

**COLLEGE OF HUMANITIES**

**REGIONAL INSTITUTE FOR POPULATION STUDIES**

**UNIVERSITY OF GHANA**

**PLACE OF RESIDENCE AND ELDERLY HEALTH STATUS IN  
GHANA**

**BY**

**ERIC BENJAMIN ENGMANN**

**(10279380)**

**THIS DISSERTATION IS SUBMITTED TO THE  
UNIVERSITY OF GHANA, LEGON**

**IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR  
THE AWARD OF THE MA POPULATION STUDIES DEGREE**

**JULY, 2018**

## ACCEPTANCE

This dissertation has been accepted by the Regional Institute for Population Studies (RIPS), College of Humanities at the University of Ghana, Legon, in partial fulfilment of the requirement for the degree of Masters of Arts (MA) in Population Studies.

-----

Dr. Fidelia Dake  
(Supervisor)

-----

Date

## DECLARATION

I, ERIC BENJAMIN ENGMANN, declare that with the exception of references and quotations acknowledged herein, this work is the product of my research undertaken at the Regional Institute for Population Studies at the University of Ghana, Legon. This dissertation has neither in part nor in whole been presented elsewhere for the award of another degree.

-----  
Eric Benjamin Engmann  
(Student)

-----  
Date

## **DEDICATION**

*To Holy Spirit;*

*We made it!*

*How can I say thanks!*

## **ACKNOWLEDGEMENT**

I am genuinely most thankful to the most high God; in whom I live, move and have my being.

I am particularly grateful to my supervisor, Dr Fidelia Dake, for her unparalleled patience, tolerance, excellent guidance, expertise, encouragement and constructive criticism to improve this work. I also want to notably acknowledge the contributions of Prof. Samuel Cudjoe and Dr Naa Dodua Dodoo.

To the entire RIPS family; my MA peers, PhD candidates, all the lecturers and staff of RIPS, I am thankful for your inputs, guidance and encouragement throughout my time at RIPS. I will keep the memories with me forever.

To my family, I say thank you for being my family. You guys upheld me every step of the way. To my beloved, Annette, I am thankful for your ever-present love, understanding and encouragements.

If I did not have you all, I may never have completed this work. I can never say thank you enough. God bless you all!

## **Table of Contents**

<b>ACCEPTANCE</b> .....	ii
<b>DECLARATION</b> .....	iii
<b>DEDICATION</b> .....	iv
<b>ACKNOWLEDGEMENT</b> .....	v
<b>ABBREVIATIONS</b> .....	ix
<b>LIST OF TABLES</b> .....	x
<b>LIST OF FIGURES</b> .....	xi
<b>ABSTRACT</b> .....	xii
<b>CHAPTER ONE</b> .....	1
<b>1.0 INTRODUCTION</b> .....	1
1.1 Background.....	1
1.2 Statement of the Problem.....	3
1.3 Research Questions.....	6
1.4 Research Objectives.....	7
1.4.1 General Objective.....	7
1.4.2 Specific Objectives.....	7
1.5 Rationale/Justification.....	7
1.6 Organisation of Study.....	9
<b>CHAPTER TWO</b> .....	10
<b>2.0 LITERATURE REVIEW</b> .....	10
2.1 Introduction.....	10
2.2 Defining Ageing.....	10
2.3 Defining health status.....	13
2.4 Measures of health status.....	14
2.5 The Elderly and health status.....	16
2.6 Place of Residence and Health Status.....	17
2.7 Smoking Status and the Health Status of the Elderly and Alcohol Consumption Status and the Health Status of the Elderly.....	19
2.8 Other Factors Associated with The Health Status of the Elderly.....	21
2.8.1 Demographic Factors.....	21
2.8.2 Socioeconomic Factors.....	23
2.9 Theoretical Framework.....	24
2.9 Conceptual Framework.....	27
2.10 Hypotheses.....	31
<b>CHAPTER THREE</b> .....	32
<b>3.0 METHODOLOGY</b> .....	32

3.1 Introduction.....	32
3.2 Study location/area.....	32
3.3 Source of Data.....	33
3.4 Sample size and sample selection .....	34
3.6 Variables .....	35
3.6.1 Dependent Variable .....	35
3.6.2 Main Independent Variable.....	37
3.6.3 Mediating Variables.....	38
3.6.4 Control Variables .....	38
3.7 Methods of data analysis.....	39
3.8 Limitations .....	41
<b>CHAPTER FOUR.....</b>	<b>42</b>
<b>4.0 ANALYSIS AND FINDINGS OF THE STUDY.....</b>	<b>42</b>
4.1 Introduction.....	42
4.2 Background Characteristics of the Elderly .....	42
4.3 Association Between Dependent and All Other Variables .....	45
4.3.1 Place of Residence and Health Status .....	45
4.3.2 Smoking Status and Health Status .....	46
4.3.3 Alcohol Consumption Status and Health Status .....	46
4.3.4 Age and Health Status.....	47
4.3.5 Sex and Health Status .....	48
4.3.6 Marital Status and Health Status .....	49
4.3.7 Income Levels and Health Status.....	49
4.3.8 Educational Attainment and Health Status .....	50
4.3.9 Occupation and Health Status .....	51
4.3.10 Ethnic Background and Health Status .....	52
4.3.11 Religion and Health Status.....	53
4.4 Factors Associated with Elderly Health Status .....	54
4.4.1 Model 1: Elderly Health Status Using Place of Residence .....	55
4.4.2 Model 2: Elderly Health Status Using Place of Residence and Mediating Variables .....	55
4.4.3 Model 3: Elderly Health Status Using All Predictors .....	56
4.5 Discussion of Findings.....	58
4.5.1 Influence of place of residence on elderly health status .....	58
4.5.2 Influence of place of residence together with smoking status and alcoholic consumption status on elderly health status .....	60
4.5.3 Factors associated with elderly health status .....	61

<b>CHAPTER FIVE</b> .....	66
<b>5.0 SUMMARY, RECOMMENDATIONS AND CONCLUSIONS</b> .....	66
5.1 Summary .....	66
5.2 Conclusion .....	68
5.3 Recommendations .....	69
<b>References</b> .....	71
<b>Appendices</b> .....	82
1. Appendix A - Measurement of Study Variables .....	82

## **ABBREVIATIONS**

WHO – World Health Organisation

NCD – Non-Communicable Disease

UN – United Nations

UNFPA – United Nations Population Fund

HAI – Help Age International

GSS – Ghana Statistical Service

SAGE – Study on Global Aging and Adult Health

## LIST OF TABLES

Table 4.1: Background Characteristics of the Elderly .....	43
Table 4.2: Association between place of residence and elderly health status .....	45
Table 4.3: Association between smoking status and elderly health status .....	46
Table 4.4: Association between alcohol consumption status and elderly health status.....	47
Table 4.5: Association between Age and elderly health status.....	48
Table 4.6: Association between sex and elderly health status .....	48
Table 4.7: Association between marital status and elderly health status .....	49
Table 4.8: Association between income levels and elderly health status .....	50
Table 4.9: Association between educational attainment and elderly health status .....	51
Table 4.10: Association between occupation and elderly health status .....	52
Table 4.11: Association between ethnic background and elderly health status.....	53
Table 4.12: Association between religion and elderly health status .....	54
Table 4.13: Estimation of Elderly Health Status Using Place of Residence .....	55
Table 4.14: Estimation of Elderly Health Status Using Place of Residence and Mediating Variables .....	56
Table 4.15: Estimation of Elderly Health Status Using All Predictors.....	57

## LIST OF FIGURES

Figure 2.1: Social Determinants of Health Theory .....	26
Figure 2.2: Conceptual Framework Showing the Relationship Between Place of Residence and Elderly Health Status.....	30

## ABSTRACT

The current recognition of the importance of subjective measures as a predictor of health has resulted in continued strides to refine and develop subjective measures. Subjective measures of health have become particularly important in gerontological studies given the advent of population ageing in most regions of the world. In sub-Saharan Africa, it has been documented that place of residence may influence the health status of elderly persons. This study sought to examine the relationship between place of residence and subjective health status of elderly persons. The study made use of data from the World Health Organization's (WHO) Study on Global Aging and Adult Health (SAGE) Wave 1 conducted in 2007. The study was limited to persons aged 60 years and over. The sample size was 2200. This study considered place of residence as a simple dichotomy – urban or rural and a composite subjective measure consisting of quality of life and physical assessment was used to measure elderly health status in Ghana. The chi-square test of association was used to analyse the relationship between the dependent and each of the independent variables and binary logistic regression analysis was employed to determine the predictors of elderly health status. The study identified that various sociodemographic characteristics of the elderly are significant predictors of their subjective health status. However, place of residence was found to not influence the health status of elderly persons. The mediating variables, smoking and alcohol consumption, were shown to have no influence the relationship between place of residence and health status. Of all other predictors of elderly health study were age, occupation, educational attainment and income. Health among elderly persons was improved by any occupational activity and self-employed elderly persons had the largest proportion of older persons reporting good health outcomes. Elderly persons with no more than 6 years of formal education had the highest odds of reporting good health. The odds of reporting good health diminished as income levels improved in elderly persons. An increase in age did not necessarily result in a decrease in health because the highest odds were observed in later years. For elderly persons with no formal education, the study suggested that targeted initiatives such as seminars and workshop should be tailored to equip elderly persons with the practical knowledge and skills that positively impact their health.

## CHAPTER ONE

### 1.0 INTRODUCTION

#### 1.1 Background

Global population ageing shows the important achievements of humanity with regards to education, medical science and public health (Golini, 2004; United Nations (UN) 2015). Population ageing is evolving as one of the most significant demographic phenomenon and social transformations that societies face in the twenty-first century (United Nations Population Fund (UNFPA), 2012). Sustained growth of the world's elderly population is anticipated to be the next universal public health problem (Suzman *et al.*, 2014). An ageing population would have implications on a region's current and future population in terms of the spread of morbidity and its associated consequence on mortality, debility and dependence. It could also greatly influence the gradation of the burden of disease, disease control and prevention measures, demand for healthcare services and medicines, as well as alter the prevailing demographic and epidemiological transitions.

In 2017, there were 981 million persons aged 60 years and older globally (UN, 2017). This represented 13 percent of the world's approximated total population of 7.6 billion (UN, 2017). The figure is estimated to grow at a stable rate of 3.2 percent per annum for the next few years (UN, 2015), and by 2050, the total population of elderly persons is projected to increase to 2 billion persons which would represent over 1 in every 5 individuals on the earth. By this time, the elderly will outnumber children under 15 years old (UN, 2015). More importantly, by 2030, today's elderly population in developing countries is expected to increase by about 40 percent (UN, 2015). This would mean that by 2050, approximately 8 in 10 of the world's population aged 60 years and over would be living in developing regions (UN, 2015).

In 2015, Africa's share of the world's population of older persons stood at 7.2 percent and although this percentage is projected to increase insignificantly to 7.5 percent in 2030, the increase in absolute numbers represents an increase from 64.4 million older persons in 2015 to 105.4 million in 2030 and denoting a percentage change of 66.3 percent over the period (UN, 2015).

In Ghana, the population of older persons increased substantially by over 77 percent between 2000 and 2010 (Ghana Statistical Service (GSS), 2011). In absolute numbers, the population of older persons increased from 0.9 million in 2000 to 1.6 million in 2010 (GSS, 2011). This proportion is projected to reach 12 percent in 2050 representing 5,336,000 older persons (GSS, 2013; UN, 2015). Females constitute 56 percent of the elderly in Ghana, confirming the notion of the feminization of ageing (Arber & Ginn, 1991; Gorman & Read, 2007; GSS, 2010; Silver, 2003).

More recently, greater concerns with population ageing have arisen given the experiences observed in industrialized regions (Deaton, 2008; Kaneda *et al.*, 2011). These concerns rest largely on elderly healthcare requirements and on the readiness of public health care systems and institutions to adequately handle the increasing demand for specialised geriatric health care services especially in developing countries (Moneer *et al.*, 2015). As the number of older persons increase, the alarms raised due to population ageing may become self-evident in developing regions such as Ghana, primarily due to continued spatial imbalances in development which have inadvertently widened social and economic disparities. This situation results in a higher incidence of poverty in particularly rural areas as compared to urban areas and has implications for health because poverty and poor health are strongly correlated and mutually reinforcing (Marmot, 1999). Therefore, for countries such as Ghana, place of residence may be a particularly important determining factor of elderly health status because it

is recognised to ably distinguish the health experiences of individuals throughout the course of history (Zimmer *et al.*, 2006).

Therefore, within the purview of place of residence and the changing dynamics in the nature, structure and size of populations globally due to population ageing, it is critical to evaluate the elderly health status and how this differs by the type of place of residence. This is important because understanding elderly health status and its causal factors are critical to effectively react to the different needs arising from population ageing. Additionally, even though some studies have been carried out in Ghana, there remains a dearth in knowledge pertaining to the role of various determinants on subjective health of the elderly.

## **1.2 Statement of the Problem**

Population ageing is a strong indication of the successes of humanity over time (Golini, 2004; UN, 2015). It simply reflects man's substantial improvements in education, medical science and public health. Evidence from the World Population Ageing, 2015 report reveals that in almost every nation, especially in developing nations, the proportion of older persons is growing at a quicker pace than all other age groups. However, the world is now only beginning to comprehend the impacts of population ageing at the national, regional and global levels.

In Africa, although awareness of population ageing is increasing, knowledge on population ageing is still largely scanty and limited. This is because most studies conducted on ageing populations were conducted in the developed world and thus their results are less applicable to the developing world. However, the impacts and unique challenges of population ageing are thought to vary in space and occur at multiple levels for individuals and the societies they live in at large (Golini, 1999), thus there is the need for focused studies on population ageing in developing countries.

Generally, in most developing regions, the elderly form the smallest proportion of the total population. In sub-Saharan Africa, the percentage of the elderly has remained fairly constant at 4.8 percent since 1970 (Randall & Coast, 2016). However, this low and stable proportion has masked the reality of a continued increase in the absolute numbers of older persons in the region (Velkoff & Kowal, 2007). Additionally, this low and constant proportion compared to the total population may partly have contributed to the reduced perceived importance of population ageing in the sub-region (Randall & Coast, 2016). This has meant that most often planning has neglected the elderly but focused on children, youth and women because they are perceived to more directly influence future economic progress. Therefore, the well-being and health needs of the elderly has largely remained marginal in policy dialogues particularly in sub-Saharan African societies (Robinson *et al.*, 2006; Mba, 2010; Kwankye, 2013).

Again, the bulk of older persons in the world are rural residents (Uzobo & Dawodu, 2015). According to Mba (2010), many Ghanaian older people return to their hometowns which are generally rural communities after retirement as a result of the higher costs involved in remaining in urban areas. However, continued spatial imbalances in development have engendered disparities and inequalities across various socioeconomic indicators that impact health such as income, the distribution of healthcare facilities and healthcare providers. These continued spatial imbalances in development are important to elderly health status because the elderly typically require more general health care as well as specialised services to deal with their composite and evolving degenerative conditions associated with ageing. Specialised services also require more money to manage effectively, however, due to geographical imbalances in development, poverty is more prevalent in rural areas resulting in poorer health statuses in rural areas (Marmot, 1999).

Additionally, even though poverty is more prevalent in rural areas, earlier studies have shown risky health behaviours such as smoking and drinking to be increasingly prevalent in rural areas (Hartley, 2004). Speculatively, an older rural or urban person who indulges in a risky health behaviour will have his or her health status modified. However, very little is known about the modifying role that such risky health behaviours may play in influencing the health status of the elderly in Ghana. Therefore, the nature and extent of the problems arising from smoking and drinking in the elderly in Ghana is not fully understood.

Also, most studies have to this point focused on a single measure or indicator of elderly health status. The bulk of studies conducted have selected traditional measures to describe elderly health status. Only in recent times have subjective measures been widely adopted to complement the traditional measures of morbidity and health (Kaneda *et al.*, 2011; He *et al.*, 2012; Help Age International (HAI), 2013). This has made it difficult to undertake a holistic and comprehensive evaluation of the health status of the elderly in developing regions because often times, traditional or objective measures do not easily reveal some critical domains of elderly health like their psychosocial conditions and evaluations of self in and outside their communities (Moneer *et al.*, 2015).

In conclusion, the elderly today, are more susceptible to health challenges because the elderly tend to receive inadequate attention even as the number of older persons is increasing rapidly. The situation of the elderly has further been exacerbated by prevailing spatial inequalities in development and its attendant impacts on the health of older people. Also, available knowledge of elderly health is mostly based on objective measures and the role of risky health behaviours in determining health in older people is not fully known. Given these realities, the health status and challenges of the elderly in Ghana remains daunting.

### 1.3 Research Questions

It is well documented that the majority of older persons in the world live in rural areas (Uzobo & Dawodu, 2015). However, in developing countries such as Ghana, spatial inequalities in development have seemingly resulted in an urban advantage across various socioeconomic indicators that impact health such as income, the distribution of healthcare facilities and healthcare providers. Therefore, it is important to appreciate the nature and extent of the relationship between residential status and health status of the elderly.

Again, although there remains a dearth in knowledge on elderly health, available knowledge on elderly health has mostly been based on objective measures. It has been found that objective measures do not easily reveal some critical domains of elderly health like their psychosocial conditions and evaluations of self in and outside their communities (Moneer *et al.*, 2015). This makes it imperative to unearth the potential factors that may be associated with subjective health in the case of Ghana.

Lastly, and the role of risky health behaviours in determining health in older people is not fully known. However, studies have revealed risky health behaviours such as smoking and drinking to be increasingly prevalent in rural areas (Hartley, 2004). It is speculated that an older person living in a rural or urban area who indulges in a risky health behaviour will have his or her health status modified. This suggests that to a degree, risky health behaviours – smoking and alcohol consumption of older persons living in either rural or urban areas modify their subjective health status. Therefore, it is important to understand how risky health behaviours modify the health of older persons in Ghana.

Therefore, to understand these critical domains in the health of the elderly, the study will seek to provide answers to three (3) primary questions namely:

1. What is the relationship between residential status and health status of the elderly in Ghana?
2. What are the factors associated with health status of the elderly in Ghana?
3. What is the influence of risky health behaviours – smoking and alcohol consumption on health status of the elderly in Ghana?

#### **1.4 Research Objectives**

Based on the questions that this study sought to provide answers to, the objectives of this study are classified in two (2) as general and specific.

##### **1.4.1 General Objective**

The general objective of the study was to examine the relationship between residential status and the health status of elderly in Ghana.

##### **1.4.2 Specific Objectives**

The specific objectives of this study are -

1. To describe the sociodemographic characteristics of the elderly in Ghana.
2. To assess the association between residential status and health status of the elderly in Ghana.
3. To determine the factors that influence health status of the elderly in Ghana.
4. To examine the influence of risky health behaviours – smoking and alcohol consumption on health status of the elderly in Ghana.

#### **1.5 Rationale/Justification**

Prior gerontological studies have markedly suggested that older persons living in rural areas were generally more vulnerable to socioeconomic and health marginalisation especially in developing countries (Uzobo & Dawodu, 2015). However, health research has established

that living in rural areas may have both a positive and negative influence (Mitura & Bollman, 2003; Gerritsen *et al.*, 1990). This is because rural residents may potentially receive more community support (Scott & Roberto, 1987; Powers & Kivett, 1992; Amato, 1993; Beggs *et al.*, 1996; Hofferth & Iceland, 1998; Kivett *et al.*, 2000; King *et al.*, 2003). Additionally, other studies have shown that in some instances a rural resident's access and quality of healthcare may match or in some instances surpass that of an urban resident (Reschovsky & Staiti, 2005; Smith *et al.*, 2008; Pong *et al.*, 2009). These seemingly contradictory outcomes of the influence of living in a rural area on the health status of the elderly needs to be explored in more detail. These seemingly contradictory findings evidently tease out the complex relationship existing between elderly health status and place of residence and clearly highlights a need for further elucidation within this area of knowledge. This study is important therefore, to provide empirical evidence on the influence of place residence on elderly health status in Ghana to enable the development of policies and programs designed to eliminate any residential disadvantage and address health disparities in Ghana.

While this study cannot necessarily infer causality from its findings, this study is important because it seeks to add to the existing literature on residential status and the health status of the elderly in Ghana via proposing a method for creating an aggregate subjective health measure. This approach would importantly enable a comprehensive assessment of the health status of the elderly and its determining factors. It will also allow planners to more accurately outline the needs and challenges of the elderly per their residential status as they strive to develop integrated policies that positively impact the life situations of the increasing elderly population in developing regions and, particularly, in Ghana (Lloyd-Sherlock, 2000; Bloom *et al.*, 2011).

Also, personal habits such as smoking and alcohol consumption play a role in determining the health of an individual even though very little is known about the influence on

elderly health in Ghana. High levels of such risky health behaviours have been found to continue into later stages of life (He *et al.*, 2012). Therefore, evidence on the nature and extent of the influence that risky health behaviours have on subjective elderly health status per place of residency will provide critical evidence to help policy formulators and public workers to develop targeted programmes to educate the elderly but also other population segments on how practising risky health behaviours could modify their health. It will also provide information to enable health-centred policy makers and institutions respond appropriately to shifts in consumption patterns of and demand for health care services as a result of practicing such habits.

Lastly, findings from this study will add to the already existing knowledge on the health status of the elderly, particularly the subjective aspects of the health status of the elderly. The study will offer insights on the factors that interplay within an older person's place of residence to ensure that he or she enjoys the later years of life without being beset with ill health.

## **1.6 Organisation of Study**

The study consists of five chapters. The first, Chapter one, comprises the background information, the statement of the problem, rationale, research questions and objectives of the study, organisation of the study and the definition of key concepts used within this study. Chapter two presents a review of literature and pertinent research associated with the study, the conceptual framework and the hypotheses. Chapter three presents the methods and procedures used in the collection and analysis of data. It comprises of details on sampling, subjects, variables, methods of analysis. Chapter four contains the results of the univariate, bivariate and multivariate analysis and discussion of the study findings. Chapter five presents a summary of the study findings, conclusions drawn from the results and their policy implications and recommendations.

## CHAPTER TWO

### 2.0 LITERATURE REVIEW

#### 2.1 Introduction

This chapter confers the literature accessible on place of residence and the health status of the elderly. The existing literature has shown variations in the health status of the elderly when viewed through the lens of place of residence. These studies were carried out in different regions of the world and used different sources of data and methods to arrive at their conclusions. This section reviews studies on defining ageing and health status, measures of elderly health status, health status and the elderly, place of residence and the health status of the elderly and other factors that influence the health status of the elderly.

#### 2.2 Defining Ageing

Despite its universality, defining ageing remains somewhat nebulous but ageing generally involves the sum total of changes that occur over time in a living organism (Bowen and Atwood, 2004). The definition for ageing may vary in space and in time. This makes the terms “ageing”, “old”, “aged”, “elderly” notions that are defined from the perspective of an individual, gender, culture and nation.

The distinct nature of the ageing process has meant that theorists have explored explanations based on both internal and external factors. However, no single theory presently can completely explain ageing or its drivers (Roach, 2001). Most existing ageing theories only suggest variable degrees of universality, cogency and consistency. However, most theorists (Eliopoulos, 2001; Hall *et al.*, 1993; Roach, 2001; Robert & Hofecker, 1990) have a shared understanding that the ageing process is universal; it is a progressive and irreversible process, both in structure and function; every living organism ages; organisms develop from the same

type of organism; it is affected by several intrinsic and extrinsic dynamics and; ageing is debilitating but may result also in gains and not only in losses.

In most cases, ageing is not easily perceived as modifications take place mostly in silence throughout an individual's life up until the time when outward changes of ageing become increasingly more visible such as the wrinkling of skin and the greying of hair. In terms of the more inward modifications, huge variations exist from person to person. According to Stuart-Hamilton's (2006) submission, two distinctions exist in ageing - universal ageing and probabilistic ageing. Universal ageing refers to age changes that all people share and suggests some chronological connotations. Probabilistic ageing, on the other hand, refers to age changes that may possibly occur in some, but not all persons as they grow older. Probabilistic changes generally account for variations in one's environment.

Gerontology literature commonly suggests four (4) dimensions of ageing that help to measure the extent of ageing in an individual (Phillips *et al.*, 2010; Ebersole and Hess, 1998; Myers, 1990). These are given as chronological ageing, biological ageing, psychological ageing and social ageing. Generally, all these dimensions of ageing interact in a complex continuum. However, each dimension is experienced at a different pace in each individual.

Chronological ageing is probable the most ubiquitous approach in defining ageing. It is defined by the number of years an individual has lived considering the calendar year since their year of birth. It is largely not acknowledged as a suitable measure of the degree of ageing because, as a process, variations exist from individual to individual. However, it is the most used approach in measuring the age of individuals. For instance, after the World General Assembly of Aging in Vienna, Austria in 1982, the United Nations adopted 60 years of age to denote an elderly person. According to Pornsiripongse *et al.* (1991), this UN chronological

definition of “old” or “elderly” somewhat serves as the world standard today. In most developed countries, 65 years and over has been adopted to classify an individual as old.

Biological ageing or senescence or functional ageing refers to biological changes occurring progressively over time that impair physical health and physiological processes of an individual. Psychological ageing refers to changes that occur in an individual’s personality, mental functioning, sensory and perceptual processes at the stage of adulthood. Social ageing refers to changing experiences an individual goes through in social roles, relationships, statuses and as a part of a social organization or structure. It embodies society's normative expectations of just how persons should act as they grow older. The social ageing dimension may be critical to defining ageing in Africa.

Wattis and Curran (2013) proposed the addition of a fifth dimension termed developmental viewpoint. This viewpoint posits that an individual’s ageing is dynamic in that at each stage of life an individual is presented with new aspirations, challenges and opportunities which necessitate the accumulation of skills, lifestyles and coping strategies over the time he or she grows old. Stuart-Hamilton (2006) made modifications to the aforementioned criterion and delineated it in five (5) dimensions. In his work, he maintained chronological, social and biological dimensions but omitted the psychological dimension. He replaced that dimension with proximal ageing refers to age-based effects that come about due to factors in one’s recent past and distal ageing refers to age-based differences occurring as a result of early life factors, such as childhood poliomyelitis.

Against this background, the WHO adopted age 50 but their definition to a large extent acknowledged that defining old age in the developing world was to a lesser degree by chronological years, but rather by functional ability as stipulated by social constructs. This approach may have been influenced by two main studies. First, Glascock *et al.* (1980)

published findings of a study that concluded that a change in social role served as a base for defining of elderliness in the developing world. Second, later studies in Nigeria generally added a refinement by positing the combining of chronological, functional and societal definitions in place of the commonly used singular definition derived from chronological or sociocultural or functional markers (Togunu-Bickersteth, 1987; 1988).

Therefore, for an individual, these arguments suggest that ageing maybe somewhat easily defined as getting older by the day or year, but what “being old or elderly” means is still mainly dependent on collective appreciation particularly in sub-Saharan Africa. This means that for an African, the definition of ageing or being elderly may be considered as the outcome of a combination of social constructs and a definite biological reality presupposed by chronological and functional definitions.

With that said, it is important to note that the enormous variability in individualised measures, as seen in the reliance on fixed age threshold for classifying people as elderly, has been argued to not fully reflect reality. Some studies have argued for a shift away from individualised measures towards population-based measure such as the use of prospective ages. According to Sanderson & Scherbov (2008), population based concepts of old age more accurately depict present health and life-expectancy improvements.

However, all these findings led this study to conclude on use of the UN stipulated age of 60 to define an elderly person in this study. This was because of the universality of the UN definition and its correspondence with the statutory age for retirement in Ghana.

### **2.3 Defining health status**

According to Breslow (1989), all emerging notions of health and health status in modern society are to be considered as revivals of ancient Greek and Chinese concepts. Breslow (1989) continued to argue that the classical thoughts considered health an inner

balance between four (4) “humours of the body” namely blood, phlegm, black bile and yellow bile. However, Breslow (1989) recognised that environmental factors and ways of living in one’s environment greatly affected health. Over the years, these classical notions of health have greatly deepened and evolved as understanding of health has increased.

The WHO explains health as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (WHO, 1948). The WHO definition brought to light the complexity and subjectivity involved in defining of health. Therefore, Kuh *et al.* (2014) defined health as a “multidimensional concept, capturing how people feel, and how they function from the individual to the cellular level”.

With regards to the elderly the definition of health adds on extra layers of complexity. For instance, when you question an elderly person suffering from diabetes or hypertension about how he or she feels, the response may typically be “I am fine”. This is because on exterior, that individual may look fine, yet in actuality the said individual may have a medical condition associated with ill health. Additionally, the range of definitions of ageing emanating from the existing works may help explain the difficulty of defining health in relation to ageing.

However, to a large extent, there is some consensus on what constitutes one’s health status. According to Breslow (1972, 1989), every individual’s health status should comprise of quantifiable health indicators on a spectrum with three (3) axes namely: the physical, the mental and the social wellbeing. This implies that the concept of health status refers primarily to a balanced and desired state of an individual health and by extension life in general.

## **2.4 Measures of health status**

Measures of health status are used in an attempt to provide more evidence-based and measureable health information of populations or individuals. Measures of health status evolved over time as understanding of health and its complexity took shape. For a long time,

health status measures focused on the evaluation of disease treatment solely because health focused on treating and preventing diseases but as the definition and focus of health evolved to include concepts on health promotion, so did the considerations of measures of health status (Breslow, 1989). Although measurements of health status can take many forms, literature delimits three (3) distinct approaches to health status measurement.

The first approach consists of “objective” physical or psychologic tests. This approach includes tests of cognitive function and of emotional health to serve as mental health status measures. They are typically administered to individuals and attempt to capture a person’s physiologic and psychologic ability to respond to environmental situations. Example of tests that fall under this approach includes stress tests, respiratory function tests, glucose tolerance test and general physical fitness tests. They are classified two (2) ways namely generic or disease-specific (also termed "condition-specific") measures. Generic measures are useful when dealing with a varied range of diseases, conditions, and demographic and cultural subgroups. Generic measures permit an assessment of health status among different populations which is important in health policy formulation. Disease-specific measures are used to evaluate specific disabilities or disorders, responsiveness and clinically significant change in disability within specific population groups.

The second approach to measures of health status gets at determining competence for social functioning. This approach makes use of self-completed questionnaires or observations to capture functional assessment markers beyond physiologic and psychologic parameters. Examples of information captured by such tests may include one’s ability to take bath without aid or to work. Functional assessment information provides a medium to judge role performances that are entrenched within the execution of culturally predefined social expectations.

The third approach to health status measures takes a person's self-perception of his or her health into consideration. This makes self-assessment or subjective measures of great social importance. Self-assessment or subjective measures are easy to adopt when the general populations are of interest in a study. This is because unlike the other health status measure approaches earlier highlighted, they do not specify any particular component of health; physical, mental and social. This feature importantly enables self-assessment or subjective measures to capture both the subjective and objective health information of individuals (Ware *et al.*, 1978). It was this fact that encouraged this study to adopt a subjective approach in measuring elderly health.

## **2.5 The Elderly and health status**

The life conditions of the elderly can be precisely described through their health status (Egidi, 2003). The health status of the elderly has been found to be greatly affected by growing old due to the build-up of health issues over a person's life-course (Ferraro and Shippee, 2009). Several studies support this claim by arguing that growing old is highly correlated with the prevalence of age-related, degenerative, chronic non-communicable and debilitating conditions like cardiovascular diseases, diabetes, and so on, that are medically expensive to treat or manage (Yi *et al.*, 2002; Tawiah, 2011; Nabalamba & Mulle, 2011; Ayernor, 2012). The effects of this claim are evident in the prevalence of illness, disability rates and mortality; the rates among the elderly significantly outstrip those of younger adults in sub-Saharan Africa (McIntyre, 2004; Aboderin & Kizito, 2010).

In sub-Saharan Africa, the health status of the elderly is thought to be much worse than in other regions. The health situation of the elderly in Africa can be considered as the "vulnerability of older persons to poor health outcomes" (Aboderin, 2010). Deviations in the epidemiological transition have resulted in the advent of the double burden of high mortality

and morbidity attributable to infectious diseases and growing rates of chronic non-communicable (Defo, 2014). Additionally, compared to younger persons, the elderly in Africa have limited access to healthcare which suggests the existence of an “age-related exclusion” (UN, 2002; Aboderin & Ferreira, 2008; Aboderin, 2010). These two factors have together left the elderly in sub-Saharan Africa more vulnerable to poorer health outcomes.

## **2.6 Place of Residence and Health Status**

An older person’s place of residence offers unique experiences and challenges which may have implications on health. Therefore, notably, residential location has been shown to be an important determining factor of health (Zimmer *et al.*, 2006). However, some scholars have argued that the normative practice of classifying residential designations as being a dichotomy - either urban or rural disregards the fact that the rural/urban classification should be more accurately viewed as a continuum (Krout, 1989). Some studies such as Verheij (1996) have therefore gone on to proposed the use of terms such as “urbanicity” (indicates the extent to which a place is urban or rural) to explain variations in health.

Theory offers two mechanisms to explain spatial health disparities namely the breeder and drift hypotheses (Verheij, 1996). The breeder hypothesis delineates two explanations for spatial health disparities (Verheij, 1996). The first explanation considers direct interactions with certain environmental influences such as stress, housing quality, pollution and industrial activity (Verheij, 1996). The second explanation considers specific types of health modifying behaviour such as smoking, alcohol consumption, church attendance, physical exercise etc. (Verheij, 1996).

The drift hypothesis also delineates two mechanisms to account for health disparities in space (Verheij, 1996). First, direct selection, which considers the movement of sick individuals to or from specific places or of them remaining stationary in these places (Verheij,

1996). The second mechanism is indirect selection and it considers individuals with some health-related characteristics that are susceptible to move to or from particular environments or remain there (Verheij, 1996).

With this background, a host of studies have evinced that the health of the elderly in rural areas is poorer than their urban counterparts (Erman, 1990; McCoy & Brown, 1978; Lassey & Lassey, 1985; Pa *et al.*, 1979; Palmore, 1983; Patrick *et al.*, 1988; Hartley *et al.*, 1994; van Dis, 2002; Slifkin *et al.*, 2000; Gillanders *et al.*, 1997; Eberhardt & Pamuk, 2004; Coburn & Bolda, 2001). These studies argue that the disparities increasingly become noticeable, once the effects of socioeconomic and demographic characteristics are held constant.

In Africa, there is evidence to support such assertions including: Gureje *et al.* (2007) and Uzobo & Dawodu (2015) in Nigeria, Clausen *et al.* (2005) in Botswana, Gómez-Olivé *et al.* (2010) in South Africa, Mwanyangala *et al.* (2010) in Tanzania; Kyobutungi *et al.* (2010) in Kenya, Debpuur *et al.* (2010) and Ayernor (2012) in Ghana. The findings of the studies argue that the urban-rural disparities in elderly health are largely attributed to explanations reaching from poverty to the absence of healthcare facilities in rural areas. This is consistent with the notion that health inequalities correspond with the widely differing constraints and opportunities of the rural residents as against to their urban peers (Alleyne *et al.*, 2000; Wagstaff, 2001).

However, some studies have posited that living in rural areas can be seen as both an advantage and a disadvantage with regards to the health of the elderly (Krout, 1989; Gerritsen *et al.*, 1990; Mitura & Bollman, 2003). Within the African context, this may importantly point to the multiplicity of social roles played by the elderly in society. These roles may be more closely observed in rural region because the majority of older persons in Africa are rural

residents (Uzobo & Dawodu, 2015). The elderly are therefore cherished and respected and this may have a positive influence on their health, particularly their subjective health. Again, social capital and social support which essentially refers to the assistance and the quality of that assistance received from one's family and within the larger community setting (Bowen *et al.*, 2000) may be more akin to rural areas (Scott & Roberto, 1987; Powers & Kivett, 1992; Amato, 1993; Beggs *et al.*, 1996; Hofferth & Iceland, 1998; Kivett *et al.*, 2000; King *et al.*, 2003).

Reschovsky & Staiti (2005), Smith *et al.* (2008) and Pong *et al.* (2009) have shown that access to healthcare and the quality of care for people living in rural areas matches or exceeds in some cases that of their urban counterparts. The contributions of Mba & Yarney (2005) indicate that some of the noteworthy health problems may be limited to urban areas such as the problems arising from the increased migration to urban areas and significant changes in lifestyle. This is important because studies have demonstrated that ensuing slums formed in urban areas are increasingly becoming home to older people (Ezeh *et al.*, 2006; Gugler, 2002; Hashimoto *et al.*, 1992). These arguments provide a basis for a rural advantage.

## **2.7 Smoking Status and the Health Status of the Elderly and Alcohol Consumption Status and the Health Status of the Elderly**

Rural or urban residency does not affect elderly health in isolation. Modifiable risky health behaviours like smoking and alcohol intake are seen to contribute to the rural–urban disparities in elderly health because they are known to increase one's susceptibility to diseases. However, research indicates that high levels of risky health behaviours in the earlier stages of life were sustained in the later stages of life, especially amongst males (He *et al.*, 2012). Such behaviours risky health behaviours are so entrenched because the factors encouraging their continuation can be classified as personal or social. This point potentially explains the attractiveness and persistence of smoking and alcohol consumption despite the numerous initiatives to curb them.

Smoking is a very essential regulating risk element for NCDs in all age groups and a key avoidable reason for untimely mortality (WHO, 2002). Generally, studies from the developed world indicate that smoking was on the decline but still remained a major factor in holding back life expectancy among the elderly (Christensen *et al.*, 2009). Smoking intensifies the possibility for ailments like lung cancer and adversely contributes to factors that result in reductions in functional ability. Again, smoking accelerates the degree of deterioration in bone density, muscular strength and operation of the respiratory system. All in all, the negative effects of smoking are accumulative and protracted in nature.

Alcohol consumption in the elderly has been revealed to impact the symptom severity and disease progression of chronic disorders such as cancers and cardiovascular conditions (Moore *et al.*, 2006; Parry *et al.*, 2011). Again, the metabolic modifications that complement growing old intensify the predisposition of the elderly to alcohol-related conditions such as malnourishment and diseases of the liver, stomach and pancreas resulting in poor health (WHO, 2002). The elderly are also more likely to suffer falls and injuries and other possible threats related to the intake of alcohol with medications (WHO, 2002).

Studies have also posited varied drinking patterns may have different implications for the health of older persons as compared to younger persons (Klatsky, 2007, Russell *et al.*, 1991). This is made evident by the association between low or moderate alcohol consumption and the lower mortality rates which result in improved cardiovascular outcomes (WHO, 2002; Sun *et al.*, 2011). However, it is important to note that Jernigan *et al.* (2000) argues that the negative impacts of drinking offset any safeguard against cardiovascular disease. This proves that the examinations of alcohol consumption among the elderly suggest different drinking patterns exist among the elderly and show various relationships depending on context.

## 2.8 Other Factors Associated with The Health Status of the Elderly

There are several factors that are associated with the health status of the elderly. Aside place of residence, health status disparities are widely attributed to “the axes of inequalities in health” namely age, sex, economic status and ethnic origin (Aboderin & Beard, 2015). Variations in these “axes of inequalities in health” translates into varying degrees of health status among the elderly. Generically, it can be surmised that the full spectrum of factors associated with the health status of the elderly can be categorised as a continuum of demographic and socioeconomic factors. Demographic factors may include age, sex, ethnic origin. Socioeconomic factors may include education, marital status, occupation, income levels and religion.

### 2.8.1 Demographic Factors

Poor health has been found to be associated with increasing age (Mwanyangala *et al.*, 2010). Generally, ageing results in a reduction of the immune system’s ability to respond in fighting illnesses, amplified restrictions on mobility and higher prevalence of non-communicable disease (Yi *et al.*, 2002; Tawiah, 2011; Nabalamba & Mulle, 2011; Ayernor, 2012; Phaswana-Mafuya *et al.*, 2013b; Ward & Schiller, 2013). Advanced age is also attributed with poor physical health (Tomás *et al.*, 2012; Phaswana-Mafuya *et al.*, 2013a; Wasiak *et al.*, 2014), was highly correlated with self-reported non-communicable disease (Phaswana-Mafuya *et al.*, 2013b; Ward & Schiller, 2013) and instances of multi-illness in individuals (Nimako *et al.*, 2013). In Ghana, growing old is related with lower levels of quality of life (Calys-Tagoe *et al.*, 2014).

With regards to sex, a disparity in longevity exists between men and women because elderly women tend to have lower mortality levels as compared to elderly men (Mwanyangala *et al.*, 2010; Kakoli & Anoshua, 2008). Conversely, elderly women report health outcomes that

are not as good as that of men because elderly women of the same age are considerably more probable to experience functional limitations like immobility and to rely self-care as compared to men (Arber & Cooper, 1999). Being an elderly woman has been observed to be linked with a host of negative health outcomes. Nyirenda *et al.* (2013) and Phaswana-Mafuya *et al.* (2013a) found elderly women to have greater levels of depression. Marengoni *et al.* (2008), Khanam *et al.* (2011), Phaswana-Mafuya *et al.* (2013b), Stelmach *et al.* (2004) and Ward & Schiller (2013) demonstrated that being an elderly woman increased the likelihood of non-communicable diseases. Other studies by Phaswana-Mafuya *et al.* (2013a) and Wasiak *et al.* (2014) have suggested that the physical health of elderly women is poorer than their male peers. Also, works by Nimako *et al.* (2013) and Khanam *et al.* (2011) have argued that women have a high likelihood of experiencing multi-morbidity.

The dire predicament of elderly women as against elderly men may potentially be explained by the unfavourable socioeconomic conditions in which older women live in as compared to older men (Nimako *et al.*, 2013). This male advantage has also been observed in developed countries as well (Marengoni *et al.*, 2008) with the exception of Australian study (Britt *et al.*, 2008). Another explanation may be that women more frequently report their health problems as compared to men because culturally, men are not expected to acknowledge illness as easily and willingly as women do (Kabir *et al.*, 2003). Women are considered to be more sensitive to their health conditions than men due to their frequent interactions with the health care system earlier in life (Kakoli & Anoshua, 2008; Razzaque *et al.*, 2010). This phenomenon could greatly influence the health status of the elderly with regards to sex.

Ethnic backgrounds are also important to the health of the elderly. Being from an ethnic minority group was shown to negatively influence mortality in the elderly (Jatrana & Blakely, 2008). A study by Montross *et al.* (2006) suggested that ethnic background was a psychosocial variable of successful ageing. This is because aside the innate genetic advantage or

disadvantage an ethnic group may possess over others, an ethnic group may also be key in influencing the relationship support links in society. In Africa, this may be of extreme importance given the absence of universal welfare systems to provide security to the elderly. In Ghana, Ayernor (2017) noted that patrilineal tribes offered more support to the elderly.

### **2.8.2 Socioeconomic Factors**

Marital status is one factor that could potentially have a telling implications on an elderly individual's mental health, feelings, health care and the perceptions of health. The married elderly or elderly in unions have been found to be of better health as compared to those who are not (Gove, 1973; Hu & Goldman, 1990, Ben-Shlomo *et al.*, 1993; Debpuur *et al.*, 2010). Older persons in unions have also been observed to have better capabilities and body function as compared to those who are not in unions (Hemathorn & Sillapasuwana, 1983).

Low income has been found to be associated with depression among older persons (Koster *et al.*, 2006). High income has been observed to be associated with self-reported non-communicable diseases (Alaba & Chola, 2013; Phaswana-Mafuya *et al.*, 2013b; Khanam *et al.*, 2011). Wealthy households in developing regions such as sub-Saharan Africa are more likely to adopt a western lifestyle and diets (Alaba & Chola, 2013; Hosseinpoor *et al.*, 2012) and such shifts alter their health status. Disability or functional limitations have been associated with poor health (Tomás *et al.*, 2012; Phaswana-Mafuya *et al.*, 2013a). Generally, poverty and poor health have been observed to be are strongly correlated and mutually reinforcing (Marmot, 1999).

Low levels of education result in poor health (Phaswana-Mafuya *et al.*, 2013a), depression in (Koster *et al.*, 2006; Stelmach *et al.*, 2004) and non-communicable diseases (Phaswana-Mafuya *et al.*, 2013b). Again, older persons with low education have restricted access to health services (Phaswana-Mafuya *et al.*, 2013a) and are more likely to come into

contact with diseases. Additionally, high levels of education have been found to result in a lower prevalence of non-communicable diseases because the more educated generally take advantage of health knowledge and practise health promotion attitudes better than individuals with less education (Alaba & Chola, 2013).

## **2.9 Theoretical Framework**

From the literature review carried out, it was surmised that associations between demographic, socioeconomic factors and the health status of the elderly exist. This alludes to the fact that factors influencing the health status of the elderly are complex and encompass multiple domains. A basic but important theoretical framework that can be used to explain the breadth of these domains is the social determinants of health theory.

The utility of this theory dates back to at least the 19<sup>th</sup> century when attempts were made to understand the social influences of population health outcomes (Jayasinghe, 2015). Ground-breaking works in this area include Rudolf Virchow's (1848) work on the how the political economy and poverty can influence an epidemic of plague in Upper Silesia of Prussia, and Friedrich Engels' (1845) work on the link between high mortality and poor living conditions among the working class in England (Krieger *et al.*, 2010). Afterwards, work in Chile by Salvador Allende tried to portray the role of social and political influences in engendering health inequalities in populations (Krieger *et al.*, 2010). The social determinants of health theory has been used in various ways but for the purposes of this study, the approach put forward by Dahlgren & Whitehead (1991) was used.

The construct put forward by Dahlgren & Whitehead (1991) is adopted by this study to represent the health of all older persons in Ghana. Per the findings of Dahlgren & Whitehead (1991), the factors influencing elderly health are represented as a set of concentric circles, with the elderly at the centre. The outermost circle, which is often the most difficult to quantify, are

the general social, economic, cultural, and environmental conditions that have important long-term health effects on the elderly. Within the context of this study, this points to the various environmental laws, policies, programs and plans targeted at steering the country towards sustainable development. These often may dictate the state of the economy and set the environment in which all other factors act on the health of the elderly. In Ghana, a good example may be the instituting of a national health insurance scheme or subsidies given to farmers to produce particular crops.

The subsequent circle contains society's basic social, health, and economic institutions, which preserve or impede health. The institutions at the level operate within the environment using the blueprint laid out by laws, policies and programs established with the preceding circle. These institutions may include schools, hospitals, farms and businesses. Schools for instance will influence the education levels of elderly person which in turn imparts their health. Hospitals may help treat and manage the complex geriatric conditions associated with ageing. Farms will determine the amount, diversity and quality of food available within the region and this will influence nutrition and diets of the elderly thereby affecting their health. Businesses determine the availability of employment opportunities which has implications on income levels and pension systems and these directly affect an individual's ability to cover the costs of treating or managing conditions associated with ageing. These institutions are collectively responsible for providing the opportunities, tools, skills, resources, services and knowledge critical to determining health.

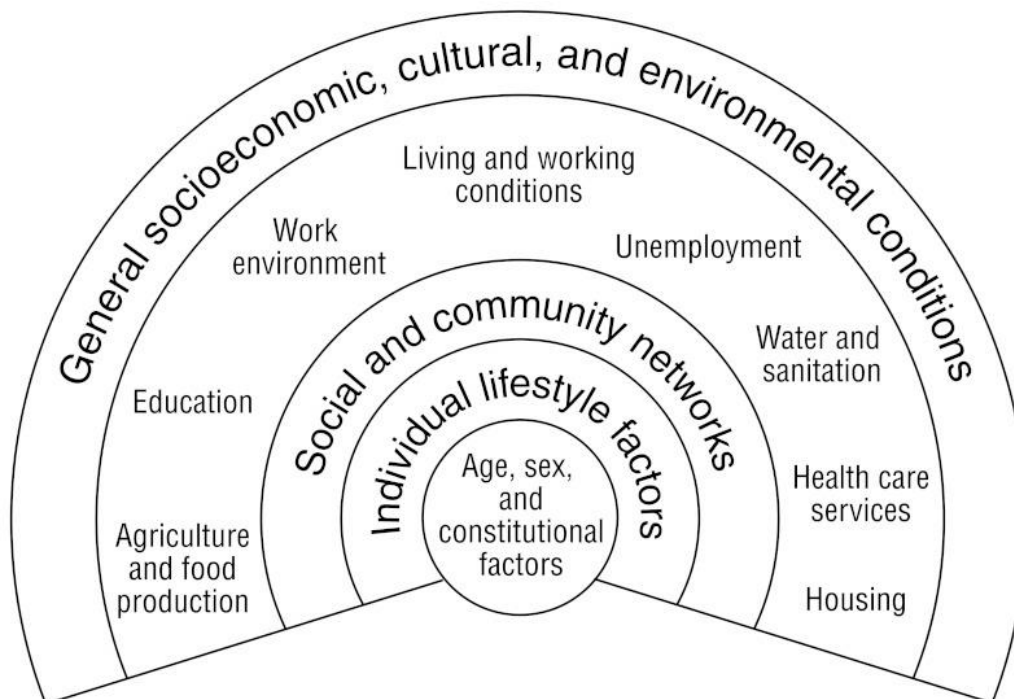
The next circle highlights the crucial role of social and community interactions and exchanges, whereby individuals make their collective decisions. This circle is particularly important within the African context because the role of the society goes a long way in determining the health of the elderly in Africa. This is because social systems serve as a safe guard for most older persons in Africa, given the absence of universal welfare system. In this

regard, belonging to a religious group may also influence health positively or negatively through the practises they espouse such as prayer meetings, church services and activities. Such activities help with social cohesiveness and social belonging which may be of importance to subjective health.

The circle following the core highlights the importance of individual’s personal and behavioural choices such as smoking and alcohol consumption in the determination of health status. These habits together act to modify the health of the elderly. However, these habits can be shaped and modified over time based on the environment one belongs to. For instance, in Africa, practises such as smoking are socially frowned. Therefore, an individual may not smoke or refrain from smoking publicly due to the negative social stigma attached to such a behaviour.

The **core** refers to the innate immutable characteristics of the elderly such as their age and sex. These also to a larger extent influence the health of the elderly. For instance, health generally decreases with age. These dynamics are illustrated in Figure 1 below:

**Figure 2.1: Social Determinants of Health Theory**



**Source: Dahlgren & Whitehead (1991)**

It is worth noting that although the Social Determinants of Health as seen in Figure 1 was used in this study. It has some drawbacks. One drawback is the omission of a time element. This meant that the effects of the accumulation of life conditions in later life could not be fully captured. Nevertheless, this model was deemed useful to this study because the data used in this study was cross-sectional in nature so the influences of time could not fully be appreciated. Also, subjective health outcomes were the focus of this study and subjective health simply considered “how an individual felt currently”. Another consideration for the selection of this theory was that the theory reveals an appreciation of an individual’s role in his or her health status. This is observed in this study through smoking status and alcohol consumption status.

## **2.9 Conceptual Framework**

Drawing from literature and the theoretical foundation, the independent variable, place of residence, as illustrated in the framework is expected to have an association with the health status of the elderly. Place of residence represents the general environment in which the institutional factors that influence health exist. The literature and theoretical foundation also indicates the association between an elderly person’s age, sex, marital status, income level and educational level with his or her health status. Most of these characteristics are represented by the core and institutional factors in the Social Determinants of Health Theory. Importantly, the effects of an elderly person’s demographic and socioeconomic factors as well as that of his or her place of residence on health are to some degree mediated by his or her lifestyle and behavioural habits such as smoking and the intake of alcohol.

Therefore, it is envisaged that an older person living in an urban area is more likely to have a good health status as compared to an older person living in a rural area because in countries such as Ghana, prevailing spatial imbalances in development have engendered an urban advantage with regards to important socioeconomic indicators that impact health.

Smoking or alcohol consumption may modify his or her health status negatively (WHO, 2002). Males are more likely to have good health compared to females because several studies such as Nimako *et al.*, 2013 have demonstrated that being a woman is linked with a host of negative health outcomes. This may be due to the fact that culturally, men are not expected to acknowledge ill health as easily and willing as women do (Kabir *et al.*, 2003) or women are considered to be more sensitive to their health conditions due to frequent interactions with healthcare systems earlier in life (Kakoli & Anoshua, 2008; Razzaque *et al.*, 2010). It is predicted that an individual's propensity to suffer from poorer health will increase with age because poor health is known to be associated with increasing age (Mwanyangala *et al.*, 2010).

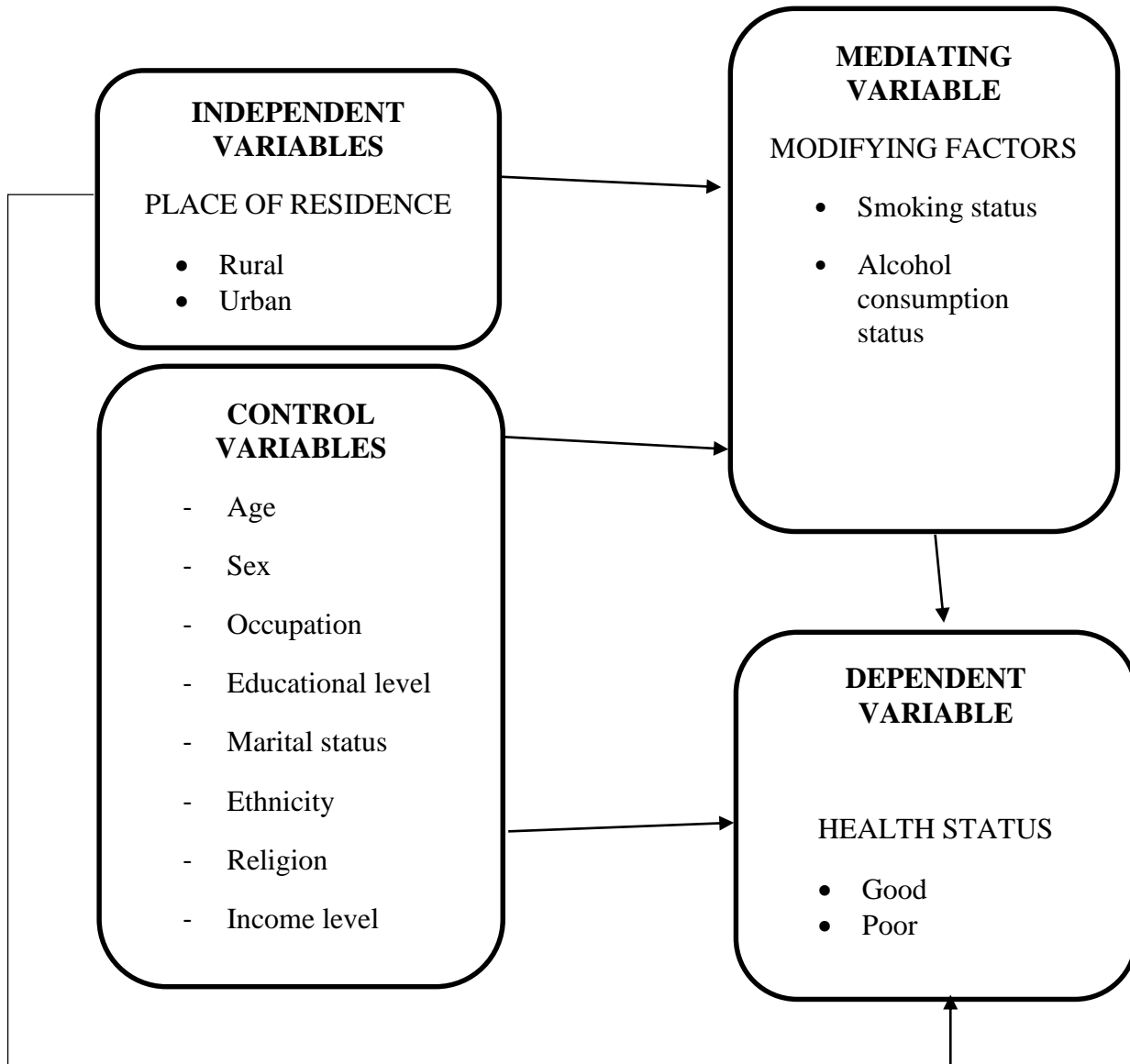
Educational level is expected to be positively related to good health status because low levels of education results in poor health (Phaswana-Mafuya *et al.*, 2013a). Individuals with higher income levels are expected to have better health outcomes because poverty and poor health are known to be strongly correlated and mutually reinforcing (Marmot, 1999). Occupation greatly influences the health status of an individual because it had a bearing on strength, impairment, disability and mobility as one ages therefore, it is expected that individuals employed in the informal sector such as labourers, masons and so on will have poor health outcomes because speculatively, the nature of their work may require more physical effort. Also, it can be argued that occupations that are mainly sedentary such as white collar jobs; accountants, managers, clerks and so on; will may have a bearing on health in that they could result in the development of NCDs.

Within the context of Africa, tribe could potentially be very important in determining the health status of the elderly given the absence of universal welfare systems to provide security in old age. Therefore, the elderly with a patrilineal ethnic background are predicted to have better health because Ayernor (2017) observed that in Ghana, patrilineal tribes offered more support to the elderly. The role of religion as a determinant of health status is difficult to

disentangle from other underlying influences because religion can dictate risk factors and preventive health behaviours through practises such as fasting and preference for traditional medicine as opposed to modern medicine. People in unions are more likely to have better health compared to those who are not in unions because older persons in unions have been observed in studies such as Debpuur *et al.* (2010) to better health as compared to older persons not in unions. Particularly, with regard to subjective health, the company of another person could positively affect the health status of older persons.

Based these observations, a conceptual framework was developed to guide this study as presented in Figure 2.2.

**Figure 2.2: Conceptual Framework Showing the Relationship Between Place of Residence and Elderly Health Status**



Source: Authors' Construct, July 2018

## **2.10 Hypotheses**

Following from the related literature and the relationships depicted by the conceptual framework (Figure 2) the following hypotheses are examined in the study.

1. The elderly in urban areas are more likely to have good health status outcomes compared to the elderly in rural areas.
2. Elderly people who do not currently smoke are more likely to have good health status outcomes compared to elderly people who do smoke.
3. Elderly people who do not currently consume alcohol are more likely to have good health status outcomes compared to elderly people who do consume alcohol.

## **CHAPTER THREE**

### **3.0 METHODOLOGY**

#### **3.1 Introduction**

This chapter presents the methodology employed in conducting this study. It focuses on the study location, data used for the study, sample size and selection, categorisation of variables and the methods deemed appropriate for the analysis of data used in the study. It concludes with the limitations of the study.

#### **3.2 Study location/area**

This study was carried out in Ghana. Ghana is a country that can be found in sub-Saharan Africa. Ghana is located in West Africa and delimited by Togo to its east, the Ivory Coast to its west, Burkina Faso to its the north and the Gulf of Guinea and the Atlantic Ocean to its south. The country spans a land mass area of about 238,535 km<sup>2</sup>. Relief in Ghana is largely low, with altitudes not more than 900 metres. In terms of drainage, the country has many water bodies and the most notable is the Volta Lake.

Ghana's population recorded during the 2010 census was approximately 24.6 million. Records from its prior census in 2000 suggest an average intercensal growth rate of 2.5 percent. Ghana has a relatively young population and the older population, which is of interest to this study forms 6.7 percent of the population representing 1,643,381 persons. The country has 10 geographical regions which are further divided into 275 administrative districts. Accra is the capital of Ghana.

The economy of Ghana comprises a blend of private and public enterprise. Majority of working population work in the informal sector and are self-employed. Key income earning sectors in Ghana are agriculture and mining and to a limited degree industry and services. Most

notable cash crops and mineral products are produced for export and include cocoa, cashew and gold.

### **3.3 Source of Data**

The study used data drawn from Wave 1 of the World Health Organization's (WHO) Study on Global Ageing and Adult Health (SAGE) (2007) and was based on the design for the World Health Survey 2003, SAGE Wave 0, Ghana. The survey was conducted between 2007 and 2008 in Ghana with the primary aim of generating useful, accurate and comparable data on a variety of health-related and wellbeing domains pertaining to adult and older populations in middle and lower-income countries.

The survey was carry out in Ghana in corporation with the University of Ghana's Department of Community Health, the Ministry of Health and WHO, as part of a multi-country longitudinal study to supplement the present data on ageing which may inform policy and programmes. Data were collected on variables such as socioeconomic and demographic characteristics, health status, risky behaviours, health service coverage and utilization among others. SAGE Wave 1 was funded by the United States Department of Health and Human Services and the National Institute on Aging.

A total of 5,266 households were surveyed based on multistage cluster sampling strategies. Households were selected based on the representative sampling frame of 251 enumeration areas (EAs) used in 2000 Ghana population and housing census (GSS, 2000). From this sampling frame a total of 24 households were selected from each EA. This yielded a total household population of 27,988 and of this figure, only 5,573 persons made up of 2,824 men and 2,749 women met the criteria for selection and were interviewed for this study. The sample was comprised of persons within the adult population aged 50 years and above with a smaller sample of persons aged 18 to 49 years.

A response rate of 86 percent for households and 80 percent for individual respondents was achieved. The data was weighted at both the individual and household level using suitable weights that were calculated based on the probability of selecting each EA.

Participants were interviewed in their homes by interviewers, using a paper and pencil interview (PAPI). Respondents aged 18 to 49 were considered as household informants and only completed a household questionnaire and respondents age 50 and over completed an individual questionnaire. This approach was employed to help reduce the burden of interviews on an older adult in a given household. A total of 30 interviewers and supervisors were trained in two phases to undertake the survey. Both the household and individual questionnaires were translated into three of the widely spoken local languages - Akan, Twi, Ga, and used for training. However, all questionnaires were translated back into English before printing was done for the survey.

Instruments used were consistent with international standards for such studies ensuring that the survey design results obtained were similar to that of ageing studies in developed countries. This has encouraged the use of this data source for a number of studies in the past to examine ageing and adult health in sub-Saharan Africa (Gómez-Olivé *et al.*, 2010; Mwanyangala *et al.*, 2010; Kyobutungi *et al.*, 2010; Debpuur *et al.*, 2010).

### **3.4 Sample size and sample selection**

The individual questionnaire file was used in this study. A total of 5,565 individuals were sampled and interviewed during the WHO Study on Global Ageing and Adult Health (SAGE) in Ghana.

The analytical sample for this study was limited to individual respondents aged 60 years and over per this study's definition of elderly. A sample of 2,835 individuals met this criterion and were duly extracted from the dataset. Of this sample, for the purpose of computing the

scales used to derive the outcome variable, a total of 2,200 cases had completed questions to fit this criterion and thus were duly extracted for use. All other respondents were excluded from the analysis as they did not meet the criterion.

### **3.6 Variables**

#### **3.6.1 Dependent Variable**

The dependent variable used in this study is health status. In this study, health status was considered in two dimensions and these two dimensions were used to create a single composite health status measure called “composite health status”. The two dimension used to derive the composite health status measure were obtained in this manner:

- Quality of life is defined by WHO (1998) as “the individual’s perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns”. It can be measured with a single question such as “Taking all things together, how satisfied are you with your life as a whole these days?” However, for the purposes of this study, it was decided that a multi-dimensional tool was needed hence the World Health Organization Quality of Life, 8-item version (WHOQoL-8) was adopted. This tool was selected because it has been effectively used by other studies on elderly populations in Africa (Sen, 1981; Gureje *et al.*, 2008) and also all its 8-items components were covered within the survey. The measure attempts to capture an individual’s perceptions on their own quality of life via addressing four principal domains: psychological, physical, social and environmental. Each question from the 8-item version of the WHOQoL index was assessed on an individualised 5-point Likert scale with each subscale being scored positively. The response options were scored from 1 (worst – very bad, very dissatisfied, not at all) to 5 (best – very good, very satisfied, completely) with the

summed score having the potential range of 8–40. The obtained scores were then transformed into a 0-100 scale by multiply each score by 100, with higher scores indicating better quality of life. After the transformation, the scores obtained ranged from 10 to 50 and the mean was 28.7. The reliability of variables used in constructing the summary scores was tested using Cronbach’s alpha. Cronbach's alpha test gave the result 0.858, which indicates a high level of internal consistency for the scale and thus demonstrates its reliability. For the purpose of this study, this was further converted by using the mean score (28.7) as a cut-off point for defining good and poor quality of life. A score equal to or above the mean score was considered as good quality of life and was coded as 1. A score below the mean was considered as poor quality of life and was coded as 2. A similar approach was used in previous research by Mwanyangala *et al.* (2010) and Hewlett *et al.* (2015).

- Functional assessment was assessed through the 12-item World Health Organization Disability Assessment Schedule Version 2 (WHODAS-II). The WHODAS instrument was selected because it was incorporated into the survey, it is well-tested, has established psychometric characteristics and seen as a good predictor of disability globally (Sousa *et al.*, 2009; Luciano *et al.*, 2010). The WHODAS contains many of the most regularly asked activities of daily life (ADL) and instrumental activities of daily life (IADL) questions, as well as an assessment of the severity of disability through the use of response categories that assess the level of difficulty. Results from the 12 questions prescribed by this instrument were scored from 1 (best – none) to 5 (worst – extreme/cannot do). Since this response options run counterintuitively to the WHOQoL scale established earlier, the options were inverted through recoding to ensure conceptual consistency. The resulting response options now ranged from 1 (worst – extreme/cannot do) to 5 (best – none). These scores were then summed to get

an overall WHODAS score ranging from 12-60. The obtained scores were then transformed into a 0-100 scale by multiply each score by 100, in which 100 represents the best situation; no disability, and 0 represents the worst situation; disability. After the transformation, the scores obtained ranged from 10 to 50 and the mean was 39.9. This similar approach was adopted by a study conducted in Tanzania by Mwanyangala *et al.* (2010). The reliability of variables used in constructing the summary scores was tested using Cronbach's alpha. Cronbach's alpha test gave the result 0.888, which indicates a high level of internal consistency for the scale and thus demonstrates its reliability. Again, for the purpose of this study, this score was further converted by using the mean score (39.9) as a cut-off point to define good and poor physical assessment similar to the approach used in the WHOQoL dichotomisation. A score equal to or above the mean score was considered as good physical assessment and was coded as 1. A score below the mean was considered as poor physical assessment and was coded as 2.

After the two dimensional variables were computed, the composite health status was created by collapsing the two dichotomous variables into a single dichotomous variable. All two dichotomous variables were given as code 1 representing "Good" and code 2 representing "Poor" as presented above and this classification was maintained in the composite variable creation. This was done by summing the two dimensions to for a single variable ranging from 2 to 4. A person's health status was categorized as "Good" if the person had all two responses being "Good" implying a score of 2 and "Bad" if otherwise implying a score higher than 2.

### **3.6.2 Main Independent Variable**

The independent variable used in this study is the place of residence. This was originally measured and maintained as a dichotomous variable for this study with options being either "Rural" or "Urban".

### 3.6.3 Mediating Variables

The mediating variables used in this study are smoking status and alcohol consumption status and together give an indication of risky health behaviours in the elderly. For the purposes of this study, current risky health behaviours was focused on. Although, intensity is also important, this study chose to focus on frequency alone because studies cited that high levels of risky health behaviours in the earlier stages of life were sustained in the later stages of life (He *et al.*, 2012). Therefore, it was assumed that ignoring intensity would not significantly alter the results of the study. Therefore, smoking status and alcohol consumption status were obtained as follows:

- Alcohol consumption status was assessed by asking the question “Have you consumed alcohol in the last 30 days?” and the response options were “Yes” or “No”. This approach has previously been employed by Martinez (2013).
- Smoking status was assessed by “Do you currently use (smoke, sniff or chew) any tobacco products such as cigarettes, cigars, pipes, chewing tobacco or snuff?”. Response options to this question were “Yes, daily”, “Yes, but not daily” and “No, not at all”. This was dichotomised by collapsing “Yes, daily” and “Yes, but not daily” as “Yes”. This was done because both “Yes, daily” and “Yes, but not daily” responses were not sizeable and also represented the same underlying idea.

### 3.6.4 Control Variables

Age was categorised into five (5) subgroups given as 60-64, 65-69, 70-74, 75-79 and 80+. This was done in an attempt to reflect the variations that people may experience as they grow older within the years defined. Marital status was collapsed into a dichotomous variable given as either “currently in union” and “not currently in union”. “Currently in union” comprised of respondents who gave the answer to the question “what is your current marital status?” as “currently married” and “cohabiting”. “Not currently in union” comprised of

respondents who provided answers as “never married”, “widowed” and “separated/divorced” to the same question. This done because the response options of “currently married” and “cohabiting” gave the clearest indication of an individual living alone and not living alone. Sex of the respondent was originally measured and maintained as a dichotomous variable for this study with options being either “Male” or “Female”. Income quintiles were predefined within the dataset provided by WHO. It was measured and maintained as five income quintiles representing the lowest (Q1) to highest (Q5) income levels. Education was categorised as “No formal education”, “Less than or equal to six (6) years of education” and “More than six (6) years of education”. This was done to assess if increasing levels of education had an effect on the subjective health status of older persons. Religion information was collected using the question “do you belong to a religious denomination?” Four of the eleven original responses were maintained namely: None, Christianity, Islam and Primal Indigenous. All other responses being Buddhism, Chinese Traditional Religion, Hinduism, Jainism, Judaism, Sikhism and Other were collapsed into ‘Others’. This was done to effectively reflect the major religions within the sample and to handle unsubstantial responses. Ethnicity was operationalised as “Akan”, “Ga-Adangbe”, “Ewe”, “Predominantly Northern Ethnic Groups” and “Others”. Predominantly Northern Ethnic Groups was obtained by collapsing Gruma, Guan, Mande-Busanga, Mole-Dagbon and Grusi. This was done to because these ethnic groups were predominantly found in northern Ghana and generally had few responses. Occupation was operationalised as “Never worked”, “Public sector”, “Private sector”, “Self-employed” and “Informal sector”. This done to reflect their most recent or current main industry of employment.

### **3.7 Methods of data analysis**

The statistical analysis software package IBM SPSS (Version 24) was used for both the descriptive and inferential analysis. The analysis was conducted with the software set at a 5

percent two-sided significance level. Simple frequencies, cross-tabulations and regression outputs were displayed using tables to describe the characteristics of the elderly, establish associations and to depict health status among the elderly.

First, univariate analyses were conducted to show the proportion of respondents with various characteristics. The outcome of this analysis was descriptive and was presented using frequencies and percentages in tabular or figure formats.

Secondly, bivariate analysis tests were employed to investigate the relationship between the outcome variable and predictor variables. The outcome variable, composite health status, was measured at a dichotomous nominal scale as having a good health status or poor health status. The predictor variable of interest of this study, place of residence, was also measured at a dichotomous nominal scale as urban or rural. Other predictor variables include smoking status, alcohol consumption status, age, sex, religion, income level, educational attainment, occupation, marital status and ethnic background. The chi-square test of independence was used to determine these relationships at 5 percent (0.05) significance level.

At the multivariate level, a binary logistic regression model was used to determine which of the independent variables influences the dependent variable. The choice of the binary logistic regression model is because the outcome variable is dichotomous which takes on the values of “1” and “2”. The value “1” represented a good health status and the value “2” represented a poor health status. The binary logistic regression was deemed the most ideal model for this study because it provided this study with the tools needed to find the best fit and to describe the relationship between the outcome and explanatory variable. In this all models, control variables were considered as contextual factors for the purposes of this study and fitted as possible explanatory variables.

The categorisation of the variables used in the study are shown in Appendix A in the Appendices section.

### **3.8 Limitations**

First, the study was carried out using data from WHO SAGE Wave 1 conducted in 2007. As we live in an ever-changing society, it is important to note that many conditions and factors may have changed during the period between 2007 and today. Unfortunately, the most recent round of the longitudinal WHO-SAGE study was not publicly available at the time of conducting this study. Thus, the findings of this study may have been different if the data was collected in real time or the study had access to more current data.

Again, health status is a culmination or accumulation of factors over a life course. However, the dataset used may not have captured all of such factors from the time of birth up to the time of data capturing.

Finally, the definition of what constitutes “urban” or “rural” is not clearly stated to assess its validity against pre-existing standards. Due to this fact more nuanced approaches such as the use of an urbanicity measure as proposed by Verheij (1996) could not be attempted to further enrich this study. Again, it was difficult to clearly assess the effect that one’s previous place of residence had on his/her health status. This would have given a different dimension to the study. As a result, the study focused primarily on the current place of residence of the respondents.

## CHAPTER FOUR

### 4.0 ANALYSIS AND FINDINGS OF THE STUDY

#### 4.1 Introduction

The chapter presents the analysis of the various issues covered in the study and the tests of association established between the independent variables and the dependent variable. The chapter is in three broad sections chiefly based on the analysis being done on the data. The first section presents a univariate analysis that summarises the background characteristics of individuals in the study. The second section depicts the bivariate analysis of the dependent variable and each of the independent variables and mediating factors. The third section examines data using multivariate analysis in multiple models to predict the factors that influence the subjective health status of older persons.

#### 4.2 Background Characteristics of the Elderly

The results presented in Table 4.1 indicates that 42.4 percent of the elderly in the sample reported a good health status whereas 57.6 percent of them reported a poor health status. From the evidence presented in Table 4.1, a greater proportion of the elderly sampled resided in rural areas in Ghana. The results indicate that 61.3 percent of the elderly live in rural areas as compared to 38.7 percent living in urban areas. Additionally, the results in Table 4.1 suggest that 89.7 percent of the elderly do not currently smoke and 73.5 percent of the elderly did not currently consume alcohol. Also, a greater proportion of the elderly in the sample were female (50.4 percent). The table continues to depicts that the age group 60-64 years had the largest proportion of elderly people with 24.6 percent. Interestingly, the age group 70-74 (24.3 percent) had the second largest proportion followed by 65-69 (21.4 percent) and 80+ (16.1 percent) respectively. The smallest proportion of elderly people were those making up the age group

75-79 years which represented 13.5 percent of the sample population. The results obtained on age was somewhat surprising given that naturally it was expected that the frequencies or proportions would decrease as age increased. Other results from Table 4.1 shows that 52.0 percent of the elderly are not currently in a union. In terms of religion, a greater proportion of the elderly were Christian with 69.0 percent. Almost half of the elderly were Akan with 49.2 percent. Most of the elderly sampled were self-employed (79.5 percent) and had no formal education (67.2 percent). A larger proportion of the elderly unsurprisingly fell within the two lowest income levels with the lowest income group representing the largest proportion with 21.6 percent.

**Table 4.1: Background Characteristics of the Elderly**

Characteristic	Percentage (%)	Number
<b>Composite Health Status</b>		
Good	42.4	932
Poor	57.6	1268
<b>Place of Residence</b>		
Urban	38.7	851
Rural	61.3	1349
<b>Smoking Status</b>		
Yes	10.3	227
No	89.7	1973
<b>Alcohol Consumption Status</b>		
Yes	26.5	584
No	73.5	1616
<b>Sex</b>		
Male	49.6	1092
Female	50.4	1108
<b>Age</b>		
60-64	24.6	542
65-69	21.4	470
70-74	24.3	535
75-79	13.5	298
80+	16.1	355
<b>Marital Status</b>		
Currently in union	48.0	1056
Not currently in union	52.0	1144
<b>Educational Attainment</b>		
No formal education	67.2	1478
<= 6 years of education	10.3	227
> 6 years of education	22.5	495

Table 4.1 (continued)

<b>Religion</b>		
None	5.2	114
Christianity	69.0	1517
Islam	14.5	319
Primal Indigenous	10.7	235
Others	0.7	15
<b>Ethnic Background</b>		
Akan	49.2	1082
Ewe	6.9	152
Ga-Adangbe	10.1	223
Predominantly Northern Ethnic Groups	11.1	244
Others	22.7	499
<b>Occupation</b>		
Never worked	2.1	46
Public sector	8.3	182
Private sector	3.2	70
Self-employed	79.5	1749
Informal sector	7.0	153
<b>Income Levels</b>		
Lowest	21.6	476
Low	20.8	458
Middle	20.4	449
High	18.6	409
Highest	18.5	408
<b>Total</b>	<b>100</b>	<b>2200</b>

Source: Computed from WHO SAGE Wave 1 – Ghana (2007)

### 4.3 Association Between Dependent and All Other Variables

#### 4.3.1 Place of Residence and Health Status

A significant association between place of residence and the health status of the elderly was found. The results also suggest that a statistically significant relationship exist between place of residence and the health status of the elderly. Table 4.2 also showed that a greater proportion of older persons reported a poor health status in both urban (53 percent) and rural (60.6 percent) areas. Comparatively, greater proportion of rural residents reported a poor health status as compared to urban residents among the elderly.

**Table 4.2: Place of residence and elderly health status**

Place of Residence	Composite Health Status (%)		Number
	Good	Poor	
Urban	47.0	53.0	851
Rural	39.4	60.6	1349
<b>Total</b>	<b>42.4</b>	<b>57.6</b>	<b>2200</b>
<b><math>\chi^2 = 12.26</math></b>			<b>df = 1</b>
			<b>p-value = 0.000</b>

Source: Computed from WHO SAGE Wave 1 – Ghana (2007)

### 4.3.2 Smoking Status and Health Status

From Table 4.3, no significant association between smoking status and the health status of the elderly was found. Examination of the results showed that proportionally a greater proportion of the elderly who currently smoke (63 percent) and do not currently smoke (57 percent) reported poor health. Comparatively, a greater proportion of older persons who smoke reported poor health as against older persons who do not smoke.

**Table 4.3: Smoking status and elderly health status**

Smoking Status	Composite Health Status (%)		Number
	Good	Poor	
Yes	37.0	63.0	227
No	43.0	57.0	1973
<b>Total</b>	<b>42.4</b>	<b>57.6</b>	<b>2200</b>
<b><math>\chi^2 = 2.977</math>      <b>df = 1</b>      <b>p-value = 0.084</b></b>			

Source: Computed from WHO SAGE Wave 1 – Ghana (2007)

### 4.3.3 Alcohol Consumption Status and Health Status

Table 4.4 shows that a significant association between alcohol consumption status and the health status of the elderly was not found. An examination of the results further revealed that 56.3 percent of the elderly who currently drink alcohol and 58.1 percent of the elderly who do not currently drink reported a poor health status. Interestingly, a slightly greater proportion of older persons who do not consume alcohol reported poor health as against older persons who consume alcohol.

**Table 4.4: Alcohol consumption status and elderly health status**

Alcohol Consumption Status	Composite Health Status (%)		Number
	Good	Poor	
Yes	43.7	56.3	584
No	41.9	58.1	1616
<b>Total</b>	<b>42.4</b>	<b>57.6</b>	<b>2200</b>
$\chi^2 = 0.551$			$df = 1$
			$p\text{-value} = 0.458$

Source: Computed from WHO SAGE Wave 1 – Ghana (2007)

#### 4.3.4 Age and Health Status

Table 4.5 portrays a statistically significant association between age and health status. The table also suggests that all elderly age groups had a greater proportion reporting poor health status outcomes. Surprisingly, the 70-74 (61.1 percent) age group had the greatest proportion of elderly person reporting poor health. This was closely followed by 80+ (60.3 percent), 75-79 (59.3 percent) and 65-69 (58.9 percent) respectively. The 60-64 had 50.2 percent reporting poor health.

**Table 4.5: Age and elderly health status**

Age	Composite Health Status (%)		Number
	Good	Poor	
60-64	49.8	50.2	542
65-69	41.1	58.9	470
70-74	38.9	61.1	535
75-79	40.3	59.3	298
80+	39.7	60.3	355
<b>Total</b>	<b>42.4</b>	<b>57.6</b>	<b>2200</b>
<b><math>\chi^2 = 16.87</math></b>			<b>df = 4</b>
			<b>p-value = 0.002</b>

Source: Computed from WHO SAGE Wave 1 – Ghana (2007)

#### 4.3.5 Sex and Health Status

From the Table 4.6, no statistically significant association between sex and health status was found. Examination of the results observed in Table 4.6 showed that proportionally, a majority of elderly males (56.0 percent) and majority of elderly females (59.3 percent) reported a poor health status. However, comparatively, a greater proportion of females as opposed to males reported poor health among the elderly.

**Table 4.6: Sex and elderly health status**

Sex	Composite Health Status (%)		Number
	Good	Poor	
Male	44.0	56.0	1092
Female	40.7	59.3	1108
<b>Total</b>	<b>42.4</b>	<b>57.6</b>	<b>2200</b>
<b><math>\chi^2 = 2.52</math></b>			<b>df = 1</b>
			<b>p-value = 0.113</b>

Source: Computed from WHO SAGE Wave 1 – Ghana (2007), July 2018

#### 4.3.6 Marital Status and Health Status

Table 4.7 depicts that a statistically significant association does not exist between marital status and health status. Again, Table 4.7 indicates that a greater proportion of the elderly currently in unions (57.0 percent) and not currently in unions (58.2 percent) reported poor health. Comparatively, a slightly greater proportion of older persons not currently in a union reported poor health as against older persons currently in a union.

**Table 4.7: Marital status and elderly health status**

Marital Status	Composite Health Status (%)		Number
	Good	Poor	
Currently in union	43.0	57.0	1056
Not currently in union	41.8	58.2	1144
<b>Total</b>	<b>42.4</b>	<b>57.6</b>	<b>2200</b>
$\chi^2 = 0.33$			<b>df = 1</b>
<b>p-value = 0.566</b>			

Source: Computed from WHO SAGE Wave 1 – Ghana (2007)

#### 4.3.7 Income Levels and Health Status

Table 4.8 depicts that a statistically significant association exists between income levels and health status. Again, the analysis showed that health outcomes improved as income increased. Also, all income quintiles had a greater proportion reporting poor health except for the highest income quintile (52.5 percent) which had a larger proportion with good health.

**Table 4.8: Income levels and elderly health status**

Income Levels	Composite Health Status (%)		Number
	Good	Poor	
Lowest	34.9	65.1	476
Low	40.2	59.8	458
Middle	41.6	58.4	449
High	44.3	55.7	409
Highest	52.5	47.5	408
<b>Total</b>	<b>42.4</b>	<b>57.6</b>	<b>2200</b>
<b><math>\chi^2 = 29.53</math></b>			<b>df = 4</b>
			<b>p-value = 0.000</b>

Source: Computed from WHO SAGE Wave 1 – Ghana (2007)

#### 4.3.8 Educational Attainment and Health Status

Table 4.9 demonstrates that a significant association exists between educational attainment and health status. The table also showed that proportionally, health status was positively related with educational attainment in that as one's educational attainment increased, his or her health improved. Only the elderly with more than 6 years of education (50.3 percent) had a greater proportion reporting good health.

**Table 4.9: Educational attainment and elderly health status**

<b>Educational Attainment</b>	<b>Composite Health Status (%)</b>		<b>Number</b>
	<b>Good</b>	<b>Poor</b>	
No formal education	39.7	60.3	1478
Less than or equal to 6 years of education	42.3	57.7	227
More than 6 years of education	50.3	49.7	495
<b>Total</b>	<b>42.4</b>	<b>57.6</b>	<b>2200</b>
<b><math>\chi^2 = 17.02</math></b>			<b>df = 2</b>
			<b>p-value = 0.000</b>

Source: Computed from WHO SAGE Wave 1 – Ghana (2007)

#### 4.3.9 Occupation and Health Status

Table 4.10 below depicts that a statistically significant association exists between occupation and health status. Examination of the results also brought to light that only the elderly who worked in the informal sector (53.6 percent) had a majority reporting a good health status. The elderly who have never worked had an equal number reporting both good and poor health. All other occupational sectors had a majority reporting poor health. Those who are self-employed had the largest proportion reporting poor health.

**Table 4.10: Occupation and elderly health status**

Occupation	Composite Health Status (%)		Number
	Good	Poor	
Never worked	50.0	50.0	46
Public sector	48.4	51.6	182
Private sector	47.1	52.9	70
Self-employed	40.4	59.6	1749
Informal sector	53.6	46.4	153
<b>Total</b>	<b>42.4</b>	<b>57.6</b>	<b>2200</b>
<b><math>\chi^2 = 15.19</math></b>			<b>df = 4</b>
			<b>p-value = 0.004</b>

Source: Computed from WHO SAGE Wave 1 – Ghana (2007)

#### 4.3.10 Ethnic Background and Health Status

From Table 4.11, it can be inferred that a statistically significant association does not exist between ethnic background and health status. Going over the results in Table 4.11, it was observed that all ethnic groups had majority of persons reporting poor health. Of this, the largest majority was found in Others (59.7 percent) and the lowest majority was found in the predominantly northern ethnic groups (53.3 percent).

**Table 4.11: Ethnic background and elderly health status**

Ethnic Background	Composite Health Status (%)		Number
	Good	Poor	
Akan	41.7	58.3	1082
Ewe	42.8	57.2	152
Ga-Adangbe	45.3	54.7	223
Predominantly Northern Ethnic Groups	46.7	53.3	244
Others	40.3	59.7	499
<b>Total</b>	<b>42.4</b>	<b>57.6</b>	<b>2200</b>
<b><math>\chi^2 = 3.78</math></b>			<b>df = 4</b>
			<b>p-value = 0.436</b>

Source: Computed from WHO SAGE Wave 1 – Ghana (2007)

#### 4.3.11 Religion and Health Status

Based on Table 4.12 it can be inferred that no significant association exists between religion and health status. Also, Table 4.12 showed that all religions had a greater proportion of the elderly reporting a poor health status. Of this, primal indigenous (61.7 percent) had the greatest proportion reporting poor health and Islam (53.6 percent) had the smallest proportion reporting poor health.

**Table 4.12: Religion and elderly health status**

Religion	Composite Health Status		Number
	Good	Poor	
None	38.6	61.4	114
Christianity	42.5	57.5	1517
Islam	46.4	53.6	319
Primal Indigenous	38.3	61.7	235
Others	40.0	60.0	15
<b>Total</b>	<b>42.4</b>	<b>57.6</b>	<b>2200</b>
$\chi^2 = 4.42$			$df = 4$
			$p\text{-value} = 0.353$

Source: Computed from WHO SAGE Wave 1 – Ghana (2007)

#### 4.4 Factors Associated with Elderly Health Status

A binary logistic regression analysis was conducted to predict the factors that influence the health status of the elderly at three levels. At the first level, the explanatory variable, place of residence, was regressed on the outcome variable, elderly health status, to ascertain its effects on the latter. At the second level, the predictor variable, together on the proximate variables – smoking status and alcohol consumption status, were regressed with elderly health status to determine the effects of the mediating variables and place of residence on elderly health status. The third model considers all other independent variables discussed in Section 3.6 in Chapter Three as predictors of elderly health status.

With each of the categorical variables, one category is referred to as the reference category (ref) and all others are interpreted in reference to the reference category. The chances that an elderly person will have a good health status outcome per his/her place of residence, are interpreted with the help of the odds ratio (OR). An  $OR > 1$  indicates a positive association

of the variable with elderly health status and so any category with OR > 1 increases the odds of having a good health status compared to the reference category of that variable. On the other hand, an OR < 1 decreases the odds of having a good health status. The significance of a predictor able to predict elderly health status is measured using the p-value, at an alpha level of 0.05.

#### 4.4.1 Model 1: Elderly Health Status Using Place of Residence

The first model depicts a logistic regression performed to ascertain the effect of place of residence on the likelihood of an elderly person having a good health status. The logistic regression model was statistically significant and showed that rural residents were about 0.73 times less likely to have a good health status than their urban counterparts.

**Table 4.13: Elderly Health Status Using Place of Residence**

Variable	OR 95% C.I	P-value
<b>Place of residence (<i>Urban</i>)</b>		
Rural	0.73 [0.62,0.87]	0.000
<i>Constant</i>	1.536	
<i>Correct Prediction</i>	57.6%	
<i>Nagelkerke R<sup>2</sup></i>	0.007	
<i>Model Chi-square (df)</i>	12.208(1)	<i>Sig = 0.009</i>
( ) = Reference category	Sample size = 2200	p < 0.05

Source: Computed from WHO SAGE Wave 1 – Ghana (2007)

#### 4.4.2 Model 2: Elderly Health Status Using Place of Residence and Mediating Variables

Table 4.14 indicates that place of residence is significantly associated with elderly health status. The logistic regression model showed that rural residents were about 0.73 times less likely to have a good health status than their urban counterparts. Generally, the results revealed no apparent difference between place of residence being directly modelled with health status and being modelled in the presence of the mediating variables. This suggests that the mediating variables do not have much influence on the association between place of residence

and elderly health status and thus place of residence may be more directly associated to elderly health status.

**Table 4.14: Elderly Health Status Using Place of Residence and Mediating Variables**

Variable	OR 95% C.I	P-value
<b>Place of residence (Urban)</b>		
Rural	0.73 [0.62,0.87]	0.000
<b>Smoking Status (Yes)</b>		
No	1.34 [1.00, 1.80]	0.051
<b>Alcohol Consumption Status (Yes)</b>		
No	0.88 [0.72, 1.07]	0.206
<i>Constant</i>	<i>1.542</i>	
<i>Correct Prediction</i>	<i>57.4%</i>	
<i>Hosmer and Lemeshow Test</i>	<i>95.8%</i>	
<i>Nagelkerke R<sup>2</sup></i>	<i>0.010</i>	
<i>Model Chi-square (df)</i>	<i>16.693(3)</i>	<i>Sig = 0.001</i>

() = Reference category

Sample size = 2200

p < 0.05

Source: Computed from WHO SAGE Wave 1 – Ghana (2007)

#### 4.4.3 Model 3: Elderly Health Status Using All Predictors

Table 4.15 indicates that place of residence is not significantly associated with elderly health status. However, it is important to note that although place of residence was not significant in this model like in the two earlier models, the odds of reporting a good health status was higher for rural residents in Model 3. The mediating variables, smoking status and alcohol consumption status, were again not found to be significantly associated with elderly health status. Also, sex, marital status, ethnic background and religion were not found to have a significant association with elderly health status.

All other predictor variables being age, educational attainment, income levels and occupation were found to be significantly associated with elderly health status. Only the 65-69 age group was significantly associated with health status. The elderly within this age group were 0.70 times less likely to have a good health status than members of the 60-64 age group.

Less than or equal to 6 years of education was found to be significantly associated with health status and the elderly with this level of educational attainment were 1.44 times more likely to report good health than the elderly with no formal education. Occupations in the private sector and informal sector were found to have a significant association with health status. Private sector employees were 1.65 times more likely to have a good health status than the elderly who had never worked. Also, informal sector employees were 1.71 times more likely to have a good health status than the elderly who had never worked. All income quintiles were found to be significantly associated with health status except the highest income quintile and among these, the best odds of having a good health status were observed in the low income quintile. Falling within the low income quintile meant you were 1.89 times more likely to have a good health status than the elderly who were categorised as being in the lowest income quintile.

**Table 4.15: Elderly Health Status Using All Predictors**

Variable	OR 95% C.I	P-value
<b>Place of residence</b> ( <i>Urban</i> )		
Rural	0.88 [0.72, 1.07]	0.200
<b>Smoking Status</b> ( <i>Yes</i> )		
No	1.31 [0.97, 1.77]	0.079
<b>Alcoholic Consumption Status</b> ( <i>Yes</i> )		
No	0.90 [0.73, 1.10]	0.308
<b>Sex</b> ( <i>Male</i> )		
Female	0.85 [0.68, 1.07]	0.159
<b>Age</b> ( <i>60-64</i> )		<b>0.004</b>
65-69	0.70 [0.53, 0.93]	0.012
70-74	1.00 [0.75, 1.33]	0.980
75-79	1.08 [0.82, 1.44]	0.570
80+	1.06 [0.77, 1.47]	0.715
<b>Marital Status</b> ( <i>Currently in a union</i> )		
Not currently in a union	1.16 [0.93, 1.46]	0.185
<b>Educational Attainment</b> ( <i>No formal education</i> )		<b>0.004</b>
<= 6 years of education	1.44 [1.16, 1.78]	0.001
> 6 years of education	1.34 [0.97, 1.85]	0.078

Table 4.15 (continued)

Variable	OR 95% C.I	P-value
<b>Religion (None)</b>		<b>0.553</b>
Christianity	1.10 [0.36, 3.38]	0.874
Islam	1.03 [0.36, 3.00]	0.953
Primal Indigenous	0.81 [0.27, 2.40]	0.703
Others	0.90 [0.30, 2.67]	0.843
<b>Ethnic Background (Akan)</b>		<b>0.883</b>
Ewe	1.01 [0.76, 1.33]	0.954
Ga-Adangbe	0.91 [0.61, 1.36]	0.641
Predominantly Northern Ethnic Groups	0.90 [0.62, 1.29]	0.562
Others	0.91 [0.65, 1.26]	0.556
<b>Occupation (Never worked)</b>		<b>0.027</b>
Public sector	1.14 [0.58, 2.24]	0.710
Private sector	1.65 [1.04, 2.62]	0.033
Self-employed	1.73 [0.95, 3.14]	0.073
Informal sector	1.71 [1.22, 2.40]	0.002
<b>Income Levels (Lowest)</b>		<b>0.003</b>
Low	1.89 [1.38, 2.58]	0.000
Middle	1.48 [1.10, 2.00]	0.011
High	1.37 [1.02, 1.84]	0.036
Highest	1.28 [0.96, 1.71]	0.091
<i>Constant</i>	<i>0.542</i>	
<i>Correct % Prediction</i>	<i>61.4%</i>	
<i>Hosmer and Lemeshow Test</i>	<i>27.2%</i>	
<i>Nagelkerke R<sup>2</sup></i>	<i>0.049</i>	
<i>Model Chi-square (df)</i>	<i>81.088(27)</i>	<i>Sig = 0.000</i>

() = Reference category

Sample size = 2200

p &lt; 0.05

Source: Computed from WHO SAGE Wave 1 – Ghana (2007)

## 4.5 Discussion of Findings

The section, discussion of findings, focuses on addressing the objectives of the study, the hypotheses and linkages to other research work on the subject of elderly health status. It therefore comprises three (3) sections with each section focused on a key area of interest to this study.

### 4.5.1 Influence of place of residence on elderly health status

The first hypothesis of this study states; “The elderly in urban areas are more likely to have good health status outcomes compared to the elderly in rural areas”. To help assess this

hypothesis, evidence from the bivariate analysis revealed a significant association between place of residence and health status. At the multivariate level, the first and second model also showed a significant association between place of residence and health status. However, when place of residence was modelled with the mediating variables as well as all other control predictors, place of residence did not have significant influence on elderly health status. It is important to note though that the odds ratios at this level indicated that the likelihood of a rural resident reporting a good elderly health status increased by 15 percent over the results obtained in model 1 and 2.

Many studies (Erman, 1990; McCoy & Brown, 1978; Lassey & Lassey, 1985; Pa *et al.*, 1979; Palmore, 1983; Patrick *et al.*, 1988; Hartley *et al.*, 1994; van Dis, 2002; Slifkin *et al.*, 2000; Gillanders *et al.*, 1997; Eberhardt & Pamuk, 2004; Coburn & Bolda, 2001; Ayernor, 2012; Uzobo & Dawodu, 2015) have found replicative evidence that place of residence has an influence on elderly health status. However, this study's findings contrast starkly with those findings but rather indicate that place of residence has no significant influence on subjective elderly health. Other studies have corroborated the findings of this study by positing a lack of "real" difference between rural and urban residency with regards to elderly health status (Lee & Lassey, 1980; Reschovsky & Staiti, 2005; Smith *et al.*, 2008; Pong *et al.*, 2009).

This result in Ghana may be due to the fact that the supposed urban advantage with regards to health in the developing world may actually be questionable (Zimmer *et al.*, 2006). It can be argued in Ghana that rural areas have cleaner air, are less congested, have a slower pace than urban areas and greater access to social capital which may ease the health difficulties of the elderly. These factors may be important because they may have shape one's self-perception, self-esteem, self-worth, stress levels etc.

Again, in spite of the perceived socioeconomic urban advantage, it is worth noting that some of the most critical health problems may mainly be experienced in urban areas. One of such experiences may be the emergence of slums and their concomitant problems as a result of increased migration to urban areas. The health of elderly urban residents may be affected because the resulting slums in cities are gradually becoming their homes (Ezeh *et al.*, 2006; Gugler, 2002; Hashimoto *et al.*, 1992). The same perceived socioeconomic urban advantage could have led to the assimilation of western lifestyle changes (Mba & Yarney, 2005; Alaba & Chola, 2013; Hosseinpoor *et al.*, 2012) and these potentially modify their health.

Therefore, the findings of this study do not offer sufficient evidence in support of the hypothesis that “The elderly in urban areas are more likely to have good health status outcomes compared to the elderly in rural areas” hence it is not accepted.

#### **4.5.2 Influence of place of residence together with smoking status and alcoholic consumption status on elderly health status**

All the evidence provided at bivariate and multivariate level agree to point out that both smoking status and alcohol consumption status have no significant association with elderly health status. This may be explained by the fact that a subjective measure was used to assess health status in this study. This is because subjective health measures basically summarise how one feels about their health. With that in mind, because smoking to a degree, is a choice and people who smoke generally say “that smoking elicits a good feeling or makes them high”, if one chooses to smoke, his or her choice may less likely be self-perceived to influence his or her health. This line of thinking may also be applicable in the case of alcohol consumption status.

Earlier studies have suggested that positive health behaviours such as non-smoking, moderate or no alcohol intake improved the odds of having a good health status (Hitt *et al.*,

1999; Engberg *et al.*, 2009; Galioto *et al.*, 2010). However, this result may rather offer support to the view that health disparities were largely as a result of other factors and not as a result making different choices (Alleyne *et al.*, 2000; Wagstaff, 2001).

Also, given the fact that a greater proportion of the elderly have no formal education (67.2 percent) and are rural residents (61.3 percent), the argument is made that health knowledge and the practise of health promotion attitudes may be low and not very different among the elderly. This meant that a marked difference in elderly health status was not seen.

Therefore, there is insufficient evidence to support the hypotheses that “Elderly people who do not currently smoke are more likely to have good health status outcomes compared to elderly people who do smoke” and that “Elderly people who do not currently consume alcohol are more likely to have good health status outcomes compared to elderly people who do consume alcohol”. Therefore, both hypotheses are not accepted per the findings of this study.

#### **4.5.3 Factors associated with elderly health status**

Based on the findings observed at bivariate and multivariate level, sex, marital status, ethnic background and religion were not significantly associated with elderly health status. However, at both the bivariate and multivariate level, the results indicated that age, income, occupation and educational attainment were factors associated significantly to elderly health status.

At the bivariate and multivariate levels, even though males seemed have better health outcomes compared to women, the evidence suggests that it did not have a significant influence on health status. These findings contradict the findings of earlier studies such as Mwanyangala *et al.* (2010) and Debpuur *et al.* (2010) which indicated that sex was associated with the health status of the elderly. This may be explained by the fact that the male advantage purported in

literature (Arber & Cooper, 1999; Stelmach *et al.*, 2004; Nyirenda *et al.*, 2013) may be a tenuous one in Ghana.

Marital status was also not found to be significantly associated with elderly health status at the bivariate level and at the multivariate level. However, it was observed that not being in a union implied an individual was 1.16 times more likely to report a good health status. Even though marital status was not significant in this study, previous studies have argued an association between marital status and elderly health status (Gove, 1973; Hu & Goldman, 1990, Ben-Shlomo *et al.*, 1993; Debpuur *et al.*, 2010). A possible reason may be the fact that in Africa, one's family is more extended in nature ensuring that the gap created as a result of the absence of a spousal support or encouragement is adequately filled due to the presence of many available substitutes within the family and community at large.

At all levels of analysis, ethnic background was not found to be significantly associated with elderly health status. All ethnic groups reported a greater proportion being in poor health. This result suggests that in the case of Ghana, an elderly person's background may not influence his or her health. A possible explanation for this may be the fact that some practises are common among all ethnic groups thereby ensuring that ethnic distinctions are generally muted in Ghana. For instance, most ethnic groups practise the patrilineal system in Ghana which according to Ayernor (2017) offered more support to the elderly.

Religion was shown to not have a significant association with elderly health status in Ghana at both the bivariate and the multivariate level. The evidence contradicted findings which suggested that religion was associated with a good health status (Koenig *et al.*, 2004). This may be explained by the fact that some religious practises and activities may be deleterious to an individual's health such as fasting, all night service etc. in spite of positives it may have such as social cohesiveness, social support etc. It is important to note that religion as measured

by this study considered affiliation and not religious activity, attitudes etc. Considering such aspects under religion may have altered the outcome.

Age was also significantly associated with elderly health status in the bivariate and multivariate analysis. Of all age groups under consideration in this study, only the 65-69 was significantly associated with health status. Individuals within this age bracket were 0.70 times less likely to report good health as compared with the 60-64 (reference category) age group. Surprisingly, a closer look at all categories under this variable suggests that an age increase did not generally result in a decrease in health because the best odds were observed as age increased. This association starkly contrast with earlier studies in Ghana that have shown ageing to be associated with lower subjective health indicators (Calys-Tagoe *et al.*, 2014). This result may be attributed to the fact that a subjective elderly health measure was used in this study. This is worth noting because increased age results in increased frailty. However, increased frailty may not necessarily translate into an inability to carry out the social roles expected of the elderly. Within the African context, social definitions form an integral part of who is referred to as old and not just chronological age. Old age is socially accepted, cherished and respected. Therefore, an elderly individual able to perform his or her social roles may have a good self-perception and by extension a good subjective health.

Educational attainment was shown to be significantly associated to elderly health status at all the levels of analysis. At the bivariate level of the analysis, health status was positively related with educational attainment in that as one's educational attainment increased, his or her health improved. The results had it that a larger proportion of the elderly with over 6 years of formal education (50.3 percent) had a good health status. At the multivariate level, the results indicated again that some amount of formal education increased an individual's odds of reporting a good elderly health status. At this stage, the elderly with no more than 6 years of formal education (1.44) had the best odds of reporting good health. They had a 10 percent

advantage over those with over 6 years of formal education (1.34). These findings generally agree with those other studies such as Phaswana-Mafuya *et al.* (2013a). This may be explained by the fact that low levels of education generally limit one's access to health services among the elderly (Phaswana-Mafuya *et al.*, 2013a) and will increase the likelihood of coming into contact with communicable diseases. Again, Alaba & Chola (2013) findings showed that high levels of education were associated with a lower prevalence of non-communicable diseases because they were more likely to take advantage of health knowledge and to better practise health promotion attitudes.

At all levels of analysis, income was observed to have a significant association with health status. The bivariate analysis showed that as income increased health status improved. At the multivariate level, all income levels were significantly associated with elderly health status except the highest income level. However, the odds of reporting good health diminished as income levels improved. This evidence potentially suggests that with regards to subjective health, an individual required just enough income to cover his or her basic needs and beyond the point of what was needed to survive, their subjective health may be more appropriately defined by the intangibles such social cohesion. Again, the finding may be explained by the notion that wealthy households in developing regions such as sub-Saharan Africa are more likely to adopt a western lifestyle and diets (Alaba & Chola, 2013; Hosseinpoor *et al.*, 2012) and such shifts alter their health status.

Occupation was found to be significantly associated with elderly health status at all levels of analysis. At the bivariate stage, only informal sector employees had a greater proportion reporting good health. At the multivariate level, only private and informal sector employees were found to have a significant association with elderly health status. However, self-employed (1.73) individuals had the best odds of reporting good health status. The results revealed that any form of gainful employment resulted in a significant increase one's likelihood

of reporting a good health status. The evidence also suggested that individuals who worked in seemingly more unstructured settings or in sectors that are difficult to regulate such as the self-employed (1.73) and informal sector (1.71) had better health statuses. This may be explained by the fact that such individuals generally worked on their own terms and such liberty or freedom may positively influence subjective health.

In conclusion, the regression analysis revealed that in the presence of all other variables, the primary predictor variable, place of residence is not a significant predictor of elderly health status. Again, despite the fact that previous studies have shown an association with all variables used within this study as seen Chapter 2, based on the findings of this study, age, occupation, income levels and educational attainment were found to be the factors associated with elderly health status in Ghana.

## CHAPTER FIVE

### 5.0 SUMMARY, RECOMMENDATIONS AND CONCLUSIONS

#### 5.1 Summary

The recent recognition of the importance of subjective measures as a predictor of health has resulted continued strides to refine and develop subjective measures especially in gerontological studies given the advent of population ageing in most regions of the world. In sub-Saharan Africa, it has been documented that spatial imbalances exist and this situation may influence the health status of the elderly. The phenomenon of population ageing occurring in the midst of prevailing spatial imbalances in Ghana was the persuasive factor behind this study's primary objective - to examine the relationship between place of residence and health status in the elderly.

The study used data from the Wave 1 of the World Health Organization's (WHO) Study on Global Aging and Adult Health (SAGE) (2007). Informed by existing literature on the subject and the survey questionnaire, the study considered place of residence as a simple dichotomy – urban or rural and a subjective composite measure consisting of quality of life and physical assessment was created to evaluate the health status of the elderly. Literature posited that the definition of old age in Africa was a composite of chronology and social constructs. Arguments could be found supporting an advantage for residency in both urban and rural areas. Other findings from literature suggested some associations between an elderly person's socioeconomic and demographic characteristics and health status aside place of residence. These include age, sex, marital status, education, income and occupation. Risky health behaviours such as smoking status and alcohol consumption status were found to mediate the influence of socioeconomic and demographic factors on health status. Based these findings in

literature and appropriateness to the current study, the Social Determinants of Health was adopted as the theoretical foundation to guide this work.

The techniques and tools used to analyse the data in this study were employed on three levels – univariate, bivariate and multivariate. Bivariate and multivariate analyses were computed at a significance level (alpha) of 0.05. The first level employed univariate analysis to describe the distribution of the elderly across all the study variables. Majority of the elderly were in poor health, lived in rural areas, female, Akan, Christian and did not smoke or drink alcohol. Again, a greater proportion of the elderly had no formal education, were not currently in a union, were self-employed and aged between 60-65 years. Most the elderly also fell within the lowest income quintile.

The second level, the Pearson's Chi-square test of association was employed to analyse the relationship between health status and each independent variable in a cross-tabulation format. The chi-square test of association was used to analyse the relationships between the dependent and each of the independent variables. After the analysis, results indicated a significant association of place of residence, age, income, educational attainment and occupation with health status.

At the multivariate level, the binary logistic regression model was employed to determine the predictors of elderly health status. Three models were run. In the first model, the explanatory variable, place of residence, was regressed on the outcome variable, elderly health status. In the second model, the predictor variable, together on the mediating variables – smoking status and alcohol consumption status, were regressed with elderly health status to determine the effects of the mediating variables and place of residence on elderly health status. The third model considers all independent variables discussed in Section 3.6 in Chapter Three as predictors of elderly health status. The results identified that various sociodemographic

characteristics of the elderly are significant predictors of elderly health status. However, place of residence was found to not influence the health status of the elderly. Predictors of elderly health study were therefore given as age, occupation, educational attainment and income. An increase in age did not necessarily result in a decrease in health because the best odds were observed at in later years. The elderly with no more than 6 years of formal education had the best odds of reporting good health. The odds of reporting good health diminished as income levels improved in the elderly.

## **5.2 Conclusion**

Elderly health status is a critical factor worth noting given the advent of population ageing globally in contemporary times. In sub-Saharan Africa, it has been documented that spatial imbalances exist and this situation may influence the health status of the elderly. For this reason, the study sought to examine the relationship between place of residence and elderly health status. The results identified that various sociodemographic characteristics of the elderly are significant predictors of subjective elderly health status. However, place of residence was found to not influence the health status of the elderly significantly in the presence of all other predictors considered in the study.

The study identified age, occupation, educational attainment and income to be significant factors associated with elderly health status. Interestingly, an increase in age did not necessarily result in a decrease in health because the best odds were observed at in later years. Prior employment of any form (occupation) improved health status significantly and self-employed individuals had the highest odds of reporting good health status. The elderly with no more than 6 years of formal education had the highest odds of reporting good health. The odds of reporting good health diminished as income levels improved in the elderly.

### 5.3 Recommendations

The conclusions drawn from this study offer relevant inferences for both policy formulation and research. The study showed that some relationships between place of residence, age, sex, marital status, income levels, educational attainment, occupation and other predictors and elderly health status exists. Of all predictors variables considered in this study, age, sex, occupation, ethnic background and income levels were established as significant predictors of elderly health status in Ghana. With these findings serving as a premise, some recommendations are made:

1. Findings suggest that employment in any sector significantly improved health status outcomes. Therefore, programmes must be introduced to encourage members of the population to take up employment of any kind due to the effects that such an endeavour may have on their health at later ages.
2. Terms of employments and other workspace arrangements of the self-employed and the informal sector more closely observed to enable replication across all other occupational sectors so as to improve the health of all future older persons in Ghana and to reduce health disparities attributable to occupation.
3. Some formal education was found to better health outcomes in the elderly. It is therefore recommended that extra attention be given to the elderly with no formal education through initiatives such as seminars and workshop tailored to equip the elderly with the practical knowledge and skills that positively impact their health. For future populations, at least basic education must remain free and universal to ensure that all citizen approach later life with high levels of educational attainment than the generations before them.
4. There is limited literature on elderly health status in Ghanaian. Further research is needed on elderly health status in order to establish the major predictors of elderly

health status. For the purposes of monitoring elderly health, such studies need to be carried from time to time and in different settings.

5. In addition, no consensus in literature could be found that provided a blueprint on the composition of an aggregate variable to assess subjective health of the elderly. Therefore, this study submits its aggregate subjective health measure to future studies for rigorous examination of its conceptual, semantic and linguistic appropriateness in our cultures and regions.

## References

- Aboderin, I. (2010). Understanding and advancing the health of older populations in Sub-Saharan Africa: Policy perspectives and evidence needs. *Public Health Reviews*, 32, 357–376.
- Aboderin, I. A. G. & Beard, J. R. (2015). Older people's health in sub-Saharan Africa. *The Lancet*, 385(9968), e9–e11.
- Aboderin, I., & Ferreira, M. (2008). Linking ageing to development agendas in Sub-Saharan Africa: Challenges and approaches. *Population Ageing*, 1, 51–73.
- Aboderin I. & Kizito P. (2010). Dimensions and determinants of health in old age in Kenya. Nairobi: National Coordinating Agency for Population and Development.
- Alleyne G.A., Casas J.A., Castillo-Salgado C. (2000). Equality, equity: why bother? *Bull. World Health Organisation*, 78(1):76–77.
- Alaba, O., & Chola, L. (2013). The social determinants of multimorbidity in South Africa. *International Journal for Equity in Health*, 12(1), 63.
- Amato, P. R. (1993). Urban-rural differences in helping friends and family members. *Social Psychology Quarterly*, 56(4), 249-262.
- Arber, S., & Cooper, H. (1999). Gender differences in health in later life: the new paradox?. *Social science & medicine*, 48(1), 61-76.
- Arber, S., & Ginn, J. (1991). *Gender and later life - A sociological analysis of resources and constraints*. London: Sage.
- Ayernor, P. K. (2012). Diseases of ageing in Ghana. *Ghana Medical Journal*, 46(2 Suppl), 18–22.
- Ayernor, P. K. (2016). Health and Well-Being of Older Adults in Ghana: Social Support, Gender, and Ethnicity. *Ghana Studies*, 19(1), 95-129.
- Ben-Shlomo, Y., Smith, G. D., Shipley, M., & Marmot, M. G. (1993). Magnitude and causes of mortality differences between married and unmarried men. *Journal of Epidemiology & Community Health*, 47(3), 200-205.
- Calys-Tagoe, B. N. I., Hewlett, S. A., Dako-Gyeke, P., Yawson, A. E., Bad-Doo, N. A., Seneadza, N. A. H., Minicuci N., Naidoo N., Chatterji S., Kowal, P. & Biritwum, R.B. (2014). Predictors of subjective well-being among older Ghanaians. *Ghana medical journal*, 48(4), 178-184.
- Beggs, J. J., Haines, V. A., & Hurlbert, J. S. (1996). Situational contingencies surrounding the receipt of informal support. *Social Forces*, 75(1), 201-222.
- Bloom, D.E. Boersch-Supan, A. and Seike, A. 2011. Population Ageing: Fact, Challenges, and Responses. Working Paper Series, PGDA Working Paper No. 71, May 2011.

- Bowen, G.L., Richman, J.M. & Bowen, N.K. (2000). Families in the context communities across time In S.J. Price, et al. (Eds.), *Families across time: A life course perspective USA*: Roxbury.
- Bowen, R. L. and Atwood, C. S. (2004). Living and Dying for Sex. *Gerontology*. 50:265-290.
- Breslow Lester (1972). A quantitative approach to the World Health Organization definition of health: physical, mental and social well-being. *Int. Journal of Epidemiology*; 1:347.
- Breslow Lester (1989). Health Status Measurement in the Evaluation of Health Promotion. *Medical Care*, Vol. 27, No. 3, Supplement: Advances in Health Status Assessment. Lippincott Williams & Wilkins.
- Britt, H. C., Harrison, C. M., Miller, G. C., & Knox, S. A. (2008). Prevalence and patterns of multimorbidity in Australia. *Medical Journal of Australia*, 189(2), 72–77.
- Brubaker, T. H. & Powers, E. A. (1976). The stereotype of "old". A review and alternative approach. *Journal of Gerontology*. 31(4)441-7.
- Christensen, K., Doblhammer, G., Rau, R., & Vaupel, J. W. (2009). Ageing populations: the challenges ahead. *The lancet*, 374(9696), 1
- Clausen, T., Romøren, T. I., Ferreira, M., Kristensen, P., Ingstad, B., & Holmboe-Ottesen, G. (2005). Chronic diseases and health inequalities in older persons in Botswana (southern Africa): a national survey. *The journal of nutrition, health & aging*, 9(6), 455-461.
- Coburn A.F. & Bolda E.J. (2001). Rural elders and long-term care. *Culture and Medicine*, Vol. 174, March, pp. 209-213.
- Dahlgren, G., & Whitehead, M. (1991). Policies and strategies to promote social equity in health. Stockholm: *Institute for future studies*.
- Deeg, D. J., & Kriegsman, D. M. (2003). Concepts of self-rated health: specifying the gender difference in mortality risk. *The Gerontologist*, 43(3), 376-386.
- Debuur, C., Welaga, P., Wak, G., Hodgson, A. (2010). Self-reported health and functional limitations among older people in the Kassena-Nankana District, Ghana. *Global Health Action Supplement 2*.
- Defo, B. K. (2014). Demographic, epidemiological, and health transitions: are they relevant to population health patterns in Africa? *Global Health Action*, Special Issue: Epidemiological Transitions – Beyond Omran’s Theory, Vol. 1.
- Deaton, A. (2008). Income, health and well-being around the world: Evidence from the Gallup World Poll. *Journal of Economic Perspectives*, 22(2)53: 1-20.
- Eberhardt M.S. and Pamuk E.R. (2004). The Importance of Place of Residence: Examining Health in Rural and Nonrural Areas. *Rural Health and Health Care Disparities*, Vol. 94, Issue 10, pp. 1682-1686.
- Ebersole, P. & Hess, P. (1998). *Toward Healthy Ageing: Human Needs and Nursing Response*. (5<sup>th</sup> Edition). St. Louis, MO: Mosby-Year Book.

- Egidi, V. (2003). Health status of older people. *Genus*, Vol. 59, No. 1, *Ageing* (Jan-Mar), pp. 169-200.
- Eliopoulos, C. (2001). *Gerontological Nursing*. Fifth edition. Philadelphia: Lippincott Williams and Wilkins.
- Engels F. The condition of the working class in England. (1845) Translated by Henderson WO and Chaloner WH. Stanford, CA: Stanford University Press, 1958.
- Engberg H., Oksuzyan A., Jeune B., Vaupel J.W., Christensen K. (2009) Centenarians--a useful model for healthy ageing? A 29-year follow-up of hospitalizations among 40,000 Danes born in 1905, *Ageing Cell*, 8(3): 270-276.
- Erman, D.A. (1990). Rural health care. *Medical Care Review* 47, 33-73.
- Ezeh A.C., Chepngeno G., Kasiira A.Z., & Woubalem Z. (2006). The situation of older people in poor urban settings: The case of Nairobi, Kenya. In B. Cohen & J. Menken (Eds.), *Aging in sub-Saharan Africa: Recommendations for furthering research* (pp. 189–213). Report of the National Research Council of the National Academies. Washington, DC: National Academies Press.
- Ferraro K, Shippee T.P. (2009). Aging and cumulative inequality: How does inequality get under the skin? *Gerontologist*; 49:333-43.
- Freund, A. M., & Smith, J. (1997). Self-definition in old age. *Zeitschrift fur Sozialpsychologie*, 28(1-2), 44-59.
- Galioto A., Dominguez L.J., Pineo A., Ferlisi A., Putignano E., Belvedere M., Costanza G., Barbagallo M. (2008) Cardiovascular Risk Factors in Centenarians, *Experimental Gerontology*, 43(2):106-13.
- Gerritsen, J.C., Wolffensperger, E.W., & Van Den Heuvel, W.J.A. (1990). Rural-urban differences in the utilization of care by the elderly. *Journal of Cross Cultural Gerontology*, 5, 131-147.
- Ghana National Ageing Policy (2008). Ministry of Employment and Social Welfare of Ghana 'Ageing with Security and Dignity'. Accra: Ministry of Employment and Social Welfare.
- Ghana Statistical Service (2010). Provisional national population and housing census, year 2010 report. Accra: Ghana Statistical Service.
- Ghana Statistical Service (2011). 2010 National Population and Housing Census Report. Accra Published by Ghana Statistical Service, Accra, Ghana.
- Ghana Statistical Service (2013). 2010 National Population and Housing Census Report: The Elderly in Ghana. Accra Published by Ghana Statistical Service, Accra, Ghana.
- Ghana Statistical Service (2005) Ghana: Population Data Analysis Report. Volume 1, Socioeconomic and Demographic Trends. Accra: GSS.
- Ghana Statistical Service (2005) Ghana: Population Data Analysis Report. Volume 2, Policy Implications of Population Trends. Accra: GSS.
- Gillanders W.R., Buss T.F., & Hofstetter C.R. (1997). Urban/Rural Elderly Health Status Differences, *Journal of Aging & Social Policy*, 8:4, 7-24

- Glascocock, A. P. & Feinman, S.L. (1980). A holocultural analysis of old age. *Comparative Social Research*, 3:311-32.
- Golini, A. (1999). Population ageing: current demographic setting and the future. Paper presented to the Economic Commission for Europe International Conference on State of the Older Population: Prelude to the Twenty-first Century, Sion, 13-15 December.
- Golini, A. (2004). A domestic and an international view from a demographic window. In International Seminar on the Demographic Window and Health Aging: Socioeconomic Challenges and Opportunities, Beijing (pp. 10-11).
- Gómez-Olivé, F.X, Thorogood, M., Clark, B.D., Kahn, K., and Tollman, S.M. (2010). Assessing health and well-being among older people in rural South Africa. *Global Health Action Supplement*, 2, 23-35.
- Gorman, B. K., & Read, J. N. G. (2007). Why men die younger than women. *Geriatrics and aging*, 10(3), 179-181.
- Gove, W. R. (1973). Sex, marital status, and mortality. *American journal of sociology*, 79(1), 45-67.
- Gugler, J. (2002). The son of the hawk does not remain abroad: The urban-rural connection in Africa. *African Studies Review*, 45(1), 21–41.
- Gureje, O., Kola, L., & Afolabi, E. (2007). Epidemiology of major depressive disorder in elderly Nigerians in the Ibadan Study of Ageing: a community-based survey. *The Lancet*, 370(9591), 957-964.
- Gureje, O., Kola, L., Afolabi, E., & Olley, B. O. (2008). Determinants of quality of life of elderly Nigerians: results from the Ibadan study of ageing. *African journal of medicine and medical sciences*, 37(3), 239.
- Hall, M. R. P. *et al.* (1993). *Medical Care of the Elderly*. Third edition. Chichester: John Wiley and Sons Ltd.
- Hartley D.L., Quam L., Lurie N. (1994). Urban and rural differences in health insurance and access to care. *J Rural Health*; 10:98-108.
- Hartley, D. (2004). Rural health disparities, population health, and rural culture. *American Journal of Public Health*, 94(10), 1675-1678.
- Hashimoto A., Kendig H.L., & Coppard L.C. (1992). Family support to the elderly in international perspective. In H. L. Kendig, L. C. Coppard, & A. Hashimoto (Eds.), *Family support for the elderly: The international experience*. (pp. 293–308). Oxford: Oxford University Press.
- He, W., Muenchrath, M. N., & Kowal, P. R. (2012). *Shades of gray: a cross-country study of health and well-being of the older populations in SAGE countries, 2007-2010*. US Department of Commerce, Economics and Statistics Administration, US Census Bureau.
- Help Age International (2013). *Global Age Watch Index 2013: Insight Report*, October 2013.
- Hemathorn, J. & Sillapasuwat, P. (1983). *Health Needed of the Elderly*. Bangkok: Department of Public Health Nurse, Faculty of Public Health, Mahidol University.

- Hewlett, S. A., Yawson, A. E., Calys–Tagoe, B. N., Naidoo, N., Martey, P., Chatterji, Kowal P., Mensah G., Minicuci N. & Biritwum, R. B. (2015). Edentulism and quality of life among older Ghanaian adults. *BMC oral health*, 15(1), 48.
- Hitt R., Young-Xu Y., Silder M., Perls,T. (1999) Centenarians: the Older You Get, the Healthier You Have Been, *Lancet*, 354(9179):652
- Hofferth, S. L., & Iceland, J. (1998). Social capital in rural and urban communities. *Rural Sociology*, 63(4), 574-598.
- Hosseinpour, A., Bergen, N., Kunst, A., Harper, S., Guthold, R., Rekve, D., et al. (2012). Socioeconomic inequalities in risk factors for non communicable diseases in low- income and middle-income countries: Results from the World Health Survey. *BMC Public Health*, 12(1), 912.
- Hu, Y., & Goldman, N. (1990). Mortality differentials by marital status: an international comparison. *Demography*, 27(2), 233-250.
- Idler, E. L., & Benyamini, Y. (1997). Self-rated health and mortality: a review of twenty-seven community studies. *Journal of health and social behavior*, 21-37.
- Jatrana, S., & Blakely, T. (2008). Ethnic inequalities in mortality among the elderly in New Zealand. *Australian and New Zealand Journal of Public Health*, 32(5), 437-443.
- Jayasinghe, S. (2015). Social determinants of health inequalities: towards a theoretical perspective using systems science. *International journal for equity in health*, 14(1), 71.
- Johnson, M. (1976). Is 65+ old? *Social Policy*. (Nov/Dec):9-12.
- Kabir, Z. N., Tishelman, C., Agüero-Torres, H., Chowdhury, A. M. R., Winblad, B., & Höjer, B. (2003a). Gender and rural–urban differences in reported health status by older people in Bangladesh. *Archives of Gerontology and Geriatrics*, 37, 77–91.
- Kakoli R., & Anoshua C. (2008). Influence of socioeconomic status, wealth and financial empowerment on gender differences in health and healthcare utilization in later life: Evidence from India. *Social Science and Medicine*, 66, 1951–1962.
- Kaneda, T. Lee, M. and Pollard, K. (2011). SCL/PRB Index of Well-Being in Older.
- Khanam, M. A., Streatfield, P. K., Kabir, Z. N., Qiu, C., Cornelius, C., & Wahlin, A. (2011). Prevalence and patterns of multimorbidity among elderly people in rural Bangladesh: A cross-sectional study. *Journal of Health, Population, and Nutrition*, 29(4), 406–414.
- King, V., Silverstein, M., Elder, G. H., Jr., Bengtson, V. L., & Conger, R. D. (2003). Relations with grandparents: Rural midwest versus urban southern California. *Journal of Family Issues*, 24(8), 1044-1069.
- Kivett, V. R., Stevenson, M. L., & Zwane, C. H. (2000). Very-old rural adults: Functional status and social support. *Journal of Applied Gerontology*, 19(1), 58-77.

- Klatsky, A. L. (2007) Alcohol, cardiovascular diseases and diabetes mellitus, *Pharmacol Res*, 55, 237-47.
- Koenig, H. G., George, L. K., & Titus, P. (2004). Religion, spirituality, and health in medically ill hospitalized older patients. *Journal of the American Geriatrics Society*, 52(4), 554-562.
- Koster, A., Bosma, H., Kempen, G. I. J. M., Penninx, B.W.J. H., Beekman, A. T. F., Deeg, D. J. H., et al. (2006). Socioeconomic differences in incident depression in older adults: The role of psychosocial factors, physical health status, and behavioral factors. *Journal of Psychosomatic Research*, 61(5), 619–627.
- Krieger, N., Alegría, M., Almeida-Filho, N., Da Silva, J.B., Barreto, M.L., Beckfield, J., Berkman, L., Birn, A.E., Duncan, B.B., Franco, S. & Garcia, D.A. (2010). Who, and what, causes health inequities? Reflections on emerging debates from an exploratory Latin American/North American workshop.
- Krout J.A. (1989). Rural versus urban differences in health dependence among the elderly population. *International J. Aging Hum. Dev.* 28, 141.
- Kuh, D., Karunanathan, S., Bergman, H. & Cooper, R. (2014). A life-course approach to healthy ageing: maintaining physical capability. *Proceedings of the Nutrition Society*, 73(2), 237–248.
- Kuhn, R., Rahman, O., & Menken, J. (2006). Survey measures of health: how well do self-reported and observed indicators measure health and predict mortality. *Aging in sub-Saharan Africa: recommendations for furthering research*, 314-342.
- Kwankye, S. O. (2013). Growing Old in Ghana: Health and Economic Implications. *Postgraduate Medical Journal of Ghana*, 2(2), 88–97.
- Kyobutungi, C., Egondi, T., Ezeh, A. (2010). The health and well-being of older people in Nairobi's slums. *Global Health Action Supplement 2*.
- Lee, G. R., & Lassey, M. L. (1980). Rural-urban differences among the elderly: Economic, Social, and Subjective Factors. *Journal of Social Issues*, 36(2), 62-74.
- Lloyd-Sherlock, P. (2000). Population Ageing in Developed and Developing Region: Implications for health Policy. *Social Science and Medicine* 51(6), 15: 887-895.
- Longino, C. F., Jr. (1998). Beyond the Body, an Emerging Medical Paradigm. Pp. 39-54 in *Care Services for Later Life*, edited by A. M. Warnes, L. Warren, and M. Nolan. London: Jessica Kingsley.
- Luciano, J. V., Ayuso-Mateos, J. L., Fernandez, A., Aguado, J., Serrano-Blanco, A., Roca, M., & Haro, J. M. (2010). Utility of the twelve-item World Health Organization Disability Assessment Schedule II (WHO-DAS II) for discriminating depression “caseness” and severity in Spanish primary care patients. *Quality of Life Research*, 19(1), 97-101.
- Marengoni, A., Winblad, B., Karp, A., & Fratiglioni, L. (2008). Prevalence of chronic diseases and multimorbidity among the elderly population in Sweden. *American Journal of Public Health*, 98(7), 1198–1200.

- Marmot, M.G. (1999). "Multi-level Approaches to Understanding Social Determinants," in L. Berkman and I. Kawachi (eds.), *Social Epidemiology*, Oxford: Oxford University Press, pp. 349-367.
- Martinez, P. (2013). Alcohol use in special populations in Africa. Data from the World Health Survey and Study on global AGEing and adult health.
- Manor, O., Matthews, S., & Power, C. (2000). Dichotomous or categorical response? Analysing self-rated health and lifetime social class. *International journal of epidemiology*, 29(1), 149-157.
- Mba C.J. (2005). Racial Differences in Marital Status and Living Arrangements of Older Persons in South Africa. *Generations Review (Journal of British Society of Gerontology)*, Vol. 15, No. 2, pp. 23-31.
- Mba, C.J. (2010) Population Ageing in Ghana: Research Gaps and the Way Forward. *Journal of Ageing Research*. Volume 2010, Article ID 672157, 8 pages.
- Mba C.J. & Yarney L. (2005). General Health Condition of Older Women in Accra, Ghana. *Population (English Edition)*, Issue 233(21), pp. 1-6.
- McCoy J.L. & Brown D.L. (1978). Health status among low-income elderly persons: Rural-urban differences. *Soc. Sec. Bull.*, Vol. 41, Issue 6, pp. 14-26.
- McIntyre D. (2004). Health policy and older people in Africa. In: Lloyd-Sherlock P, ed. *Living longer. Ageing, development and social protection*. London: Zed Books: 160–83.
- Mitura, V. & Bollman, R.D. (2003). The health of rural Canadians: A rural- urban comparison of health indicators. *Rural and Small Town Canada Analysis Bulletin*, 4 (6), 1-23.
- Moneer A., Sumit M. and Pratima Y. (2015). Inequalities in Elderly Health and Wellbeing in India: An Exploration. BKPAI Working Paper Series II No.5, UNFPA, New Delhi.
- Moore, A. A., Giuli L., Gould R., Hu P., Zhou K., Reuben D., Greendale G., & Karlamangla A. (2006). *Journal of the American Geriatrics Society*, 54(5), 757-762.
- Montross, L.P., Depp, C., Daly, J., Reichstadt, J., Golshan, S., Moore, D., Sitzer, D. & Jeste, D.V., (2006). Correlates of self-rated successful aging among community-dwelling older adults. *The American Journal of Geriatric Psychiatry*, 14(1), 43-51.
- Mwanyangala, M.A, Mayombana, C., Urassa, H., Charles, J., Mahutanga, C., Abdul-lah, S., *et al.* (2010). Health status and quality of life among older adults in rural Tanzania. *Global Health Action Supplement 2*.
- Murata, C., Kondo, T., Tamakoshi, K., Yatsuya, H., & Toyoshima, H. (2006). Determinants of self-rated health: could health status explain the association between self-rated health and mortality?. *Archives of gerontology and geriatrics*, 43(3), 369-380.
- Myers, G. C. (1990). *Demography of Ageing. The handbook of ageing and social science* (3<sup>rd</sup> ed.). New York: Van Nostrand Reinhold.
- Nabalamba, A. and Mulle C. (2011). Ageing Population Challenges in Africa, *AfDB Chief Economist Complex*, Vol 1 Issue I November 2011.

- Nimako, B.A., Baiden, F., Sackey, S.O., & Binka, F. (2013). Multimorbidity of chronic diseases among adult patients presenting to an inner-city clinic in Ghana. *Global Health*, 9, 61.
- Nyirenda, M., Chatterji, S., Rochat, T., Mutevedzi, P., & Newell, M. L. (2013). Prevalence and correlates of depression among HIV-infected and -affected older people in rural South Africa. *Journal of Affective Disorders*, 151(1), 31–38.
- Parry, C. D., Patra, J. & Rehm, J. (2011) Alcohol consumption and non-communicable diseases: epidemiology and policy implications, *Addiction*, 106, 1718-24.
- Payne CF, Mkandawire J, Kohler HP, (2013). “Disability transitions and health expectancies among adults 45 years and older in Malawi: a cohort-based model”. *PLoS Med*; 10: e1001435.
- Phillips, J., Ajrouch, K. & Hillcoat-Nalletamby, S. (2010). Key Concepts in Social Gerontology. London, SAGE Publications Ltd. Pp. 12-13.
- Scott, J.P., & Roberto, K.A. (1987). Informal supports of older adults: A Rural-urban comparison. *Family Relations*, 36, 444-449.
- Stuart-Hamilton, I. (2006). *The psychology of ageing: An introduction*. Jessica Kingsley Publishers.
- Phaswana-Mafuya N., Peltzer K., Chirinda W., Kose Z., Hoosain E., Ramlagan S., Tabane C. & Davids A. (2013a). Self-rated health and associated factors among older South Africans: evidence from the study on global ageing and adult health. *Global Health Action*, 6(1), 19880.
- Phaswana-Mafuya N., Peltzer K., Chirinda W., Musekiwa A., Kose Z., Hoosain E., Davids A. & Ramlagan S. (2013b) Self-reported prevalence of chronic non-communicable diseases and associated factors among older adults in South Africa. *Global Health Action*, 6(1), 20936.
- Pong RW, Desmeules M, Lagacé C (2009). Rural-urban disparities in health: how does Canada fare and how does Canada compare with Australia? *Aust J Rural Health.*; 17:58-64.
- Pornsiripongse, S., Amantayakul, P., Usuparat, P., Bausuang, A. (1991). Elderly Food Habit of “Wasanawet” Ageing Home and Nakornluang Village, Ayudhaya. Bangkok: Sahadhammka Publishing.
- Powers, E. A., & Kivett, V. R. (1992). Kin expectations and kin support among rural older adults. *Rural Sociology*, 57(2), 194-215.
- Randall, S. and Coast E. (2016). "The Quality Of Demographic Data On Older Africans". *Demographic Research* 34 (2016): 143-174.
- Razzaque, A., Nahar, L., Khanam, M. A., & Streatfield, P. K. (2010). Socio-demographic differentials of adult health indicators in Matlab, Bangladesh: Self-rated health, health state, quality of life and disability level. *Global Health Action*.
- Reschovsky J. D. & Staiti J. B. (2005). Access and quality: does rural America lag behind? *Health Aff.*; 24:1128-1139.
- Roach, S. (2001). *Introductory to Gerontological Nursing*. Philadelphia, Lippincott Williams and Wilkins.

- Robert, L. (ed.) & Hofecker G. (1990). *The Theoretical Basis of Ageing Research*. Facultas, Universitätsverlag, Austria.
- Robinson, T., Mosha, F., Grainge, M., & Madeley, R. (2006). "Indicators of mortality in African adults with malaria". *Transactions of the Royal Society of Tropical Medicine and Hygiene*, vol. 100, no. 8, pp. 719- 724.
- Russell, M., Cooper, M. L., Frone, M. R. & Welte, J. W. (1991) Alcohol drinking patterns and blood pressure, *Am J Public Health*, 81, 452-7.
- Sanderson, W., & Scherbov, S. (2008). *Rethinking age and aging*. Washington, DC: Population Reference Bureau.
- Sen, A. (1981). Public action and the quality of life in developing countries. *Oxford Bulletin of Economics and Statistics*, 43(4), 287-319.
- Silver, C. B. (2003). Gendered identities in old age: Toward (de) gendering?. *Journal of aging studies*, 17(4), 379-397.
- Slifkin R.T., Goldsmith L.J., Ricketts T.C. (2000). *Race and Place: Urban-Rural Differences in Health for Racial and Ethnic Minorities*. Chapel Hill, NC: University of North Carolina at Chapel Hill.
- Smith KB, Humphreys JS, Wilson MG (2008). Addressing the health disadvantage of rural populations: how does epidemiological evidence inform rural health policies and research? *Aust J Rural Health*; 16:56-66.
- Sousa, R. M., Ferri, C. P., Acosta, D., Albanese, E., Guerra, M., Huang, Y., Jacob, K.S., Jotheeswaran, A.T., Rodriguez, J.J.L., Pichardo, G.R. & Rodriguez, M. C. (2009). Contribution of chronic diseases to disability in elderly people in countries with low and middle incomes: a 10/66 Dementia Research Group population-based survey. *The Lancet*, 374(9704), 1821-1830.
- Stelmach, W., Kaczmarczyk-Chałas, K., Bielecki, W., Stelmach, I., & Drygas, W. (2004). How income and education contribute to risk factors for cardiovascular disease in the elderly in a former Communist country. *Public Health*, 118(6), 439–449.
- Sun, Q., Townsend, M. K., Okereke, O. I., Rimm, E. B., Hu, F. B., Stampfer, M. J., & Grodstein, F. (2011). Alcohol consumption at midlife and successful ageing in women: a prospective cohort analysis in the nurses' health study. *PLoS medicine*, 8(9), e1001090.
- Suzman, R., Beard, J. R., Boerma, T. & Chatterji, S. (2014). Health in an ageing world--what do we know? *The Lancet*, 385, 484-486.
- Tawiah, E. O. (2011). Population ageing in Ghana: A profile and emerging issues. *Etude de La Population Africaine*, 25(2), 623–645.
- Togunu-Bickersteth, F. (1987) Chronological definitions and expectations of old age among young adults in Nigeria. *Journal of Aging Studies*. 1(2);113-24.
- Togunu-Bickersteth, F. (1988) Perception of old age among Yoruba aged. *Journal of Comparative Family Studies*. 19(1):113-23.

- Tomás, J. M., Gutiérrez, M., Sancho, P., & Galiana, L. (2012). Predicting perceived health in Angolan elderly: The moderator effect of being oldest old. *Archives of Gerontology and Geriatrics*, 55(3), 605–610.
- United Nations (2002), Report of the Second World Assembly on Ageing Madrid, 8-12 April.
- United Nations (2002). Madrid International Plan of Action on Ageing (MIPAA). New York (NY): United Nations.
- United Nations, Department of Economic and Social Affairs, Population Division (2002). World Population Ageing 1950–2050. New York: United Nations.
- United Nations, Department of Economic and Social Affairs, Population Division (2015). World Population Ageing 2015 - Highlights (ST/ESA/SER.A/368).
- United Nations (2015). World Population Prospects, the 2015 Revision. United Nations Department of Economic and Social Affairs.
- United Nations (2017). World Population Prospects, the 2015 Revision. United Nations Department of Economic and Social Affairs.
- United Nations Population Fund (UNFPA) (2012). Ageing in the Twenty-First Century: A Celebration and a Challenge. New York: United Nations Population Fund.
- United Nations Population Fund (UNFPA) (2012). Ghana country report on the implementation of the Madrid International Plan of Action on Ageing. Accra: UNFPA and Republic of Ghana.
- Uzobo, E., & Dawodu, O. A. (2015). Ageing and Health: a Comparative Study of Rural and Urban Aged Health Status in Bayelsa State, Nigeria. *European Scientific Journal*, 11(14), 258–273.
- van Dis J. (2002). Where we live: health care in rural vs. urban America. *JAMA*: 287:108.
- Velkoff, V.A. and Kowal, P.R. (2007). Population Ageing in Sub-Saharan Africa: Demographic Dimensions 2006. *Current Population Reports*. Washington DC: US Census Bureau: 1–47.
- Verheij R.A. (1996). Explaining urban-rural variations in health: a review of interactions between individual and environment. *Social Science & Medicine*, 42(6), 923-935.
- Virchow, R. (1848). Report on the Typhus Epidemic in Upper Silesia. *Archiv. für Patholog. Anatomie u. Physiologie u. für klin. Medicin*, 2(1), 2.
- Wagstaff A. (2001). Economics, health and development: some ethical dilemmas facing the world bank and the international community. *J Med Ethics*, 27(4):262–267.
- Wandera, S. O., Golaz, V., Kwagala, B., & Ntozi, J. (2015). Factors associated with self-reported ill health among older Ugandans: a cross sectional study. *Archives of gerontology and geriatrics*, 61(2), 231-239.
- Ware J.E. Jr, Davies-Avery A., Donald C.A. (1978). Conceptualization and measurement of health for adults in the health insurance study, vol. V: general health perceptions. R-1987/5-HEW. Santa Monica, CA: The RAND Corporation.

- Wasiak J., Lee S.J., Paul E., Mahar P., Pfitzer B., Spinks A., Cleland H., Gabbe B. (2014). Predictors of health status and health-related quality of life 12 months after severe burn. *Burns*, 40(4), 568–574.
- Wattis, J. & Curran, S. (2013). *Practical Psychiatry of Old Age*. Fifth Edition. Radcliffe Publishing.
- World Health Organization (1948). World Health Organization Constitution. In: *Basic Documents*. Geneva.
- World Health Organization. (2002). *Active ageing: A policy framework* (No. WHO/NMH/NPH/02.8). Geneva: World Health Organization.
- World Health Organization - WHOQOL Group (1998). Development of the World Health Organization WHOQOL-BREF quality of life assessment. *Psychol Med*; 28(3):551-8.
- Yi, Z., Vaupel, J. W., Zhenyu, X., Chunyuan, Z., & Yuzhi, L. (2002). Sociodemographic and health profiles of the oldest old in China. *Population and Development Review*, 28(2), 251-273.
- Zimmer, Z., Kaneda, T. & Spess, L. (2006). Urban Versus Rural Mortality Among Older Adults in China.

## Appendices

### 1. Appendix A - Measurement of Study Variables

Variable Type	Variable	Measurements
Dependent Variable	Composite Health Status	1 = Good 2 = Poor
Independent Variable	Place of residence	1 = Rural 2 = Urban
Intermediary Variable	Smoking Status	1 = Yes 2 = No
	Alcohol Consumption Status	1 = Yes 2 = No
Control Variables	Age	1 = 60-64 2 = 65-69 3 = 70-74 4 = 75-79 5 = 80+
	Sex	1 = Male 2 = Female
	Occupation	1 = Never worked 2 = Public sector 3 = Private sector 4 = Self-employed 5 = Informal sector
	Education	1 = No formal education 2 = Less than or equal to 6 years of education 3 = More than 6 years of education
	Marital status	1 = Currently in union 2 = Not currently in union
	Ethnicity	1 = Akan 2 = Ewe 3 = Ga-Adangbe 4 = Predominantly Northern Ethnic Groups 5 = Others
	Religion	0 = None 1 = Christian 2 = Islam 3 = Primal Indigenous 4 = Others
	Income	1 = Lowest 2 = Low 3 = Middle 4 = High 5 = Highest