. It was also found in this study that the nature of illness and quality of service provided were the major determinants of health-care expenditure.[13]

From the above discussion, it appears apparent that factors that determine health care utilisation among the elderly differ somewhat across regions. For example, studies carried out in the developing countries have acknowledged poverty and distance as

significant factors that affect health care utilisation among the elderly, whereas more advanced age, female sex, greater number of visits to a doctor, greater number of medications utilised etc, are factors that are greatly associated with health care utilisation among the elderly in the developed countries. In both developed and developing countries, health care utilisation among the elderly were found to be associated with poor or negative self-perceived health status, nature of illness, access to social security, chronic conditions, living arrangements and limited physical activity performance in the activities of daily living.

1.5 Definition of terms

Health care utilisation: For the purpose of this study, utilisation of health care refers to obtaining the health care provided by the health care service provider(s) in the form of health care contact.[31]

Ageing: While ageing can have various definitions depending on the contextual subject, for the purpose of this study, ageing in humans refers to a multidimensional process of physical, psychological, biological and social change in which some dimensions grow and expand over time, while others decline.

1.6 Aims and objectives

1.6.1 Aims of the study

This study aimed at describing health care utilisation, self-reported health status and to compare the proportions of adults aged 50+ years with moderate and poor health status

to those with good health status. The study also aimed at identifying factors associated with health care utilisation among the elderly population in Kassena-Nankana district, Ghana in the year 2007.

1.6.2 Research question

What are the factors that determine health care utilisation among the elderly population in rural Ghana?

1.6.3 Objectives

1. To describe health care utilisation, self-reported health status and to compare the proportions of adults aged 50+ years who reported their health status as poor and moderate to the proportion of those who reported their health status as good in Kassena-Nankana district, Ghana.
2. To identify factors associated with health care utilisation among adults aged 50+ years in Kassena-Nankana district, Ghana.

2.0 METHODOLOGY

This chapter describes the study design, information about the primary study, the study area and study population, sampling, methods and data sources. The chapter also covers inclusion and exclusion criteria used to define the study population and ends with a discussion on ethical issues.

2.1 Study design

Secondary data analysis was performed on a cross-sectional dataset collected between February and July 2007 through face-to-face interviews within the setting of the Navrongo HDSS in rural Ghana.

2.1.1 The primary study

The Navrongo Health Research Centre (NHRC) is one of the sites that implemented the full version of the WHO-INDEPTH Adult Health and Ageing Survey. The Adult Health and Ageing Survey is an INDEPTH Network multi-site activity in collaboration with the World Health Organisation's Study on Global Ageing and Adult Health (WHO SAGE). The objective of SAGE is to improve the empirical understanding of the health and well-being of older adults and ageing in developing countries through provision of reliable, valid and cross-nationally comparable data for examining health difference across individuals, countries and regions, in addition to providing validated health measurement methods.[32]

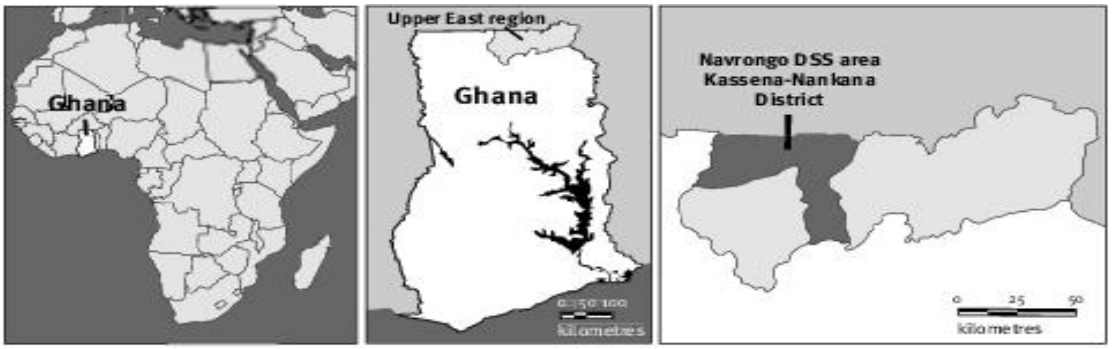
The full version of the module implemented in INDEPTH sites targeted only the elderly aged 50 years and above. A minimum sample size of 600 elderly individuals was expected of each site. The sample was drawn through a single stage random sampling of individuals who were at least 50 years old.

The survey team was divided into two groups – the interview team and the measurement team. The interview team visited selected respondents in their households to explain the study and invite them to participate. Individuals willing to participate signed a consent form after which they were interviewed. The measurement team then visited the respondents a few days later to administer various tests and take various measurements. The implementation of the survey in parts was done to reduce the burden on the respondents and the interviewers. The questionnaire was quite long and required considerable time and effort to complete. Seven hundred elderly people were sampled and 594 (85%) elderly men and women were successfully interviewed.

The data for the variables used in this study were collected by the interview team in the form of interviewer-administered questionnaire (i.e. the interviewer completed the questionnaire with participant's responses to the questions). In situations where a participant had cognitive limitations to answer the questionnaire, a proxy respondent was identified, and consequently, proxy consent and questionnaire were used.

2.2 Study area

The present study was done in the Navrongo DSS in Kassena-Nankana district in Upper East region, northern Ghana. The district lies between latitudes $10^0$30' and $11^0$00' north of the equator and between longitudes $1^0$00' and $1^0$30' west of the zero meridian and covers an area of 1,675 square kilometers along the Ghana-Burkina Faso border (see map on figure 2.1).



Source: http://www.idrc.ca/en/ev-43032-201-1-DO_TOPIC.html

FIGURE 2.1 Map of Africa Showing Ghana and the location of the Navrongo HDSS

The DSS area measures roughly 50 km long and 55 km wide and has an altitude of 200m - 400m above the sea level. The land is relatively flat and passing through it from Burkina Faso is the White Volta River, which feeds Lake Volta (the world's largest artificial lake) in the Volta region, south of Ghana. The district's ecology is typically Sahelian (hot and dry), with the vegetation consisting mostly of semi-arid grassland interspersed with short trees. There are two main climatic seasons, the wet and dry seasons. The wet season extends from April to October, with the heaviest rainfall mainly

occurring between June and October. The mean annual rainfall is 1365 mm but the highest level is recorded in August.[33] The months of November-March are dry.

The Navrongo DSS was established in 1993 by the Navrongo Health Research Centre (NHRC) to support research studies and provide means for testing various health intervention strategies. The DSS routinely updates vital events (births, deaths, migration, marriages and pregnancies) in all the approximately 14,200 compounds within the study area. All vital demographic events occurring within the district are updated through regular visits to each compound every 90 days. Where a death has occurred, the compound is revisited to obtain information on the circumstances leading to the death. These verbal postmortems are conducted using different schedules for children and adults. All these are done by trained enumerators and field supervisors.[33]

2.3 Study population

The study population was all adults aged 50+ years who were residents of the Kassena-Nankana District, Northern Ghana in 2007.

2.4 Sampling technique and sample size

Seven hundred (700) adults aged 50 years and above, residents of the NDSS in Kassena-Nankana district in Ghana in the year 2007 were randomly sampled but successfully interviewed 594 (85%) adults for the primary study. The SAGE questionnaire was used as a tool for data collection. The 594 adults interviewed for the primary study were all analysed for this study.

2.4.1 Inclusion and exclusion criteria

All adults (males and females) aged 50+ years, inhabitants of the Navrongo DSS who consented to be interviewed during a cross-sectional study between February and July 2007 were included. Those who were below 50 years of age or were not residents of the DSS or did not consent to be interviewed were excluded. Also households that were already included in the sample for the summary version were excluded from the sampling frame for the full version.

2.5 Variables

2.5.1 Explanatory variables

This study made use of the behavioural model of health services utilisation[34;35] to identify factors necessary to determine health care utilisation among the elderly population in rural Ghana. According to the model, these factors are classified in three groups as predisposing, enabling and need variables.

The predisposing variables refer to characteristics which exist prior to occurrence of any specific disease episode[7;8;36] (for example age, sex, marital status and other socio-demographic factors). Enabling variables are factors that hinder or enable the use of health care services such as financial capability and ability to get to places where services are offered.[7] Need variables refer to perception of a change in one's health as may be evidenced by illness[7;8] (self-perceived health status and history of previous diagnosis of any disease are example of need variables).

In this study, the predisposing variables investigated were age, sex, marital status, ethnic background, education and smoking or use of smokeless tobacco. Financial position and occupation were included as measures of enabling factors. The need indicator variables were self-reported health status, medical history of chronic conditions (stroke, arthritis, diabetes, angina, chronic lung disease, asthma, depression, hypertension and cataracts), cognitive impairment (i.e. difficulty with concentrating or remembering things in the last 30 days), difficulty with picking up things in the last 30 days, functional status in performing ADL and self-care.

Despite its importance and applicability, the behavioural model of health service utilisation has been criticized for failing to clearly distinguish between predisposing and

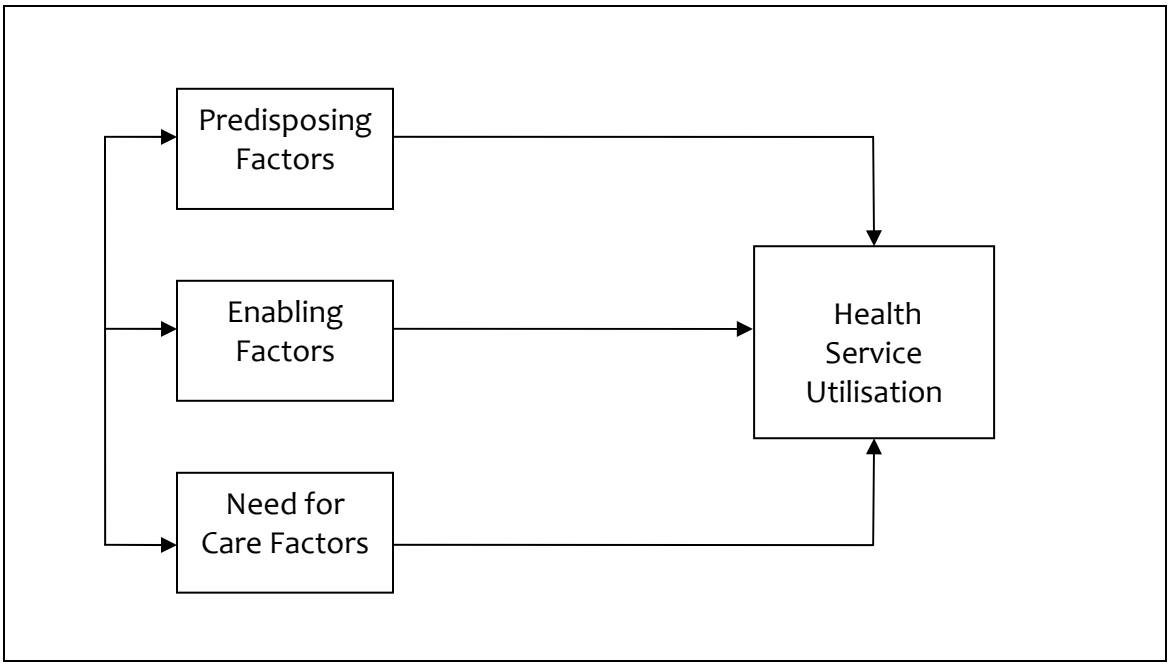


FIGURE 2.2 Andersen's model of health service utilisation

enabling variables. The model also does not account for health services sought informally such as that obtained from traditional healers and the use of herbs.

The relationship between the variables as presented in Figure 2.2 is such that the predisposing factors may influence enabling factors and both may affect need for care as well as utilisation.[8]

2.5.2 Outcome variable

The outcome (dependent) variable is health care utilisation that occurred in the last 3 years preceding the interview. This variable was measured as described in section 2.6.1.

2.6 Data processing methods and data analysis

2.6.1 Data processing

The data for this study were extracted from the database of the WHO-INDEPTH Adult Health and Ageing Survey, which was the primary study. Data cleaning, editing, consistency check, labeling and coding took place prior to data analysis. In compliance with study objectives and statistical procedures, necessary manipulations such as generating new variables, combining some variables, encoding etc were performed. The variable self-reported health status which originally had five categories (i.e. very good, good, moderate, bad and very bad) was re-categorised into three categories as “good”, “moderate” and “poor”. The category “good” included all those who reported to be in very good and good health status: “moderate” remained unchanged with those who

reported to be in moderate health status and the category "poor" included all those who reported to be in bad and very bad health status.

Study participants who reported that they got health care the last time when they needed it, and if this occurred within the last 3 years, were defined as participants who utilised health care. Else, participants who reported that they never needed care, those who needed care more than 3 years ago and those who needed but could not obtain care were defined as not having utilised health care. Thus a dichotomous outcome variable was defined to indicate whether or not health care utilisation occurred in the last 3 years. Participants who utilised health care (i.e. success) were assigned scores of one, and those who did not utilise health care (i.e. failure) were assigned scores of zero. STATA 10 statistical software was used to carry out this process.

2.6.2 Data analysis

2.6.2.1 Descriptive analysis

The data were explored through descriptive analysis to obtain summary statistics of basic features of the study participants and results were presented in a frequency distribution table, graphs and charts as shown in chapter three (table 3.1, figures 3.1 and figure 3.2).

Following the re-categorisation of the indicator variable of self-reported health status described in section 2.6.1 above, the proportions of self-reported health status were subsequently estimated as follows;

$\hat{p}_i = \frac{r_i}{N}$, (i = 1, 2, 3), where

$\hat{p}_i$ = Estimated proportion of elderly who reported health status *i*

r_i = Number of elderly who reported health status *i*

N = Total population (respondents)

3.6.2.2 Inferential statistics

2.6.2.2.1 Univariate analysis

Univariate analysis served to assess distributional characteristics of the data and as a prerequisite for multivariate analysis. Chi-square and Student t tests were used as tests of association at 5% level of significance between the independent variables and health care utilisation. Univariate models were fitted to the data in order to identify individual factors which were associated with health care utilisation.

The comparison of the proportions estimated in section 2.6.2.1 was such that “poor” and “moderate” were each compared to “good” to test the null hypotheses that the proportion of adults who reported poor health status is not different from the proportion of those who reported good health status; and similarly, the proportion of adults who reported moderate health status is not different from the proportion of those who reported their health status as good. To test these proportions, the normal approximation to the binomial distribution was assumed[37] at 5% significance level.

2.6.2.2.2 Multivariate analysis

Multivariate analysis was performed using logistic regression to find factors that predict health care utilisation in the population of adults aged 50+ years. The logistic regression took the following form;

$$\log_e\left(\frac{\mathrm{p}}{1-\mathrm{p}}\right) = \alpha + \sum_{i=1}^{n} \beta_i x_i$$

Where p = probability of utilising health care service(s); α = the intercept coefficient; β_i (i = 1, 2… n) = slope coefficient and x_i (i = 1, 2… n) are the independent or explanatory variables.

Variables were selected for the multivariate model through a manual process. The likelihood ratio test was used to assess the contribution of each explanatory variable on health care utilisation. This approach is more reliable than the Wald tests and is preferred in both smaller and large samples.[38] It is only in large samples where the Wald tests for the effects of a single predictor will agree quite closely to the results from the likelihood ratio test. Thus in this study, a factor was deemed important in the multivariate model if the likelihood ratio test justified its contribution to health care utilisation, regardless of its p-value of the Wald statistic.

Factors in the multivariate analysis whose odds ratios corresponded to a p-value ≤ 0.05 and a 95% confidence interval that excludes the null (i.e. one for odds ratios) were identified as statistically significant determinants of health care utilisation among the

elderly. The whole process of data analysis was carried out using STATA 10 statistical software at 5% two-sided significance level.

Odds ratios, 95% confidence intervals and p-values were reported. Results were presented as shown in chapter three (table 3.6).

2.7 Ethical consideration

Before this study commenced, its protocol was approved by both the Human Research Ethics Committee (Medical) of the School of Public Health, University of the Witwatersrand, Johannesburg (clearance certificate number **M090945**) and the Institutional Review Board (IRB) of the Navrongo Health Research Centre (approval ID, **NHRCIRB0 80**). Approval letters are attached, (see appendices B1 and B2).

In executing the primary study, written informed consent was obtained from each individual respondent who participated in the study. Identification numbers were used in the database of the study to identify study participants. This ensured their confidentiality and anonymity. Also the dataset that was extracted for this study served its sole purpose, no other unauthorised uses were attached to it.

3.0 RESULTS

Findings of this study are presented in this chapter, with the descriptive part first followed by the analytical one. Description involves the use of tables, graphs and charts and only tables for the analytical results. The chapter ends with diagnostic tests for model adequacy.

3.1 Descriptive results

3.1.1 Demographic characteristics

A total of 594 adult respondents aged 50+ years, with females constituting 61% and males 39% participated in this study. Their mean age was 64 years, with a standard deviation of 10 years (ranging from 50 to 106 years). The median age (i.e. age at which half of the population is younger and half is older) was 62 years. Of all the participants, 35% were in the age group 50-59 years, 35% in the age group 60-69 years and 30% were aged 70+ years (table 3.1).

Half of the study participants were currently married. Majority of those currently not married were widowed (85.9%) and the rest were divorced (10.7%), never married (2.7%) and cohabiting (0.7%).

In terms of ethnic background, respondents were made up of *Nankam* (49%), *Kassem* (47%), *Buli* (3%) and 1% unspecified backgrounds. However, due to a few respondents from the *Buli* ethnic background, the categories of ethnicity were re-coded to form a

new category combining *Buli*, *Kassem* and the unspecified background, leaving *Nankam* unaltered. This new category accounted for about 51% of the study participants.

TABLE 3.1 Demographic characteristics of the study sample, Navrongo HDSS, Ghana, 2007. (N = 594)

Covariate	Description
	Value (%)
Sex	
Female	360 (60.6%)
Male	234 (39.4%)
Age (years)	
50 - 59	210 (35.3%)
60 - 69	206 (34.7%)
70+	178 (30.0%)
Ethnicity*	
Nankam	290 (48.8%)
Other (mainly Kassem)	298 (50.2%)
Marital Status	
Currently not married	298 (50.2%)
Currently married	296 (49.8%)
Ever been to school*	
No	526 (88.7%)
Yes	67 (11.3%)
Ever had an occupation (excluding housework)	
No	106 (17.9%)
Yes	488 (82.1%)

* Data missed for ≤ 1% of the respondents

Education level was assessed by inquiring whether or not a participant had been to school. Participants who reported that they have been to school were further asked their highest level of education attained. The study found that 89% of the participants

had never been to school and only 11% had been to school. Of those who had been to school, 47 (70%) had primary education, whereas 20 (30%) had at least a secondary education.

Majority of the respondents (82%) reported to have had an occupation (excluding house work), whereas the rest (18%) never had any (table 3.1).

3.1.2 Health status descriptions

Study participants were asked to rate their physical and mental health. There were three categories of health status namely; good, moderate and poor. Participants who

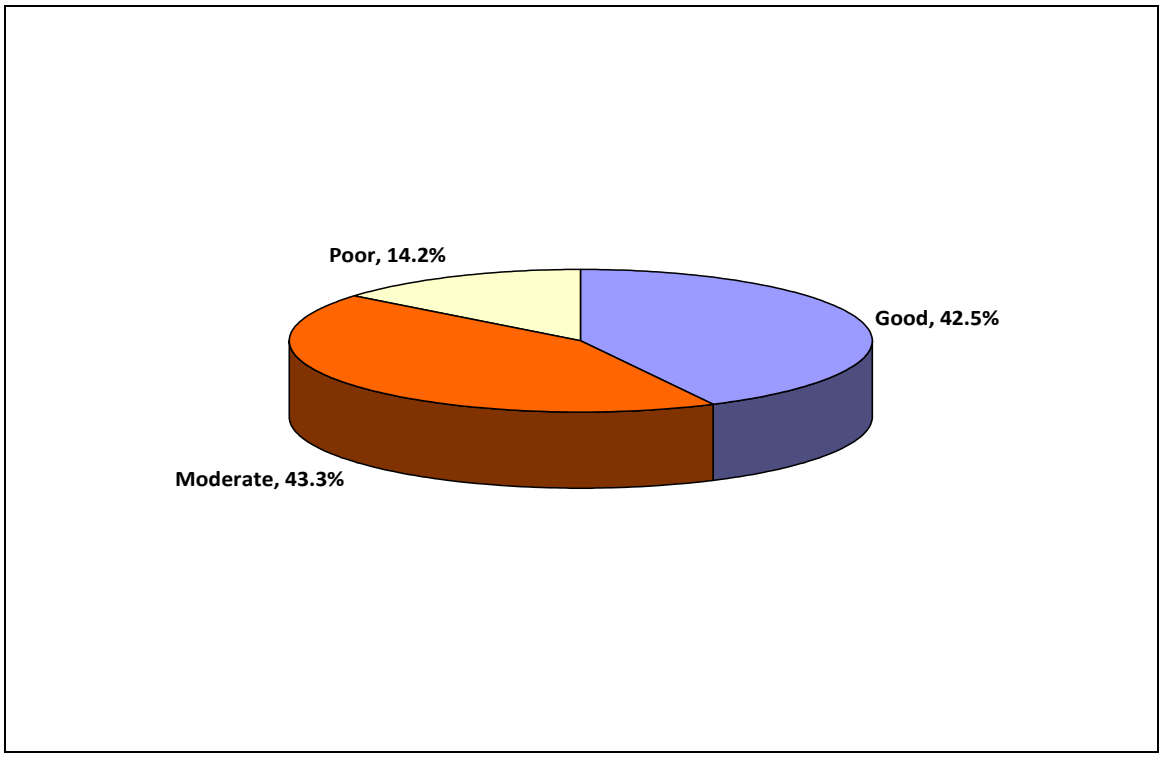


FIGURE 3.1 Percentage distribution of health status descriptions among the elderly rural Ghanaians, Navrongo HDSS, 2007. (N = 594)

reported their health status as good (42.5%) were proportionally similar to those who reported their health status as moderate (43.3%). Poor health status accounted for 14.2% of the study participants (Figure 3.1). The proportion reporting good health status was three times as large as that of poor health status.

3.1.3 Prevalence of Chronic conditions

Of the chronic conditions[a] investigated, Arthritis was the most prevalent (6.4%) followed by Cataracts (4.3%), Angina (3.9%) and Depression (3.5%). The prevalence of other

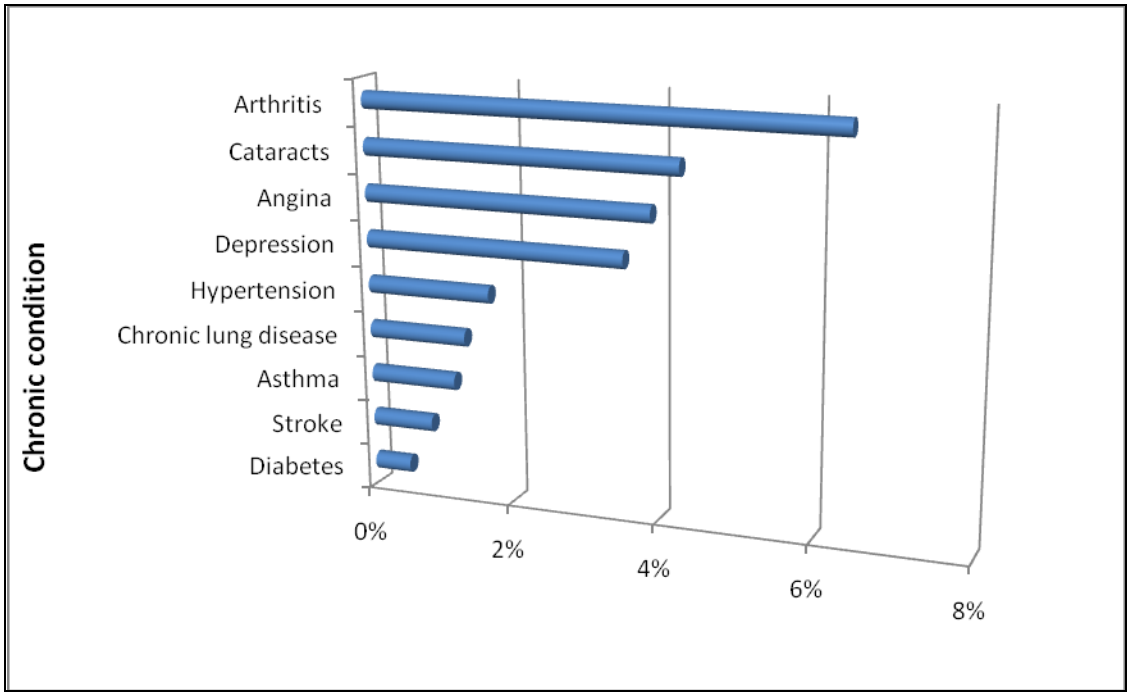


FIGURE 3.2 Prevalence of chronic conditions among the elderly rural Ghanaians, Navrongo HDSS, 2007. (N = 594)

[a] Report of medical diagnosis of at least one of the following conditions; arthritis, stroke, angina, diabetes, chronic lung disease, asthma, depression, hypertension and cataracts

chronic conditions namely, Hypertension, Chronic lung disease, Asthma, Stroke and Diabetes was each below 2% (Figure 3.2).

3.1.4 Health care utilisation

Data on health care utilisation were available for 585 (98.5%) participants. Of these, 184 (31%) reported to have utilised health care whereas 401 (69%) reported not to have utilised health care services in the last three years preceding the interview. Participants who did not utilise health care were defined as (1) those that never needed health care, (2) those that needed health care in more than three years ago and (3) those that needed but could not obtain health care services.

From the chronic conditions point of view, majority (68.4%) of the study participants with arthritis reported health care utilisation in the last three years. This is the chronic condition which constituted the highest proportion of health care users of all the chronic conditions investigated. The proportion utilising health care service ranged from 50% to 61% among individuals with angina, stroke, depression and chronic lung disease. The proportion of the study participants with cataracts, asthma and hypertension who utilised health care services was 44%, 42.9% and 40% respectively. None of the diabetic participants reported health care utilisation (Figure 3.3 (a)).

Health care utilisation was further assessed in three categories (none, one and more than one) of presence of the chronic conditions. The category of participants with more than one chronic condition comprised the largest proportion (63%) of individuals who

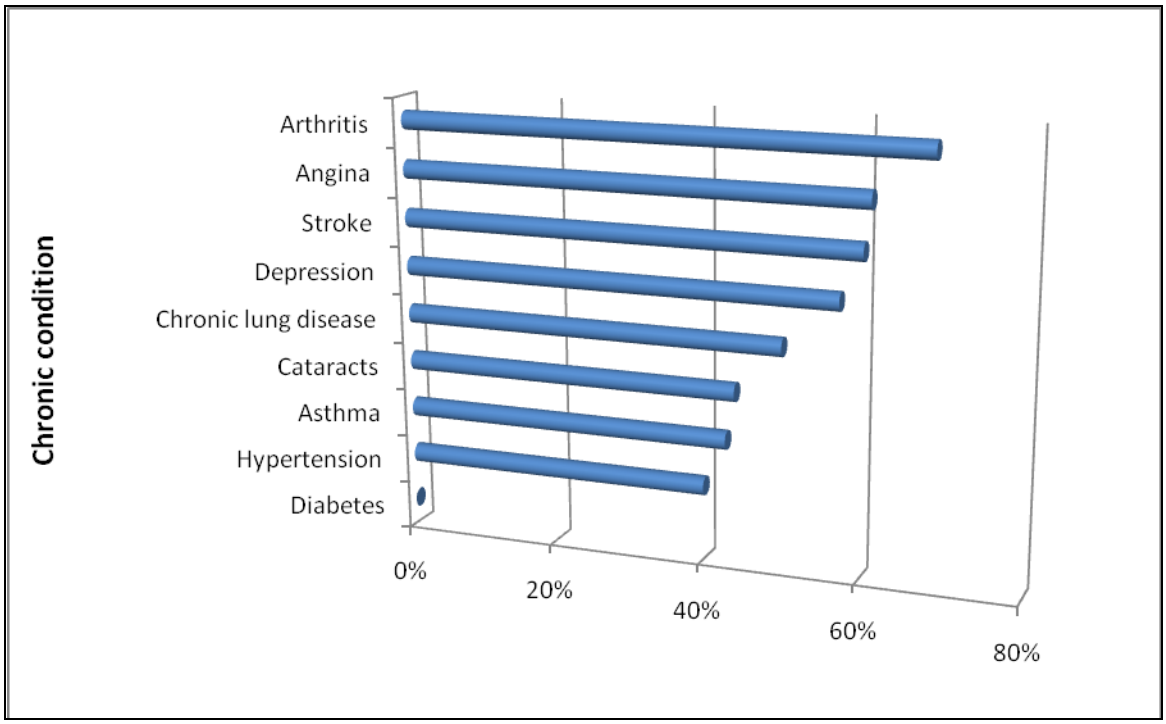


FIGURE 3.3 (a) Percentage distribution of health care utilisation by chronic condition (specific), Navrongo HDSS, 2007, (N=594)

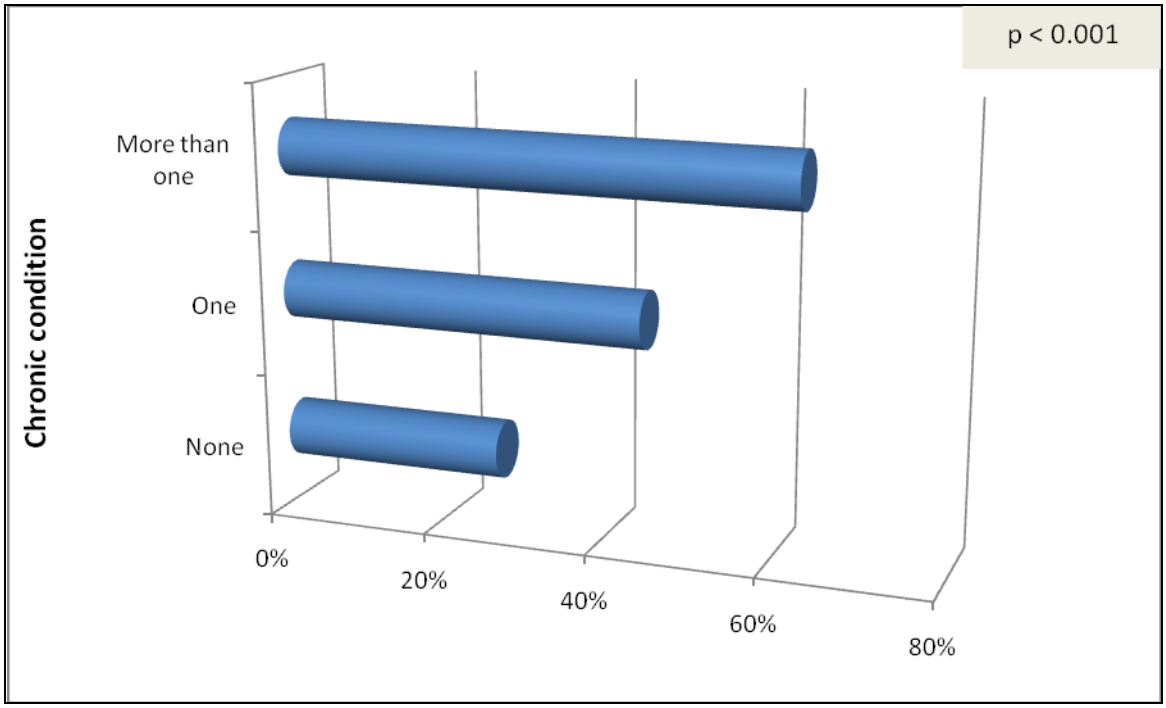


FIGURE 3.3 (b) Percentage distribution of health care utilisation by chronic condition (grouped), Navrongo HDSS, 2007, (N = 594)

utilised health care services, overriding the proportion utilising health care of those with one and none of the chronic conditions (Figure 3.3 (b)).

3.2 Inferential results

3.2.1 Predisposing variables and health care utilisation

The results of the bivariate analysis of the predisposing variables for health care utilisation are presented in table 3.2. Among these variables, age group (p = 0.022) and ethnic background (p = 0.005) of the study participants were statistically significantly associated with health care utilisation in the last three years. Of the participants in the age groups 50 – 59, 60 – 69 and 70+ years, 24.4%, 36.1% and 34.5% utilised health care services respectively. The proportion of participants in the age group 60 – 69 and 70+ years who utilized health care services was 11.7% and 10.1% respectively higher than that among participants in the age group 50 – 59 years.

Health care utilisation differed significantly by levels of ethnic background. Study participants from the *Nankam* ethnic origin reported 10.8% less health care utilisation than participants from other ethnic backgrounds.

The pattern of health care utilisation did not differ significantly (i.e. no association) by sex (p = 0.628), marital status (p = 0.574), level of education (p = 0.915) and smoking or use of smokeless tobacco (p = 0.225) of the study participants. A special note on gender: about one third of both males and females reported health care utilisation, hence absence of gender differentials in this context (Table 3.2).

TABLE 3. 2 Distribution of the predisposing variables for health care utilisation in the last 3 years among the elderly in the Navrongo HDSS, Ghana, 2007, (N = 594)

Covariate	Health care utilization in the last 3 years†		p-value*
	Yes (n = 184)	No (n = 401)	
Sex			0.628
Female	32.2%	67.8%	
Male	30.3%	69.7%	
Age (years)			**0.022**
50 – 59	24.4%	75.6%	
60 – 69	36.1%	63.9%	
70+	34.5%	65.5%	
Marital Status			0.574
Currently not married	30.4%	69.6%	
Currently married	32.5%	67.5%	
Ethnicity			**0.005**
Nankam	25.6%	74.4%	
Other	36.4%	63.6%	
Education			0.976
Never been to school	31.5%	68.5%	
Ever been to school	31.3%	68.7%	
Ever used tobacco			0.225
No	34.1%	65.9%	
Yes	29.4%	70.6%	

* Based on Pearson Chi-square test

†Data for health care utilization were available for 98.5% of the respondents

3.2.2 Enabling factors and health care utilisation

Table 3.3 presents information on health care utilisation by enabling factors (i.e. financial capability and occupation) There was a significant association between study participants who reported to have had an occupation (not involving housework) and health care utilisation in the last 3 years (p = 0.015). The proportion reporting health care utilisation was 33.7% among those who had had any occupation compared to 21.4% among those who had none.

TABLE 3.3 Distribution of enabling variables for health care utilisation in the last 3 years among the elderly in the Navrongo HDSS, Ghana, 2007, (N = 594)

Covariate	Health care utilization in the last 3 years		**p-value***
	Yes (n = 184)	No (n = 401)	
Money to meet needs+			0.312
Enough	45.5%	54.5%	
Not enough	31.2%	68.8%	
Ever had an occupation (excluding housework)++			**0.015**
No	21.4%	78.6%	
Yes	33.7%	66.3%	

* Based on Pearson Chi-square test
+Data missed for 3 respondents
++Missing data for 1 respondent

Financial capability which was assessed by asking whether a participant had enough or not enough money to meet their needs, did not have a significant association with health care utilisation in the last 3 years (p = 0.312).

3.2.3 Need variables and health care utilisation

Table 3.4 presents analysis of health care utilisation by need variables. Self-reported health status ($p = 0.023$), medical history of chronic conditions ($p < 0.001$) and cognitive impairment in the last 30 days ($p = 0.028$) were significantly associated with health care utilisation. Of the study participants reporting their health status as good, moderate and poor, 26.8%, 32.3% and 42.9% respectively reported health care utilisation in the last three years. Those who rate their health status as poor are more likely to use health care services.

It was also noticed that, medical history of chronic conditions had a significant association with health care utilisation in the last three years ($p < 0.001$). Of the study participants who reported a medical history of at least one chronic condition, 50% utilised health care services compared to 27.5% of those who had no medical history of any chronic condition but utilised health care anyway.

Furthermore, cognitive impairment (measured as difficulty with concentrating or remembering things in the last 30 days) was significantly associated with health care utilisation ($p = 0.028$). About one third of the study participants who reported severe cognitive impairment in the last 30 days utilised health care services.

The following variables namely, difficulty with picking up things in the last 30 days ($p = 0.503$), difficulty seeing and recognising an object at a distance of about 20 metres ($p = 0.802$) and difficulty with self-care (ADL - bathing, washing, dressing) in the last 30 days

TABLE 3.4 Distribution of the indicators for the need of health care services in the last 3 years among the elderly in the Navrongo HDSS, Ghana, 2007, (N = 594)

Covariate	Health care utilization in the last 3 years†		p-value*
	Yes (n = 184)	No (n = 401)	
Self-reported health status			**0.023**
Good	26.8%	73.2%	
Moderate	32.3%	67.7%	
Poor	42.9%	57.1%	
Medical history of chronic conditions[a]			**<0.001**
No	27.5%	72.5%	
Yes	50.0%	50.0%	
Difficulty with picking up things in the last 30 days			0.503
None	32.5%	67.5%	
Severe	29.8%	70.2%	
Difficulty seeing and recognizing an object at a distance of about 20 metres			0.802
None	32.7%	67.3%	
Severe	31.7%	68.3%	
Difficulty with self-care (bathing, washing, dressing) in the last 30 days			0.653
None	30.9%	69.1%	
Severe	32.8%	67.2%	
Cognitive impairment in the last 30 days			**0.028**
None	26.2%	73.8%	
Severe	34.9%	65.1%	

*Based on Pearson Chi-square test

†Data for health care utilization were available for 98.5% of the respondents

[a] Medically been diagnosed with at least one of the following conditions; arthritis, stroke, angina, diabetes, chronic lung disease, asthma, depression, hypertension and cataracts

(p = 0.653) were not associated with health care utilisation among the elderly rural Ghanaians in the last 3 years.

3.2.4 Univariate Logistic regression

Results of the univariate (unadjusted) logistic regression analysis are presented in table 3.5. Factors that individually predict health care utilisation among the elderly rural Ghanaians in the last three years were: a medical history of at least one chronic condition (p < 0.001), ethnic background (p = 0.005), age group (p < 0.05), poor health status (p = 0.007), occupation (p = 0.016) and severe cognitive impairment (p = 0.028).

The odds of health care utilisation was significantly 2.63 times higher among participants with a medical history of at least one chronic condition compared to those who did not report any chronic condition (OR = 2.63; 95% CI = [1.70 - 4.07]; p < 0.001).

Health care utilisation was also 66% higher among participants of the other ethnic background compared to those of the *Nankam* background (OR = 1.66; 95% CI = [1.16 - 2.37]; p = 0.005).

The odds of health care utilisation was 75% higher among participants in the age group 60-69 years compared to those in the age group 50-59 years (OR = 1.75; 95% CI = [1.14 - 2.69]; p = 0.010). It was also 63% higher among participants aged 70+ years compared to those in the 50's (OR = 1.63; 95% CI = [1.05 - 2.54]; p = 0.031). However, health care

utilisation was similar among participants aged 70+ years and those in the 60's (OR = 0.93; 95% CI = [0.61 – 1.42]; p = 0.738).

Though not statistically significant (OR = 1.30; 95% CI = [0.88 - 1.91]; p = 0.182), health care utilisation was 30% higher among participants with moderate health status compared to those with good health. However, a significantly higher odds of health care utilisation was observed among participants with poor health status compared to those with good health (OR = 2.00; 95% CI = [1.22 - 3.43]; p = 0.007). On the other hand, health care utilisation was 57% higher among participants with poor health status compared to those with moderate health. This effect was marginally significant (OR = 1.57; 95% CI = [0.95 - 2.61]; p = 0.079).

The odds of health care utilisation was 87% higher among participants who had had an occupation (not including house work) compared to those who had no occupation (OR = 1.87; 95% CI = [1.13 - 3.11]; p = 0.016).

Study participants who reported to have had severe difficulty with concentrating or remembering things (i.e. cognitive impairment) in the last 30 days were 23% more likely to utilise health care services compared to those who did not report the difficulty (OR = 1.23; 95% CI = [1.02 - 1.48]; p = 0.028).

No significant individual effect on health care utilisation was observed from the following factors: marital status (p = 0.574), education (i.e. ever been to school) (p = 0.976), financial position (i.e. money to meet needs) (0.319), difficulty with picking up

TABLE 3.5 Univariate logistic regression analysis of factors associated with health care utilisation in the last 3 years among the elderly population in the Navrongo HDSS, Ghana, 2007, (N = 594)

Covariate	Health care utilisation in the last 3 years		p-value
	OR	95% CI	
Medical history of Chronic Conditions[a]			
No	1		
Yes	2.63	1.70 - 4.07	**<0.001**
Ethnicity			
Nankam	1		
Other (mainly Kassem)	1.66	1.16 - 2.37	**0.005**
Age (years)			
50 - 59	1		
60 - 69	1.75	1.14 - 2.69	**0.010**
70+	1.63	1.05 - 2.54	**0.031**
Self-reported health status			
Good	1		
Moderate	1.30	0.88 - 1.91	0.182
Poor	2.05	1.22 - 3.43	**0.007**
Marital status			
Currently not married	1		
Currently married	1.11	0.78 - 1.57	0.574
Ever been to school			
No	1		
Yes	0.99	0.57 - 1.72	0.976
Ever had an occupation (excluding housework)			
No	1		
Yes	1.87	1.13 - 3.11	**0.016**
Money to meet needs			
Enough	1		
Not enough	0.73	0.40 - 1.34	0.319

Continues

TABLE 3.5 Continued

Covariate	Health care utilisation in the last 3 years		p-value
	OR	**95% CI**	
Cognitive impairment in the last 30 days			
None	1		
Severe	1.23	1.02 - 1.48	**0.028**
Difficulty with picking up things in the last 30 days			
None	1		
Severe	0.88	0.61 - 1.27	0.503
Ever used tobacco			
No	1		
Yes	0.81	0.57 - 1.14	0.226
Sex			
Male	1		
Female	1.09	0.76 - 1.56	0.629

OR = Odds ratio; CI = Confidence interval

ª Medically been diagnosed with at least one of the following conditions; Arthritis, Stroke, Angina, Diabetes, Chronic Lung Disease, Asthma, Depression, Hypertension and Cataracts

things in the last 30 days (p = 0.503), smoking or use of smokeless tobacco (p = 0.226) and sex (0.629) (Table 3.5).

3.2.5 Multivariate Logistic regression

The final results of the multivariate logistic regression analysis of the factors associated with health care utilisation in the last three years among the elderly rural Ghanaians are presented in table 3.6. Having the explanatory variables adjusted for each other in the model as shown in the table, the following five variables were identified as significant

TABLE 3.6 Multivariate Logistic regression analysis of factors associated with health care utilisation in the last 3 years among the elderly population in the Navrongo HDSS, Ghana, 2007. (N = 594)

Covariate	Health care utilisation in the last 3 years**		p-value
	OR	95% CI	
Medical history of Chronic Conditions[a]			
No	1		
Yes	2.36	1.49 - 3.75	**<0.001**
Age group (years)			
50 - 59	1		
60 - 69	1.68	1.07 - 2.64	**0.025**
70+	1.48	0.89 - 2.47	0.130
Self-reported health status			
Good	1		
Moderate	1.17	0.77 - 1.78	0.473
Poor	2.00	1.11 - 3.59	**0.021**
Cognitive impairment in the last 30 days			
None	1		
Severe	1.26	1.02 - 1.56	**0.032**
Difficulty with picking up things in the last 30 days			
None	1		
Severe	0.76	0.61 - 0.96	**0.021**
Ethnicity			
Nankam	1		
Other (mainly Kassem)	1.27	0.87 - 1.87	0.212
Money to meet needs			
Enough	1		
Not enough	0.68	0.36 - 1.28	0.231

OR = Odds ratio; CI = Confidence interval - adjusted for other explanatory variables in the table

** Data missed for 3.7% of the respondents for this final logistic regression model

[a] Medically been diagnosed with at least one of the following conditions; Arthritis, Stroke, Angina, Diabetes, Chronic Lung Disease, Asthma, Depression, Hypertension and Cataracts

determinants of health care utilisation among the elderly population in rural Ghana at the 5 percent significance level: (1) medical history of chronic conditions, (2) age group, (3) self-reported health status, (4) difficulty with concentrating or remembering things in the last 30 days and (5) difficulty with picking up things in the last 30 days.

Health care utilisation was significantly higher among the study participants with a medical history of at least one chronic condition than participants without any of the chronic conditions (OR = 2.36; 95% CI = [1.49 – 3.75]; p < 0.001). Similar results were also observed in the univariate analysis.

The odds of health care utilisation was 68% higher among study participants in the age group 60-69 years compared to the odds of health care utilisation of those in the age group 50-59 years. This effect was statistically significant (OR = 1.68; 95% CI = [1.07-2.64]; p = 0.025). Similarly, health care utilisation was 48% higher among participants aged 70+ years compared to participants in the age group 50-59 years, but this effect was not statistically significant (OR = 1.48; 95% CI = [0.89-2.47]; p = 0.130). Health care utilisation was similar among the study participants in the age groups 60-69 and 70+ years (OR = 0.88; 95% CI = [0.55 – 1.41]; p = 0.602).

Study participants who reported their health status as moderate were 17% more likely to utilise health care compared to participants who were in good health status, but there was no statistical evidence for this effect (OR = 1.17; 95% CI = [0.77 - 1.78]; p = 0.473). However, participants who were in poor health status were significantly 2 times more likely to utilise health care than those who were in good health status (OR = 2;

95% CI = [1.11 – 3.59]; p = 0.021). On the other hand, health care utilisation was 70% higher among participants with poor health status compared to those in moderate health status. This effect was marginally significant (OR = 1.70; 95% CI = [0.98 - 2.96]; p = 0.058) (results available on request). An inverse relationship is therefore noticed between health care utilisation and health status. The lower the health status the elderly person perceives, the higher the likelihood of health care utilisation.

It was further observed with statistical evidence that participants who had severe difficulty with concentrating or remembering things (cognitive impairment) in the last 30 days were 26% more likely to have utilised health care than those who did not report such difficulties (OR = 1.26; 95% CI = [1.02 - 1.56], p = 0.032).

On the other hand, study participants who reported to have had severe difficulty with picking up things in the last 30 days were 24% less likely to utilise health care services compared to participants who did not experience the difficulty. This effect was statistically significant (OR = 0.76; 95% CI = [0.61 - 0.96], p = 0.021).

Health care utilisation was 27% higher among participants of the other ethnic backgrounds compared to participants of the *Nankam* ethnic origin, but this effect was not statistically significant at the 5% significance level (OR = 1.27; 95% CI = [0.87 - 1.87], p = 0.212).

Although health care utilisation was 32% lower among participants who reported to have had not enough money compared to those who had enough money to meet their

needs, there was no statistical evidence consistent with this effect (OR = 0.68; 95% CI = [0.36 - 1.28], p = 0.231).

A separate analysis of the multivariate logistic regression was performed excluding 21study participants who needed but could not obtain health care (unmet need). The aim was to compare the pattern of health care utilisation between participants who needed and obtained health care services versus those who never needed health care. The results (not presented) were similar to that presented in table 3.5 inclusive of the 21 participants, where the dichotomous outcome variable was defined as health care utilisation occurred (success) or did not occur (failure) in the last 3 years.

3.2.4.1 Model adequacy

Diagnostic tests were carried out to assess the best fit for the data for the multivariate logistic regression model in table 3.6, as far as model assumptions are concerned. The assumption of linearity in the relationship between the log odds of the outcome (health care utilisation) and the explanatory variables was not violated. There was also no evidence of lack of fit in the model. The Hosmer-Lemeshow goodness-of-fit test at a generally recommended number of groups[38] suggested that the model fits the data adequately (p = 0.9018). In addition, no effect modification (interaction) was observed.

4.0 DISCUSSION, LIMITATIONS AND CONCLUSIONS

This chapter discusses the results of the previous chapter and provides a broad outline of the major findings in a framework of the existing literature. Discussed also, are generalisability and validity of the findings and the limitations encountered. Finally, the chapter ends with conclusions and recommendations.

The study aimed at describing health care utilisation, health status and comparing the proportions of adults aged 50+ years with moderate and poor health status to those with good health status and to identify factors associated with health care utilisation in this population of rural Ghana.

4.1 Discussion

This is the first study in Ghana and one of the very few studies in Africa to address the situation of the elderly population in terms of health care utilisation. The level of health care utilisation in the study area was 31% and 4% unmet need for health care utilisation. The proportion of participants reporting poor health status was similar to that in moderate health status. The proportion of participants in good health status was three times higher than the proportion of poor health status (14.2%). A similar study was done in Nigeria and it was observed that more than 60% of the elderly people rated their health status as bad.[13]

Health care utilisation in the last three years was found to be significantly associated with age group (in years) of the study participants, medical history of chronic conditions, self-reported health status, a report of difficulty with picking up things in the last 30 days and cognitive impairment in the last 30 days.

Age as one of the predisposing variables influenced health care utilisation in such a way that, study participants in the age group 60-69 years were 68% more likely to utilise health care services than those in the age group 50-59 years. Similarly, those in the age group 70+ years were 48% more likely to utilise health care than those in the 50's, but this effect was not statistically significant. However, health care utilisation was similar (p = 0.602) among the study participants in the age groups 60-69 and 70+ years, but slightly lower among those in the oldest age group than those in the 60's. This is probably due to their small proportion in the population as a result of higher mortality rates in the elderly, especially the oldest-old. In this study, the oldest age group constituted the smallest proportion of the study participants, even though they were in the widest (open interval) age group (Table 3.1). Despite the fact that this pattern is not very steady, it is closely related to what has been consistently found in many studies carried out in developed countries,[4;25;26;39] whereby as age increases, so does the likelihood of health care utilisation among the elderly.

This study has also shown that the indicator variables of need were the most strongly associated with health care utilisation. This is in agreement with findings from other studies carried out in both developed[4;5] and developing countries.[6;13] With regards to

self-reported health status, majority of the literature in the field have reported it to be strongly associated with health care utilisation.[7;36;40-43] The present study also observed the same effect. Health care utilisation was two times higher among study participants who reported their health status as poor compared to those who reported their health status as good. That is; the poorer the health status the elderly person perceived, the higher was the likelihood of health care utilisation. It is therefore worthy calling for attention to this indicator for any interventions aiming at improving the health and welfare of the elderly populations. It has been shown that providing the elderly with preventive treatments contributes to substantial health gains.[4]

Majority of those who reported their health status as moderate and poor also reported a medical history of chronic conditions, severe cognitive impairment and severe difficulty with picking up things in the last 30 days and were mostly ≥60 years of age. However, the effect of each of these factors on health care utilisation remained impervious when adjusted for each other in the multivariate analysis (Table 3.6).

Another indicator of the need variables with a significant association with health care utilisation was a medical history of chronic conditions. Individuals with a medical history of at least one chronic condition were 2.36 times more likely than those without any of the chronic conditions to utilise health care services. Health care utilisation was also higher in those with more than one chronic condition than those with one and none of the conditions. Of the chronic conditions investigated, the most prevalent among the elderly rural Ghanaians were arthritis (6.4%), cataracts (4.3%), angina (3.9%) and

depression (3.5%). The rest were less that 2% prevalent. Unfortunately, there were no nationally representative results available to compare with the results of the current study. However, the prevalence of Arthritis in the elderly rural Ghanaian population was lower compared to 39.4% observed in Bangladesh[44] but twice as high as that observed in Cameroon.[45] Chronic conditions have been constantly and consistently reported in many studies to adversely affect lives of the elderly people.[1;46] Available statistics show a rapid rise of the number of Americans who will suffer functional disability due to Arthritis, Stroke, Diabetes, Coronary artery disease, cancer or cognitive impairment.[47] Growing older does not have to translate into disabilities. Some studies have shown that avoiding sedentary lifestyles and taking up regular physical exercises and nutritionally appropriate diets would significantly decelerate the effect of chronic conditions in elderly.[46]

There are a few studies carried out in Africa in this field and to the best of my knowledge no one so far has investigated the impact of the chronic conditions on health care utilisation in elderly. In Nigeria, Abdulraheem[13] investigated illnesses such as joint pain, fever, poor sight, socio-economic indicators etc and all were associated with health care seeking behaviour among the elderly. A study done in Ahafo-Ano South district in Ghana did not focus *per se* on the elderly, but reported that distance affects health care utilisation in vulnerable groups including the elderly in rural areas of the developing countries.[30]

Cognitive impairment (measured as difficulty with concentrating or remembering things in the last 30 says) is another indicator variable of need that significantly influenced health care utilisation among the elderly rural Ghanaians. Participants who reported severe cognitive impairment in the last 30 days were 26% more likely to utilise health care services than participants who did not report the impairment. Similar results were observed in the state of Indiana, whereby moderate to severe cognitive impairment was found to be associated with increased use of health services and increased mortality in the elderly.[48] Cognitive impairments could be well-managed by proving early diagnosis and better treatments to diminish the effect of dementia.[49]

Participants with severe difficulty with picking up things (e.g. a coin on a table) in the last 30 days were 24% less likely to utilise health care services compared to those without the difficulty. This factor was not significant in the univariate analysis, but became significant after adjusting for other factors in the multivariate analysis. Although this observation is unexpected and may as a result not have obvious explanations, it is likely however that these difficulties may be a result of general body weaknesses (very common in the elderly[13]), and may subsequently hamper their efforts to reach health facilities - which are usually distant from the majority, especially in rural areas of the developing countries.[30] Unfortunately, the use of herbs, traditional healers and the similar is not well-documented and may as well exacerbate the use of health care services delivered through the formal framework of health facilities. Nevertheless, this observation is inconsistent with that observed in Nigeria, whereby body pain,

generalised body weakness and fatigue were among the leading health problems in elderly and all elevated health care utilisation.[13]

With respect to the indicators for enabling factors (i.e. financial position and occupation), none was significantly associated with health care utilisation in the multivariate logistic regression model. It was observed however that, the odds of health care utilisation was higher among the study participants who had had an occupation than those who had no occupation. The significance of this effect in the univariate analysis (table 3.5) was not maintained after adjusting for other factors in the multivariate analysis (table 3.6). Among the study participants who ever had an occupation, there were a few with an entitlement to retirement or pension fund 15 (3%), medical services 23 (4.7%) and cash bonuses 36 (7.4%) as benefits from their main occupation. This may not suffice to explain the significance of occupation (in the univariate analysis) as a determinant of health care utilisation. I think, in addition, that those who ever had an occupation had better information (possibly accessible in their work places) on health services network in the community than those who did not have any occupation. Moreover, awareness of free health insurance for the vulnerable groups including the elderly (only those over 70 years of age) and the indigent which started operating in Ghana in 2005[50] would have narrowed the gap in health care utilisation between those who ever and never had occupations (excluding housework). Information is a factor known to play a remarkable role in health care utilisation.[8]

Study participants reporting not to have enough money were 32% less likely to utilise health care services compared to those who had enough money, but this was not statistically significant in both univariate (p = 0.319) and multivariate (p = 0.231) analyses. This though, may not have been a fair comparison because there were only 11 (1.8%) participants who reported to have had enough money to meet their needs. However, inadequate funds has been acknowledged as a detrimental factor to health care utilisation, especially obtaining quality care.[13]

Finally, the determinants of (i.e. facilitating or impeding) health care utilisation among the elderly rural Ghanaians are summarised in figure 4.1 according to the behavioural model of health care services utilisation, where the independent variables are organised

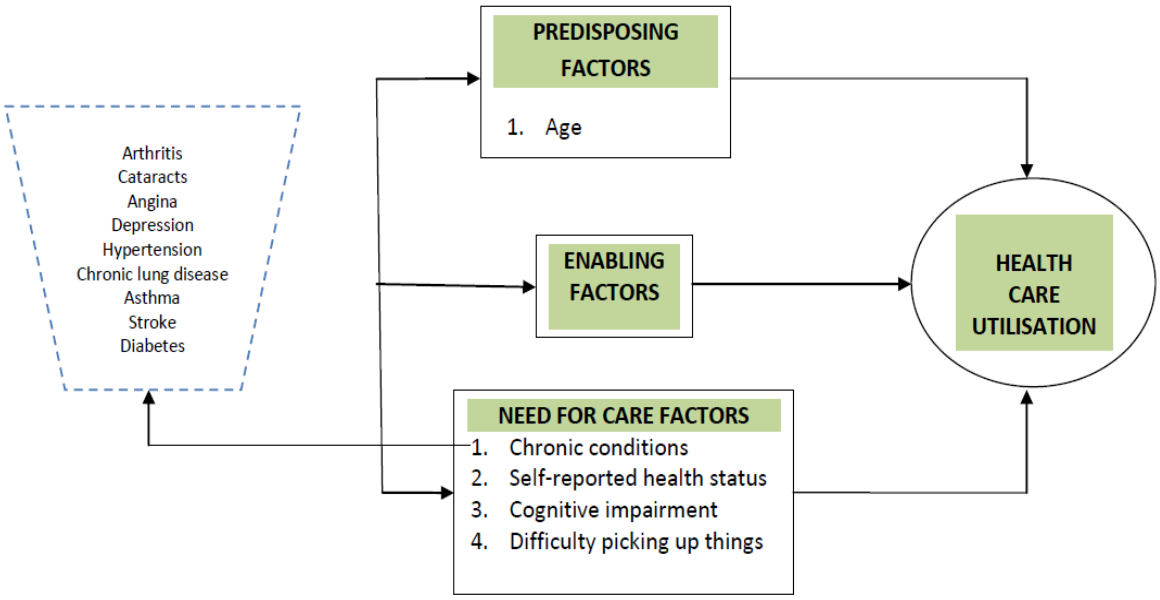


FIGURE 4.1 A pragmatic model of health care utilisation among the elderly population in the Navrongo HDSS, 2007

as predisposing, enabling and need-related factors. In this study, age was the only predisposing variable with a significant association with health care utilisation. All of the enabling variables investigated (i.e. financial capability and occupation), were not significant in the multivariate analysis, though occupation had a significant association with health care utilisation in the univariate analysis. Indicator variables of need were the strongest determinants of health care utilisation. These were medical history of at least one chronic condition (i.e. - in a descending order of prevalence -; arthritis, cataracts, angina, depression, hypertension, chronic lung disease, asthma, stroke and diabetes), poor perceived health status, severe cognitive impairment and severe difficulty with picking up things in the last 30 days.

The significance of occupation and ethnicity observed in the univariate analysis was not maintained after adjusting for other factors in the multivariate analysis. According to the log likelihood ratio test[38] and the need for parsimonious model, these factors presented immaterial effect on health care utilisation and were therefore not adjusted for in the final multivariate model.

4.2 Generalisability, validity and reliability

This study was carried out in a largely rural setting of the Kassena-Nankana district in Ghana. Although the rural population may not always resemble their urban counterpart in many aspects including health services accessibility, the determinants of health care utilisation identified in this study, particularly poor self-perceived health status and chronic conditions, have also been found in other studies carried out in urban

settings.[7;36;43;46] However, while the likelihood of health care utilisation increases as age advances in developed countries, among the rural Ghanaians it pinnacles among those in the age group 60 – 69 years and slightly drops among those aged 70+ years. Also difficulty with picking up things in the last 30 days which significantly impedes health care utilisation may not exert the same effects in populations where home-based health care services are accessible. Therefore, these factors may have limited the generalisability of this study.

On the other hand, all possible efforts were made to avoid bias in data analysis and of course the entire methodology of this study. In the course of executing the primary study, field workers were intensively trained for 26 days from 12th February to 9th March 2007. The training covered all important aspects including basic techniques of interviewing, as well as a review of each of the survey instruments used. As part of the training, simulated interviews and piloting the instruments took place as well. All these ensured data quality, repeatability of results and the ability of the instruments to measure what they were actually required to measure. Instruments used in this study are comparable to those used in similar surveys done in South Africa, India and Bangladesh.

4.3 Limitations

It is a well known fact so far that causality cannot be established with cross-sectionally designed studies. Because of their snapshot nature, it is difficult to ascertain whether

the exposure or the outcome existed first.[51;52] Therefore, the associations observed in the present study cannot be declared as causal.

Information on health care utilisation referred to the last 3 years. This is a long time and consequently, may increase the possibility of recall bias. However, this effect may not have influenced the results too much, since the rate of health care utilisation in this study was 31% which is similar to that observed in other studies carried out in Africa, like the one done in Nigeria[13] where the use of health facility services was 31.2%. Also, there was no documentation of whether or not older people, who were found to have a need for health care during interview, were actually linked to such services. Similarly, there were no statistics available to document the previous level of health care accessibility in the study area to be compared with what this study observed.

Some important variables were not available for this study. There was a need to analyse the effect of the factors such as distance to the nearest health facility, cost of care and household factors (e.g. living arrangements – alone/with others) on health care utilisation, but this information was not available. Furthermore, health care services sought from traditional healers and the use local treatments was not known, hence not accounted for in estimating the proportion of health care utilisation in this study. Therefore this may have underestimated the true proportion of health care utilisation. Income was assessed by enquiring from the participants whether they had enough or not enough money to meet their needs, but no specific value or a range of values where one actually belonged was reported as conventionally done in other studies.[36]

Reported history of medical diagnosis of the chronic conditions was self-reported. No medical verification or a proof of such reports was done. This may have compromised the precision of the estimated prevalence of the chronic conditions. This also applies to self-reported health status of the study participants.

Generally, as a secondary study, data were not collected specifically for this study thus missing data on some important variables that would have been important to analyse as pointed out in the preceding paragraph.

4.4 Conclusions and recommendations

Despite the limitations encountered, the findings of this study are very useful. The study has identified the factors that influence health care utilisation among the elderly in rural Ghana. The strongest ones were medical history of chronic conditions and self-reported health status, outweighing age, cognitive impairment in the last 30 days and difficulty with picking up things in the last 30 days.

Health care utilisation was higher among individuals with more than one chronic condition. This highlights the importance of supporting chronic care and health services for the elderly people to properly manage subsequent poor health outcomes such as disability, morbidity and mortality.

The 14.2% and 43.3% of the elderly in the poor and moderate health status respectively, both of which had higher likelihood of utilising health care services than the 42.5% in good health, provides the magnitude of the problem and could help in identifying the

elderly and intervening accordingly. Our health systems should consider establishing geriatric wards as a step towards proper handling of the increasing demand for health care services by the growing number of the elderly population in Ghana.

Those who rate their health status as poor are more likely to use health services. Considering this reality, it is very crucial that when the elderly people perceive their health status as poor, immediate and appropriate measures need to be taken, bearing in mind the worldwide evidence relating this indicator to various poor health outcomes.

Difficulty with picking up things in the last 30 days significantly hampers health care utilisation among the elderly rural Ghanaians. Therefore, provision of home-based health care services would facilitate and possibly universalise health care accessibility especially for those who cannot reach health facilities for assorted reasons such as limited mobility and so forth.

Based on the results of this study, participants in the age group 60 – 69 years had significantly higher odds of utilising health care services than those in the age group 50 – 59 years. Similarly, health care utilisation was higher among those aged 70+ years than those in the 50's but this difference was not significant. However, it was 12% lower among participants aged 70+ years than those in the age group 60 – 69 years, but this difference was also not significant ($p = 0.602$). At this point, it is not straightforward as to whether health care utilisation actually peaks among the 60's and drops slightly among those aged 70+ years or it increases as age advances. In this line therefore,

further studies are encouraged to investigate the pattern of health care utilisation among the elderly in relation to age, especially in Africa. It may be age or factors acting through age that make all the differences, otherwise there is nothing of concern that makes the elderly population different from other groups of people in terms of health needs.

The findings of this study are considered valuable for health systems, health policy-makers and all stakeholders in the health sector. The study provides useful information on the key indicators that could steer decisions and planning for improving the health and welfare of the elderly populations.

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APPENDICES

APPENDIX A Approval of research title (Faculty's higher degrees committee, Wits)

Faculty of Health Sciences
Medical School, 7 York Road, Parktown, 2193
Fax: (011) 717-2119
Tel: (011)717-2075/6

Reference: Ms Tania van Leeve
E-mail: tania.vanleeve@.wits.ac.za
12 October 2009
Person No: 382128
PAG

Mr A Exavery
P O Box 78373
DAR ES SALAAM
0000
Tanzania, United Republic of

Dear Mr Exavery

Master of Science in Medicine (Population-Based Field Epidemiology): Approval of Title

We have pleasure in advising that your proposal entitled "*Determinants of health care utilisation among the elderly population in rural Ghana" has* been approved. Please note that any amendments to this title have to be endorsed by the Faculty's higher degrees committee and formally approved.

Yours sincerely

Mrs Sandra Benn
Faculty Registrar
Faculty of Health Sciences

APPENDIX B1 Ethical clearance certificate, HREC (Wits)

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG
Division of the Deputy Registrar (Research)

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
R14/49 Mr Amon Exavery

CLEARANCE CERTIFICATE	**M090945**
PROJECT	Determinants of Health Care Utilisation among the Elderly Population in Rural Ghana
INVESTIGATORS	Mr Amon Exavery.
DEPARTMENT	School of Public Health
DATE CONSIDERED	2009/10/02
DECISION OF THE COMMITTEE*	Approved unconditionally

Unless otherwise specified this ethical clearance is valid for 5 years and may be renewed upon application.

DATE 2009/10/02 **CHAIRPERSON** .....
(Professor PE Cleaton-Jones)

*Guidelines for written 'informed consent' attached where applicable
cc: Supervisor : Prof KK Grobusch

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10004, 10th Floor, Senate House, University.
I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to a completion of a yearly progress report.**

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES...

APPENDIX B2 Ethical clearance, IRB (NHRC)

In case of reply the number and date of this letter should be quoted.

My Ref. :DK/dk/IRB/SP/080/2010
Your Ref:

Navrongo Health Research Centre
Institutional Review Board
Ghana Health Service
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16th February 2010

Mr. Amon Exavery
University of Witwatersrand
School of Public Health
7 York Road
Parktown 2193
South Africa

ETHICS APPROVAL ID: NHRCIRB0 80

Dear Mr. Exavery,

Approval of a protocol titled "Determinants of health care utilization among the elderly population in rural Ghana"

I write to inform you that the NHRCIRB reviewed and approved the above-mentioned protocol.

Please note that any amendment to this approved protocol must receive ethical clearance from the NHRCIRB before its implementation.

You are also by this approval required to submit a final report of your study to the Board for review.

The Board wishes you all the best in this study.

Sincerely,

Dr. John Awoonor-Williams
Chair, NHRCIRB

Cc: Director, NHRC