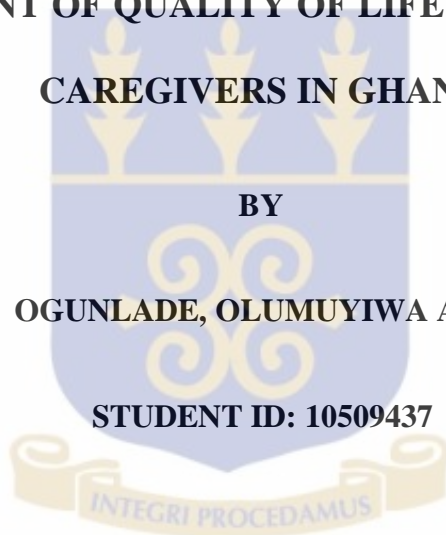


SCHOOL OF PUBLIC HEALTH
COLLEGE OF HEALTH SCIENCES
UNIVERSITY OF GHANA, LEGON

**AN ASSESSMENT OF QUALITY OF LIFE AMONG ELDERLY
CAREGIVERS IN GHANA**

BY
OGUNLADE, OLUMUYIWA AYO
STUDENT ID: 10509437



**THIS DISSERTATION IS SUBMITTED TO THE UNIVERSITY OF GHANA
IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD
OF THE MASTER OF PUBLIC HEALTH DEGREE.**

NOVEMBER, 2015

DECLARATION

I, Ogunlade Olumuyiwa Ayo, declare that except for the other people's investigations which have been duly acknowledged, this work is the result of my own original research, and that this dissertation, either in whole or in part has not been presented elsewhere for another degree.

Ogunlade, Olumuyiwa Ayo

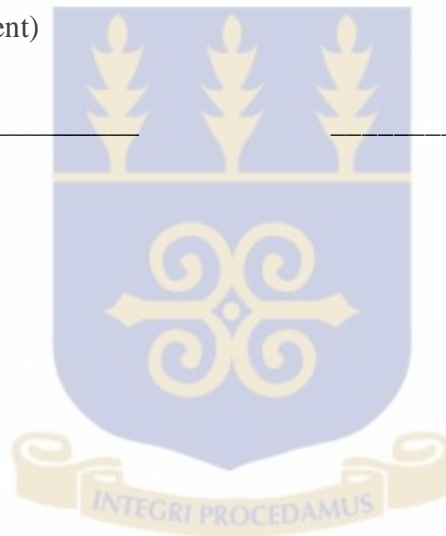
Dr. Genevieve C. Aryeetey

(Student)

(Supervisor)

DATE

DATE



DEDICATION

I dedicate this research work to my family, the Ogunlade Clan – Ma, Pa, Bola, Opeyemi,

Biodun, and the two little Demilades. You know how there can't be daylight without the sun, it's the same with us – without you guys, there isn't me. Thanks for lighting up my life; love you forever, *mi familia!*



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ABSTRACT

Background and objective

As population ageing, urbanization and epidemiological changes accelerates across the world, the prevalence of caregiving by the elderly is bound to increase. This situation in which the elderly give care to others has been found in various settings to have adverse effects on the elderly's well-being. However, there is a paucity of evidence confirming the existence of such negative effects among the elderly in Ghana who give care, especially as it impacts on their quality of life. The general objective of this work is to access the quality of life among caregivers aged 60 and above in Ghana.

Methodology

This research was a descriptive study analysing secondary quantitative data consisting of 2595 observations obtained from the WHO Study on Global AGEing and Adult Health (SAGE Wave 1) conducted in Ghana in 2007/08. Impact of care and quality of life indices were developed from relevant responses and the indices were tested for internal validity using the Cronbach alpha (α) test. Cross-tabulations (chi-square and Kruskal-Wallis tests) as well as simple and multiple ordinal logistic regressions were used in analysing the dataset on STATA version 13. A significance level of 5% was used to determine statistical significance for every relationship investigated.

Results and conclusion

About 5% of the 2595 elderly participants included in the study were caregivers, with almost two-thirds of them (63%) aged between 60-69 years old. Elderly caregivers significantly reported lower quality of life scores than non-caregivers [AOR= 0.658 95% CI=0.446 - 0.972] and a higher proportion (33.07%) of them significantly reported bad

health than non-caregivers (21.61%). Most caregivers (64.66%) experienced lower burden of care, although moderate burden was more significantly associated with lower quality of life scores than lower burden [OR=0.411, 95% CI=0.189 - 0.897; p=0.026]. This relationship however ceased to be significant when adjusted by socio-demographic characteristics. The gender, age, educational status, occupational status and income quintile of elderly caregivers also had significant associations with the quality of life scores. Considering that caregiving affects the quality of life of the elderly in Ghana, these findings could help identify those at risk of lower quality of life due to their caregiving role and help in developing measures to alleviate that impact.

Keywords: Quality of life, caregiving impact, Elderly caregiver, self-reported health, Ghana

TABLE OF CONTENTS

DECLARATION.....	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
ABSTRACT	v
TABLE OF CONTENTS.....	vii
LIST OF TABLES	x
LIST OF FIGURES	xi
LIST OF ACRONYMS	xii
DEFINITION OF KEY TERMS.....	xiii
CHAPTER ONE.....	1
INTRODUCTION.....	1
1.1 Background.....	1
1.2 Statement of the Problem	3
1.3 Justification of the study.....	4
1.4 Conceptual Framework	5
1.5 Study Objectives	7
1.5.1 General Objectives.....	7
1.5.2 Specific Objectives	7
1.5.3 Research questions.....	7
CHAPTER TWO.....	8
LITERATURE REVIEW	8
2.1 Introduction.....	8
2.2 Defining caregiving.....	8
2.3 Formal caregiving	10
2.4 Informal caregiving	10
2.5 Describing informal caregivers.....	12
2.6 Elders as caregivers: description and determinants	14
2.6.1 Demographic change	16
2.6.2 Epidemiological change.....	17
2.6.3 Social norms and changes	18
2.7 Burden of caregiving	19
2.8 Effects of caregiving by the elderly	20
2.8.1 Physical and Mental/Emotional Health Effects.....	20

2.8.2 Financial Effects	22
2.8.3 Subjective Effects	23
2.8.4 Other factors related to caregiving burden.....	24
2.9 Measurement tools	25
2.10 Quality of Life (QoL).....	26
2.11 Caregiving and quality of life among the elderly	26
2.12 Measuring quality of life	28
2.13 Gaps to be filled	29
CHAPTER THREE	30
METHODOLOGY	30
3.1 Introduction.....	30
3.2 Study design.....	30
3.3 Source of data	30
3.4 Study area	31
3.5 Study population	31
3.6 Sampling procedures	31
3.6.1 Sampling method.....	32
3.6.2 Data collection.....	33
3.6.3 Cleaning the dataset/Missing-ness.....	33
3.6.4 Study sample size	35
3.6.2 Exclusion criteria	35
3.7 Variables.....	36
3.7.1 Main outcome variable:	36
3.7.2 Independent variables:	37
3.8 Data collection and analysis method.....	39
3.8.2 Data analysis.....	39
3.9 Quality Control	42
3.10 Ethical considerations	42
3.11 Dissemination of findings.....	43
CHAPTER FOUR	44
RESULTS	44
4.1 Introduction.....	44
4.2 Socio-demographic characteristics of study participants	44
4.2.1 Caregivers.....	44

4.2.2 Socio-demographic distribution of participants by caregiving	45
4.3 Health State.....	48
4.3.1 Association of self-reported health with caregiving status	48
4.3.2 Association of chronic disease state with caregiving status.....	48
4.3.3 Regression of self-reported health against caregiving status and selected variables	50
4.4 Quality of Life (QoL).....	52
4.4.1 Distribution of quality of life index by caregiving status	52
4.4.2 Association of quality of life index and caregiving status	52
4.5 Other QOL modifying factors.....	54
4.5.1 Socio-demographic characteristics and quality of life.....	54
4.5.2 Health state and quality of life.....	57
4.6 Caregiver burden/impact among Caregiver.....	58
4.6.1 Distribution of caregiving burden among caregivers	58
4.6.2 Relationship of caregivers' burden index with Quality of life score.....	60
4.6.3 Other caregiving factors in relation to care-burden`	60
CHAPTER FIVE.....	63
DISCUSSION	63
5.1 Study limitations	68
CHAPTER SIX	70
CONCLUSION	70
6.1 Summary and conclusion.....	70
6.2 Recommendation and implications for the elderly	71
6.2.1 Policy Implications	71
6.2.2 Future research	72
REFERENCES.....	73
APPENDICES.....	90

LIST OF TABLES

Table 3.1: Data cleaning processes.....	35
Table 3. 2: Table of variables.....	36
Table 4.1: Socio-demographic distribution of participants by caregiving.....	47
Table 4.2: Distribution of participants by health status.....	49
Table 4.3: Regression of self-reported health against caregiving status and selected Variables.....	51
Table 4.4: Descriptive statistics of quality of life index by caregiving status.....	52
Table 4.5: Association of quality of life index and caregiving status.....	53
Table 4.6: Ordinal logistic regression of caregiving status against quality of life index	53
Table 4.7: Regression showing the relationship between some socio-demographic characteristics of the participants and their quality of life.....	56
Table 4.8: Relationship of caregiving, controlled by health status, to Quality of life index.....	58
Table 4.9: Association of quality of life to caregivers' burden index.....	59
Table 4.10: Relationship of caregivers' burden index with quality of life score.....	60
Table 4.11: Association of socio-demographics to caregiving impact in predicting QoL Scores.....	62

LIST OF FIGURES

Figure 1.1: Conceptual Framework- Quality of Life of elderly caregivers	7
Figure 4. 1: Distribution of participants by caregiving	44
Figure 4. 2: Distribution of caregiving burden among caregivers	59

LIST OF ACRONYMS

APA	-	American Psychologist Association
AOR	-	Adjusted Odds Ratio
BADL	-	Basic Activities of Daily Living
CI	-	Confidence Interval
EAs	-	Enumeration Areas
OECD	-	Organization for Economic Co-operation and Development
OR	-	Odds Ratio
QOL	-	Quality of Life
PSUs	-	Primary Sampling Units
SAGE	-	WHO Study on Global AGEing and Adult Health
USDHHS	-	United States Department of Health and Human Services
WGS	-	World Geodetic System
WHS	-	World Health Survey
WHOQoL	-	World Health Organization Quality of Life Instrument

DEFINITION OF KEY TERMS

Impact of Caregiving: The physical, psychological, emotional, social and financial stresses that individuals experience due to providing care to others.

Caregiver: is the person primarily responsible for feeding, clothing, providing health care, and performing other actions of caregiving for another individual regardless of age of, or relationship to that other person.

Caregiving: Consists of supportive actions that assist, support, or help another person or group with evident or anticipated varied needs to improve a human condition or lifestyle. It includes financial care (cash, paying for bills, fees, food, medicines), emotional care (social support, counselling, time with friends) and health care (providing health care - administering medicines, changing bandages, arranging health care providers). Also, physical care (household chores, transportation), and personal care (bathing, eating, dressing, toileting/incontinence, moving around) are considered caregiving acts.

Elderly: Any person aged 60 years or older in developing countries (including Ghana) and 65 years and older in developed countries.

Informal Caregivers: refers to the provision of care often to a friend, family member neighbour with the caregiver having little or usually no training; informal caregivers are also not often paid for their care efforts.

Quality of Life: This refers to an individuals' perception 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.

CHAPTER ONE

INTRODUCTION

1.1 Background

The world's demography is changing, as the median age of the world's population progressively increases. The global median age has been estimated to be 23.6 years in 1950, 26.6 years in 2000, and about 30 years in 2011; by 2050 it is expected to reach 37.3 years (Lutz, Sanderson, & Scherbov, 2008; The Economist, 2013). This means that the elderly population is increasing across the globe. To buttress this point, the United Nations estimates that the population of people aged 60 years or over is the fastest growing age-segment of the world's population, with a projected increase from 287 million in 2013 to 440 million by 2050 in developed countries, and from 554 million to 1.6 billion in the developing world within the same time-period (United Nations [UN], 2013). It is further anticipated that by 2050, there will be nearly as many people aged 60 and above as there will be individuals below the age of 15 (HelpAge, 2014).

Ghana (mean age 20.8 years), like other countries in sub-Saharan Africa with a relatively young population demography, is not immune from this trend. In fact, Mba (2010) corroborates this fact by stating that Ghana has one of the highest population proportions of persons aged 60 years and over in sub-Saharan Africa (Mba, 2010). Indeed, over the past 54 years of Ghanaian political independence, there has been an increase of 699% in the absolute number of elderly Ghanaians (United Nations Development Programme, 2013). The latest figures released by the Ghana Statistical Service in 2013 based on data collected from the 2010 census reveals that this increase will continue. This means that the elderly dependency ratio which currently

stands at 5.9% will shoot up in line with the global trend of demographic transition (Best, 2014; Ghana Statistical Service [GSS], 2013).

This predicted increase in the elderly population means that there will be significant economic and public health challenges in caring for them in their old age, and it will become demonstrably important to ensure they remain productive members of the society at that age (Georgetown University, 2005). In facing this imminent challenge, the realization that the elderly can, and still play important roles in our society becomes clear. They become role models, advisers, caretakers of their grandchildren and sometimes caregivers for other members of the family. It is this part of their lives that this work sought to explore, in order to understand their role as givers of care to others in need of such care.

The act of providing care by the elderly is often overlooked because the stereotypical picture of caregiving is more often that of them (the elderly) receiving care and not giving it. In understanding this part of their lives, it is important to first explain who caregivers are.

Care givers, also called carers, are either paid or unpaid persons who help other individual(s), often with some impairment, with their activities of daily living. The impairment must not necessarily be a debilitating or health condition, and the care recipient could be an adult or a child (Kindersley, 2013). Care giving is classified by either intensity of assistance or by the type of care provider. In terms of intensity of care, there are primary caregivers, secondary caregivers and tertiary caregivers. While in terms of types, formal caregiving and informal caregiving exists (World Health Organization [WHO], 2000). This study will be focusing on informal caregiving which is non-paid caring for a friend, family member or neighbour who because of sickness, frailty or disability, cannot manage everyday living without help or support.

This is in contrast to formal caregiving which refers to care provision associated with a formal service system, (like nursing homes, assisted living, and hospices), and usually provided by a paid, trained staff or a volunteer (Day, 2014).

Caregiving in many African countries, including Ghana, is mainly informal, as formal caregiving structures are not widespread or widely-used due to their high financial demands (Stoehr, 2013).

1.2 Statement of the Problem

Previous studies within African contexts have sought to understand themes such as the burden or impact of caregiving, its effects on recipient's outcome & caregiver wellbeing, and the validity of caregivers' well-being measures (Akosile, Okoye, Adegoke, Mbada, & Maruf, 2013; Akpan-Idiok & Anarado, 2014; Kidman & Thurman, 2014; Oshodi et al., 2012; van den Tweel et al., 2008). The common thread running through these studies is that where they include the elderly in their work, they mostly feature them as care recipients and not as the givers of care.

However in Africa, caregiving by the elderly is an age-old phenomenon (Ardayfio, 2014; Madhavan, 2004). This principle extends from the broad sense of responsibility and care that extended family members have towards each other, and which is intensified by the endemic lack of social and welfare infrastructures across the continent (Gysels, Pell, Straus, & Pool, 2011). Beyond this, the incessant socio-political crises and disease epidemics that leaves numerous disabled and orphans across Africa (like HIV which is responsible for the orphaning of 5.8% of all children in the region), alongside growing rural-urban migration has deepened the demand for the elderly to provide care to others (Brodaty & Donkin, 2009; Dahlberg, Demack, & Bamba, 2007; Hosseinpoor et al., 2013; Lum et al., 2011; Madhavan, 2004).

However, this experience of caregiving by the elderly has consistently been associated with poorer self-perceptions and measures of well-being (Cole, Manuh, & Miescher, 2007). This is because older people are in an exceptionally difficult position of dealing not only with the stress associated with caregiving (Bevans & Sternberg, 2012; Okoye & Asa, 2011; Pinquart & Sörensen, 2003), they also have to manage the physical, social and health limitations imposed

by their advanced age (Cohen and Menken, 2006). A study carried out by the Centers for Disease Control (CDC) in the United States showed that elderly caregivers have a 63% higher risk of mortality than non-caregivers in the same age group (Morrow-Howell, 2000).

While studies carried out in developed countries on the impact of caregiving on the quality of life of the elderly have shown poor quality scores for the elderly (Njororai & Njororai, 2013; Schenk, Michaelis, Sapiano, Brown, & Weiss, 2010), there is limited evidence confirming or refuting these findings in Ghana. This is despite the fact that elderly people are known to be involved in the activities of caregiving in the country (Ardayfio, 2014; Bledsoe & Brandon, 1992). As such, it is necessary to bridge this knowledge gap, by identifying who these elderly caregivers in Ghana are, and then assess the impact of their caregiving role on their quality of life, comparing it to the quality of life of elderly Ghanaians who are not actively giving care to others.

1.3 Justification of the study

This study attempts to shed much needed light on the health state and wellbeing of the elderly, while also delivering knowledge about the experiences of elderly caregivers. This would provide policy makers with fresh insights into the multidimensional scope of caregiving and encourage them to formulate and implement effective policies that will help relieve the impact of caregiving.

Furthermore, by determining the impact of caregiving and highlighting optimal caregiving situations, this study builds a framework that will better the lot of the elderly who are giving care to others. It is also expected that the findings from this work will be a contribution to the steadily growing but still largely ignored research field of Aging in Ghana. The research work may, in addition, serve as a knowledge base that will pave the way for further research on not just the experiences of the elderly as caregivers in Ghana, but the life-course changes forced on the general elderly population by the constraints of age.

1.4 Conceptual Framework

This study draws on the work of Meecharoen et al. (2013), in explaining the effect of giving care to others on an individual's quality of life (Meecharoen, Sirapo-ngam, Monkong, Oratai, & Northouse, 2013). Figure 1.1 illustrates the model that guided this study, showing the relationships among the variables of interest. The framework represents the pathway by which the quality of life of elderly caregivers can be influenced. The model puts the socio-demographic characteristics of the elderly caregivers (age, sex education, occupation, residence and income, as the main antecedents), while caregivers' health status and burden were considered mediators of their quality of life (which is the major outcome variable of the study).

The age of the caregiver is a defining feature of this study due to the focus on the elderly. Also, the elderly's sex, education, place of residence are important in assessing the quality of life of caregivers. Literature shows some significant association between these characteristics and reportage/measure of quality of life. Progressing age in itself offers many limitations and impairments; but for caregivers, this factor is especially important as they have to navigate the challenge of not only caring for themselves but also caring for others, thus increasing the likelihood that they have a lowered quality of life. Gender

is also important, as literature has extensively confirmed that caregivers are mostly female and that female caregivers experience more stress in caregiving than their male counterparts. Living in a rural area can mean that resources needed to care effectively for the recipient are unavailable, which increases the stress of giving care and lowers perceptions of good quality of life. A caregiver's quality of life is also affected by their education, as having higher education may mean improved access to needed support in caring for others and may also ensure that the caregiver is able to access helpful information that perhaps would be unavailable to the uneducated caregiver. This would infer that such benefits would help in ensuring quality of life is high. Being employed and having more income are also pertinent socio-demographic details that literature confirms affects quality of life, as employed caregivers and those of high income ratings have more financial and material resources to care for their charges.

However, the effect of these features on the caregiver's quality of life are mediated by the health status of the caregiver participant. Caregivers have been found in previous studies to suffer more from declines in physical and mental health relative to non-caregivers, thus resulting in poorer quality of life. That aspect is captured within the framework as the caregivers' health status – assessed by their self-reported health and the presence of chronic physical and mental illnesses. Literature consistently reports a strong relationship between the perceptions of self-health by caregivers and the quality of life they enjoy, with one widely accepted relationship being that female caregivers report poor self-health which reflects in their lower quality of life when assessed. Caregiving has been found to have a clear impact on the sleep, social life, finances, and energy levels (among other effects) of the caregivers, and this impact mediates the socio-demographic status of the caregiver to affect quality of life. As such, even if female caregivers are usually found to have poorer quality of life

measures, the impact of caregiving can moderate such relationship to either worsen the quality of life or improve it.

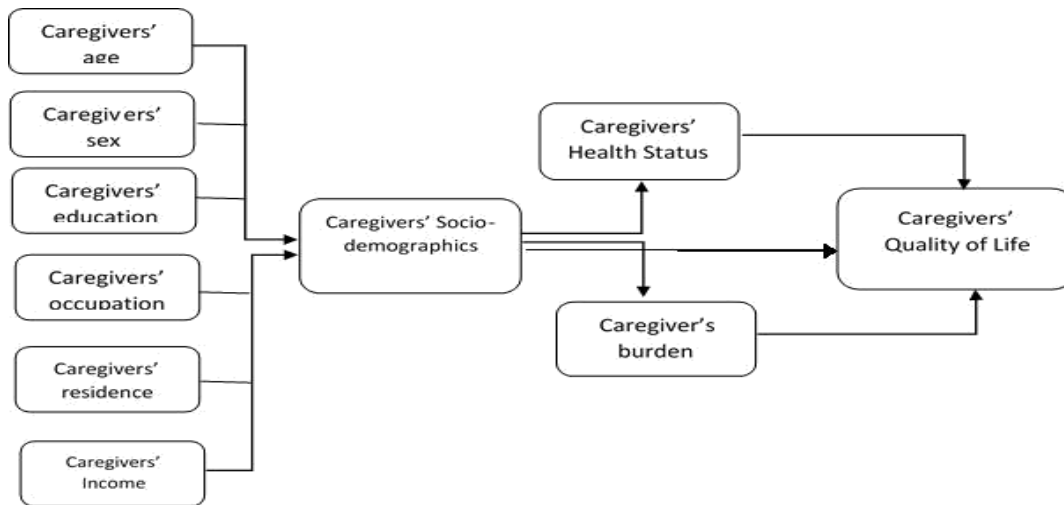


Figure 1.1: Conceptual Framework- Quality of Life of elderly caregivers

1.5 Study Objectives

1.5.1 General Objectives

To assess the effect of caregiving on the quality of life of elderly caregivers in Ghana

1.5.2 Specific Objectives

- i. To explore the association between caregiving and health status
- ii. To determine if caregiving by the elderly affects their quality of life
- iii. To describe the impact/burden of caregiving among elderly caregivers and its effect on their quality of life

1.5.3 Research questions

- i. Do elderly caregivers have poorer self-reported health and more chronic diseases than elderly non-caregivers do?
- ii. Do elderly caregivers have lower quality of life scores than elderly non-caregivers do?
- iii. Among caregivers, what is the level of impact/burden of caregiving they experience, and does this burden affect their quality of life scores?

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents literature reviewed in relation to the objectives of this study. The review is organized into thirteen sections, beginning with a definition of caregiving and ending with a discussion of the gaps to be filled by this study. Literature included in this review included journals, books, online articles, newspaper articles obtained mainly from various online sources such as Google Scholar, Oxford Journals, PUBMED, Cambridge Journals, ScienceDirect, OnlineWiley Oxford Journals, SCOPUS, SAGEPUB, Taylor and Francis, Web of Knowledge and other databases.

2.2 Defining caregiving

Caregiving as a practice is nothing new, it has been the way families and communities have lived and cared for one another for centuries. But as an academic interest, Scharlach (2008) traced it to a 1965 article debunking the perception of the modern family as becoming too individualized (Scharlach, 2008). Since then, a large body of work has grown to investigate different issues in caregiving. A lasting legacy of that pioneering work was to begin a pattern of assessing caregiving topics from the caregiving burden perspective. This review utilizes such perspective, as well.

Caregiving as a formal study has evolved to become a multidisciplinary field, involving nursing, public health, sociology, psychology and economics. The contribution from the various fields have strengthened and improved the understanding and practice of caregiving (Hermanns & Mastel-Smith, 2012; Kyei-Arthur, 2013).

Although there are several definitions of caregiving, there is no standard definition that fits all the components that caregiving entails (Hermanns & Mastel-Smith, 2012; Hunt, 2003). For example, Drentea (2007) defined caregiving as the act of providing unpaid assistance and support to family members or acquaintances who have physical, psychological, or developmental needs. Such support or care, according to her, could be instrumental, emotional and informational and is directed at maintaining or improving the recipients' present condition (Drentea, 2007). This definition is deficient in its failure to state some details about caregiving, such as the fact that caregivers can in fact be paid.

Schultz and Martire (2004), defined caregiving as providing care to an ill or disabled family member or friend usually with such health condition being long-term (Schulz & Martire, 2004). Hermanns and Mastel-Smith (2012) posited caregiving as a process of helping people who are unable to do so for themselves, in a manner that encompasses fulfilling the physical, mental, emotional and social needs of the recipient (Hermanns & Mastel-Smith, 2012).

There are also definitions of caregiving that emphasize perceptions or intent. An instance of this is Connell's (2003) description of caregiving as the meaning or purpose that a caregiver attributes to some behaviour and not really the nature and/or demand of the behaviour itself

(Connell, 2003). As such, it is not the rendering of help to someone who needs it that makes one a caregiver, but the perception of the person rendering the help about what that help is – either as a passing gesture of kindness or as something beyond normal/expected assistance which aims at improving the recipient's dependent state.

This study will employ the definition of caregiving by Wood and Parkham (1990), as

“supportive actions that assist, support, or help another person or group with evident or anticipated varied needs to improve a human condition or lifestyle” (Wood & Parham, 1990).

2.3 Formal caregiving

Caregiving could be performed on a formal basis by someone trained to provide extensive care on an occupational basis, or informally by persons providing care to a friend or family member without having received any training in caregiving (Uren, 2011). This distinction though is not absolute, as there are many as yet unexplored points of intersection between them, especially in caregivers for respite and palliative care i.e. care relief for chronically and terminally ill care recipients (Schulz, 2013). Formal caregiving is providing care to someone by an individual who has some formal training in such act, and who is paid to provide such care (Waldrop, 2006). It could be home-based, in which the caregiver regularly visits or lives with the recipient in their home, or facility-based, in which the recipient is domiciled in a care-facility such as a hospice, and is cared for by trained personnel (Kyei-Arthur, 2013). This kind of care is more often found in developed nations and is generally expensive to obtain.

2.4 Informal caregiving

Informal caregiving, also known as familial care, may be explained as the provision of care to a friend or family member with little or usually no training; informal caregivers are also not often paid for their care efforts. The caregivers' functions vary from recognized and intentional assistance in performing many or all daily activities, to unrecognized ones where minor activities like assisting in purchasing items, moving

things around the house and checking on welfare is performed (Schulz & Tompkin, 2010). They can be primary (i.e. main caregivers) or secondary caregivers (i.e. caregivers who help recipients but are not main caregivers) or part of a community/family of multiple caregivers who assist or aid a friend or family member in the activities of daily life.

According to Blum (2009), informal caregiving is complex and the relationships are dynamic (Blum, 2009). This means informal caregiving has no defined limits, and the caregiving experience could get worse rapidly or get better, often depending on changing circumstances of the recipient. It is also a situation rife with stress, social tension, financial distress and even depression, especially in caregivers of people with chronic illnesses (Borg & Hallberg, 2006)

Informal caregiving is the most common form of caregiving situation around the world (Wiener, 2003); the reason for this ranges from policy shifts and privatizing reforms within the health sector in the West (Giesbrecht, Crooks, Williams, & Hankivsky, 2012), to the comfort and cost-effectiveness it offers in Asia (Goh, Lai, Lau, & Ahmad, 2013; Mehta, 2005). In Africa, the lack of formal care structures (private or public), the high-priced cost of the few such formal care institutions, and the socio-cultural rejection of contracting out the care of family and friends ensures that informal care is more prevalent (Adeosun, 2013; Carmel & Pollack, 2013; Joubert, 2005; Kipp, Matukala Nkosi, Laing, & Jhangri, 2006; Nankwanga, Neema, & Phillips, 2013; Sudhinaraset, Ingram, Lofthouse, & Montagu, 2013). The quality of care provided by informal caregivers may be poor relative to what a professional caregiver could provide, but the low-cost, alongside socio-cultural norms means that it still remains the most popular option of caregiving (Cross & MacGregor, 2010).

2.5 Describing informal caregivers

Every instance of informal caregiving is unique, as differences exist on many fronts such as the relationship between the care recipient and the caregiver, the intensity of care offered, the gender of the caregiver and socio-economic elements like race, income, geographical location, level of education and, of course, age (Magaña, Ramirez-Garcia, Hernández, & Cortez, 2007).

Although, informal caregivers are usually family members of the person receiving the care, there are many variations to the relationship between the caregiver and care-receiver, even within the context of family members (Montgomery, Rowe, & Kosloski, 2007). Caregivers could also be friends and volunteers who provide care either as primary caregivers or as secondary/tertiary caregivers. Generally, the relationship between the caregiver and recipient is said to be vital to the health outcomes of both parties (Fredriksen-Goldsen, Kim, Muraco, & Mincer, 2009).

Within the context of family, caregivers can be nuclear or extended family members; they could be parents caring for sick children, or grandchildren; they could also be children caring for parents; it could also be a spousal care situation. Spouses and adult children, especially daughters and daughters-in-law, constitute the largest sub-group of informal primary caregivers (Kyei-Arthur, 2013). Extended family members usually take care of relations when nuclear family members are deceased, unavoidably distant geographically or impaired in some other way (Montgomery et al., 2007). Family caregivers undertake this care not solely out of obligation, but also out of an expectation of personal satisfaction and accomplishment that comes with the altruism of caring for someone else (Brodaty & Donkin, 2009).

Non-family members can also become informal caregivers. This often happens in

circumstances such as when a strong sense of familiarity exists between caregiver and recipient, or the non-related caregiver is geographically proximate to the recipient. It can also occur if the recipient is socially isolated (maybe lacking close-by relatives), and the caregivers' time situation is flexible i.e. the person has few competing responsibilities, and has more time, opportunity, and desire to help others (Felmlee & Muraco, 2009).

There are other informal caregivers who intentionally decide to volunteer to care for others, without having an initial relationship with the recipients. These voluntary caregivers are usually members of the community who are otherwise unemployed or not tied to strict obligations, and who may not receive or need training to care for people in their homes. They could be aged, retired people in the community, young socially-minded people, and they could volunteer full-time or part-time and may be classed as independent volunteers (i.e. people self-driven to provide care) and organized volunteer (people providing care voluntarily within an organizational framework) (Akintola, 2004; Choi, Burr, Mutchler, & Caro, 2007; Joubert, 2005). Volunteers are often people without previous caregiving experience who take on household chores, and aid with the care of the recipient. They are mostly female, usually motivated by a combination of the desire to help, the positive feedback received from care recipients and strong community support (Marincowitz, Jackson, & Fehrsen, 2004).

Caregiving differences exist by gender, with 2 out of every 3 informal caregivers being female (Suthers, 2006). The roles males play often is less arduous, less time-consuming, less regular and less holistic in comparison to that of females (Brodaty & Donkin, 2009; Jacobs, 2014; Montgomery et al., 2007). The sex of caregivers changes with age as there are in some way, more male caregivers than female at ages above 75

due to men usually having better health in old age (Organisation for Economic Co-operation and Development [OECD], 2011).

Income, location and education also play some role in determining who a caregiver is, although there is no general consensus on what role they play (Chadiha, Feld, & Rafferty, 2011; Correa, Leandro-Merhi, Fogaca, & de Oliveira, 2009; Do, Cohen, & Brown, 2014; Duci, Ajdini, & Dhembo, 2014; Hosseinpoor, Bergen, & Chatterji, 2013; Siegler, 2007; Wong, Lam, Chan, & Chan, 2012).

Globally, most caregivers fall in the age range of 45-59, however this has been edging higher as the demographics of nations change. Life expectancy is improving resulting in higher elderly population. In addition, migration of the youth and the ravages of epidemics in the developing world, such as HIV/AIDS, have turned the elderly into carers of young children and disabled persons (Brodaty & Donkin, 2009; Dahlberg, Demack, & Bamba, 2007; Hosseinpoor et al., 2013; Lum et al., 2011; Madhavan, 2004).

2.6 Elders as caregivers: description and determinants

Although the predominant idea in much of the world is that of elderly people as a frail, dependent population, this stereotype is not true; elders, classified in this text as people aged 60 and over, are an important sub-group among caregivers around the world (Thrush & Hyder, 2014). It is argued that about one-third of people giving care in the US are above the age of 60, and the age group 50-64 is believed to provide the most intense care in terms of time-spent. Hosseinpoor, Bergen and Chatterji (2013) gave four reasons for the growing population of informal elderly caregivers across the world. Their reasons are:

- I. The increasing number of those aged 60 and over in the world leading to both a higher demand for care by an aging population and a larger number of the elderly acting as caregivers (like in cases where children aged 60-70 will care for parents in their 90s);
- II. Decreased funding for formal care services;
- III. Cultural evolution and smaller family sizes causing a change in living arrangements;
and
- IV. Advances in medical knowledge causing the disabled to live longer, thus thrusting caregiving roles on their family members over the long while (Hosseinpoor et al., 2013).

In the US, more than 30% of persons caring for the elderly are aged 65 or over (Family Caregivers Alliance FCA, 2005). Also, 42% of all grandparents in the US residing with their grandchildren, usually aged 55 and above, are the primary caregivers of their grandchildren (American Psychological Association APA, 2013). In other developed nations, where population aging is proceeding rapidly, healthy older adults are more likely to become caregivers and to continue giving the care for a while (Hong & Park, 2010; Roth, Perkins, Wadley, Temple, & Haley, 2009).

In developing countries, especially Africa, rapid societal changes created by modernization and accompanying socio-demographic shifts like the migration of young family members to urban areas, poverty, and the HIV/AIDS epidemic has increased the profile of the elderly as caregivers (Hayslip & Kaminski, 2005). For example, the number of grandparents caring for orphans affected by HIV/AIDS has increased over time, and up to half of the world's 15 million AIDS orphans are being cared for by a grandparent; the majority of these grandparents are women and are

above the age of 60 (Hayslip & Kaminski, 2005).

However in most developing countries, these older caregivers are often neglected and they lack rigorous governmental support; they are left to fend for themselves and those they give care to without societal aid most times (Hong & Park, 2010). This situation is especially true in Ghana, with a sizable population of elderly caregivers who care to children whose parents have migrated, disabled and are victims of the HIV/AIDS pandemic. These caregivers are also neglected and are not given social aid nor sufficient family support (Ardayfio, 2014; Tackie-Ofosu, 2010). Some countries do have some policy to help the caregivers like the US' National Family

Caregiver Support Program (Caro, 2014), the cash benefits and tax incentives to caregivers in Europe, the Caregiver Tax Credit and Medical Expenses Tax Credit to support caregivers in Canada and the welfare policy enacted to provide social and financial assistance to caregivers in Asia (Keefe & Rajnovich, 2007; Organisation for Economic Co-operation and Development [OECD], 2011; Shimmei & Chou, 2014).

Africa has the smallest relative proportion of elderly people in the world, but that is changing as the continent's age structure begins to enter a period of demographic and epidemiological changes (Ghana Statistical Service [GSS], 2013; Kahn et al., 2006). These changes, coupled with rapid social changes and the poor state of national health infrastructures across the continent, ensures that for years to come, the elderly will become an increasingly relevant age segment of the health sector, both as receivers and providers of care (WHO, 2007). A brief look at some key determinants of the elderly serving as caregivers will give some context to this subject matter:

2.6.1 Demographic change

This refers to population changes occurring in the path theorized by the classical

demographic transition theory. This theory argues a four-stage demographic situation of societies, with the second and third stage characterized by great population explosions while the first and last stage witness negligible population growth rates (Coall & Hertwig, 2010; Joubert, 2005).

The experience of this change by African nations, moving from the second and first stages on to further ones of decreasing death and birth rates means that life expectancy is increasing, with average life expectancy in Africa being projected to become 64 years in 2030, compared to 57 years in 2010 (African Development Bank [ADB], 2012). The population of Africa is ageing with persons aged 60 and over projected to grow from 64 million in to 211 million in 2050, an absolute increase of 148 million and a relative increase of 232 per cent (ADB, 2012). As previously noted, these consequences will lead to a situation where an increasing aged population will have to start caring for itself and its reducing offspring.

2.6.2 Epidemiological change

This refers to the theory propounded by Abdel Omran (2005) in which he theorized that societies experience three phases of epidemiologic transition (which are the age of pestilence and famine, the receding pandemic stage and the stage of degenerative and man-made diseases) that revolves around both decreases in mortality rates and changes in the cause from infectious disease to more of man-made/non-communicable diseases (Omran, 2005). An updated version of it puts a less delineated spin on the theory by asserting that in many developing countries, infectious diseases co-exists with the non-communicable ones, and over time, only the balance

—as to which is responsible for more deaths— changes (Agyei-Mensah & Aikins, 2010).

Many countries in Africa are still largely troubled by infectious diseases, particularly HIV/AIDS, tuberculosis and malaria (with Ebola being a recent direct health threat); but non-communicable diseases are also taking a toll with mental illness, heart diseases, childhood developmental challenges all causing major fatalities (Lozano et al., 2013). These emerging trends will require that the victims and dependents of victims need to be cared for. The elderly family members who are considered to have more free-time and experience are called upon to provide such care (WHO, 2007).

2.6.3 Social norms and changes

Another determinant of elderly people serving as caregivers are the social norms, customs and changes in the society. These are identified as urbanization, beliefs and customs, wars and political crises. Urbanization refers to the increasing urbanization of Africa. As Africa develops and more young people migrate out of rural homes and into urban areas, it forces those who are available, usually the aged, to take up the unmet need for care by proximate relatives and friends (Aboderin, 2004; Cheng & Siankam, 2009; Ezeh, Chepngeno, Kasiira, & Woubalem, 2006; Oppong, 2006; Zimmer & Dayton, 2005).

With regard to beliefs and customs, the following issues were identified. In some African countries, older women are usually required to provide postpartum care for women; also, unmarried women are expected to leave their children with their aged parents to avoid embarrassment and dampening of marital prospects. Then there are customs in which grandparents take care of their grandchildren and other relatives due to short or long term financial distress of the grandchild's parents i.e. their child (Fischer, 2002; Kapungu et al., 2013; McKelvy & Draimin, 2002; Schatz, 2007; Silverstein & Giarrusso, 2010; Zimmer & Dayton, 2005).

Finally with regards to wars and political crises, when there are large numbers of unattended orphans and war-disabled, elderly caregivers who are relations of the affected children step up, and children without relation are cared for by voluntary caregivers including elderly ones either in a community or privately (Amone-P'Olak et al., 2014; Hansen, 2005; Werner, 2012).

Other reasons that ensures the elderly serve as caregivers may include incarceration, divorce and separation or negative lifestyle (like addictive drug use) of natural caregivers of children, unemployment and multi-generational co-residence (Bor, Tanser, Newell, & Bärnighausen, 2012; Hayslip & Kaminski, 2005; Hosegood, Benzler, & Solarsh, 2005).

Although the care rendered by caregivers of all age groups is vital in improving societal health social outcomes, the caregiver experience has generally tended towards a net negative with 53% of caregivers surveyed in the US reporting worse health due to caregiving (Pinquart & Sörensen, 2007). This negative experience is often referred to as the impact or burden of care.

2.7 Burden of caregiving

The definition of the burden of care within literature remains unclear and varied. Bastawrous (2013) defined the burden of caregiving as the measurable stress associated with giving care (Bastawrous, 2013). Applebaum and Breitbart (2012) defined it as a multidimensional biopsychosocial reaction resulting from an imbalance of care demands, relative to caregivers' personal time, social roles, physical and emotional states, and financial resources, given the other (social and professional) roles they fulfil (Applebaum & Breitbart, 2013). Similarly, George and Gwyther (1986) define caregiving burden as the physical, psychological, emotional, social and

financial stresses that individuals experience due to providing care (George & Gwyther, 1986). It could be assessed somewhat objectively by measuring the duration, number of care recipients, tasks performed and other physical or instrumental provision of care means. It could also be assessed subjectively by observing the caregivers' perceptions of psychological, emotional, social consequences of rendering care (Chou, 2000).

Caregiving by the elderly is fraught with stress; it often puts them in situations in which their personal needs are ignored and their age-related health challenges become exacerbated (Chang, Chiou, & Chen, 2010; Marcon, Rubira, Espinosa, Belasco, & Barbosa, 2012). The majority of older caregivers are women who face serious financial, physical and emotional stress due to their late-life caregiving responsibilities. In developing nations, elderly caregivers face the unique consequences of high levels of prime-aged adult morbidity and mortality that affects their care-receiving and giving abilities (Schatz, 2007).

2.8 Effects of caregiving by the elderly

Elderly people giving care is not a phenomenon without consequences, and the burden of this role has various effects, some of which are explored below

2.8.1 Physical and Mental/Emotional Health Effects

Caregiving effects are stressful events that have biopsychosocial implications, meaning that the mental changes they cause lead to physical responses (Vitaliano, Zhang, & Scanlan, 2003). The elderly who give care are usually found to report and test for poorer health than non-caregiving ones, even as the number of their chronic ailments like hypertension, diabetes, arthritis and depression were higher and became more as they aged (Baker & Silverstein, 2008; Chang et al., 2010; Hayslip & Kaminski, 2005;

McKelvy & Draimin, 2002; Musil, Warner, Zauszniewski, Wykle, & Standing, 2009; Yamaki, Hsieh, & Heller, 2009).

For instance, Elmore (2014) and Ice et al., (2012) reported that elderly caregivers had higher levels of stress hormones and lower levels of antibody responses than non-caregivers, and they had a slightly greater risk for health problems than non-caregivers did (Elmore, 2014; Ice, Sadruddin, Vagedes, Yogo, & Juma, 2012). Baker and Silverstein (2008) further saw that newly involved elderly caregivers had an immediate & drastic health response (depression) but they adapted over time (Baker & Silverstein, 2008). Longitudinal studies of elderly caregivers found that those reporting more physical care-related stress experienced greater morbidity and mortality over time (McCann, Hebert, Bienias, Morris, & Evans, 2004). A study of the impact of caregiving on the elderly in Kenya showed that caregiving did not affect physical health but did act to decrease mental health and self-reported health over time (Ice, Yogo, Heh, & Juma, 2009). Various studies have also shown the existence of associations between specific chronic diseases (such as depression) and caregiving status (Luchesi, Degani, Brígola, Pavarini, & Marques, 2015; Schoenmakers, Buntinx, & Delepeleire, 2010; Visser-Meily, van Heugten, Post, Schepers, & Lindeman, 2005).

A review of mental health-related experiences and challenges of informal HIV/AIDS caregivers by Lua & Mustapha (2012) revealed that stress, depression, stigma and discrimination, insufficient support, role overload and extreme poverty are the main challenges experienced (Lua & Mustapha, 2012; Mwinituo & Mill, 2006). It has also been found that age was negatively correlated with positive physical and mental self-appraisal among caregivers (Poulin et al., 2010). Yang et al. (2012) found that caregivers who were providing care and experiencing caregiver burden and strain had a 63%

higher risk of mortality than non-caregivers (Yang, Hao, George, & Wang, 2012).

2.8.2 Financial Effects

The financial effects of caregiving refer to direct monetary expenses incurred in providing care, the forgone financial or monetary costs in employment due to acting in a caregiving role and subjectively indicated non-monetary costs perceived by the caregiver as financial costs (Degeneffe, Chan, Dunlap, Man, & Sung, 2011; Lai, 2012).

Generally, informal caregiving has been estimated as very costly (Boyer et al., 2012; Ogunmefun & Schatz, 2009). Many households in poor countries, find it difficult to recover from the financial impact of their caregiving efforts. In Malawi, many older people report having to sell assets (including land and property) or using scarce savings in order to support the people under their care (Sefasi, 2011). In a study done in South Africa, primary caregivers (a fourth of which were elderly), had taken time off from formal or informal employment or schooling to take care of the sick care-recipient, leading to the loss of household income and the under-schooling of children, especially girls (Steinberg, Johnson, Schierhout, & Ndegwa, 2002).

Elderly caregiving actually impoverishes many homes across Africa, as a study in Kenya found significant differences in living arrangements, wealth, income and expenditure between elderly caregivers and non-caregivers (Chepngeno-Langat, Falkingham, Madise, & Evandrou, 2009). In Tanzania, it was found that the average monthly cost of caring for vulnerable children by elderly caregivers was about US\$19/month, and it is even higher in Mozambique at US\$21 (Busolo & Nhongo, 2008), but in both countries, more than 30% lived under the poverty line of \$2/day in 2009, creating a financial dilemma for caregivers (Sumner, 2012). This leaves the caregiver more stressed and financial

stresses lead to worse health outcomes for both care receiver and giver.

2.8.3 Subjective Effects

Caregivers experienced social strain if they felt frustrated by the reduced time they have for leisure, rest, family and friends and if they perceive a lack of caregiving assistance from other family members (Lai, 2012). Many elderly caregivers find out they are excluded from social activities and could not rest in their old age; many even feel a sense of isolation and overwhelming duties leading to depression (Mccallion & Janicki, 2014). Elderly caregivers also experience stigma if they are caring for those with developmental and incurable diseases like HIV/AIDS, schizophrenia, Down's syndrome etc. (McKelvy & Draimin, 2002; Ogunmefun, Gilbert, & Schatz, 2011; Phelps, Hodgson, McCammon, & Lamson, 2009). In addition, caregivers experience stresses and impacts that have negative repercussions on their perceptions of personal well-being (Settineri, Rizzo, Liotta, & Mento, 2014; Välimäki, Vehviläinen-Julkunen, Pietilä, & Pirttilä, 2009; van den Tweel et al., 2008).

On the other hand, Boerner et al. (2004), Phelps et al. (2009) and Shim et al. (2013) argued that elderly caregivers do benefit from their role as it gives them some sense of true self-discovery, personal growth and a more positive attitude to life (Boerner, Schulz, & Horowitz, 2004; Phelps et al., 2009; Shim, Barroso, Gilliss, & Davis, 2013). Some literature go further to confirm that older caregivers have better physical, emotional, and cognitive health outcomes and reduced mortality relative to non-caregivers as they develop effective coping skills that aid their caregiving experience (Bertrand et al., 2012; Ekwall, Sivberg, & Hallberg, 2007; Freedman, Cornman, & Carr, 2014).

The pervading absence of government programs and policies in sub-Saharan Africa to

support the elderly caregiver impacts negatively on their psychological health, as well (Busolo & Nhongo, 2008). Other factors noticed to have an effect on caregiving include duration of caregiving, number of care recipients, relationship between caregiver and care recipient. A few of such factors are discussed below.

2.8.4 Other factors related to caregiving burden

- Socio-demographics of caregiver
 - **Sex/Gender:** Females report more stress, poorer health and high burden of disease than men (Akpinar, Kucukguclu, & Yener, 2011; Muliira & Muliira, 2011), although there are contradictory reports, as well. Pinquart and Sorensen (2006) found, in their meta-analytic review, that there exists practically significant (though not very huge) gender differences in caregiver burden as women experience more caregiving stress (Pinquart & Sorensen, 2006). George (2010) asserts however that sex as a predictor of burden is much more complex (George, 2010). Sex of the care recipient might affect care burden levels too (Haro et al., 2014).
 - **Rural-urban Location:** Differences in physical/mental health may not always exist, but caregiving arrangements and health care availability differs and may lead to stresses (Bigbee, Musil, & Kenski, 2011; Peterson & Starks, 2014). Older caregivers in rural areas however, are more accepting of caregiving roles because of traditional norms and so may have better health, although self-reported health worsens (Chang et al., 2010).
 - **Income and Education level:** The elderly's income and level of education has been observed to be a robust predictor of subjective

burden and well-being, as educated people might have better information on how to deal with the physical, mental and even spiritual needs of those they care for, reducing stress (Busolo & Nhongo, 2008; George & Gwyther, 1986; Raina et al., 2005).

A few more factors that may affect caregiving impact include health-status of the care recipient, the type of care being provided, and marital status (as those elderly caregiver who were married had higher level of stress than those who weren't married); also religious activities helped relieve caregiver burden (Freedman et al., 2014; Haro et al., 2014; Hebert, Dang, & Schulz, 2007; Jones, Hadjistavropoulos, Janzen, & Hadjistavropoulos, 2011; Mhaka-Mutepfa, Cumming, & Mpofu, 2014; Monin & Schulz, 2009; Neely-Barnes & Dia, 2008; Schulz & Sherwood, 2008; Smith, Ryan, Queen, Becker, & Gonzalez, 2014; Thrush & Hyder, 2014).

Geographical distance also mediates the amount of burden felt by elderly caregivers, as the farther away they are to the recipient the more stress felt by both parties (Xavier, Ferraz, Marc, Escosteguy, & Moriguchi, 2003). Finally, it has been found that caregivers in good health were less burdened than those who had illnesses (Chou, 2000; Sisk, 2000).

2.9 Measurement tools

In measuring caregiving impact, different scales have been invented and used. Some of these scales are disease specific, others focus on the positive aspects of caregiving, or they focus on either objective or subjective caregiving, and yet some try to assess caregiving by competence. A few of them are the caregiving competence scale, caregiving activities scale, Zarit burden scale and Montgomery caregiving burden scale (Kyei-Arthur, 2013). There have however been studies that did not use such tools but instead identified contextually relevant questions that highlighted the impact

of caregiving, and from such questions made up a latent index (Mugisha et al., 2013) . This study will be using such methods as well.

2.10 Quality of Life (QoL)

Quality of life, as a subjective indicator of well-being, has varied context-dependent definitions. Conceptually, it includes spirituality, health, activity level, social support, resources, satisfaction with personal accomplishments, and life situations (Chappell & Reid, 2002). It involves both affective/emotional/psychological and cognitive aspects of well-being. The WHO defines Quality of life as

“Individuals’ perception 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.”

(WHO, 2007a).

The WHO further expanded that the Quality of Life (QoL) concept is essentially a subjective evaluation of the positive and negative aspects of the participant’s life. It is affected in a complex way by the person's physical health, psychological state, level of independence, social relationships, personal beliefs and their relationship to salient features of their environment (WHO, 2007a).

Among the elderly, quality of life depends on the emotional interpretation every individual ascribes to their station in life based on internal variables (his/her emotional attitude facing the facts of life, personality, resilience) and on external variables (contingencies, environmental resources) (Xavier, 2003). Thus, the same experiences of perhaps, chronic ailment, might be perceived differently by two otherwise similar elderly individuals.

2.11 Caregiving and quality of life among the elderly

Quality of life among the elderly goes beyond focusing on generic functional and cognitive decline, and includes assessing individual perceptions of some relevant life issues (Guyatt, Feeny, & Patrick, 1993). This assessment among the elderly who give care involves understanding that caregiving can have serious adverse effects on the elderly caregiver which in turn lowers their quality of life. A study in China provides empirical evidence that increased caregiver burden, was associated with a decline of well-being and quality of life (Yang et al., 2012).

Kipp (2006) reports that subjective well-being and quality of life measures strongly correlated with other 'harder' physical measures of health status such as mortality, clinically diagnosed morbidity, symptom reporting, and health care utilization (Kipp et al., 2006). Previous research has found that older adults including caregivers, tend to have stable subjective well-being as they age and become both more accepting of life's fact and reflective on their comparative wellness among their peers (Freedman et al., 2014; Röcke, Li, & Smith, 2009). However, it is not clear how this growing acceptance is affected by being a caregiver. Also, a review by Washington (2005) showed that the relationship between the self-reported health of caregivers and their well-being measure is a complex one, with it being often negatively correlated; i.e. as quality of life decreases, report of poor health increases (Washington, 2015)

Much of Quality of Life measures in elderly caregivers relate to burden level, and they often have negative correlations, and this could get worse if the care recipient worsens (Hejoaka, 2009; Read, Adiibokah, & Nyame, 2009; Valenca, de Menezes, Calado, & de Aguiar Cavalcanti, 2012; Youngblut, Brooten, Blais, Hannan, & Niyonsenga, 2010). This dismal well-being state of elderly caregivers is mediated by the caregivers' coping skills, religion, cultural norms, attitude and altruism, socio-

economics and social support (Gomez-Olive et al., 2014; Kasedde, Doyle, Seeley, & Ross, 2014; Piat, Ricard, Sabetti, & Beauvais, 2007). The quality of life of caregivers can predict the wellbeing of the care-recipient as well (Hacialioglu, Özer, Erdem, & Erci, 2010).

2.12 Measuring quality of life

Quality of life (QoL) is quantitatively assessed by self-reports of the subject through interviews conducted by a researcher who has developed indicators of assessing the quality of life. Measuring quality of life is important to assess the impact of life conditions and chronic diseases, and help predict prognosis and clinical responses (Guyatt et al., 1993). It also is a public health measure that complements other measures of morbidity and mortality, due to its biopsychosocial approach of assessing a participant's wellbeing (Ferrans, Zerwic, Wilbur, & Larson, 2005). A study by Spiro and Bosse (2000), however questioned the idea of quality of life as a strong measure of well-being by finding that correlations between quality of life measures and well-being was, at best, only moderate (Spiro & Bosse, 2000). Also, the use of quality of life indices may not be reflective of the nuanced perspectives that study subjects really have about QoL indicators, as some participants might perceive some experiences and indicators as more impactful on their lives than others (Vellone, Piras, Talucci, & Cohen, 2008).

There are various measurement tools to assessing quality of life that vary widely in conception, construction, intent and content demonstrating that the measure of the quality of life, like what it is measuring, is subjective. Reviews of QoL measurement tools focuses on either tying them with the International Classification of Disease/Disability (Cieza & Stucki, 2005), Psychometric properties (Huang, Wu, & Frangakis, 2006), disease/health state (Marinus, Ramaker, Van Hilten, & Stiggelbout, 2002) and content analysis (Tschiesner, Rogers, Harreus, Berghaus, & Cieza, 2008).

In general, two approaches to quality of life measurement are available: specific instruments that focus on problems associated with single disease states, patient groups, areas of function, or individuals; and generic instruments that provide a summary of quality of life, usually health-related quality of life (Bonomi, Patrick, Bushnell, & Martin, 2000).

Overall, all measure of QoL must meet some essential criteria before being widely accepted and used. These include acceptability to health professionals and patients/participants; minimal burden in completing such assessment. It should also be brief, easy to comprehend and should not require very high degree of concentration; it must possess high-enough reliability and repeatability in which it yields the same score after repeated measurements in patients (often measured by Cronbach's alpha). Validity (in which the scale measure what it was made to measure), responsiveness (in which the test is able to capture change in a patient's condition over time when it occurs), and interpretability (which refers to the ability to assign meaning to the scores yielded by the measure) are also required features of a useful measure of QoL (Fayers & Machin, 2013).

2.13 Gaps to be filled

An overview of the literature above reveals a paucity of works on the elderly as caregivers in Ghana to understand their experience; this is the major gap this research work is stepping in to fill. This research work will endeavour to answer such questions.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter describes the research methods and procedures used in conducting this study. It contains 11 sections, including those on study design, study area, variables and study population. Sections on sampling, data collection, quality control, data processing and analysis as well as ethical considerations are also present in this chapter.

3.2 Study design

A cross-sectional, quantitative design was employed in this study to address the stated research objectives.

3.3 Source of data

This study used data from the World Health Organization's Study on Global AGEing and Adult Health (SAGE), Wave 1, carried out between May 2007 and June 2008. The SAGE study is a longitudinal population survey performed to gather longitudinal information on the health and well-being of Adults and the aged population of Ghana, China, India, Mexico, Russian Federation and South Africa, using nationally representative samples. It was carried out in all six countries in cross-sectional instalments called 'Waves' with two waves having been completed (WHS/SAGE Wave 0, 2002-2004 and SAGE Wave 1, 2007/8) while a third one (Wave 2, 2014/15) is ongoing as at the time of this writing.

Participants in the study were surveyed concerning household characteristics, socio-demographics, income and work history. They were also queried on their perceived health status, subjective well-being and quality of life. Other participant characteristics assessed were disease risk factors and preventive health behaviours,

chronic conditions and health services coverage, health care utilization, subjective well-being and quality of life, and social networks. Some anthropometric measurements and objective health tests were also conducted on the respondents, including blood pressure tests, cognition tests and visual acuity tests.

3.4 Study area

The SAGE study was conducted among a representative sampling of the aged and adult population across all the ten (10) regions of Ghana. Ghana has a land mass of 238,535 km² and is bordered by the Ivory Coast in the west, Burkina Faso in the north, Togo in the east and the Gulf of Guinea and Atlantic Ocean in the south. Ghana is divided into ten administrative regions – Ashanti, Brong-Ahafo, Greater Accra, Central, Eastern, Northern, Western, Upper East, Upper West and Volta Regions (Central intelligence Agency CIA, 2014).

Ghana's total health expenditure as a percentage of GDP between 2010-2014 has been at 5.2%, and as at 2009, it had a total of 3217 health facilities, most of which are government & quasi-government hospitals (Ministry of Health Ghana MOH-G, 2012; World Bank, 2014).

3.5 Study population

The study population for this study was the elderly (age 60 years and over) population of Ghana as at 2007/2008. According to the 2010 national population census, the elderly accounted for 6.7% of the total population of 24,658,823, with 56% of them being female to 44% male (Ghana Statistical Service GSS, 2013).

3.6 Sampling procedures

This section outlines the sampling methods used in gathering the SAGE data set that this study utilized in analysis. It also explains the procedures the researcher employed

in screening the complete dataset to obtain a sample of the observations that were analysed in achieving the objectives of this study.

3.6.1 Sampling method

This study employed the individual dataset from the WHO Study on Global Ageing and Adult Health (SAGE)-2007/8, Wave 1 (Ghana). Multistage cluster sample method was used to sample 5269 households and 5573. Since the WHO SAGE study was a nationwide study, the sampling procedure began by stratification of the country (Ghana) by its ten administrative regions (Ashanti, Brong-Ahafo, Greater Accra, Central, Eastern, Northern, Western, Upper East, Upper West and Volta regions), and also by locality (rural or urban). This resulted in the creation of 20 nationally representative strata. A total of 251 Census Enumerated Areas (EAs) formed during the 2000 Population and Housing Census was used as the primary sampling units (PSU) within the 20 strata. The EAs were distributed across the strata based on proportion-to-size allocation; with the measure of size being the number of individuals aged 50 years and above in the respective EAs.

In each selected EA, a listing of the households was conducted to classify each household into four mutually exclusive categories based on the premise of the age of the household-head, and subsequently on having been sampled in previous waves. The categories formed were newly-sampled 50 years-and above households, newly-sampled 18-49 years households, 50 years-and above households sampled in previous waves and 18-49 years households sampled from previous waves. Using this classification, twenty-four households were randomly selected from each selected EA.

All 50 years-and above households were purposively sampled for the individual interview (multiple individual interviews was possible in these households), This was because the study was focused on getting as many elderly participants from each

household as possible. In order to contrast with information on elderly health, 18-49 households were also sampled for individual interviews. In each of these households one person aged 18-49 was eligible for the individual interview, and the individual to be included was selected using Kish table grids.

It was also ensured that for the individual interview, four previously sampled 18-49 households were randomly selected in each EA, and the participant previously interviewed in the previous wave was sampled for the individual interview.

3.6.2 Data collection

The World Health Organization (WHO) collected the data for the SAGE study through face-to-face interviews (verbal and written) in the homes of selected participants using six-types of questionnaires. The household and individual questionnaires were translated into three local languages (Akan Twi, and Ga) and used for training. Back translations were also done before use. Instruments for blood pressure, height, weight, waist and hip measurements, spirometry, visual acuity (near and distance using tumbling E charts), stopwatches (to time measured walk) and needle finger pricks were used to get objective health data. The data was obtained from the WHO SAGE Study online portal (WHO, 2009).

3.6.3 Cleaning the dataset/Missing-ness

The dataset used in this study (the WHO Ghana SAGE study individual dataset) originally contained 1,684 variables and 5,573 observations obtained from the WHO SAGE database. In using the dataset for this study, it was first cleaned by excluding observations from respondents below the age of 60 years. Then, extraneous variables which would not be applicable for the study were removed.

Considering that the dataset contained missing data, the next stage of cleaning involved assessing the randomness of the missing data. This was done by evaluating data missing-ness by cross-tabulating the missing values with socio-demographic variables of age, sex, place of residence, education, occupation and region of residence (using t-test for age and chi-square for sex, place of residence, education, occupation and region of residence). These socio-demographic variables were used because they are the main antecedent variables of this study that respondents could not 'skip' or have a 'not applicable' response. None of the cross-tabulations proved statistically significant. This led to the conclusion that much of the missing data was random, and missingness had no systematic relation to any of the used variables.

This was followed by a complete case analysis (listwise deletion) in which observations that had missing values for more than 40% of the predictor variables of interest and failed to have a response in less than seven of the eight questions used in composing the outcome variable were removed. Finally, variables were merged/aggregated and recoded as and where necessary. All of the stated operations were done on STATA version 13.0. Table 3.1 below shows a brief description of the processes carried out in sequential order.

Table 4. 1: Data cleaning processes

S/N	Operation carried out	Result obtained
1	Removal of observations from respondents aged below 60	2724 out of 5,573 observations deleted
2.	Excision of non-relevant variables	74 variables kept from 1, 684 variables
3.	Merging and recoding variables	65 variables left from 74 variables
4.	Dropping observations with less than 50% of complete responses	244 observations dropped from 2849
5.	Final recoding and dropping of un-needed variables	43 variables left from 65 variables; 2595 observations left

3.6.4 Study sample size

The WHO SAGE individual dataset included observations from 5573 individuals.

From this individual dataset, a total of 2595 responses were used in this study based on the following criteria:

3.6.4.1 Inclusion criteria

The inclusion criteria for an observation to be included in this study from the dataset were

- Observation must be for a participant of age 60 years or over. This was because thie study is concerned with the elderly, defined as those aged 60 years and over.
- Observation representing respondent must have at least 60% complete data in the variables of interest.

3.6.2 Exclusion criteria

Once an observation does not fulfil both criteria for inclusion, it was excluded from the study.

3.7 Variables

The variables this study considers are tabulated below:

Table 3. 1: Table of variables

Dependent variable	Independent variable (s)
Quality of Life	Caregiving status
	Sociodemographic characteristics
	<ul style="list-style-type: none"> - Sex - Age - Education - Place of residence - Income - Current occupational status
	Self-reported health status
	Presence of chronic disease
	Impact/burden of care

3.7.1 Main outcome variable:

3.7.1.1 Quality of Life (QoL)

The WHO EUROHIS-QOL quality of life index was employed in this study as the indicator for quality of health. The WHO EUROHIS-QOL is an 8-item index graded on a 5-point Likert scale, with increasing scores being indicative of increasing perception of quality of life. It was composed by first reversing the numerical codes assigned to the responses contained in the SAGE dataset to questions on quality of life. In the dataset, “1” indicated *very satisfied*, “2” is for *satisfied* “3” stands for *neither satisfied nor dissatisfied* “4” is *dissatisfied* and “5” indicated *very dissatisfied*. The reverse-coding gave positive responses higher numerical codes. The new codes for individual responses were then summed up to generate the WHO EUROHIS-QOL quality of life index. Higher responses indicated higher quality of life and vice versa, with the scores ranged between a minimum of 8 and a maximum of 40. The scores

were then re-categorized and re-coded into “Higher”, “Moderate” and “Lower”. Scores from 40-30 were considered as “Higher” category, as “Moderate” (29-19) and “Lower” category (18-8). This same method was used by Martinez, Lien, Landheim, Kowal, & Clausen (2014) in studies conducted in similar African settings and based on the same SAGE study data for South-Africa (Martinez, Lien, Landheim, Kowal, & Clausen, 2014).

3.7.2 Independent variables:

The independent variables used in this study were the caregiving status of the individual, their socio-demographic characteristic, the caregiving burden for those who are caregivers. Also, the self-reported health status and presence of chronic diseases were independent variables assessed in this study.

3.7.2.1 Caregiving role of the elderly and aged in Ghana:

This variable was assessed from responses to the question(s) on the individual questionnaire asking if the participant was a caregiver (*“Who is or was the main person providing care for this adult/child? Is it you yourself, someone else in this household, or someone outside of this household?”* and *“Even if you were not the main caregiver, did/do you provide care or support to this person?”*). This formed the criteria to include participants into the caregiving arm of the analyses which was done to assess the effect of caregiving on the quality of life of elderly caregivers as compared to elderly non-caregivers.

3.7.2.2 Socio-demographic of the respondents

This study looked at six socio-demographic characteristics of respondents. These characteristics are sex, age, place of residence (rural or urban), educational status, current occupational status (unemployed or currently employed) and income quintile.

3.7.2.3 Self-reported health of the respondents

This variable was to find the current subjective perception of health at the moment of interview. It was recoded from a 5-point Likert scale response of “1 for Very good, 2 for Good, 3 for Moderate, 4 for Bad, 5 for Very bad” to the question ‘In general, how would you rate your health today?’. ‘Bad’ and ‘Very bad’ were merged into ‘bad self-reported health’ category, while ‘Very good’ and ‘Good’ were merged into a single ‘good self-reported health’ category.

3.7.2.4 Presence of chronic diseases

This variable assessed the presence of selected chronic diseases in participants in order to find out if caregivers had more diseases than non-caregivers. The diseases were arthritis, angina, chronic lung disease, depression, hypertension, and diabetes. Questions asked in the questionnaire to assess those conditions were “*Have you ever been diagnosed with/told you have [chronic condition]?*” The response to this is a binary of yes and no, with the yes response recoded as 1 and no recoded as 0. An equally weighted summation of these responses from each participant who gave a valid response to at least five of the conditions, was made into an individualized index ranging from 0 (no conditions), 1-2 (one-two conditions) 3-4 (three or more conditions).

3.7.2.5 Burden of care

This variable was to measure the impact of caregiving on those who said they were caregivers and how this affected their quality of life. It was composed from 5-point Likert responses to ten questions focused on caregiver’s sleep, energy, caregiving engagements, stigma and finances (these questions are listed in Appendix II). Two sets of such questions were asked depending on whether the care recipient was an adult or child. Those who took care of one set of recipients (i.e. either adult or child) answered to only one set while the caregivers of both adults and children had the

same responses for those questions when asked. The WHO SAGE study individual questionnaire and dataset used in answering these variables are available online (WHO, 2007, 2009).

By simple summation of individual-level responses, with all questions equally weighed, an ‘impact/burden of caregiving’ index was created. This was done by giving each Likert point an increasing numeric value from 1-5 (None = 1, Mild = 2, Moderate = 3, Severe = 4 and Extreme = 5). After this was done, the new index was assessed and demonstrated good internal reliability for the caregivers’ impact responses (Cronbach’s $\alpha = 0.95$). The burden index is then re-categorized into lower burden (scores from 9-22), moderate burden (23-36) and higher burden (37-50). A similar index-by-summation method has been used in a study assessing the burden of care and quality of life (Mugisha, Seeley, and Kowal, 2013).

3.8 Data collection and analysis method

3.8.2 Data analysis

All data analyses was done on STATA version 13.0. Quantitative data analyses for this study was done on four (4) levels. First, descriptive statistics of the whole participant population was done. Using the aid of a pie-chart shown in Figure 4.1, participants who met the inclusion criteria for this study were first defined by their caregiving status. This was to clearly map out the relative proportions of elderly caregivers to elderly non-caregivers. Also, in accordance with the objectives and conceptual framework guiding this study, the socio-demographic characteristics of the participants were described as the antecedent variables. These variables included age, sex, education, occupational status, income and location, and the description was done using proportions and frequencies. The chi-square test was employed to measure associations between these characteristics and caregiving status. The results of these

analyses are presented in Table 4.2. It should be noted that though the use of income measures in assessing socio-economic status in Africa is generally not perceived as very reliable, this research work used the income quintile as a proxy for the more preferred wealth quintile. This was because the WHO had calculated the income of each participant using advanced principal composite analysis (PCA) analysis adjusted for the income-uncertainty inherent in the Ghanaian setting; an analysis which this study does not replicate here.

The second level of analyses was to describe the health state of participants. Chi-square tests and Kruskal-Wallis H tests, were done to determine the existence of a significant association between health status of all participants and their caregiving status. This was done by separately analysing each indicator of health status, which are self-reported health and presence of chronic disease, against the caregiving status of participants; this was to achieve the first objective which is exploring the association between caregiving and health status. These analyses are presented in Tables 4.2. A multiple ordinal regression of self-reported health against caregiving status and socio-demographic variables, shown in Table 4.3, was done to determine the strength of association between self-reported health and caregiving status as adjusted by socio-demographic variables.

At the third level of analysis, the quality of life of all participants was assessed by an initial descriptive analysis of quality of life scores of all participants by caregiving status: this was followed by a Kruskal-Wallis H test to assess the association. These analyses appears in Tables 4.4 and 4.5. Further, a simple ordinal regression was done to evaluate if caregiving status predicted quality of life scores, and a multiple logistic regression was ran adjusting the predictor relation by socio-demographics. The results are presented in Table 4.6 and 4.7. This level of analyses was done to essentially

compare whether caregiving status had any effect on the elderly's quality of life scores, and thus achieve the second specific objective of this study. As a final comparison, the caregiving status was regressed against quality of life and adjusted by the indicators of health status – self-reported health and presence of chronic disease, and the model is shown in Table 4.8.

The fourth and final level of analysis was to describe the impact/burden of caregiving among caregivers. A bar chart shown as Figure 4.2 illustrated the proportion of caregiver's burden among caregivers, and a Kruskal-Wallis test was used to measure the association between the impact levels and quality of life score with results tabulated in Table 4.9. In addition, Table 4.10 and 4.11 shows the simple and multiple regression models employed to assess the predictor relationship of the burden index on quality of life score when adjusted by socio-demographic factors. These analyses fulfil the third specific objective of the study.

In all these tests of associations and regressions conducted, a p-value of < 0.05 ($<5\%$) was used to denote statistical significance. Ordinal logistic regression was used because the outcome variables were treated as categorical variables with ordered categories. Crude and adjusted odd ratios (ORs) were calculated with a 95% confidence interval (95% CI). Odds ratios with accompanying 95% CI were used to assess the strength of the relationships. Significant relationships were denoted with an asterisk (*). ** denoted statistical significance at $p < 0.001$, while * denoted statistical significance at $p < 0.05$. All reported p-values were considered statistically significant at a level of 5% (0.05).

3.9 Quality Control

Statistical and data quality was maintained through the course of the study by keeping strictly to the data available from the SAGE study, and not manipulating the data to fit into any preconceived hypothesis or idea. Other steps taken to ensure that high standards of quality were maintained included keeping a log-file of all analysis conducted and re-running to ensure that results obtained are replicable following the exact data analysis parameters laid down.

3.10 Ethical considerations

The following ethical procedures were observed during the study.

Before the commencement of this study, ethical approval was sought from the Ghana Health Service Ethical Review Committee of the Research and Development Division of the Ghana Health Services. Although this research work used secondary data from the 2007/2008 WHO SAGE study, both the target population and the society stand to benefit from the study this research, as issues benefiting the elderly is promoted in the work. The research posed no risk to the target population or society.

The data, which has been previously stripped of participants' personal details, was also reported in a way that reduced the possibility of tracing information gathered back to participants; this was done to ensure confidentiality and anonymity.

Although this research work uses openly available secondary data from the 2007/2008 WHO SAGE study data, the dataset for this work was kept in a pass-worded folder on the researcher's computer which only he had access to. Since this research work used openly available secondary data from the 2007/2008 WHO SAGE study, informed consent from participants was not directly needed or sought. However, consent from the WHO was received to access the dataset.

Apart from the academic and public health importance of the study, I have no other personal interest in the study. This research was self-financed.

3.11 Dissemination of findings

This research report will be disseminated through the following channels:

1. School of Public Health, University of Ghana, Legon
2. A scientific paper will be written for publication in a reputable journal

CHAPTER FOUR

RESULTS

4.1 Introduction

This chapter begins by describing the dataset, the socio-demographic characteristics of the study population and the type of caregiving, caregiving support and burden experienced by the caregivers. Also explored in this section are the associations between the variables of interest and whether being a caregiver can predict the quality of life of elderly people. In this study, the characteristics considered are age, gender, residence, educational level, employment status, self-reported health status, presence of chronic diseases, and impact of caregiving.

4.2 Socio-demographic characteristics of study participants

4.2.1 Caregivers

Among the 2595 individuals whose responses were used in this study, 4.89% (127) of all participants were caregivers in some way while about 95.11% (2,468), representing an overwhelming majority, are not caregivers in anyway whatsoever. As such, a dichotomy of caregivers and non-caregivers was used in further analyses. Figure 4.1 below gives a graphical illustration of the relative proportion of caregivers to non-caregivers.

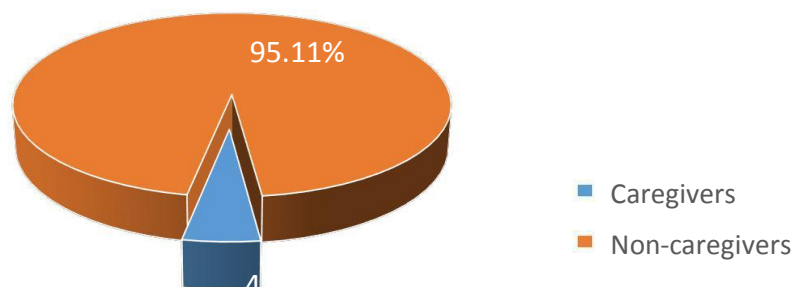


Figure 4. 1: Distribution of participants by caregiving

4.2.2 Socio-demographic distribution of participants by caregiving

In disaggregating the participants by socio-demographics, it is observed – as shown in Table 4.1- that non-caregivers consistently make up the higher proportion due to their overall larger number in the study. Further details shown on that table are discussed below in this section.

4.2.2.1 Age

The ages of the participant ranged from 60 -114 years and the mean age is 70.9 with a standard deviation of ± 8.4 years. The most common ages were 70, 60 and 65 with frequencies of 9.29% (241), 9.17% (238) and 7.71% (200) respectively. After categorizing the age, it is observed that there was a decrease in number of participants as age category increases; hence, more than half of all participants were aged between 60-69 years, and only 12.52% of all participants were of the oldest age category (80 years and above). The 60-69 age bracket also has the largest absolute numbers of caregivers (80), while the other two age groupings have almost the same number of caregivers. A chi-square measure of association between age and caregiving showed significance at 5% level [χ^2 (2, N = 2595) = 14.02; $p < 0.001$].

4.2.2.2 Gender

Inspecting the dataset by gender, Table 4.1 shows that there were slightly more females than males (50.33% against 49.67%) in this study. However, while there were more non-caregivers in both sexes, a disproportionate amount of caregivers were females (59.1%) compared to males (40.9%). The association between gender and caregiving was also significant [χ^2 (1, N = 2595) = 4.07; $p = 0.044$].

4.2.2.3 Residence

In terms of residence/locality, most participants lived in rural communities (61.27%); caregivers also had the same dwelling patterns as about 62% of them (79), resided in the rural areas. Despite these, there was no significant relationship between caregiving

status and residence.

4.2.2.4 Education

In response to questions on education, a total of 2588 participants gave valid responses and 7 participants were classified as don't know/missing data. Of those (2588) who gave valid responses, 66% had no formal education; out of the 34% of participants who gave affirmative responses to having any level of formal education, 5 responses (out of 878) were classified as don't know/missing data, while 51% of valid responses reported that they had primary school, 41% had secondary education, while only 8% had tertiary level of education. Whereas 36% (46) of caregivers were educated, just 34% of non-caregivers were educated. Among the educated caregivers, 33% were primary-school educated, 54% were secondary school educated and 13% were tertiary-level educated: this is in contrast to non-caregivers who had a more consistent decline in proportion as educational level increased (52% primary-school educated, 40% secondary-school educated and 8% tertiary-level educated). This means that caregivers were, on average, more educated than non-caregivers especially as the relationship between caregiving and education level was significant [χ^2 (2, N = 873) = 6.54; p=0.038].

4.2.2.5 Occupation

In analysing data for occupational status, 57 participants had invalid/missing data out of the total of 2595 participants. Of those with valid data, 60% reported being currently employed as shown in Table 4.1. Although there was so statistically significant association between occupation and caregiving, the proportion of currently employed caregivers was 54% as against 60% for non-caregivers.

4.2.2.6 Income Quintiles

For this characteristic, 2591 responses were valid as shown in Table 4.1; most

participants, irrespective of caregiving status, belonged in the lower and middle quintiles (62%). However, while the proportion of non-caregivers consistently declines with increasing quintile levels, that of caregivers does not similarly decline. Both caregivers and non-caregivers had the same relative proportion of participants in the higher income quintiles (37%).

Table 4.1: Socio-demographic distribution of participants by caregiving

Characteristic	Non-caregivers, % (n)	Caregivers, % (n)	Total, % (n)	χ^2 (p=value)
Age				
60-69 years old	94.42 (1354)	5.58 (80)	55.26 (1434)	14.02 (<0.001)*
70-79 years old	97.25 (813)	2.75 (23)	32.22 (836)	
80 years and above	92.62 (301)	7.38 (24)	12.52 (325)	
Gender				
Male	95.97 (1237)	4.03 (52)	49.67 (1289)	4.07 (0.044)*
Female	94.26 (1231)	5.74 (75)	50.33(1306)	
Residence				
Urban	95.22 (957)	4.78 (48)	38.73 (1005)	0.05 (0.825)
Rural	95.03 (1511)	4.97 (79)	61.27 (1590)	
Education (N=2588)^a				
No formal education	95.26 (1629)	4.74 (81)	66.07 (1710)	0.31 (0.575)
Has formal education	94.76 (832)	5.24 (46)	33.93 (878)	
Education Level (N=873)^b				
Primary education	96.61 (427)	3.39 (15)	50.63 (442)	6.54 (0.038)*
Secondary education	93.04 (334)	6.96 (25)	41.12 (359)	
Tertiary education	91.67 (66)	8.33 (6)	8.25 (72)	
Current Occupation (N=2538)^c				
Unemployed	94.43 (967)	5.57 (57)	40.35 (1024)	1.51 (0.220)
Employed	95.51 (1446)	4.49 (68)	59.65 (1514)	
Income Quintile (N=2591)^d				
Lowest quintile – 1	94.15 (531)	5.85 (33)	21.77 (564)	4.93 (0.294)
Low quintile – 2	95.68 (509)	4.32 (23)	20.53 (532)	
Middle quintile – 3	95.65 (506)	4.35 (23)	20.42 (529)	
High quintile – 4	96.33 (473)	3.67 (18)	18.95 (491)	
Highest quintile – 5	93.89 (446)	6.11 (29)	18.33 (475)	

^a8 missing observations; ^b5 missing observations; ^c57 missing observations; ^d4 missing data * Statistically significant at 0.05 level

4.3 Health State

This section reports on the self-reported health and the chronic diseases experienced by participants. It explores the association between these characteristics and caregiving status using cross tabulations. All associations were tested at 5% significance level (that is 0.05).

4.3.1 Association of self-reported health with caregiving status

Caregiving status is expected to reveal variations in self-reported health, as literature describes caregivers as reporting poorer health. This study explored such association by analysing responses to self-reported health by caregiving status, as shown in Table 4.2. In terms of overall response on self-reported health, Table 4.2 gives a view of the range of responses. Almost half of all participants (46.5%) declared moderate health, with just slightly more than 1 in 5 (22.2%) of total participants saying they had bad health. The table shows that caregivers reported more extremes of health than non-caregivers. Caregivers had relatively more people reporting bad health (33.1%) against that of non-caregivers (21.6%), and they had more reporting good health as well (35.4%) than non-caregivers do (31.2%). However, a large proportion of non-caregivers reported moderate health (47.2%) than caregivers do (31.5%). The association between self-reported health and caregiving status was found to be significant by a Kruskal-Wallis H test [$H(2, N = 2594) = 14.3; p=0.01$].

4.3.2 Association of chronic disease state with caregiving status

Due to the decline in physical health associated with caregiving in literature, an assumption of this study is that caregivers would have more morbidities than non-caregivers. Although a total of 12 chronic conditions were assessed in the SAGE study, this study focuses on the presence of 6 of them in study participants to calculate a chronic disease index – Arthritis, Angina, Chronic Lung Disease, Depression, Hypertension, and

Diabetes. Those not considered are oral health, stroke, asthma, cataracts, injuries and cervical cancers – and they were excluded either because they were not classed as chronic conditions within the bound of this study (i.e. injuries and oral health) or were typical of only a gender (cervical cancer) or were seen (with literature support) as too debilitating to be found in a caregivers (stroke and cataracts) or there aetiology is not strongly associated with caregiving (asthma). The index created was tested for internal validity and a Cronbach alpha (α) of 0.79 was obtained.

Table 4.2 shows that while 68% of the total participants, irrespective of caregiving status, had no chronic disease, non-caregivers had more chronic diseases as a percentage of their total population (32.5%), while no caregiver had more than 2 chronic diseases. Just 1.3% of non-caregivers had three or more chronic diseases, although this relationship between caregiving status and presence of chronic diseases was not significant.

Table 4.2: Distribution of participants by health status

SELF-REPORTED HEALTH					
Caregiving Status	Bad self-reported health, % (n)	Moderate self-reported health, % (n)	Good self-reported health, % (n)	Total, % (N)^a	H (p-value)
Non-caregivers	21.61 (533)	47.22 (1165)	31.17 (769)	95.10 (2467)	14.29 (p=0.01)*
Care-givers	33.07 (42)	31.50 (40)	35.43 (45)	4.90 (127)	
Total	22.17 (575)	46.45 (1205)	31.38 (814)	100 (2594)	
CHRONIC DISEASES					
Caregiving Status	None	1-2 Chronic diseases	3 or more Chronic Diseases	Total, % (N)^b	χ^2 (p-value)
Non-caregivers	67.46 (1663)	31.24 (770)	1.30 (32)	95.10 (2465)	2.29 (p=0.319)
Care-givers	71.65 (91)	28.35 (36)	None	4.9 (127)	
Total	67.67 (1754)	31.10 (806)	1.23 (32)	100 (2592)	

^a 1 missing observation; ^b3 missing observations* Statistically significant at 0.05

4.3.3 Regression of self-reported health against caregiving status and selected variables

In further understanding the predictors of self-reported health, a multiple ordinal regression analysis (LR chi-probability <0.001) captured in Table 4.3 shows that an increase in age leads to decline in self-reported health, as those aged 70-79 years were 0.706 times significantly as likely to report good/moderate health than those of the age group 60-69, when all other socio-demographic variables were held constant [95% CI=0.597; p<0.001]; self-reported health of participants aged 80 years and over also had a similarly significant relationship [AOR=0.484, 95% CI=0.380, 0.618; p<0.001]. When other variables were adjusted for, females had significantly greater odds than males to report bad health [AOR=0.795 95% CI=0.682, 0.927; p=0.03], just as those with one or two chronic illnesses [AOR= 0.690, 95% CI=0.584, 0.815; p<0.001] had lesser odds of reporting good health than those without any chronic ailments and participants with three or more morbidities [AOR=1.854 95% CI=0.224, 0.823; p=0.011] had an improbable but statistically significantly greater odds of reporting good health than those without any chronic ailments. Employed participants had 2.516 greater odds of reporting good/moderate health than the unemployed [95% CI= 2.130, 2.973; p<0.001], just as those belonging to the highest income quintiles [AOR=1.723 95% CI=1.330, 2.234; p<0.001] and the high income quintile [AOR=1.574, 95% CI 1.236, 2.003; p<0.001] were likely to have better self-reported relative to those of the lowest quintile. However, caregiving status and place of residence showed no significance relationship with self-reported health

Table 4.3: Regression of self-reported health against caregiving status and selected variables

Self-reported health predictors	Co-efficient (Std. Err)	Adjusted odds ratio (95% CI)
Caregiving		
Caregiver	-0.130 (0.183)	0.878 (0.613 - 1.259)
No caregiver (Reference Category)	0.000	1
Age		
60-69 years old (Reference Category)	0.000	1
70-79 years old	-0.348 (0.085)**	0.706 (0.597 - 0.835)
80 years and above	-0.725 (0.124)**	0.484 (0.380 - 0.618)
Gender		
Male (Reference Category)	0.000	1
Female	-0.229 (0.078)**	0.795 (0.682 - 0.927)
Place of residence		
Urban (Reference Category)	0.000	1
Rural	-0.139 (0.087)	0.870 (0.734 - 1.032)
Occupational Status		
Currently Unemployed (Reference Category)	0.000	1
Currently Employed	0.923 (0.085)**	2.516 (2.130 - 2.973)
Chronic disease		
No chronic disease (Reference Category)	0.000	1
1-2 chronic diseases	-0.371 (0.085)**	0.690 (0.584 - 0.815)
3 or more chronic diseases	-0.846 (0.332)*	1.854 (0.224 - 0.823)
Income Quintile		
Lowest income quintile – 1 (Reference Category)	0.000	1
Low income quintile – 2 Middle income quintile – 3 High income quintile – 4	0.201 (0.117)	1.222 (0.971 - 1.537)
	0.146 (0.118)	1.158 (0.918 - 1.459)
	0.454 (0.123)**	1.574 (1.236 - 2.003)
Highest income quintile – 5	0.544 (0.132)**	1.723 (1.330 - 2.234)
<i>N=2531; Log Likelihood = -2517.433; Pseudo R²=0.06</i>		

4.4 Quality of Life (QoL)

The quality of life of participants is the main outcome of this study, and as such, analyses of the association and predictive relationship of caregiving status and quality of life is pertinent. The results of those analyses are in this section.

4.4.1 Distribution of quality of life index by caregiving status

The descriptive characteristics of the raw quality of life (QoL) index scores by caregiving status gives us the statistics shown in Table 4.4 in which the scores of both caregivers and non-caregivers covered the full range of 40 to 8. The mean QoL score of non-caregivers (25.5), is higher than that of caregivers (23.7), which is also true for the modal and median score, where that of non-caregivers (29 and 26 respectively) is higher than that of caregivers (28 and 25 respectively).

Table 4.4: Descriptive statistics of quality of life index by caregiving status

Caregiving Status	Number of Observations	Mean	Maximum QoL Score	Minimum QoL Score	Standard Deviation	Modal QoL Score	Median
Non-Caregiver	2468	25.48	40	8	5.29	29 (244 participants)	26
Caregiver	127	23.66	40	8	6.85	28 (14 participants)	25
Total	2595	25.40	40	8	5.39	N/A	26

4.4.2 Association of quality of life index and caregiving status

For the quality of life index, it is seen in Table 4.5, that more than two-thirds of non-caregivers (67.5%) reported moderate QoL, with just above a tenth (11.6%) having lower QoL and a little over one in five of them having higher QoL (20.9%). Caregivers, while also having similar distributional patterns, show more dispersion; the difference between those reporting higher QoL and lower QoL is smaller (22.0% to 18.9%), and the relative proportion reporting moderate health is also lower (59.1%) when compared to non-

caregivers (67.52%). The differences in QoL and caregiving status was found significant by a Kruskal-Wallis H test [$H(2, N = 2594) = 4.302; p=0.038$].

Table 4.5: Association of quality of life index and caregiving status

Caregiving status	Quality of Life Index			Total, % (n)	H (p-value)
	Lower QoL, (n)	Moderate QoL, % (n)	Higher QoL, % (n)		
Non-caregivers	11.56 (285)	67.52 (1665)	20.92 (516)	95.10 (2466)	4.302 (p=0.038)*
Caregivers	18.90 (24)	59.06 (75)	22.05 (28)	4.90 (127)	

*significant at 0.05 level

Conducting a simple ordered logistic regression of caregiving status against quality of life index, as shown in Table 4.6, shows that there is an inverse and statistically significant relationship between them, although the pseudo R^2 of 0.001 suggests that the overall impact of caregiving status on the QoL index predicts/explains just about 0.1 % of the variation seen in the index. Interpreting the odds tells us that the odds of a high QoL score are 0.658 times significantly lesser for caregivers compared to non-caregivers ($p=0.033$).

Table 4.6: Ordinal logistic regression of caregiving status against quality of life index

Caregiving Status	Co-efficient (Std. Err.)	Crude odds ratio (95% CI)
Caregiver	-0.419 (0.196)*	0.658 (0.448 - 0.967)
Non-Caregiver (Reference Category)	0.000	1

N = 2594; Log likelihood = -2199.4933;

* - the association is significant at 0.05

4.5 Other QOL modifying factors

Having established some sort of significant relationship between caregiving and quality of life scores, it is incumbent to assess what other factors in addition to caregiving status play a role in determining quality of life score. Socio-demographic variables are first examined as to their prediction of QoL score.

4.5.1 Socio-demographic characteristics and quality of life

Considering a pseudo R^2 of 0.1011, the ordinal logistic regression model illustrated in Table 4.7 can be cautiously said to explain up to 10% of variations observed in the quality of life index. It can be observed in Table 4.7 that the overwhelming majority of the characteristics significantly influence participant's quality of life. The model shows that caregiving remains a predictor of QoL in the regression shown in Table 4.7, after controlling for the socio-demographic variables of interest. Holding other socio-demographic traits constant, caregivers are 0.658 times as likely to have a high QoL score as non-caregivers [95% CI=0.446, 0.972; $p=0.035$]. While other variables are held constant, Table 4.7 shows that participants who are aged 70-79 years are 0.760 times as likely as those aged 60-69 years (the reference group) to have high QoL scores, just as those aged 80 years and over have a 0.469 lesser odds of reporting high QoL scores than the reference group. Both of these relationships are statistically significant as well (95% CI= 0.626, 0.923; $p=0.006$ and 95% CI=0.353, 0.623; $p<0.001$ respectively).

In terms of gender, Table 4.7 illustrates a statistically significant relationship between sex and QoL scores ($p<0.05$) when other socio-demographic factors are constant, such that females are 0.656 times as likely as males to report high QoL scores if other variables are held constant [95% CI=0.548, 0.745]. Rural residency also has a negatively impactful but statistically significant relationship ($p=0.05$) with QoL scores, as rural dwellers are 0.758 times as likely as urban residents to have high QoL scores when other variables are

controlled for [95% CI=0.625, 0.919]. Employment status shows that under the constancy of other variables, employed participants have a 2.751 statistically-significant ($p<0.05$) better likelihood of having high QoL scores than their unemployed counterparts.

Although primary school level educated participants are 1.105 times more likely to have high QoL scores than uneducated participants when other variables save education are held constant, the relationship is not significant ($p=0.403$). However higher levels of education show more significant relationships with having high QoL scores (secondary and tertiary $p<0.05$), with secondary education having 1.854 times greater odds [95% CI=1.417, 2.426; $p<0.001$] and tertiary educated participants having 2.897 times higher odds [95% CI=1.700, 4.937; $p<0.001$] of having better QoL scores than the uneducated.

In terms of income quintiles, when other variables are held constant, Table 4.7 shows that the higher levels of income have more statistically significant relationships with high QoL score. Participants in the second/low quintile have greater odds of having a better QoL scores than those in the first/lowest quintile, a relationship which is statistically significant [AOR=1.374, 95% CI=1.057, 1.786; $p=0.017$]. For the fourth and fifth quintiles, they have 2.203 and 3.365 times greater odds of reporting high QoL scores than those of the lowest quintile respectively (both $p<0.001$).

Table 4.7: Regression showing the relationship between some socio-demographic characteristics of the participants and their quality of life

QOL predictors	Co-efficient (Std. Err)	Adjusted odds ratio (95% CI)
Caregiving		
Caregiver	-0.418 (0.199)*	0.658 (0.446 - 0.972)
No caregiver (Reference Category)	0.000	1
Age		
60-69 years old (Reference Category)	0.000	1
70-79 years old	-0.274 (0.099)**	0.760 (0.626 - 0.923)
80 years and above	-0.756 (0.145)**	0.469 (0.353 - 0.623)
Gender		
Male (Reference Category)	0.000	1
Female	-0.422 (0.092)**	0.656 (0.548 - 0.745)
Place of residence		
Urban (Reference Category)	0.000	1
Rural	-0.277 (0.098)**	0.758 (0.625 - 0.919)
Occupational Status		
Currently Unemployed (Reference Category)	0.000	1
Currently Employed	1.012 (0.098)**	2.751 (2.268 - 3.337)
Educational level		
No formal education (Reference Category)	0.000	1
Primary education	0.100 (0.120)	1.105 (0.874 - 1.397)
Secondary education	0.617 (0.137)**	1.854 (1.417 - 2.426)
Tertiary education	1.064 (0.272)**	2.897 (1.700 - 4.937)
Income Quintile		
Lowest income quintile – 1 (Reference Category)	0.000	1
Low income quintile – 2 Middle income quintile – 3 High income quintile – 4	0.318 (0.134)*	1.374 (1.057 - 1.786)
	0.190 (0.135)	1.209 (0.927 - 1.576)
	0.790 (0.143)**	2.203 (1.664 - 2.916)
Highest income quintile – 5	1.213 (0.155)**	3.365 (2.485 - 4.556)

N=2528; Log Likelihood = -1927.438; Prob.> Chi2= <0.001

* - significant at 0.05 significance level; ** - significant at 0.01 significance level;

4.5.2 Health state and quality of life

Besides socio-demographic characteristics, other factors associated with QoL are self-reported health and presence of chronic ailments. Table 4.8 shows the ordinal logistic regression of various variables. It can be observed from Table 4.8, that while caregivers have 0.738 times lesser odds of having higher QoL scores than non-caregivers when other variables are held constant, the relationship is not significant ($p=0.12$). When other factors are held constant, those with moderate self-reported health have a huge and statistically significant 5.881 increased likelihood of having high QoL scores than those with bad self-reported health [95% CI=4.614, 7.497; $p<0.001$]. While those with high self-reported health have 20.696 times greater odds of a higher QoL score than participants who reported bad health [95% CI=15.700, 27.280; $p<0.001$]. While controlling for other factors, those with 1-2 chronic ailments have a counter-intuitive 1.045 greater likelihood of having better QoL scores than those without any chronic ailments and participants' with 3-4 chronic ailments are 0.648 less likely to have higher QoL scores than those without any chronic condition, although both relationships are not significant ($p=0.636$ & $p=0.273$ respectively).

Table 4. 8: Relationship of caregiving, controlled by health status, to Quality of life index

QOL Predictors	Co-efficient (Std. Err)	Adjusted odds ratio (95% CI)
Caregiving status		
Caregiver	-0.304 (0.195)	0.738 (0.503 - 1.083)
Non-caregiver (Reference Category)	0.000	1
Self-reported health		
Bad health (Reference Category)	0.000	1
Moderate health	1.772 (0.124)**	5.881 (4.614 - 7.497)
Good health	3.03 (0.141)**	20.696 (15.700 - 27.280)
Chronic disease		
No chronic ailment (Ref Category)	0.000	
1-2 chronic ailments	0.044 (0.093)	1.045 (0.872 - 1.252)
3-4 chronic ailments	-0.434 (0.395)	0.648 (0.299 - 1.407)
N = 2591; Log Likelihood = -1920.757; Prob. chi= <0.001		

** - the association is significant at 0.01

4.6 Caregiver burden/impact among Caregiver

4.6.1 Distribution of caregiving burden among caregivers

Of the 127 caregiving participants, 116 gave valid responses (i.e. responses other than ‘don’t know’ or ‘not applicable’) on at least 9 questions. Although the hypothetical range the burden score can cover runs from 9 to 50, the minimum value obtained was 9 and the maximum was 44 with a median score of 18, mean score of 18.35 (SD ± 9.74) and score 20 being the most frequent reported by 11% (14) of the participants. Figure 4.2 shows the distribution of the caregivers’ burden.

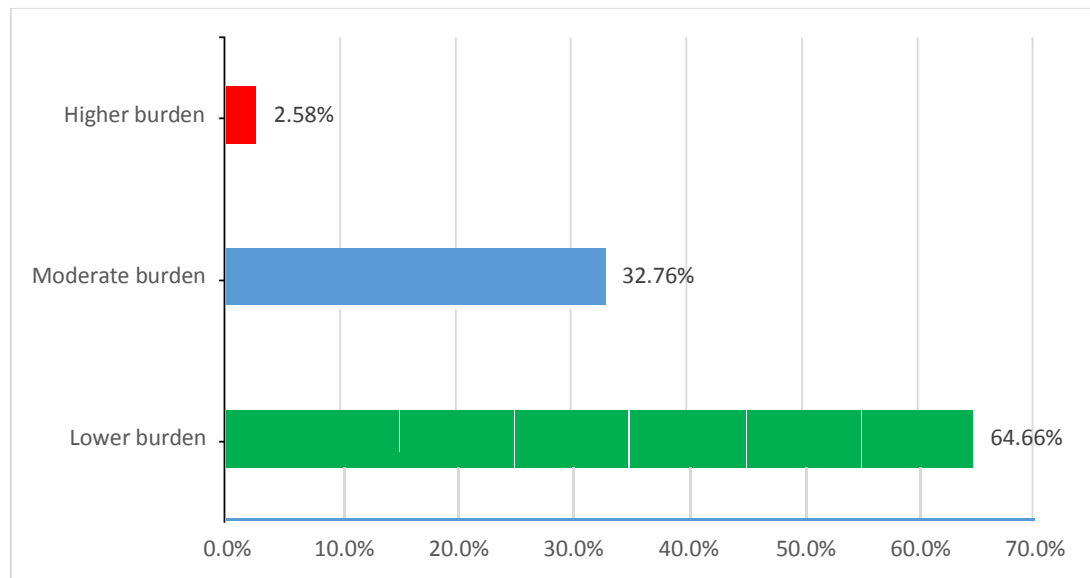


Figure 4. 2: Distribution of caregiving burden among caregivers (n=116)

Going further to investigate the distribution of caregivers, a Kruskal-Wallis H analysis was ran in testing the existence of an association between caregivers' burden index and quality of life scores. The results, as indicated in Table 4.10, shows that almost three-fifths (58.62%) of all caregivers' had moderate quality of life scores, and that with increasing burden, the proportion of those with higher quality of life reduces. The association between caregiver's burden and quality of life proved significant by a Kruskal-Wallis H test [$H(2, N = 116) = 9.84; p = 0.043$].

Table 4.9: Association of quality of life to caregivers' burden index

Caregiving burden level	Lower QoL, % (n)	Moderate QoL, % (n)	Higher QoL, % (n)	Total, % (n)	H (p-value)
Lower burden	18.67 (14)	52.00 (39)	29.33 (22)	64.66 (75)	9.84 (0.043)
Moderate burden	23.68 (9)	71.05 (27)	5.26 (2)	32.76(38)	
Higher burden	33.33 (1)	66.67(2)	0 (0.00)	2.58 (3)	
Total	20.67 (24)	58.62 (68)	20.69 (24)	100 (116)	

4.6.2 Relationship of caregivers' burden index with Quality of life score

Table 4.10 presents results from a regression model that tests whether caregiver burden significantly predicts QoL scores. As the Table indicates, only moderate burden of care showed a significant relationship ($p=0.026$) with QoL scores, as those with moderate burden have 0.411 lower odds of having a higher QoL score than those with lower burden [95% CI=0.189, 0.897]. Those with high burden are 0.269 times as likely to have a higher QoL score as those with lower burden, but that relationship is statistically insignificant [95% CI= 0.031, 2.348; $p=0.239$].

Table 4. 10: Relationship of caregivers' burden index with quality of life score

QOL Predictors	Co-efficient (Std. Err)	Crude odds ratio (95% CI)
Caregiving burden index		
Lower burden	0.000	1
Moderate burden	-0.888 (0.398)*	0.411 (0.189, 0.897)
Higher burden	-1.312 (1.105)	0.269 (0.031, 2.348)

N=116; Log Likelihood = -108.99069

* - the association is significant at 0.05

4.6.3 Other caregiving factors in relation to care-burden`

4.6.3.1 Socio-demographic characteristics

In a fuller comprehension of the distribution of caregivers' burden, Table 4.11 shows the association of socio-demographics with caregiving impact and what adjusting impact by them predicts QoL scores.

Conducting the Kruskal-Wallis test to find an association between caregiving impact and socio-demographics show that there are statistically significant differences in the groups between impact and place of residence on one hand [$H(116, 1) = 6.55$; $p= 0.01$] and impact with income quintiles on the other hand [$H(115, 4) = 15.49$; $p= 0.05$]. Other

socio-demographic variables did not show such statistical significance.

Further ordinal regression analysis was conducted as shown in Table 4.11. The model used had a pseudo R^2 of 24.9%. The model, as tabulated, showed that caregivers aged 80 years and above are 0.205 as likely to have high QoL scores as those aged 60-69 ($p=0.009$) when other factors in the model are controlled for. Caregivers who are currently employed also have 4.777 greater odds relative to the unemployed to have high QoL scores ($p=0.02$) when other factors are held constant. Assessing by income quintiles also reveal that when other factors are controlled for, caregivers of moderate income quintile have 11.89 times greater odds of having a better QoL score than those of the lowest quintile and those of the highest income quintile had 4.54 greater odds of having high QoL scores than those of the lowest income quintile.

Table 4. 11: Association of socio-demographics to caregiving impact in predicting QoL scores

QOL predictors	H Test (p-value)	Co-efficient (Std. Err)	Adjusted odds ratio (95% CI)
Caregiving			
Lower burden (Reference Category)		0.000	-
Moderate burden	N/A	-0.660 (0.497)	0.517 (0.195 - 1.370)
Higher burden		-0.826 (1.442)	0.438 (0.026 - 7.388)
Age			
60-69 years old (Reference Category)		0.000	-
70-79 years old	2.56 (p=0.28)	0.229 (0.592)	1.257 (0.394 - 4.011)
80 years and above		-1.585 (0.606)**	0.205 (0.062 - 0.672)
Gender			
Male (Reference Category)		0.000	-
Female	0.55 (p=0.46)	-0.504 (0.449)	0.604 (0.251 - 1.455)
Place of residence			
Urban (Reference Category)		0.000	-
Rural	6.55 (p=0.01)*	0.274 (0.531)	1.316 (0.465 - 3.723)
Occupational Status			
Currently Unemployed (Reference Category)		0.000	-
Currently Employed	3.43 (p=0.05)*	1.562 (0.511)**	4.769 (1.751 - 12.986)
Educational level			
No formal education (Reference Category)		0.000	-
Primary education	3.780 (p=0.29)	0.080 (0.647)	1.088 (0.304 - 3.853)
Secondary education		-0.790 (0.694)	0.924 (0.237 - 3.596)
Tertiary education		1.845 (1.047)	6.332 (0.813 - 49.330)
Income Quintile			
Lowest income quintile – 1 (Reference Category)		0.000	-
Low income quintile – 2		0.102 (0.641)	1.107 (0.315 - 3.886)
Middle income quintile – 3	15.49 (p=0.05)*	2.475 (0.718)**	11.886 (2.908 - 48.584)
High income quintile – 4		0.790 (0.777)	3.343 (0.729 - 15.324)
Highest income quintile – 5		1.213 (0.789)*	4.539 (2.485 - 21.292)

N=114; Log Likelihood = -82.532116; H Test has burden index as outcome variable

* - the association is significant at 0.05; ** - the association is significant at 0.01

CHAPTER FIVE

DISCUSSION

The previous chapter analysed the WHO SAGE study 2007/08 data for variables of interest which helped in describing caregiving and its relationship to quality of life among the elderly in Ghana. Various results and statistically significant relationships were observed, and based on that, ideas from literature can be confirmed or expanded on. The main purpose of this research was to describe perceived caregiver burden and quality of life among elderly caregivers in Ghana as well as to explore the relationship between several factors, including the self-reported health of these caregivers, the impact of caregiving on them and their quality of life. In meeting these objectives, this study used analytical framework that adapted existing conceptual narratives of the way caregiving burden interacts with quality of life.

It is not surprising that caregivers represented a small minority of eligible participants, as their age means that they are often receivers of care rather than givers, even if this trend is set to change over time (Georgetown University, 2005). The proportion of caregivers relative to the total population of eligible observations is not unreasonable, considering that the population is restricted to only those above the age of 60 years and the ability to care for others declines with increasing age as confirmed in a study by Hosseinpoor, Bergen and Chatterji (2013) where they saw that caregiving prevalence decreased step-wise across age groups for any care and all categories of care (Hosseinpoor et al., 2013). However, this prevalence can be said to be low when assessed in the light of findings that in a low and middle income country like Ghana, a significant number of older persons are informal caregivers (Schatz & Seeley, 2015; Thrush

& Hyder, 2014).

Assessing the socio-demographic traits of caregivers also reveals other patterns substantiated by literature. The results of this study showed that since there is a trend of increase in age being associated with a decline in caregiving population, most elderly caregivers are below the age of 69. The results also inform that women are more likely to be caregivers than men are; this gender differential is a well-established fact in literature both in developed and developing regions, as it has been found that women also devote more time to the caring act/actions (Akintola, 2008; Dahlberg et al., 2007; Schatz & Ogunmefun, 2005; Suthers, 2006). This may be due to the fact that women are seen as natural caregivers who are inherently more capable of giving a wholesome, more impactful type of care (Theixos, 2013).

It was found that place of residence (rural or urban) and being educated or not had no significant effect on caregiving status: but among the educated, increasing education significantly correlated with being a caregiver. This finding on residence contrasts with some research that indicates that elderly rural inhabitants are more likely to be caregivers perhaps due to the higher older and dependent population in the rural areas (Do et al., 2014). Residence and higher education being a factor in caregiving status can be found in literature; for instance Hosseinpoor, Bergen and Chatterji (2013) found that caregivers in low and middle income countries were more likely to be tertiary-level educated and urban-dwellers (Chadiha et al., 2011; Hosseinpoor et al., 2013). Economic factors such as income quintile and being employed showed no association with being a caregiver or not.

While there are enormous amount of literature corroborating the fact that caregivers

have worse physical and mental health outcomes, this study also came out with somewhat similar results showing that there is some association between caregiving status and participants' self-reported health. However, this relationship does not translate into a similar association between caregiving and presence of chronic disease. This may not be too surprising considering that some prominent caregiving literature describes the tentative relationship between caregiving and physical health as mediated by mental health (Chang et al., 2010; De Frias, Tuokko, & Rosenberg, 2005; Piquart & Sörensen, 2007; Schulz & Sherwood, 2008). However, further analysis may show the existence of associations between specific chronic diseases (such as depression) and caregiving status, which would substantiate literature (Luchesi et al., 2015; Schoenmakers et al., 2010; Visser-Meily et al., 2005). In further analysing self-reported health by predicting it with caregiving status and other socio-demographic variables, it becomes clear that increasing age, being female, being currently employed and belonging to the highest income quintiles have significant predictor effects on self-reported health. Much of this can be explained by the fact that increasing age brings along more fragilities and belief/report of good health becomes less positive (Settineri et al., 2014). Women have been found to report significantly poorer health in literature as not only do they engage in more arduous caregiving tasks but their physical function often declines faster than men of similar age, and as such they report poor health (Merrill, Seeman, Kasl, & Berkman, 1997). Socio-economic inequalities as manifested in income levels and employment status as health deteriorated more rapidly with age among men and women from the lower socio-economic levels, leading to poorer self-rated health (Chandola, Ferrie, Sacker, & Marmot, 2007; Mossey & Shapiro, 1982).

The quality of life index is an attempt to assess in one variable, the various perceptions of quality of life indicators by each participant. In this study, the

association between the index and caregiving status proved significant, with regressions showing the relationship as an inverse one, in which a change in status from not being a caregiver to being one increases the likelihood of reporting lower QoL scores.

This finding is confirmed in literature, as caregivers experience stresses and impacts that have negative repercussions on their perceptions of personal well-being (Settineri et al., 2014; Välimäki et al., 2009; van den Tweel et al., 2008). The drawback of using this quality of life index is the equal weighing given to each question, as some participants might perceive some experiences as more impactful on their lives than others (Vellone et al., 2008). Also, the extreme-option caution effect among other effects, might skew results distribution to the middle-range of the score (Hamamura, Heine, & Paulhus, 2008; Kulas, Stachowski, & Haynes, 2008).

While caregiving status might relate to QoL scores, it was worthwhile to assess if other factors alongside the main effect of caregiving also played a role of some sorts. Starting with socio-demographic characteristics, the adjusted odds of caregiving status remained significant in predicting lower QoL scores for caregivers. Increasing age also predicted poorer QoL scores, just as being female and living in the rural areas also did, confirming studies done in the US and other parts of Africa (Dahlberg et al., 2007; Glasgow, 2000; Schatz & Ogunmefun, 2005; Suthers, 2006). However, being employed, having higher levels of education and income tied to having better QoL scores, which literature confirms (Duci et al., 2014; Wong et al., 2012).

In this work, the single instance in which caregiving status did not significantly predict QoL scores, it was adjusted by self-reported health and chronic diseases.

Whereas self-reported health itself significantly predicted QoL scores when the presence of chronic diseases and caregiving status were controlled, the other variables did not do same vice versa.

A review by Washington (2005) showed that the relationship between the health of caregivers and their well-being is a complex one, with it being often positively correlated; i.e. as quality of life decreases, report of poor health increases (Washington, 2015). This study had similar findings with good self-reported health among caregivers being strongly associated with their reportage of higher quality of life scores. Another study by Ku *et al.* (2013) shows that the duration of care predicted self-reported health and life satisfaction rather than merely being a caregiver or not (Ku *et al.*, 2013).

The experience of caregiving has been seen as having some burden and impact which has consistently been associated with lower perceptions of well-being (Cole *et al.*, 2007) and even physical health (Chang *et al.*, 2010; Marcon *et al.*, 2012). This study did find some confirmatory results to that effect, as most caregivers reported low impact in terms of caregiving, although perceptions of moderate impact of caregiving had a significant effect on QoL scores. In explaining this finding, it is instructive to note that older people, especially in Africa with its ageist expectations of leadership, guidance and mentorship from the elderly, may well find some benefits from caregiving (Cole *et al.*, 2007). A study of caregiving by spouses of dementia patients found that elderly spousal caregivers who had altruistic values and believed in expressing positive attitude while perceiving satisfaction in living according to their values in life had lowered impact of caregiving (Shim *et al.*, 2013). They also expressed faith in a higher power and deep affection for their loved one, all of which represents coping strategies that

have been documented as mediating the effect of caregiving (Ekwall et al., 2007).

In terms of distribution, caregiving impact was only significantly associated with some demographic characteristics. Rural residency was associated significantly with caregiver burden on bivariate analysis, which is consistent with the assumptions underlying the conceptual framework and also previous findings asserting that those who lived in the rural areas experience more caregiver strain (Glasgow, 2000). However the regression done showed that although the relationship was not significant, the rural-dwellers had a higher likelihood of better QoL score than urban dwellers. Poor economic situation (in terms of income and being employed) were also significantly associated with caregiving impact, a finding that is supported in literature. Ekwall et al (2007) found that poor economic situation had an adverse effect on quality of life of elderly caregivers in a study they conducted in Europe. Regression analysis also identifies age as having a significant effect on quality of life with the most elderly population (age group 80 and above) having a negative reaction to caregiving in terms of QoL. This is perhaps intuitive, as many at this stage are encountering late-life limitations that tests their ability to manage such stress while trying to maintain a modicum of respectable aging for themselves. Finally, this work has been able to identify significant relationships between socio-demographics as mediated by the impact of caregiving and the health status of caregivers, on quality of life.

5.1 Study limitations

This study had some major constraints that affected the scope and analysis performed. Three major limitations identified were that the proportion of missing data in the data set ensured that the total population analysed as well as caregiver

population assessed was unduly reduced. Also, the dataset was not primarily made for understanding the nuances of caregiving as narrated by caregivers themselves, and as such only limited analyses and conclusions can be drawn. Finally, the research work did not include an assessment of other factors such as duration of caregiving, relationship between caregiver and recipient, age of care recipient, number of care recipients and support given to caregivers, as it relates to their effect on the quality of life of caregivers.

Despite these, it is hoped that this study will help improve the support provided to caregivers and the quality of life of Ghana's elderly population, so as to meet the growing and diverse needs for the health care of the elderly population.

CHAPTER SIX

CONCLUSION

6.1 Summary and conclusion

In summary, this research work was conducted with three specific objectives in focus which are exploring the relationship between caregiving and health status of the elderly, describing the impact of care on elderly caregivers, and determining the effect of caregiving burden of the elderly on their quality of life. The analyses which were performed were directed at meeting those objectives, and the researcher can make the following specific key claims based on its findings

- a. Caregiving among the elderly happens more among younger-aged ones than older aged ones
- b. Elderly caregivers are more females than males, and are more likely higher educated
- c. Caregivers often report lower quality of life and self-reported health status even if they are not disproportionately diagnosed with chronic conditions.
- d. While the observed impact of caregiving among the elderly appears low, it has an association with their income status, education level and their place of residency
- e. Caregivers all experience some form of impact/burden but moderate levels of caregiving burden is more related to poorer quality of life scores.

This study has endeavoured to fill the gap on developing a basic comprehension of the peculiar nexus under which care giving by the elderly operates.

6.2 Recommendation and implications for the elderly

The elderly are a vulnerable population, socially, economically and biologically. They are however becoming increasingly important in any health discuss considering their ascendant population globally.

6.2.1 Policy Implications

In Ghana, the lack of a rigorous geriatric research field makes it doubly important to utilize every opportunity to study the health situation of the elderly in Ghana in order to develop appropriate measure to promote maintain and improve it.

Understanding their caregiving circumstances is not only vital to their health situation but also their societal integration and vitality, as the constant spectre of obsolesce hanging over their elderliness is challenged by the different narrative of their useful contribution to the health and developmental outcomes observed in society.

This dissertation was conducted with the aim of providing a theoretical basis for any intervention to alleviate the burden of the elderly caregiver and assist in the identification of programs to improve the Quality of life of elderly people in Ghana, generally. In doing so, its findings can be used to recommend the following strategies

- a. Creating accessible and affordable social infrastructures to relieve the elderly who are caregivers
- b. Ensuring that the elderly are provided programs that would keep them active as well as give them the opportunity to remain economically independent

- c. Increasing material, health and informational resource availability for the elderly, especially the less educated and those who live in the rural areas

6.2.2 Future research

Their role as caregivers is what this work investigated, so as to highlight the challenges that they face in that role. There is however room for future research to be conducted to look at other determinants of caregiving and the quality of life. Such determinants includes their coping skills, the impact of support received from any sources, the duration of caregiving as well as the relationship between caregivers and the recipient. This kind of research should also be qualitatively focused in order to get a fuller picture of the effects of caregiving on these elderly caregivers. Also, there is need to utilize research in understanding attitudes to formal caregiving as an alternative to informal caregiving.

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APPENDICES

APPENDIX I: Supporting information on caregivers A: Other caregiving factors in relation to care-burden`

A.1 Relationship

The relationship of the caregiver to the recipient can have some effect on the burden of care and hence, quality of life score. In the raw data, categories of relationship included were spouse/partner; daughter/son; daughter- or son-in-law; grandchild; parent; parent-in-law; brother/sister; other relative, adult (e.g. cousin); not related adult, other family related child, not family-related child . These were re-categorized into **immediate family** (covering spouse/partner; daughter/son; grandchild; parent; brother/sister), **extended family** (covering daughter- or son-in-law, parent-in-law; other relative, adult (e.g. cousin); other family related child), **other non-relatives** (covering not family-related child and adult) **and immediate and extended family** (covering taking care of both extended and immediate family). Table A1 shows the distribution of the new-formed categories.

A.2 Number given care

The number of recipients each caregiver gives care to could be a potential predictor of quality of life. The number of recipients (irrespective of age) is categorized into three groups: single recipient, 2-4 recipients and 5-8 recipients. Table A1 illustrates the distribution of the categories

Table A1: Distribution of caregiver's relationship to recipient and the number of recipients being cared for.

		Relationship	Number being given care
Number	of valid	115	127
observations			
Categories and	Frequencies	Immediate Family (including grandchildren) 86.1(99)	Single recipient 77.2 (98)
		Extended Family 6.1 (7)	2-4 care recipients 18.9 (24)
		Other relatives 2.61 (3)	5-8 care recipients 3.94 (5)
		Immediate and extended family 5.22 (6)	

Going further to regress for a relationship between caregiving burden, number of care recipients and relationship to caregiver, an insignificant model results as observed in Table A2 in which most of the illustrations examined are insignificant ($p=0.0807$).

A2: Regression of quality of life of caregivers against care-burden number of & relationship with care recipients.

Variables	Coefficient	Adjusted Odds Ratio	p-value	Model fit p-value
Caregiving burden				0.0407
2	-1.00515	0.365991	0.022*	
3	-2.9854	0.05052	0.100	
Number of care recipients				
2-4 care recipients	0.419885	1.521787	0.415	
5-8 care recipients	0.813393	2.255547	0.531	
Relationship with care recipients				
Extended family	-0.11922	0.887615	0.893	
Other relative	0.103473	1.109016	0.931	
Immediate and extended family	2.385343	10.86279	0.072	

* - the association is significant at 0.05

A.3 Social support

Social support is examined by the question “*In relation to providing care and support in the last 12 months, has your household received any help or assistance from outside the household?*” and answers were binary, with 122 valid observations. 29.5% of caregivers gave a yes answer while 70.5% gave a negative answer. Using it as a control of caregiving burden, a statistically significant regression model ($p=0.0096$; $R^2=6\%$) as illustrated in Table A3 shows that social support being constant, those

with moderate care burden had a 69% chance of having poorer QoL score than those with low burden ($p=0.005$), while those with high burden had a 83% higher odds of having poor QoL scores than those with low burden although such a relationship is not statistically significant ($p=0.115$).

When caregiving burden is held constant, Table 14 shows that those who received social support had a 69% lower odds of having good QoL scores than those who did not receive such support ($p=0.08$).

Table A3: Regression of Caregiving burden and receipt of social support against Quality of Life scores

Variables	Coefficient	Odds Ratio	p-value	Model p-value
Caregiving burden index				0.0043*
Lower burden	Reference category			
Moderate burden	-1.164	0.312	0.005*	
Higher burden	-1.789	0.167	0.115	
Social support receipt				
Received social support	-1.174	0.309	0.008*	

* - the association is significant at 0.05

APPENDIX II: Questions from the WHO SAGE Study Individual questionnaire used in composing indices

A: WHO Quality of life Index questions

1. How would you rate your overall quality of life? Q7009
2. Do you have enough energy for everyday life? Q7001
3. Have you enough money to meet your needs? Q7002
4. How satisfied are you with your health? Q7003
5. How satisfied are you with yourself? Q7004
6. How satisfied are you with your ability to perform your daily living activities? Q7005
7. How satisfied are you with your personal relationships? Q7006
8. How satisfied are you with the conditions of your living place? Q7007

B: Caregiving impact/burden questions

As a result of providing care, or the increase in providing care, over the last 12 months, how

much difficulty have you had with:

1. Getting enough sleep? Q8018
2. Eating enough food? Q8019
3. Having enough energy to do the extra work? Q8019
4. Taking care of your health, ailments or chronic condition (if exist) – including impact of caregiving on your own health (such as, stress, fatigue, muscle strains, insomnia, anxiety, grief)? Q8021

5. Paying for medication/treatments for your own ailments / chronic conditions? Q8022
6. Visiting friends and relatives as much as before you were providing this level of care? Q8023
7. Sharing feelings about caregiving responsibility with others? Q8024
8. Financial problems due to loss of income, decreased time available for paid employment, or increased costs or expenses? Q8025
9. Knowing the correct care to provide for health problems for this person(s) (for example, knowing the best treatment, getting access to medicines (like anti-retrovirals), knowing how to protect yourself, as the caregiver, from getting the illness/disease)? Q8026
10. Experiencing stigma or problems as a result of or associated with the illness or death (that is, have you been treated differently or poorly by the community, friends or family members outside your household)? Q8027