UNIVERSITY OF CAPE COAST

DOMESTIC HEALTH HAZARDS OF THE ELDERLY RESIDENT IN CAPE COAST METROPOLIS

JOHN KUMFO

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BY

JOHN KUMFO

Thesis submitted to the Department of Population and Health, of the Faculty of Social Sciences, University of Cape Coast, in partial fulfillment of the requirements for the award of Doctor of Philosophy Degree in Population and Health

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DECLARATION

Candidate's Declaration

I hereby declare that this thesis is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature ……. Date ....……

Name: John Kumfo

Supervisors' Declaration

We hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

Principal Supervisor's Signature…….... Date ……

Name: Professor A. M. Abane

Co-Supervisor's Signature……..... Date ……

Name: Professor A. Kumi-Kyereme

ABSTRACT

This study is a cross-sectional survey conducted in the Cape Coast Metropolis in the Central Region of Ghana in 2013 among 308 adults who were 65 years and above. The main objective was to investigate the domestic health hazards of the elderly with structured interview schedule. The descriptive analysis revealed that 64% of the sample had medium level of awareness on Domestic Health hazard (DHH) and fire source was the leading DHH (63.0%). It was also revealed that the elderly suffered stumbling within the last 12 months (39.6%). Bathroom was also found to be the most harmful location at home among 12.0% of the elderly while 56.8% suggested education as a means to reduce DHH. The inferential statistics revealed that one's level of education had moderately positive association, with level of awareness of domestic hazards recording ($r = 0.311$, $p < 0.05$). There was also a moderately positive significant association ($r = 0.426$, $p < 0.05$) between number of hazards and number of accidents suffered. Relevant theories on ageing and accidents were reviewed and these led to the theoretical contributions to knowledge. Both person theory and dominion theory explained why the elderly suffered accidents at home and these have led to policy issues by the government. The study suffers some limitations in its choice of research area, the design, and instrumentation. There were suggestions made on preventing DHH and the accidents through structural home modifications and education on home dangers to the entire family.

KEY WORDS

Ageing and health implications

Domestic accidents for the elderly

Domestic health hazards and the elderly

Prevention of domestic hazards and accidents in the elderly

Safe and hazardous areas at home for the elderly

Vulnerability of the elderly

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DEDICATION

Dedicated to my family.

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LIST OF ACRONYMS

ACFUND-	AGED CARE FUND
ADL -	ACTIVITIES OF DAILY LIVING
AED -	ACCIDENT AND EMERGENCY DEPARTMENT
CCM -	CAPE COAST METROPOLIS
CCMA –	CAPE COAST METROPOLITAN ASSEMBLY
CCMH-	CAPE COAST MUNICIPAL HOSPITAL
CDC-	CENTRES FOR DISEASE CONTROL AND PREVENTION
CHO -	COMMUNITY HEALTH OFFICERS
CHPS -	COMMUNITY-BASED HEALTH PLANNING SERVICES
CHV -	COMMUNITY HEALTH VOLUNTEERS
CWC -	CHILD WELFARE CLINICS
DHH –	DOMESTIC HEALTH HAZARDS
DOVVSU-	DOMESTIC VIOLENCE AND VICTIMS SUPPORT UNIT

DV -	DEPENDENT VARIABLE
ECG-	ELECTRICITY COMPANY OF GHANA
GSS -	GHANA STATISTICAL SERVICES
HIV and AIDS-	HUMAN IMMUNODEFICIENCY VIRUS AND ACQUIRED IMMUNODEFICIENCY SYNDROME
HFHA -	HOME FALL HAZARD ASSESSMENT
HRCDs-	HEART RELATED CHRONIC DISEASES
HAS-	HOME SECURITY ACTION
IADLs-	INSTRUMENTAL ACTIVITIES OF DAILY LIVING
IHE-	INDOOR HOME ENVIRONMENT
IPC -	INDIVIDUAL PERFORMANCE CAPACITY
IV -	INDEPENDENT VARIABLE
LEAP-	LIVELIHOOD EMPOWERMENT AGAINST POVERTY
LMICs -	LOW- AND MIDDLE-INCOME COUNTRIES
MIPAA-	MADRID PLAN OF ACTION ON AGEING
MOH -	MINISTRY OF HEALTH
MSLC-	MIDDLE SCHOOL LEAVING CERTIFICATE

NGOs -	NON-GOVERNMENTAL ORGANISATIONS
NHI-	NATIONAL HEALTH INSURANCE
NHIS-	NATIONAL HEALTH INSURANCE SCHEME
NHRCDs-	NON-HEART RELATED CHRONIC DISEASES
NSP -	NATIONAL TRAUMA DATA BANK'S NATIONAL SAMPLE PROJECT
OAA –	OLD AGE ASSOCIATION
PF-E-	PHYSICAL FUNCTIONING ASSESSMENT IN YOUR ENVIRONMENT
PHC-	POPULATION AND HOUSING CENSUS
RCH-	REPRODUCTIVE AND CHILD HEALTH
RTA-	ROAD TRAFFIC ACCIDENT
RoSPA-	THE ROYAL SOCIETY FOR THE PREVENTION OF ACCIDENTS
SAGE-	STUDY ON GLOBAL AGEING
SPSS-	STATISTICAL PACKAGE OF SERVICE SOLUTION
UMHS -	UNIVERSITY OF MICHIGAN HEALTH SYSTEM

UN -	UNITED NATIONS
USA-	UNITED STATES OF AMERICA
VIPP-	VIOLENCE AND INJURY PROTECTION PROGRAMME
WAJU	WOMEN AND JUVENILE'S UNIT
WHO –	WORLD HEALTH ORGANISATION

CHAPTER ONE

INTRODUCTION

Background to the Study

Demographic trends suggest that with each passing day, births replace the large numbers that die. However, equilibrium is never achieved as the babies outnumber those who die: a phenomenon that steadily increases the world's population. As these young ones grow, the population structure changes with implications for those at the aged class. Population ageing has posed several challenges to demographers. With the prevailing conditions in population dynamics, the elderly population increases steadily, leading to a phenomenon that could also have adverse health implications for the aged.

It has been estimated that the aged population would exceed the population of children under 15 years by the year 2020 (Insel & Roth, 2004). Available data supporting this statistics indicates that globally, the number of persons over 60 years will increase from about 600 million in 2000 to almost 2 billion in 2050 (United Nations [UN], 2013). The report continues that persons aged 60 and over in sub-Saharan Africa will nearly double from over 35 million in 2006 to well over 69 million in 2030. Velkoff and Kowal (2007) also attest that between 2030 and 2050, the number of elderly people in the sub-region is projected to double again to over 139 million. The UN Report (2013) concludes that the proportion of the population aged 60 years or over globally is also projected to rise progressively from 5 per cent in 2013 to approximately 11 per cent by 2050.

In Ghana, the 2010 Population and Housing Census (PHC) indicates that the number of persons aged 60 years and above increased persistently from 1960 with a sharp rise from 1984 to 2010. The 213,477 figure of 1960 to 1,643,381 in 2010 results in an increase of seven-and-half times (770%) over a period of 50 years (Ghana Statistical Service [GSS], 2013). Mba (2010) supports this worrying situation and makes projections on the population of the elderly in Ghana from 2010 to 2050 as presented in Table 1.

Table 1

Future Structure of Ghana's Population 60 and above from 2010 to 2050

	No. in '000		Percentage Distribution	
Year	60+	80+	60+	80+
2010	1483	122	6.1	0.5
2015	1727	159	6.5	0.6
2020	2044	202	7.1	0.7
2025	2415	248	7.8	0.8
2030	2844	298	8.6	0.9
2035	3301	351	9.4	1.0
2040	3929	408	10.6	1.1
2045	4590	506	11.8	1.3
2050	5721	568	14.1	1.4

Source: Mba (2010)

The world ought to be proud of an increasing population, but this is insufficient to ensure a high population with healthy people particularly as the aged class gradually faces health problems (Krugu, 2014). Typical of these health problems for the elderly are home accidents resulting from domestic health hazards (DHH). Living to very old age is a social prestige as well as a

privilege; yet, this can turn resentful and wretched when the efficiency in body organs reduces from the age of 60 years (Nicks, 2010). Hence, getting old has its own disadvantages that may give rise to lots of concerns of the elderly which when ignored can make their future very gloomy.

Several issues have been raised on the demographics of ageing. The increasing aged population is attributed to the rising life expectancy at birth (UN, 2013) which is the result of improved medical practices. The Royal Society for the Prevention of Accidents (RoSPA) (2015) also attributes more people enjoying life into their 90s to awareness of healthy diet and regular exercise. This increasing life into the 90s gradually changes the population structure from the typical pyramid to a form when the pyramid bulges at the top.

Ageing is a natural phenomenon which commences at birth, and gerontologists such as Moody (2002) regard this phenomenon as normal ageing. Ageing in itself is universal, besides being normal, and an inevitable biological phenomenon (Velhal, 2012). Nevertheless, the impact of ageing is felt later in life, and this informed Cora (2003) to believe that ageing ends at death. Insel and Roth (2004), Santrock (2006) and Crumbie (2007) have used different theories to explain ageing, but it was clear that no single theory could utterly clarify ageing adequately. Everyone experiences it in different forms and severities, with accompanying health implications. The central issue is that ageing may gradually interfere with self-care. One's inability to bath, dress, feed, and meet the elimination needs may make the one experience poor personal hygiene and malnutrition among others with the attendant health

implications. Elderly persons' inabilities to perform such essential activities suggest that they are gradually losing their independence and demanding caregiver or institutional support.

In a study conducted in rural and urban areas in India, Chandwani, Jivarajani and Jivarajani (2009) found that 311 men and women who were 60 years and above had health problems including hypertension, diabetes, anaemia, and accidents. Nicks (2010) also emphasises that the health concerns of the elderly who were 65 years of age and over include vision problems and osteoporosis; these conditions often make an individual prone to falls-related problems and to domestic hazards.

Elderly health concerns are broad and have been examined from different dimensions. Bassitt (2010) lists the top five health concerns with ageing as 1) cardiovascular diseases, 2) prostate problems (for men), 3) falls, 4) joint problems, and 5) mental health issues. The author went further to list depression, Alzheimer's disease, dementia, anxiety, and suicide as the top five leading mental health concerns. Apart from these, the elderly are faced with many other concerns. In a study by University of Michigan Health System [UMHS], (2007), 50% of the 11,000 participants in the National Health and Retirement study were found to have been affected in moderate to severe form with at least one of the ageing conditions such as falls, incontinence, and vision or hearing impairment. The respondents with advanced years in the study reported of additional ageing conditions. This situation gradually displaces the elderly into more dependent state in life.

There is a gradual decrease in elderly health as a result of progressive degenerative processes in the entire body. At a certain stage in life, one's mobility may reduce following degeneration of the musculoskeletal system coupled with varying degrees of sensory impairment (Krugu, 2014). The gradual process involves multiple systems and hence increases the frequency of the elderly falling victim to increasing degenerative conditions (UMHS, 2007). Majori, Signorelli, Bonizzato, Poli and Romano (1999) contend that these degenerative conditions may render the elderly vulnerable to intra-domestic accidents.

In Ghana, Adoma and Yendaw (2014) were interested in the chronic diseases that persons who are 60 years and above experience. Data was obtained from records available on chronic diseases reported at Cape Coast Municipal Hospital (CCMH) between 2004 and 2009. Two major types of chronic diseases were identified from the data. These major groups were heart-related chronic diseases (HRCDs) and non-heart related chronic diseases (NHRCDs). This investigation followed some other studies conducted on diabetes, obesity, cancers, and hypertension in other parts of the country.

Ayernor (2012) analysed data from World Health Organization (WHO) Study on global AGEing and adult health (SAGE) which was conducted in 2005 where Ghana was used as one of the participating countries, to outline the chronic non-communicable diseases that burden the elderly in Ghana. From the results, it emerged that 45% of people aged 50 years and above had oral health problems. In conclusion, the results of the study predicted an

increased prevalence of chronic non-communicable diseases among the elderly in Ghana.

Ghana was one of the six countries involved in the SAGE study on disability stemming from unintentional injuries excluding traffic accidents in adults who are 50 years and over. The authors' worry was on falls becoming a key public health problem in low- and middle-income countries (LMICs) with rapid population ageing (Williams et al., 2015).

Other studies of the elderly include their health-seeking behaviour (Ford, 2005); the need for health information on healthy living (Rana, Wahlin, Lundborg, & Kabir, 2009); and performance of activities of daily living (ADLs) (Seo & Chung, 2007; UMHS, 2007). Vulnerability of the elderly to home accidents due to domestic hazards has also been a vital area of study (see Tomey & Sowers, 2009). World Health Organisation (WHO) (2013), asserts that every home even in the new and ideal state is full of potential hazards which Edwards (2013) claims are not instantly seen. Earlier in life, individuals live comfortably and safely in these *same* homes until ageing commences and natural changes gradually weaken their bodies. The gradual weakness of the body as observed by Nicks (2010), coupled with hazardous conditions in the environment render the elderly highly vulnerable to domestic accidents, occurring from domestic hazards which is the centrepiece of the study. Majori et al. (1999) found that domestic accidents occurred in 56% of elderly. The domestic accident varies greatly with falls as the very frequent in the elderly followed by wound, burns, and crushing. Regarding falls in particular, Velhal (2012) briefly outlines the effects of simple fall in the

elderly to have both physical and psychological consequences including outgrowing socio-economic burdens.

With the increasing concern about the ageing population, it became necessary to formulate policies on the aged that would bind individuals, agencies, organisations, and governments to commit themselves to addressing these concerns. The UN General Assembly in 1982 therefore adopted Resolution 37/51 on the Vienna International Plan of Action on Ageing (UN, 2007). This led to the formulation of specific actions to be taken on the elderly. These actions were left for the individual member countries to implement. The Madrid International Plan of Action on Ageing (2002) also sought to assess the progress made on the Vienna Plan of Action (Ghana Country Report, 2007).

Based on Article 37 Clauses 2(b), 3, and 6(b) of the Constitution of the Republic of Ghana (1992), a committee was constituted at the national level to draft a policy for Parliament on ageing. This was done as reported in Ghana Country Reports (2007). The world celebrates the day for the aged on October 1st, while in Ghana, July 1st (Ghana's Republic Day) has been set aside for the aged. An additional provision which the government of Ghana has for the elderly is the exemption of the elderly who are 70 years and above from paying for health care services rendered at government facilities. This exemption offers some relief only to a few elderly as the favour excludes the elderly below 70 years though the retirement age from the public service in Ghana remains at 60 years. Within this 10 years interval, the elderly go through hard and difficult socio-economic hardships.

Challenges from the various perspectives of life ultimately end up affecting the health of the elderly directly or indirectly. For instance, the persistent degeneration of the various body systems of the elderly may end up in gradual loss of function in these systems (Nicks, 2010). Ultimately, there would be complaints of sicknesses in different forms with frequent reports from the body systems. These inevitably subject the elderly to frequent hospital attendance where the elderly mainly report age-related problems including domestic injuries.

The family has been a reliable source of assistance to the elderly in providing ADLs for the elderly. The family which has been very strong and effective in supporting the elderly is also gradually facing fragmentation (Haaga, 2010; Oppong, 2006). This fragmentation has been attributed to cultural diversification and socio-economic factors among others; yet, the fact remains that the elderly no longer receive adequate attention due them from the family; a situation which sometimes compels some elderly to live alone till their death. Lee, Wong and Lau (1999) have established that 79% of their patients studied were living alone at home during the home accident. Elder care therefore deserves brief mentioning here.

Cultures vary on caring for family members. In most parts of the world including Ghana, children receive parental care from total dependent state at birth. Caring for the child to independent state further places responsibility on children to care for their ageing parents and this makes caring in the family a reciprocal phenomenon. This phenomenon is somehow failing with time (Haaga, 2010; Oppong, 2006) as economic hardships remain the key reasons

why many families neglect looking after their older ones. The elder care responsibility then falls on *very* close family members. This notwithstanding, Ghana Statistical Service (2013) reported in the characteristics of living arrangement that 8.3% of the elderly receive care from the extended family, and between nine and 11.4% stay alone; thus indicating the dwindling family care provision for the elderly.

In Ghana, the traditional systems of care for the elderly (and children and other vulnerable groups) have been undermined by the processes of modernization. This has been attributed to the fragmentation of the family system (Haaga, 2010; Oppong, 2006). As children and other kins move to urban areas and other destinations, kinship ties become weak and obligations are not binding as lack of proximity and application of sanctions encourage irresponsibility towards the elderly and others.

Moreover, public attempt at addressing domestic irresponsibility in the area of care for people has not targeted areas beyond child care or maintenance. In Ghana, the neglect of the elderly has not been criminalized as that of the child neglect at the moment. The Domestic Violence and Victims Support Unit (DOVVSU), formerly Women and Juvenile's Unit (WAJU) is located within the Police Service and it prosecutes persons brought to the unit for alleged child neglect and other cases. Regardless of this weakness in elder care, the family alone cannot address some of these elderly health concerns unless they are enlightened through empirical investigations.

Environmental hazards exist in different forms to affect health in diverse ways. In Ghana, empirical investigations in environmental hazards

focus on occupational hazards. Amfo-Otu and Agyemang (2017) studied health hazards and safety practices among mechanics in the Sekyere East District involving 70 mechanics. Among other things, the respondents were found to be exposed to physical (heat and burns); chemical (asbestos fumes); and biological (insect bites) hazards. The investigators did not find occupational health and safety strategies in the country to address the sector needs.

Besides occupational hazards, the home also has environmental hazards in various ways that are not good for human life. For instance, some families have portable generators to augment the frequent power cuts that were experienced in Ghana anytime the Electricity Company of Ghana (ECG) organised load shareding exercises. The outcome of this in some homes was carbon monoxide poisoning of the household members with instant death. Users only knew about the generator as substitute to power source; nevertheless, they were not informed about the effects of unduly inhaling the fume. Prior education on the environmental health hazard could prevent the dangers associated with the use of this alternative source of electricity. These reports did not touch on the health hazards of the elderly who form a vital population in Ghana.

These worry developments serve as valid basis for research into domestic health hazards (DHH) of the elderly which remain the major cause of domestic accidents for this critical population.

Statement of the Problem

Insel and Roth (2004) observed elderly population growth and expressed serious concern about their potential implications. This implies that if ignored, there can be health implications on the country's development with the state directing more attention to the health issues of the elderly.

From the global front, there were only 131 million people of age 65 years and over in 1950. This number had almost tripled and was estimated at 371 million in 1995. In percentage change, there was an increase from 5.2 in 1950 to 6.2 in 1995. It has been estimated that by 2050, one out of ten people worldwide will be 65 years of age or more. A related document to support this indicates that globally, the number of persons over 60 years will increase from about 600 million in 2000 to almost 2 billion in 2050 (UN, 2013).

Mba (2010) asserts that Ghana has a high number of the elderly persons (see Table 1). This figure will increase steadily in view of the corresponding rise in life expectancy rate of 61. The Ghana Statistical Service (2013) emphasised that the population trends of Ghana indicate that the ageing of the population will continue in the 21st century. It is virtually impossible to control the population increase of the aged but as a matter of urgency, we must address the ageing-related health problems such as the dangers the elderly live in when most of them may turn home bound. Research on the aged is limited in Ghana. The few studies done in the area have been summarized in Table 2.

The numerous hazards in our home environment do not only threaten the lives of the elderly, but also disable some of the elderly, particularly those who may be frail and are living alone at home (Ang & Lim, 2008; Huang,

2005; Maeba & Takenaka, 2010). These hazards have put the elderly into very precarious situations at home. Majori et al. (1999) for instance documented falls, wounds, burns, and crushing among the elderly population. It appears none of such studies have been conducted in Ghana. Most investigations on accidents focused on road traffic accidents; while occupational hazards have been studied by Amfo-Otu and Agyemang (2017).

Research on elderly health matters has generally been limited in quantity and scope although it is a vital area in human life that should be treasured by all. Some of these areas were covered as stated above, but none has been found on hazards that the elderly stay with at home. There is therefore the need to pay heed to the health aspects of ageing, especially in Ghana. These worrying needs serve as valid basis for an urgent research into DHH of the elderly. It appears no systematic academic inquiry exists on the subject in the Cape Coast area where the current study is being conducted. This empirical investigation is not only essential but also fills the research gap in elderly health. It specifically focuses on the hazards and the elderly in the Cape Coast Metropolis (CCM).

Table 2

Summary of Investigations on the Elderly in Ghana.

INVESTIGATOR(S)	RESEARCH AREA
Apt (1971)	The Socio-economic Conditions of the Aged in Ghana
Brown (1984)	Improving the Social Protection of the Aging Population in Ghana
Brown (1995)	Aging and Family Care in Ghana: A Study in Caring Relationships
Stucki (1995)	Managing the Social Clock: The Negotiations of Elderhood among rural Asante of Ghana
Van der Geest (1996)	The Elderly people in Ghana: On-going Anthropological Research
Gerrar (2002)	The Economics of Retirement
Van der Geest (2002)	Respect and Reciprocity. Care of the Elderly people in Rural Ghana
Mba, Addico & Adanu (2007)	An In-Depth analysis of Socio-Demographics, Living Arrangements and Health conditions of Ghana's Older Population
Ayabilla (2008)	Social Support System for the Aged in the Bawku Municipality
Mba (2010)	Population Ageing in Ghana: Research Gaps and the Way Forward
Tawiah (2011)	Population Ageing in Ghana: a profile and emerging issues
Ayernor (2012)	Diseases of Ageing in Ghana
Mba (2013)	Living arrangements of the elderly men and women in Ghana's urban areas
Biritwum, Mensah, Minicuci, Yawson, Naidoo, Chatterji & Kowal (2013)	Household Characteristics for older adults and study background from SAC Ghana Wave 1
Ocansey, Awusabo-Asare, Kumi-Kyereme & Boadi-Kusi (2013)	Ocular Health of the Emerging Elderly Population in Ghana: Evidence from Peri-Urban Community
Adoma & Yendaw (2014)	Ageing and Chronic Diseases in Ghana: A Case Study of Cape Coast Metropolitan Hospital
Ba-Ama, & YaabaAckah (2014)	Causes of Neglect of the aged in Sekondi-Takoradi Metropolis, Ghana
Darteh, Nantogmah & Kumi-Kyereme (2014)	"If your parents help you grow teeth; you help them lose theirs": Family Support for the Aged in Yamoransa, Ghana

Source: Compiled by author.

Research Questions

The study was guided by the following research questions:

a) What is the level of awareness of the elderly about domestic health hazards?

b) What are the most common types of domestic health hazards for the elderly?

c) Where do most accidents involving the elderly take place at home?

d) What is the prevalence of domestic accidents among the elderly?

e) What do the elderly suggest on prevention of domestic health hazards?

Objectives of study

The broad objective of this study was to assess the domestic health hazards of the elderly in Cape Coast Metropolis. Specifically, the study:

a) investigates the level of awareness of the elderly about domestic health hazards

b) determines the most common types of domestic health hazards that they face

c) examines the areas of the home environment that could negatively affect the health of the elderly

d) assesses the prevalence of domestic accidents among the elderly

e) discusses the suggestive preventive measures of domestic health hazards and

f) estimates the association between domestic accidents and background characteristics of the elderly

Research Hypotheses

The study sought to test the following hypotheses:

a) There is no statistically significant relationship between awareness of DHH and selected demographic characteristics of the elderly.
b) There is no statistically significant relationship between domestic health hazards and domestic accidents.
c) There is no statistically significant relationship between domestic accidents and selected background characteristics of the elderly.

Rationale of the Study

The elderly population is fast increasing globally, but with decreasing family, society, and state responsibility. In Ghana, parliamentary ratification that would enforce policies for the elderly has been done since 2010. Cape Coast is the capital of the Central Region of Ghana and is well noted for it housing most educational institutions in Ghana, including the University of Cape Coast. Some of the retired employees of these institutions have settled in the metropolis. Equally, some of the indigenes who travelled outside Cape Coast to work have returned on retirement. The proposed study on DHH of the elderly has become necessary in view of the projected elderly population increase (see Table 1), the vulnerability of the elderly through domestic health hazards and increasing age-related problems, together with fragmentation of the family system (Haaga, 2010; Oppong, 2006).

Furthermore, Mba (2010) laid stress on creating awareness regarding population ageing and the research gaps in the Ghanaian context since very little attention has been given to ageing in Ghana by both the research

community and policy makers. Cohen and Menken (2006) maintain that public health services in sub-Saharan Africa are more concerned with preventable childhood diseases, than they managing the health care of the frail elderly. Maternal and child health, reproductive health services, together with human immune-deficiency syndrome (HIV and AIDS) continue to receive greater attention from non-governmental organisations (NGOs) and the state through the Ministry of Health (MOH) but the same cannot be said of elderly health. Furthermore, Olaleye's (2009) investigation found that home accidents affect the physical and social well-being of the elderly in Ogun State, Nigeria. Studies that have focused on the elderly in Ghana are shown in Table 2. In Ghana, Amfo-Otu and Agyemang (2017) studied the occupational health hazards among mechanics in the Sekyere East District. There is no data from the Ghana Health Service on DHH. The present study attempts to enlighten the public on age-related domestic dangers of the elderly and bring research to bear on the elderly abreast with maternal and child health, reproductive health, and preventable childhood diseases among others.

Apart from these issues, the study is also momentous for the following reasons:

a) Information on elderly vulnerability and the specific health information needs of the elderly concerning domestic hazards posing threat to their health have policy implications.
b) The results of this study draw public attention to the importance of research on elderly health issues and bring its value close to

investigations in preventable childhood diseases and HIV and AIDS among others.

Significance of the Study

This sub-section covers what the study will contribute and who will benefit from it. Creating awareness on DHH, we believe, would benefit the public and the elderly in particular on coping with some predictable health hazards at home in order to attain healthy ageing. The elderly population who are uninformed on DHH would take advantage of the findings from this investigation. Additionally, more preventive measures would be considered and the more practicable ones would be taken in solving home accidents for the elderly in particular.

This study would also enrich the literature on elderly health issues with particular reference to domestic dangers. It is believed this would enrich the literature base of future researchers on domestic health issues in Ghana.

Scope of the Study

Theoretically, the study is on the elderly and their health hazards; hence, a minimum age defines the inclusion criteria and some selected home dangers considered. The advancing age of the elderly makes them prone to several problems. Some of these include emotional and socio-economic problems. This study is unable to address all the theoretical health problems of the elderly. The focus of the present study was mainly on the elderly in hazardous environments. The threat that persistent living in this environment

poses to the elderly when timely exposed, we deem, will create public awareness on the plight of the elderly.

Geographically, an investigation of this nature would be of immense use if the entire country had been covered. The present study covers only the elderly in Cape Coast Metropolis which is only one of the Metropolises in the Central Region.

Limitations

This section reports on a few ideal situations that were not in place to ensure quality in the present research and yet, were beyond the researcher's control. Predominantly, quantitative data was generated for this study. The addition of qualitative items could have enriched the quality of the instrument and therefore generated in-depth data than what has been provided in this work. This however would extend the time the research assistants would spend with each participant, some of who may be tired in the process and possibly get off-track in the information they provided.

Regarding the inclusion criteria of 65 years, documents were not inspected to confirm the ages stated by the respondents. Thus, the researcher only relied on the respondents' information on age, which may not be the true chronological age for some of them. The respondents were required to recall accidents suffered within a period of 12 months. It is not certain if the elderly could be trusted in some of the responses such as the number of times they suffered some accidents. This renders the data generated to be purely subjective. Some of them could conceal the truth from the research assistants

as the injuries they suffered could be painful or embarrassing that they never wanted to recall.

The data collected could be of a higher quality if pictures were taken to support the descriptions given by the elderly on the safe or unsafe areas at home. Besides, on the degree of available dangers at home, pictures would have helped to provide supportive evidence than the researcher solely relying on the elderly responses which makes the information very subjective.

Finally, the research setting of one district is inadequate for generalisation of the results. Covering a wider area such as covering the entire region could have given more credibility to the results for generalisation.

Organisation of the Study

This study is organised under nine chapters. Following this chapter is Chapter Two which discusses policies on ageing and population ageing in Ghana. The relevant literature in Chapter Three covers issues of ageing, human growth and development, optimising ageing, theories of ageing and accidents, and the empirical works on the research questions. Chapter Three ends with Tomey and Sowers' (2009) conceptual model which has been adapted for the study.

The entire plan of the study is presented in Chapter Four and it includes the research design, sampling, instrumentation, research philosophy, data collection and analysis. In Chapter Five, the report covers the socio-demographic characteristics of the elderly such as gender, marital status, literacy levels, living arrangements, occupation before 65 years, environmental home situations, locations at home that the elderly spent the

day time, and other related issues. Chapter Six covers the results and discussion on the first and second research questions which focus on elderly awareness and types of DHH. Issues on awareness presented here covered the meaning of domestic hazard, elderly coping strategies and some extrinsic factors of elderly vulnerability to home accidents.

Chapter Seven presents the field data on unsafe locations and dominant domestic accidents that the victims suffered within the past 12 months, time of the day said accidents occurred, possible contributory factors, frequency and interventions. Chapter Eight covers suggested preventive measures of DHH. Issues considered here include awareness of Old Age Association (OAA) at Cape Coast, having changed living arrangement after turning 65 years, locations or structures that require modification, and recommended topics for health education at their age. Chapter Nine concludes the research report by providing a summary, conclusions, policy implications and recommendations for further study.

CHAPTER TWO

POPULATION AND AGEING IN GHANA

Introduction

Demographers and social scientists face a serious crisis in the area of population explosion. This explosion has become a global challenge which is observed to increase steadily as indicated by the world records. It is a natural phenomenon that requires international and national policies to meet the social and health implications of population growth.

Ghana has its own fair share of this health and social problem and she follows the strategies adopted by the world bodies to address the issue. Ghana participates actively in these strategies. These strategies as well as population growth in Ghana including the research area are addressed in this chapter.

Policies on Ageing

A lot has been said globally on the increasing life expectancy rate and its consequences on the population. Suggestions and recommendations on this global population increase may not yield much if they are not backed with policies. Policy formulation therefore becomes inevitable in elderly health matters. In view of this, there have been policies at global, continental, and national levels on ageing and more particularly on the welfare and healthy living of the elderly. Prominent among these policies at the global level are those from the UN and WHO which are examined here.

Policies at International Level

It is possible to trace the history behind the action on ageing at the global level from over half a century in UN records. It is on record from Global Action on Ageing (2009), that the UN's Universal Declaration of Human Rights in December 1948 specifically mentions the security of human beings in their old age. Even though the elderly population was not as large as it is now at that time, the UN had the elderly in mind. In 1982, elder issues received an even more powerful international attention when the UN General Assembly (resolution 37/51) endorsed the first instrument on ageing which had established a global long-term strategy for the ageing population. An important area in the policy guide was the protection of the elderly. The present study focuses on DHH and the resultant domestic accidents among the elderly and how the hazards could be reduced to ensure their health. The UN endorsement followed an earlier adoption in the same year at the World Assembly on Ageing at Vienna, Austria. In this initial UN document, Member States were tasked to draw their own plan of action on the welfare of the elderly using the draft document. The plan was however criticised that it did little to address the older generation.

In 1994, an International Conference on Population and Development program of action was held in Cairo. At this conference, 179 countries adopted a 20-year programme of action, which among other things included the provision to protect older persons. The 1994 conference was followed immediately with a further meeting in 1995 where some insufficiencies in the implementation were raised. In 2002, the Second World Assembly on Ageing

was held at Madrid (UN, 2002), where 160 UN Member States adopted the Madrid Plan of Action on Ageing (MIPAA). At this 57th session, the General Assembly addressed four major areas of concern as follows: 1) Older persons and development, 2) Health and well-being into old age, 3) Enabling and supportive environment for ageing, and 4) Implementation and follow-up. This meeting assessed the progress made by Member States in implementing the Vienna Plan of Action (Global Action on Ageing, 2009). The present study on DHH of the elderly is related to the second and third concerns of the General Assembly as it addresses the enabling environment for the health of the elderly.

United Nations Remembrance day

United Nations Day for Older Persons falls on October 1st each year. The day has been set aside by UN General Assembly Resolution 45/106 in recognition of the contributions of the elderly and also to draw attention to their challenges (UN, 1990). All member countries of the UN including Ghana celebrate the day with different programmes and activities which among other things make the concerns of the elderly felt through the print and electronic media.

Ghana, a UN Member State following the UN document has a plan of action on the welfare of the elderly using the draft document. These policies at the national level are now discussed.

Policies at National Level

Ageing issues have escalated beyond an individual challenge to societal, national and even global dimensions. Nations, particularly the UN member countries, therefore see the urgent need to pursue the UN Resolution 37/51 and the Vienna Plan of Action and develop action plans that should be nation-specific to meet the needs of the elderly. In Ghana, it is clear that ageing problems have overstretched many sectors such as health, housing, and transportation, as over five percent of Ghana's population in 2000 was 65 years and above (GSS, 2002). These therefore set the stage for the Government of Ghana (2010) to enact the National Ageing Policy.

A National Committee on Ageing was established by the Ministry of Employment and Social Welfare which worked together with Center for Social Policy Studies to produce a draft National Policy on Ageing. In the process to develop the draft policy, several stakeholders were involved. There were 11 main objectives; the eighth which is relevant to this study is protection for the elderly including preventive and rehabilitative health care. The preventive aspect in the present study involves prevention of DHH in the living environment of the elderly. Objective achievement was made possible by 13 policies to guide the implementation. The document identified 11 policies and a pertinent one related to this study is on "Improving the housing and living environment of the older person." Easy accessibility and safety of the environment are paramount to ensure the physical and psychological security of the older person at home. This aspect of the draft document is the responsibility of Ministry of Water Resources, Works and Housing which will

specifically modify or refurbish buildings for the elderly. In order to safeguard the draft policy, the government was to establish National Council on Ageing to coordinate and oversee the successful implementation of the National Ageing Policy. In conclusion, clear guidelines were drawn on implementation methods, monitoring and evaluation as well as revision of the policy. The National Ageing Policy was completed in February 2002 and submitted to Cabinet in March, 2003 (Ghana News Agency, 2005). This policy was eventually promulgated by Parliament in 2010.

Ghana follows the UN directive on the concerns of the elderly as this concern is a global issue. The directive requires member states to draw up their own line of action on the elderly. Requests of this nature demand approval at the highest level of authority; hence, in Ghana this was enshrined in the 1992 Constitution. Having been set down in the most powerful state document, the implementation of the policy should have been easy. Article 37(2b) of the 1992 Constitution focuses on the protection and promotion of the basic human rights of the disabled, the aged, children, and the vulnerable among others. This study takes on the aged in particular. The physical conditions of most elderly place them into vulnerable group. Persons like the aged are regarded as vulnerable at their age and the frail body of some of the elderly make them prone to unique health problems leading to home accidents such as falls. Article 37(6b) requires the State to, "provide social assistance to the aged such as will enable them to maintain a decent standard of living." Indeed, it is this decent standard of living that the elderly require since this will pave the way for their healthy ageing.

As a member state, Ghana participates actively in the United Nations Day for Older Persons which falls on October 1st each year. Member countries of the UN celebrate the day with different programmes and activities. July 1st (Ghana's Republic Day) has also been set aside for the aged. Parties and other activities are organised to create awareness among people about the concerns of the elderly.

Livelihood Empowerment Against Poverty (LEAP)

In 1982, the Government of Ghana introduced cash transfer programme aimed at supporting the poor and vulnerable households including the elderly. An objective of LEAP that relates the elderly is: "To increase access to health care services among children below 5 years of age, the aged (65 years and above without productive capacity) and people with severe disability" (LEAP, 2016). This implies that the elderly, irrespective of their health status, must attain 65 years to be qualified beneficiaries of the LEAP programme. Help from LEAP programme covers access to healthcare services.

Clearly, LEAP has been seen to provide some relief to the elderly; nevertheless, a sizeable percentage has been excluded below the age limit specified in the policy document. This limitation is not only felt by the elderly below the specified age but also by concerned individuals. Alidu, Dankyi, and Tsiboe-Darko (2016) addressed this issue and offered some recommendations to address the limitations. The recommendation related to the aged is the need for a downward review of the age criteria for beneficiaries of social intervention programmess meant for the aged.

Older Ghanaians Services Act

Individuals also being much worried about the increasing elderly population, resolve to add their voice to the plight of the elderly. Darkwa (1999) has been one of the earliest to contribute to the issue. His article recalled the challenges of the increasing elderly population of Ghanaians. Darkwa proposed the creation of a national policy to be known as "Older Ghanaians Services Act". The article entreated policy makers to seek partnership with other bodies to meet the needs of elderly Ghanaians. Old Age Association is a non-profit non-governmental organisation established in some cities. The Association meets regularly to discuss pertinent issues about their welfare. This group has a branch in Cape Coast and they meet fortnightly for the same purpose. Nevertheless, the elderly, owing to mobility problems, are cut off from the regular meetings. Besides, old age associations, churches can also be of immense help to their members. We suggest that the proposed act by Darkwa should be seriously considered to press home the health needs of the elderly.

Population Ageing in Ghana

Population ageing is a global issue with Ghana having her own fair share of the problem. This subsection examines the issue locally and with respect to the research area.

Ghana Demographic Profile

Population trend is very vital for both social scientists and health workers alike without which they cannot perform their professional tasks

effectively. Demography refers to studies on characteristics of human population such as age, gender, social, class etc. Planning for health services will be ineffective if the structure and population distribution are not known. Some crucial factors which influence population of a nation are birth and death rates as well as migration, immigration, epidemics and natural disasters such as floods.

Population increase is a global phenomenon and Ghana is not an exception. The national population census is a means of counting members of a country for planning and other purposes. In most countries including Ghana, census is conducted every ten years. Reliable population figures have not been available for Ghana during the pre-independence period; but the post-independence figures are available to guide health planners in the fair distribution of health services within the country and across the life span. A crucial matter that has been the worry of demographers and governments alike is the changes in structure and increase in the population particularly in the case of the elderly which has been predicted to exceed that of children (0 to 15 years) by 2050 (UN, 2013).

In Ghana, the population increased from 19,533,560 in 2000 to 21,029,850 in 2005; 24,339,840 in 2010 and finally to 24,791,070 midyear estimation in 2011 at 2.3% annual change as indicated in Ghana Population Growth Rate (2011). The release puts the figure to represent 28.1% increase over the 2000 record; and that of Central Region increased from 1,593,823 in 2000 to 2,107,209 in 2010. The Ghana Demographics Profile (2014) puts the population of 15 to 64 years at 60% with 65 years and over at 3.6% of the total

population; the growth rate has been given as 1.8% and life expectancy at 61years with gender differences.

Covering much more extended period in Ghana, persons aged 60 years and above increased steadily from 1960 with a sharp rise from 1984 through 2010 and beyond. The 213,477 figure of 1960 to 1,643,381 in 2010 gives an increase of over 770% over a period of 50 years (GSS, 2013). On persons who are 65 years and over, the GSS figures further reveal percentage growths of 3.5% in 2010, 4,0% in 2020, 4.4% in 2025 and 8.6% by 2050. Gbogbo (2011) analysed the population figures from 1960 to 2000 and similarly reported a steady increase in the population. Ghana Statistical Service (2012) reports on 2015 mid-year population as 27.9 million. From the global perspective on population ageing, Ghana ranks 148th position at the rate of 5.2 when persons aged 60 years and over in the country were considered (UN, 2013).

The population of 65 years and over in Central Region shows an increase from 1970 to date. In 1970, the Central Region had 39,852; 52,762 in 1984; 91,050 in 2000; and 116,369 in 2010. In 2010, the intercensal growth rate for Central Region was 3.1, the highest in the country and only comparable with Greater Accra Region. Central Region recorded 224 which is second to Greater Accra with 1236 in population density. On regional distribution of the elderly in Ghana, Central Region is the fifth with 9.9% after Ashanti, Greater Accra, Eastern, and Volta regions. Within the region on district basis, Cape Coast Metropolis is the fourth (169,894) after Gomoa East (207,071), Mfantsiman Municipal (196,563), and Ewutu Senya (195,306)

(GSS, 2013). Together with the rising life expectancy, these figures suggest that there is the potential for the elderly population to increase in future.

Structurally, the population pyramid gradually bulges at the tip of the figure, indicating more people now occupying the apex than before. This picture translates into higher life expectancy when many more people now live longer than previously. The life expectancy at birth for Ghana in 2015 stands at 65.75 years (male: 63.38 years, female: 68.19 years, 2014 estimates) (Central Intelligence Agency, 2015).

Several people have raised issues about the ageing population which has implications on the health of the elderly. The problem can be more profound for Ghana as a developing country. There are limited resources for the provision of adequate health care for the various age groups, particularly for the elderly, who have peculiar health problems. Some elderly people who do not have any specific disease condition may be weak and frail and gradually lose the ability to live independently. The general outcome is the tendency to suffer home accidents if such elderly attempt to help themselves in ADLs. This makes it difficult to conceptualise a healthy person in the aged group.

Summary

This chapter covered the development of global and national population policies and population dynamics in Ghana. Protection of the increasing elderly population has received attention at the UN General Assembly since 1982. Policies on ageing come from international and national level. The UN General Assembly (resolution 37/51) addressed the earliest

document on ageing in view of global population ageing. There were several other meetings on the necessary actions that could be taken on the welfare and safety of the elderly.

Ghana, a UN member country, has adapted the UN plan of action to promote the safety and welfare of the increasing elderly population. Article 37(2b) of the 1992 Constitution is on the protection and promotion of the basic human rights of the aged. As a result, the National Ageing Policy was completed in February 2002. Other issues on the aged are covered in Livelihood Empowerment Against Poverty, Older Ghanaians Services Act, as well as celebrations on United Nations Remembrance Day and July 1st (Ghana's Republic Day).

Ghana is going through population ageing as it has become a global problem. Records from the earliest census to date confirm this estimating that persons aged 65 years and over will form 8.6% of the population by 2050. In 2010, Central Region has the intercensal growth rate of 3.1 which is the highest for the country. In 2015, life expectancy at birth for Ghana stands at 65.75 years. These records emphasise population growth problems that require urgent attention on elderly issues.

CHAPTER THREE

REVIEW OF RELATED LITERATURE

Introduction

The literature review continues with some of the relevant theoretical and empirical works done on the topic. This review, according to Macnee (2004), is so vital as it describes what is known in the area of study; thus, a good literature search relates the research questions or the purpose of the current study. This aspect of the thesis covers Definition of terms; Theories of ageing; Theories of accidents; Epidemiology of domestic injuries; Vulnerability to home accidents; and Home safety. Other areas that the literature covers include, awareness of home hazards and accidents, types of domestic health hazards, prevalence of home accidents, consequences of home accidents, hazardous areas at home; prevention of domestic hazards/accidents and conceptual framework.

Definition of Terms

Ageing

A natural process which everyone experiences is ageing. However, when a person turns out to assume an aged status is not a matter to be decided by the individual. During circumstances under which the position of an aged goes with benefits, the individual assumes the position and vice versa. The subjective and changing means of recognising the aged is not acceptable. A more globally accepted means would be more valid for research and other scientific purposes. Ghanaian viewpoint of an aged is examined here.

An Elderly in Ghanaian Context

There are prescribed ages for the various developmental stages in life but it is not the same for the elderly who are at the last stage in human growth and development. What constitutes being old varies widely between countries and also by the perceiver. Besides, it is also defined from the biological and sociocultural perspectives.

From the biological perspective, persons with grey hair or bald head are not only addressed as an elderly, but are also recognised as such among other persons with dark and bushy hair. The former are accorded respect due to an elderly before the latter are considered. Body images of weak persons often with slow steps are some of the misleading criteria for the elderly in some circumstances.

Societal roles that persons play serve as the benchmarks in some instances. Persons who assume the role of a family head at the age of 50 years or even less are addressed as elderly. These positions are essentially based on the person's position in the generation, where a person who is *chronologically* younger in years is placed over and above the other who is older chronologically. This is explained by the fact that the chronologically younger person is a generational father or mother; and hence, between the two would take a senior position in the society. This consideration is unacceptable outside sociocultural perspectives.

In some situations where degenerative conditions set in quite early in life, such persons are quite slow in their steps. In many developing countries such as Ghana, older persons themselves use declining functional, mental or

physical capacity to define old age (GSS, 2013). The wide variations in Ghanaian context of an elderly render the definition to criticism as they render the lower limit very ambiguous. These different ages therefore cannot be accepted for research results which are exposed to the international community.

From the international community, the WHO recognises persons over 65 years to be the aged. This chronological age is however different from the United Nation (UN) age of 60 years and above (GSS, 2013; WHO, 2010). This disparity is of great concern as in most countries including Ghana, the retirement age from government service is 60 years; some individuals take post-retirement contract and are still capable of working in their 70s. Equally, some others are incapable of working before the age of 60. Others in private employment also work beyond 60 years in life. This is a clear indication that people age differently as suggested by Holmes, Powell-Griner, Lethbridge-Cejku and Heyman (2009).

In the present study, the WHO age of 65 years defines the lower age for the target population. This age has been used as it is the higher of the two specified ages recommended by the UN and WHO. Moreover, several people are still active at 60 years. In Ghana, the lower age limit for the beneficiaries in LEAP is 65 years. Furthermore, deterioration in health becomes more obvious from the seventh decade. It is however necessary to examine ageing from the cultural perspective.

Cultural Context of Ageing

Differences in growing old have been observed between continents, nations, regions and cultures. In the western world, people have negative attitude towards their aged. When these same people grow up, the negative attitudes turn inwards with most of such elderly having old age depression.

Elder care varies widely across cultures. For a very long time elder care has been the responsibility of the family and within the extended family members. In the western world where family ties are not as strong as in the developing countries, elder care is largely provided by the state or charitable organisations. The elderly are given the due respect by all members of the society. They receive this respect from the fact that they are regarded as the store of wisdom in the society. In China, this is evident in the statement, "The elder is a treasure in the family." (Kokkola, 2014). This status accorded the elderly is gradually changing as a result of socioeconomic changes where people turn to their nuclear families, education and career choices.

The elderly living together with the other members of the family has been a long standing feature in most countries until recently. This was noted about countries such as Croatia, India, China, and Ghana among others. It is sad to note that this healthy habit is changing as these countries face generational population dynamics. Sokolovsky (2001) refers to Apt describing the situation as the elderly who once paid their dues while they were young became disappointed when it was their turn to be paid.

On the life of the elderly, most of them enjoyed co-residence status. This was noted in Simmons' observation that the family has been the safest

haven for the aged (Sokolovsky, 2001). Countries such as Fiji, Korea, among others had between 75% and 85% of the elderly residing in extended family setting. The author studied the elderly life in Amatango, a central Mexican village and came out with interesting results. Despite the increase in the population of the village, 60% of the elderly still lived in three generation settings. Apart from the family support, the elderly in Amatango command respect and power from the carrying out of community rituals and civil responsibilities.

The passage of time produces changes in both living and non-living things. Ageing refers to accumulation of changes in an organism or object over a period; and in humans it is a process involving physical, psychological, and social changes. This change is described in GSS (2013) as the time when functional, mental or physical capacity decline in life. Humans go through these changes since conception until death; thus making ageing a natural phenomenon but varying among individuals. The process of ageing eventually changes our health status. In order to understand these changes, it is imperative to examine the definition of health.

Definition of Health

Achieving optimum health has been everyone's worry in life as persons would wish that they never decline in their health status even in their old age. This implies that individuals are informed to some extent on the concept of health. What is however not clear enough is whether people fully understand what it means to be in good health, that is, to be *healthy*. The term "health" can apply to an individual, family, community and entire populations;

but individuals are those who are often worried about their health status. The health status of individuals can give an impression of the health of the community. This study however focuses on DHH, which is becoming one of the leading causes of home accidents among the elderly (Cora, 2003; Home Security Action, 2011) that could render the elderly unhealthy. Falls, one of the commonest domestic accidents among the elderly, seriously affect their health as they form the leading causes of injury and even death (Roche, 2010).

The term "health" is difficult to define concisely; yet, it remains a status in life that everyone wishes to maintain. It is a quality of life hence individuals have their own definitions for it. Edlin, Golanty and Brown (1999) compare health with love and happiness; and these as qualities of life are very difficult to define. Besides, they cannot be measured. Greig (2007) also agreed with Edlin et al. on the difficulty in defining health and added that everyone forms their own definitions about health. These different definitions when critically examined have been framed on a common theme – "self-responsibility and adopting a healthy life-style" (Edlin, et al. 1999: 4). This implies that everyone, irrespective of advancing years, should continue living responsible and independent life. Where individuals force independent lives in the midst of DHH, the tendency is for the frail elderly to experience domestic accidents.

There could be other definitions of health prior to the celebrated WHO definition of 1946. This WHO definition regards health as: "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity" (WHO, 1946). This definition from WHO is described

as positive one as very important strengths have been identified in the definition as follows:

1. Promotes positive view of health by mentioning well-being
2. Is a holistic definition, including different dimensions of health
3. Can be seen as an idealistic target to aspire for – health as an ideal state (Greig, 2007: 5).

Although WHO's definition has somewhat stood the test of time, it is beginning to face some criticism. The criticism has been on the basis that it would be virtually impossible to have total health status as implied by the term "state of complete" when the three variables (physical, mental and social) have to be regarded as the bases or required areas of functioning for persons to be healthy. The World Health Organisation later expanded on the definition to include community concept. This expansion set the pace for other attempts to provide more concise definitions.

The WHO definition of health has not been amended since 1946; however, a review followed the Ottawa Charter for Health Promotion in 1986. Health has then been regarded as: "A resource for everyday life, not the objective of living. It is a positive concept emphasizing social and personal resources, as well as physical capacities." (First International Conference on Health Promotion, 1986). An important issue raised in the last definition relates appropriately to elder health, that is, *physical capability*. Thus, the gradual physical weakness in the body in ageing renders the elderly physically incapable of functioning. Besides being unhealthy, the elderly also gradually lose their independence; and the tendency of depending on others increases

with corresponding decrease in functional ability. With gradual fragmentation of the family system care of the elderly at home would decrease (Haaga, 2010; Kwatei, 2009; Oppong, 2006). Where elderly persons attempt to force independent life the danger is that they may sustain domestic accidents if there should be any environmental hazard.

The individuals' functional ability has been considered as the measure of health. From this perspective, Hall and Weaver (as cited in Lundy and Janes, 2003: 9) defined health as: "A purposeful and integrated method of functioning within an environment." In this definition, the environment has been included to press home the fact that the individual's surrounding plays a vital role in quality of life. It is against this backdrop that the home environment of the elderly should be regarded as a vital issue any time the health of the elderly is considered. Good and safe environment is necessary for all age groups and more importantly for the elderly who become weak gradually and may consequently lose their balance. Hazardous environments can affect one's health status as indicated in Tomey and Sowers (2009), particularly in the elderly since some of them gradually experience deterioration in some sense organs and at times in the musculoskeletal system. These states of deterioration serve as intrinsic factors that could contribute to domestic accidents in the elderly. Safe (hazard-free) environment is therefore strongly recommended for the elderly to ensure their optimum health.

Several other attempts have been made over the years to explain what health is through different ways. Being healthy is a relative term applied to human state of being when an individual is considered to be well; hence,

human beings move through illness-wellness continuum to determine whether they are healthy or not (Berman, Snyder, Kozier, & Erb, 2008). A healthy person is difficult to define perhaps in view of the complexity of the human body. The body can be studied under different body systems that operate in concert to ensure healthy body.

World Health Organisation and other authorities have used various definitions for the same concept of health. It is now the onus of the individuals to stay healthy especially into old age. This task to a large extent is the commitment of the individuals to optimise ageing through healthy and successful ageing which are discussed here.

Optimising Ageing

Old age is often perceived as a blessing and the aged are mostly credited with rich store of wisdom (Kokkola, 2014). This high position accorded the aged can be a reality if there is successful and healthy ageing through the individual optimising their own ageing process. This subsection examines the meaning of health and what it means to go through healthy ageing as an attempt to enjoy successful ageing. A brief discussion on human growth and development to outline stages of life span into adulthood is appropriate at this point.

Outline of Human Growth and Development

Research on the elderly is incomplete without a brief outline of the human life span. Thus, this area of growth and development is briefly outlined here in view of its relevance to the research topic. Ageing as considered earlier

is a process which commences from conception and ends at death. A zygote develops later after conception; an embryo stage follows and passes through several stages till birth of the human being. During the foetal stage in the prenatal period, body organs develop systematically. Some factors that may influence foetal development include maternal nutrition, drug use, and psychological state of the mother (Bernstein, Penner, Clarke-Stewart, & Roy, 2006). Adequate maternal nutrition enhances foetal development; drug use could harm the infant's body size, behavior, intelligence and their overall health in post-natal life. After 38 to 40 weeks of gestation comes the new born with limited but effective senses of vision, hearing, taste, and smell.

Postnatal life goes through physical, cognitive, and emotional development among others. Physically, the new born passes through sensory and motor developments; the gradual development of the senses enhances the child's comprehension of the environment. Motor development is sequential and by 12 to 13 months most infants could walk alone. Bernstein et al. (2006) argue that emotional bonding between the baby and the mother or other mother substitutes begins from birth and is very critical in the child's development.

Some theories which explain different areas of human development include Piaget's cognitive development, Erikson's psychosocial development, and Freud's psychosexual development. Maslow's theory on human needs and Kohlberg's ideas on human learning help to shape the lives of the individuals in different ways (Bernstein et al. 2006).

Children grow through adolescence with further physical, cognitive, and emotional development. Beyond these areas of development is identity formation where the adolescent tries to understand "who am I." Parenting becomes very challenging and failure may result in an adolescent who may go wayward and end up with personality problems for the rest of their lives. Adequate nutrition is required to meet the rapid growth that characterizes the stage of adolescence. Some adolescents, particularly females may be overly conscious of their physical bodies, take to dieting and end up having anorexia nervosa with very lean bodies which can be very fatal with delayed intervention. Peer relationships may also be very challenging to most adolescents as they may copy bad habits from their friends including the use of alcohol and other hard drugs.

The period of early adulthood from 20 to 40 years follows the adolescent period. Erikson describes this period as intimacy versus isolation (Bernstein et al. 2006). This period marks the stage when most people form permanent and lasting relationship with the opposite sex and start raising their families. These family members are relevant to this study as they support the elderly in being co-residents for the elderly when some of the elderly are faced with degenerative conditions in the ageing process.

Middle adult years (40 to 65 years) may sometimes be very difficult periods. Hormonal changes occur and women experience menopause with the associated emotional disturbances. Other people are faced with caring for their old parents, rebellious adolescents and perhaps divorce and retirement. These may be very smooth for some individuals but very worrying for others.

Ageing is a process which varies in individuals; nevertheless, these worrying situations may render some individuals to age faster as argued in continuity theory of ageing. Stable marriage is very healthy in elderly periods as spouses support each other in living arrangements during their last days.

During late adulthood which begins at 65 years, there is great decline in body functions. The decline may occur in the senses as well as other organs where degeneration increases. Depending on the cultural orientation most elderly may experience empty nest syndrome as the children at this stage in the family's development would leave home for marriage and work. At this point in time, the elderly may struggle physically and socio-economically to earn a living for the rest of their life; this is likely to influence healthy ageing which we briefly examine here.

Healthy Ageing

It is possible for individuals to improve on the ageing process through their own active involvement. This sub-section discusses the process of practising healthy ageing in order to age successfully.

Rowe and Kahn (1997) have contributed immensely to ageing and the understanding of healthy ageing. In their definition, they considered the individual ageing healthily to be free of disease; functioning at a high physical and cognitive level; are socially engaged, and are productive. This conceptualisation of healthy ageing has not been spared by critics who claim that it is only attainable by the minority. Three alternate definitions considered other dimensions on the concept of healthy ageing as the approach by Rowe and Kahn only covers a small proportion of the ageing population. In recent

thinking, less emphasis has been placed on disease avoidance. This reasoning eventually embraces the greatest number of individuals experiencing healthy aging (McLaughlin, Jette, & Connell, 2012).

With healthy ageing, much is required from the individual as they have to participate actively in the process which demands optimising opportunities for good health. Through this active participation, individuals can enjoy independent and high quality life. Some of the activities required include regular exercises, good nutrition, health screening and enough sleep among others. These activities would help the individuals in successful ageing which is discussed below.

Successful Ageing

There has been a steady rise in life expectancy at birth with higher expectations of older age. Ageing should not merely be increase in number of years, but these additional years should not be miserable. Thus, the expectation of older age raises concern for many on how to age successfully. Successful ageing according to Bowling and Dieppe (2005) can be possible through promoting healthier old age. An issue raised by the authors is on the definition of "successful ageing" and who should define it. Besides the appropriate definition, the authors recommend a policy for a programme that promotes successful ageing commencing from middle ages instead of supporting the elderly with chronic conditions. Programmes instituted early may be seen quite useful since prevention is better than cure. Thus, although supportive services are good for the disabled elderly, these services are provided a bit too late. Hence it would be quite beneficial to the elderly if

awareness is created in them on DHH and the resultant home accidents some of which are quite fatal.

It is believed that the older adult's view on ageing will raise definitions from the elderly themselves. In a survey of older adults, their views were compared on successful ageing with those definitions available in the published literature. Phelan (2004) found that the older adults surveyed reported multidimensional views about successful ageing. These views involve beliefs about physical, functional, social, and psychological health which paint a picture of a narrowed definition in the existing literature compared with their own. From the study, a clearer picture has been presented on the multiple factors that comprehensively form successful ageing. Hence, the functional ability of the older adult is just too inadequate to describe the elderly as enjoying successful ageing. Martin, Kelly, Kahana, Kahana and Poon (2012) have reviewed immense literature on successful ageing. Other views on successful ageing stress on subjective versus objective perceptions of successful ageing, and further relate the concept to studies on healthy living and exceptional longevity (Martin, Kelly, Kahana, Kahana, Willcox, Willcox & Poon, 2015).

Though a natural process that awaits everyone, life changes can guide individuals to age in a healthy manner. It is against this backdrop that Healthy Aging Health Center (2008) claims that lifestyle choices have more influence on how well our body ages. Lifestyle that could lead to healthy ageing may not be known to all except through health information programmes. Hence, for the elderly in particular to benefit from such programmes, regular health

education is required in the related topics such as awareness and prevention of accidents among the elderly; this can be most beneficial if it is done earlier in life.

It is important to understand the repercussions of healthy or successful ageing. Persons who enjoy successful ageing are still able to function at their old age. Nevertheless, Phelan (2004) claims successful ageing goes beyond the mere ability to function. Rowe and Kahn (1997) made a clear distinction between "successful aging" and "usual aging". From their distinction, "usual aging" refers to the elderly functioning well but are at risk for disease or disability. On the other hand, "successful ageing" goes beyond functional ability to include maintenance of high physical and cognitive functional capacity, and active engagement in life.

Rowe and Kahn (1997) recommended some factors that positively influence the ageing process and enhance quality of life in later years. In their suggestion, they stated: 1) Avoid Disease and Disability; 2) Maintain High Cognitive and Physical Function; and 3) Stay Involved With Life and Living. It is against this backdrop that Livingston, Cooper, Woods, Milne, and Katona (2008) reviewed the published literature on successful ageing and related quality of life. In the longitudinal study, Livingston et al. came out with the most predictors of successful ageing as mental health and social relationship. The concern about safety environment relates to avoidance of disability by Rowe and Kahn. For instance, DHH may end up rendering the elderly disabled through an accidental fall or any other injury at home if home safety is not adequately ensured. The present study also covered issues on home safety,

dangerous areas, and some accidents of the elderly at home. To be precise, the first suggestion raised by Rowe and Kahn is related to the present study with the focus on DHH which could result in disease and disability.

Much as everyone would make frantic efforts to optimise ageing, this may not be easy for all persons. This may be attributed to the complex nature of ageing. Theories of ageing now follow to examine the differences in the ageing process.

Theories of Ageing

In Social Science, gerontologists are not only interested in how many people are ageing but also in how people age. This concept of ageing has been the focus of the social scientists in order to have adequate information on what can be done for the ageing population. Ageing (senescence, as it is sometimes called) largely refers to a multidimensional process that involves physical, psychological, and social change. Countless theorists have attempted to explain the process of ageing, but it is apparent each of the theorists could only *partly* (emphasis) explain the concept. There are many types of theories categorised under two main biological theories to explain human ageing as: 1) Programmed and 2) Damage or error theories (Jin, 2010; Stibich, 2015). Besides the biological theories are other theories that focus on psychological and social means of successful ageing.

Programmed Theory

Under the programmed theory propounded by Jin (2010), three sub-categories have been identified as programmed longevity, endocrine theory,

and immunological theory. In programmed longevity, certain human genes serially switch on and off to end up with ageing manifested during deficient states of such genes. Programmed theories accept predetermined fixed schedule triggered by genetic programmes. A thorny issue arises in accepting the programmed theory. It is hard to accept how different programmes exist within the same human species and switch on and off resulting in age differences at death.

Hormones in the endocrine system regulate the pace of ageing in the endocrine theory where the hormones regulate the functions of their target organs directly or indirectly. The activity of the target organs therefore fall with health implications whenever there is marked reduction in hormonal support to the target organs. For instance, a fall in sex hormones in mid-forties causes health problems in both sexes. The criticism against this hormonal role is why some people still live healthily for over four to five decades following such menopausal problems.

The body immune system is not left out in the explanation of ageing. Reduced bodily immunity explains how lowered immunity could result in increased vulnerability and subsequent weakening of the body that renders the body prone to infectious diseases and with steady course through ageing and death. The immune system can remain quite functional to protect individuals from infectious diseases thereby helping to prolong life. The question is however raised on non-communicable diseases that may set in earlier in life resulting in early ageing and death for some people. All three explanations from the programme biological theory appear so strong and laudable yet do

not explain every aspect of human ageing partly as a result of the weaknesses identified, hence the need to consider other accounts on ageing.

Damage Theory

The other side of the biological theory propounded by Jin (2010) is concerned with structural afflictions on humans and regarded as damage or error theory. Defensive or protective genes have some role to play in ageing. In this damage theory, cells and tissues go through wear and tear over time with the outcome as ageing. This gradual process inevitably ends up destroying the body resulting in various degrees of degeneration. This wear and tear theory is credited to Dr. Weisman dating back to 1882; and sounds most credible since it logically applies to most organisms.

The other line of argument from the error theory is on high basal metabolic rate as the basis of mortality. Rate of oxygen basal metabolism of the organism is the basis of this explanation. Accordingly, the greater the rate of the basal metabolism for an organism, the shorter the life span. The increased metabolic rate leads to earlier organ damage hence the high mortality in such persons. The third example of the damage theory involves excess sugars and proteins in the blood. These sugars may result in protein molecules "sticking together" (cross-linking) that eventually damages the cells and tissues of the body (Stibich, 2015). The changes occur at the level of individual cells, yet the cellular changes can translate into significant dysfunction of body systems. For example, cross-links are associated with the loss of elasticity in skin and muscle tissue, stiffening of blood vessel walls, changes in the lens of the eye, delayed wound healing, and reduced joint

mobility in ageing individuals. Related to this study these changes account for the intrinsic factors within the elderly that would be predisposition to domestic accidents.

The last but not least is the free radical theory in the damage theory. Free radicals are atoms or molecules with single or unpaired electrons when oxygen interacts with certain molecules. These free radicals as in the general basis of the damage theory cause harm to the body cells with the outcome as gradual irreversible damage and death. Criticism against the role of the free radicals is the defensive role of antioxidants (Vitamin C and Vitamin E) which prevents the harm on the body. This makes it difficult to accept the damaging role of the free radicals alongside with the defensive role of the antioxidants.

Stibich (2015) further argues on the role of genes in ageing by suggesting that genes may help an individual to live longer. The experiment in animals could not be fully translated to persons but researchers found that genes could explain up to 35% of the differences that occur in ageing in persons. This was based on the fact that there are specific genes which account for persons living longer. Stibich additionally contends that some vital body systems gradually deteriorate structurally and physiologically; nevertheless, he is fast in concluding that many of the causes of ageing could be modified through the individual's behaviours particularly, through our lifestyle. Related to the present study, ageing can be enhanced through promoting home safety measures; home accidents could be the last factor to cause pre-mature death in some elderly persons who may be victims to home accidents and their consequences all being the outcome of DHH.

Psychosocial Theories of Ageing

It is the wish of everyone to age well in life. The psychosocial theories focus on psychological and social means of successful ageing. Different theories have come under this and will be examined briefly in relation to the present study.

A social theory that attempts to explain ageing is the disengagement theory. The theory uses social interaction to explain the phenomenon arguing that it involves natural withdrawal of the aged from the society. This is considered as a natural process where the withdrawal results in decreasing interaction that naturally exists in the aged and the people in the environment. Besides the social isolation, the elderly also experience the feeling that they are no longer accepted in the society; worse so there is nothing that they could offer to the society.

A critical problem with this theory was on its assumption that the elderly had nothing doing following the disengagement. This is debatable and inapplicable to some of them as they serve as rich store of wisdom for their societies (Kokkola, 2014) and therefore not totally disengaged with the health implications.

Activity Theory

This psychosocial theory explains how individuals can engage in a full day of activities and maintain a level of productivity to age successfully. Hence, the focus is on the individual to have more to do and age better, happier, and healthier. The activity theory therefore sounds more positive if the individual can have commitment to their activities. Critics of this theory

argue that it is not just enough for people to be busy, but that life should also be fulfilling. In addition, the theory lacks lifespan coverage and only waits till a person gets into the aged class.

Continuity Theory

In this psychosocial theory, the focus is on the individual continuing with a successful life led earlier. Thus, persons who have done well earlier in life would maintain the same. What even makes the theory more successful is if members of the same age group could be available to make the transition easier. A limitation of this theory is that one has to go through healthy habits during their middle age; else they would not hope for any successful ageing and only continue to deteriorate in older age with their poor lifestyle.

The theories discussed so far have been inconclusive with almost all the theories having some form of limitations or criticism. This situation therefore gives room to consider other views of ageing.

Widespread Views of Ageing

Different authorities think about ageing in different ways. Ageing is the sum of the changes that occur in members of all species as they grow older. These changes are quite complex commencing from the prenatal stage in life. In humans, Cora (2003) stressed that these changes commence from conception and progress throughout life to death. Moody (2002) considers ageing to begin at birth. The medical definition for ageing considers it as the process of growing old (Medical Dictionary, 2006). In the process, there is failure in the replacement of cells by their numbers such that full functional

capacity cannot be attained. The decline particularly disturbs neurons rendering them incapable of mitotic division (Medical Dictionary, 2006). The decreasing numbers of the neuron in particular ultimately affects mental health. It is logical that ageing should begin from conception since it is the product of conception that grows to maturity before birth as Taylor, Lillis, and LeMone (2005) argue that it is a gradual process of continued development and maturation.

Insel and Roth (2004) rather attribute the cause of ageing to a variety of processes that may be due to environmental and biological factors. We expect such factors to have equal effects on persons in the same way; through this, ageing can occur at the same time. These varied views on the onset call for a redefinition of ageing. In any attempt to reach a more comprehensive definition of ageing, the different types of age need to be critically examined.

Perspectives of Classification

Ageing is quite a complex phenomenon; hence, different perspectives are available to classify the age of the individual. This complex situation gives room for different meanings given to ageing and its implications on the individual. Rosenbloom Jr. (2012) identified biological, psychological, chronological, and physiological ages as types of age. Among these different types of age-related characteristics, chronological (legal) age is the most common definition of age. Rosenbloom Jr. describes chronological age as the number of years, months, and days that have elapsed from birth. Legal age, on the other hand, defines such things as voting rights, retirement age and others where the number of years in one's life is required.

The term “functional age” is used when chronological, biological and psychological ages are combined. Using these various age-related characteristics, ageing is viewed as a complete concept and can be better understood when we examine the various types together. For instance, chronological age cannot be the same as functional age. Two persons can be 90 years old, but this does not mean that each person is functioning like a 90-year old, as persons age differently (Holmes et al., 2009). When persons are ageing, their body organs and systems advance and consequently experience normal physical changes. The states of decline in body functions are some of the situations considered as intrinsic factors that render the elderly vulnerable to home accidents, if the domestic hazards are predominant. Therefore in the present study, an elderly person at 70 may be a vulnerable person whereas the other at 90 years may not. Berman et al. (2008), for instance, explained that these changes associated with ageing are attributed to degenerative processes in the body. These render the individual weak in function which possibly can affect their social and psychological life.

Basaraba (2013) also contributes to the types of age, and indicates that legally, chronological age is recognised to be exactly how old a person is. Hence chronological age is the number of years that someone has recorded according to the calendar. Consequently, by the turn of year on the calendar, the person makes one year in life. With this approach, a fixed chronological point is required in life to qualify persons to enjoy some privileges and also face some penalties. For instance, chronological age specifies who a child, an adolescent, and an adult is. Specific ages are known in different countries

when people can vote and also get married. In Ghana, the compulsory retirement age is 60 years; but the elderly cannot benefit from free health services until they are 70 years. Despite the legal compulsory retirement age, able-bodied persons could request for post-retirement contract provided their services are needed in the enterprise. This would be a case where two different people would attain 60 years chronologically and yet function differently.

Classification with Age Structure

In human growth and development, old age is the stage with the longest duration, especially with the ageing population. In this study, the period commences from 65 years, and ends at any age. Baltes and Smith (2003) and Cora (2003) identify three ranges of the elderly as the *young old* (65 to 74 years), *middle old* (75 to 84 years), and the *old-old* (85 years and older). Later, on the same categories of the ageing population, Santrock (2006) prefers to label them as the young-old, old-old, and oldest-old respectively but with no changes in the age ranges. The importance of the categories is to note which category is increasing in number and whether a particular category is uniquely prone to a health problem. For instance, Velhal (2012) reported that falls as a domestic accident is common in elderly over 80 years.

The onset of ageing the individual also deteriorates progressively, as there is gradual decline in the elderly person's lifestyle. The ability to do some basic things in life decreases gradually. Wiener and Hanley (1989) identify eating, bathing, dressing, toileting and transferring as basic tasks of everyday life which some elderly particularly the oldest-old require assistance in one or more to perform. Attempting to perform these basic tasks sometimes may

make the elderly vulnerable to domestic accidents, as their frail body would not support them in the process. Santrock (2006) however makes a strong point that some elderly above 85 years are active instead of the popular opinion that they are frail and always need assistance. This assertion does not however dispute the fact that the few frail elderly would require assistance.

Ageing process gradually results in changes in most body organs and thus affects most systems. The reproductive and the musculoskeletal systems are often affected in the ageing process. Other areas that are affected in ageing include hair and height. The skin becomes less elastic and often wrinkled. As regards the senses, vision and hearing are most affected (Healthy Aging Health Center, 2008). Degeneration in the musculoskeletal system and reduction in vision are crucial issues of ageing that are strongly related to domestic hazards and accidents of the elderly in the present study (Stibich, 2015). The severity of these changes can decrease the independence of the elderly to a more dependent state where they may be unable to perform the basic everyday activities. These situations compel them to depend on a care giver, or force them to do things for themselves during which they may experience home accidents due to changes in the musculoskeletal system and vision. Physiological ageing affects everyone with the resultant health implications which are serious public health concerns of nations globally.

The ageing health problems become further compounded when accidents start to be a worry for the aged in view of their vulnerability. Theories of accidents are covered to identify the types that are common in the life of the elderly.

Theories of Accidents

The nature of accidents in all spheres of life with the potentially disastrous outcomes has become an alarming issue to many people. There was the need to consider accidents seriously and thus provide preventive measures to reduce fatalities, if practicable. Accidents continue to be a worry to humanity, as Santrock (2006) ranks accidents as the seventh leading cause of death among the older adults. For the elderly, accidents result from a fall at home and Taylor et al. (2005) stress that the elderly have more difficult time recovering from fall injury. Goetsch (2007) discussed eleven models of accidents. These models covered very wide areas of human activities, and only those that were specific on domestic accidents of the elderly are covered in this work.

Accidents occur anywhere in one's life; they can occur at the workplace from occupational hazards, or on the road as road traffic accident (RTA) and at home to be regarded as domestic/home accidents (Shawon, Hossain, Rahman, & Ima, 2012). Naturally, accidents are not common expectations but the frequency of home accident is increasing making it a serious public health problem. The relevant models suggested in Goetsch (2007) are a) Domino theory, b) Systems theory, and c) Combination theory of accident causation and these are discussed in the sections that follow.

Domino Theory

According to Goetsch's (2007) models of accidents, the Domino Theory postulates that a series of factors could be responsible for accidents to

occur. Five factors have been identified as accounting for these accidents: ancestry/social environment, fault of person, unsafe act/mechanical/physical hazard, accident, and injury. These factors are quite complex and are rather more general; however, some factors are related and hence can be considered in this study. Two of these related factors would be discussed.

Firstly, on the fault of the person, it is possible that the elderly are able to identify some weaknesses in their health status, yet they insist on undertaking some activities by themselves. This may be regarded as a situational factor related to the activity being done, as in they rushing to the bathroom. It could also happen that there might not be anyone available to assist them at the time of the accident. For instance, Lee et al. (1999) reported that 79% of the elderly studied in Hong Kong were living alone when they experienced home accidents. It is common for someone to mount an object (for example a stool) to remove items from a height (which at home is often from shelves). This may be necessary when individuals have to manage life by themselves mostly in situations where they live alone. Thus, through no fault of the elderly, preventable domestic accidents could not be avoided; and the elderly becomes a victim with the fatal consequences. This theory is acceptable since most homes have shelves mainly erected at the kitchen where extra items are placed to create more space at the kitchen.

Secondly, physical hazards could be attributed to the dangers in our home environments. According to WHO (2013), human environments comprise latent threats to human life. Slippery floors and inadequate illumination are some environmental hazards mentioned by Tomey and

Sowers (2009). Trembley Jr. and Barber (2005) recognised tripping over objects such as toys and peels on the floor as the most common dangers at home. The Violence and Injury Prevention Program (VIPP) of Utah Department of Health (n.d) was more direct on slippery or wet floors, uneven floors and surfaces, poor lighting and unstable furniture as increasing the chances of the adult falling. In addition, passing through walkways congested with furniture and household items could be some of the inevitable environmental physical hazards. Walkways could be congested if a large family resides in a small apartment. Coupled with the vulnerability of the elderly, we can explain accident occurring in the elderly with the physical hazards in the Domino Theory; hence, making this theory acceptable in this work.

Systems Theory

The systems theory of accident causation according to Goetsch (2007) postulates three component factors. These are: a) The person (host), b) Machine (agency), and c) Environment. The systemic view considers the performance of the system as a whole. Hollnagel (2004) mentioned this view, stressing that several causal factors such as human, technical, and environmental factors exist coincidentally in a specific time and space to cause accidents. It is obvious that these factors are conspicuous in the aetiology of occupational and road traffic accidents. Systems theory is more closely related to the present study except for its agency (technical) component. The other two components are discussed here as they relate to this study.

Firstly, the "Person" component applies to the elderly (person/host). Factors such as age-related decline in function, disorders, and adverse effects of drugs, degenerative conditions, frailty, and decreased vision are but a few of the host conditions in the elderly which could also be described as the intrinsic factors. On age and gender of home accidents, Pi, Hu, Zhang, Peng and Nie (2015) found females as having higher incidence of falls; 50% of the falls occurred in persons above 80 years. Other investigators found different ages in relation to home accidents (see Huang, 2005; Lim, Jasvindar, Normala, Ho, Yau, Mohmad, Lai, & Sherina, 2014; RoSPA, 2015). Sollitto (2015) also in support of the systems theory identified lack of physical activity, impaired vision, medications, and diseases as most likely to cause falls in the elderly. The "person" theory is appropriate here since these intrinsic factors then act as predisposition to increase elderly vulnerability to accidents when home factors precipitate the situation.

Secondly, Tomey and Sowers (2009) consider the environment as having a lot of hazardous situations in our homes and this is supported by WHO (2013). These environmental (extrinsic) factors can be "hidden" to increase the risk of falls independently or, more importantly, by interacting with intrinsic factors. Edwards (2013), in support of this, describes these hazards as "hidden in plain sight" which implies that they are available but we cannot easily detect them. Risk is highest when the environment requires greater control of posture and mobility as in walking on a slippery surface or in an unfamiliar (new home) environment. Highly polished surfaces are often very slippery. Courtyards that are un-cemented are sometimes slippery mostly

in the rainy seasons. In a new home, residents may not be familiar with the set up; hence, initially, they may bump into objects. An accident in such homes could occur anytime but may be more frequent and serious at night. Regarding the time of accident, both Bhanderi and Choudhary (2008) and D'souza, Shringarpure and Karol (2008) found that the majority of the accidents occurred during the morning and evening hours; but Sudhir, Krishna, Channabasappa and Dhar (2014) established that most accidents ensued at noon. It is hard to explain the differences in time when the accidents happened.

An empirical investigation that supported the host and environment factors in the system theory was that by Bhanderi and Choudhary (2008). The aim of the study was to examine the incidence of domestic accidents in a semi-urban community in India. A semi-structured questionnaire was used to collect data from 796 households and the data was analysed, using a Chi-squared test. From the results, the incidence of domestic accidents was found to be 1.7%; while falls which was the most common accident reported was associated with age and with females. In this investigation, age and gender were considered as the associated host/person factors. RoSPA (2015) supports slippery floors as an environmental factor contributing to falls in the elderly; Botek (2015) in her investigation found obstacles such as rugs, furniture, and electrical cords in walkways to be high environmental factors in home accidents.

Combination Theory

Combination theory of accident causation is simply focused on the complex nature to the aetiology of accidents. The precept of this theory is that

factors from two or more models might be part of the cause. By this thinking, no single theory could thoroughly explain the cause of any one specific accident. This is related to the elderly in the sense that host factors and/or environmental factors could be responsible for falls in the elderly. In this study, host factors operate as intrinsic causes which increase the vulnerability of the elderly and combine with physical hazards, fault of person and environmental hazards (extrinsic factors) as causes of domestic accidents in the elderly. Thus, in order to prevent domestic accidents in the elderly, it is essential to consider the relevant theories in the aetiology of accidents particularly those related to the home and the elderly. Through avoidance of domestic hazards, accidents at home would be minimised and home safety assured. Going further to examine the epidemiology of domestic injuries can help understand the DHH that the elderly are exposed to.

Empirical Applications

Epidemiology of Domestic Injuries

The frequency and risk factors in home injuries were studied in Malaysia by Lim et al. (2014). In the investigation, it emerged that 5.8% experienced some kind of home injury in the previous one year; the common location was the kitchen (81 of 4,842); and the rates were significantly higher in females (7.4%) than in males (3.9%). In a separate investigation in United States, Oyetunji, Ong'uti, Bolorunduro, Gonzalez, Cornwell and Haide (2011) analysed data extracted from the National Trauma Data Bank's National Sample Project (NSP). The data from subset of hospitalised patients who

sustained injuries for over a 4-year period was used in the study to test the hypothesis that the home remains a significant source of injury for the elderly. The sample was classified into two groups based on the location of injury i.e. home versus non-home.

Out of 98,288 patients who were 65 years and over (a mean of 77 years), 42% of the injuries occurred at home, followed by those that occurred in motor vehicle crashes (25%). The researchers concluded that, home injuries remain the main cause of elderly hospitalisation following trauma. This finding implies that with the steady increase in the elderly population (together with DHH), hospitals would continue to record higher cases of domestic accidents for the elderly. These researchers stressed the need to create preventive measures to avert elderly domestic injuries. The study was limited as the data employed a retrospective analysis; and also that the home living conditions and co-morbidities of the elderly were difficult to tease out. It could be possible that the home might have a lot of hazards which would require eradication as the first step to the solution of the problem. The living conditions and co-morbidities of elderly vulnerability to home accidents are discussed in what follows.

Vulnerability to Home Accidents

A study by Evci, Ergin, and Beşer (2006), in the Aydin Province of Turkey found a tall list of factors associated with having a home accident. Some of these are poor housing conditions, being a female, living alone, having a chronic illness, physical and hearing disability, wearing eye glasses, inactivity, using assistive devices, and taking more than four drugs. With the

exception of poor housing conditions, all the other factors are intrinsic, that is, host factors in aetiology of accidents (Tomey & Sowers, 2009).

The increasing number of home accidents and the fatal consequences particularly in the elderly (Moeller, 2013) have increased the need to intensify the search for the vulnerable factors. Donatelle (2001) stressed that the older group in particular are vulnerable to unintentional injuries in the home. Also, the Utah Department of Health (n.d) has been so much concerned with vulnerability and emphasise age, gender, health conditions, medication, lifestyle, and environmental hazards as the factors that may contribute to the older adult falling at home.

Demographic risks causing home accidents in the elderly have also been studied by some scholars. Lim et al. (2014), for instance, studied the risk factors in the occurrence of home injuries among the aged in Malaysia, using 4,842 subjects. The researchers were interested in injuries that were sustained within the previous year. Women aged between 70 and 74 years were also found to suffer more home injuries in the sample. Gender and marital status emerged clearly as factors that cause home accidents in the study, with married elderly more protected from fall injury than divorced/widowed or singles. It is not clear what advantage was available in these demographic variables, but it is suggested that they could be supportive to each other in household activities during which an accident may occur. This brings into the lime light the advantages in co-residence which we examine briefly at this point.

Solidarity living particularly among the elderly has its strengths and weaknesses. As regards its strength, the frail elderly, in particular have co-residents available at home. This practice of sharing a house would be an advantage to the elderly having limitations in physical functioning and would have co-residents available to provide both instrumental activities of daily living (IADLs) and ADLs as and when necessary. Independent living nevertheless, ensures that the elderly enjoy their privacy. Zimmer and Dayton (2007) in a study that covered 24 countries of sub-Saharan Africa found that 59% and 46% of the elderly lived with their children and grandchildren respectively. All things considered, the elderly have more to take in co-residence than independent living.

Gender as a factor in vulnerability to home accidents has been reported by other researchers (see Keskinoglu, Picakciefe, Bilgic, Giray, Karakus, & Ucku, 2008; Orces, 2013; Pi et al., 2015; Yu, Wang, Kittipanya-Nyan, Eng, & Cheong, 2009). These investigators found the incidence of falls to be higher in females. RoSPA (2015) also identified the female gender as one of the multiple risk factors. It is not clear how vulnerability gets skewed to females; perhaps, the general masculine nature of males could be to their advantage.

The study by Lee et al. (1999) indicated that over 45% of the patients had more than one disease at the time of the accident. These disease conditions particularly those that affect vision and balance could contribute to stumbling and falls. The elderly who struggle with chronic diseases were found, in another study by Evci et al. (2006), to be among those who had domestic accidents. The Centres for Disease Control and Prevention (CDC) (2015)

observes that 24% of elderly in nursing home fall from muscle weakness and gait problems. A high number of the sample (80%) who take some medication, as found in Lee et al.'s study also raises serious concern as medication-related issues are noted in home accidents for the elderly. Medications act on the body in different ways and may also produce side effects as occurs in analgesics and antidepressants (Robinovitch, Feldman, Yang, Schonnop, Lueng, Sarraf, Sims-Gould, & Loughin, 2012; RoSPA, 2015).

Huang (2005) attempted to determine among other things the variables that predict environmental hazards among community elderly in Taiwan. Elderly persons who were 65 years and over, numbering 1,212, were sampled using a cluster sampling method. From the study, 60.4% of the homes had environmental hazards. The significant predictors were found to be: living in an urban area, poor awareness of one's health status, family dysfunction, being older than 75 years, poor gait, and poor balance.

Injury risk has been a great worry to elderly and their care givers alike as mobility could worry the elderly as they advance in age. This informed Şimşek, Yümin, Sertel, Öztürk and Yümin (2012) to investigate the assistive device usage among 163 elderly persons. The results revealed that 31% of women and 19% of men use assistive devices. Using these devices would facilitate mobility in the elderly; nevertheless, their use is an indication that elderly mobility suffers in the absence of these devices.

Theories of accident have been propounded to explain the connection between dangerous factors and accidents. Shawon et al. (2012) reports that hazards and accidents are in direct association. Beyond these factors,

vulnerability of the victims is largely responsible for most accidents that occur. Vulnerability together with the nature of the hazard determines the specific type of accident that may occur. Although vulnerability to accidents is high in home accidents in the residence, safe home environment can reduce the injury rate a lot and the literature now covers home safety.

Home Safety

People have their sense of independence when they live at home instead of institutions as they have their freedom to do what pleases them. What the elderly in particular need in addition to independence in their homes is safety. The home is safe if the environment is modified to reduce potential harm. Lundy and Janes (2003) have developed Home Safety checklist as a form of guidance. In the absence of these, home safety becomes greatly sacrificed for domestic hazards and consequently accidents. But for the elderly in particular, it comes with high risk predominantly in some situations. For instance, some common dangers associated with the elderly living alone at home are falls and medication mistakes (Roche, 2010). Advancing years is not without its consequences on health in general. Among the elderly, it results to greater frailty which attributes to declining health and mobility (UMHS, 2007). States of unsafe home environment for the elderly was reported by Home Security Action [HSA] (2011). Rugs and carpets are found in most homes and are for different uses but also result in unsafe home environments.

Attention to home safety can be given through different means; some homes have these in place for safety of the elderly or are practised by the family. For instance, in a research conducted in India, Aras, Narayan, D'souza

and Veigas (2012) found some safe home practices varying in types of families and literacy when they interviewed 135 elderly 60 years and above. Home safety practices were found in joint families where the elderly kept the passage linking bedroom to bathroom free from obstacles.

From Aras et al.'s study, elderly from nuclear family and literate elderly were found to have a lot of good practices some of which were walkway free from obstacles, adequately lighted stairway, and replacing things after use. Literate elderly were also particular by replacing things after use and walk in rooms that do not have obstacles. On lighting of stairways, nuclear families were found performing better. Nonetheless, there were some unsafe practices reported from the study. For instance, some of the sample did not clean up spills whereas others also walked through wet floors. The researchers suggested safety practices and awareness to prevent home accidents among the elderly.

Slocum (2010) commented on conditions that contribute to safety at home. Some of these conditions were identified as good lighting, slip resistance floors, as well as knowledge and facilities for fire detection and prevention. The author emphasised the need to take care of the individual's general health through exercises to promote safety at home. It is necessary to promote general health through regular exercise to promote mobility and balance particularly in the elderly. In addition, an annual eye test has been recommended for prompt detection of any visual problems that might be developing in the elderly. Floyd (n.d) also recommended annual eye examination as a means of preventing home accidents in the elderly. On taking

wrong medications, Slocum suggested that the elderly in particular should not hesitate to check with the pharmacist if they are in doubt on the dosage of any new medication they should be taking. Regular medical examinations as well as serious attention to environmental hazards should be regarded supreme to ensure home safety in health issues of the elderly.

The indoor home environment comprises different areas that indeed are home requirements to ensure survival for the residents and also to raise the quality of life for the family. For instance, the kitchen has been structured and equipped specially for preparation of food. The bathroom is structured to ensure the maintenance of personal hygiene whereas we rest in the sitting room or courtyard depending on the social class of the family. After the day's work, we retire to rest in the bedroom. Thus, it is difficult to live without these areas at home, although some can be hazardous to human life. Life can however continue without any threat to our health if we can make these areas safer through modification or being extra careful particularly as we age.

We can ensure safety of the home through different means. Some of these measures can be structural modifications and others through extra carefulness of the residents. Structurally, bath and stairs can have wooden supports for the elderly in particular to hold on. Floors can be kept tidy and free from many obstacles that stand in the way to obstruct free movement. Furniture should be as simple as possible and arranged carefully to allow for free passage. Additionally, furniture without castor wheels is better for the elderly to prevent the furniture from moving about with the elderly who struggles with it to take a seat. Still on safe movement, the entire environment

should have adequate illumination for both day and night particularly around corners and stairs. Where the elderly live in storey building, it is recommended that they should relocate to the ground floor to avoid climbing stairs which may not only be a nuisance to them but also likely to end up in falls.

Safety measures are very crucial issues in life; people would promote home safety practices if they are better informed about the dangers which sometimes may escape identification. The literature therefore continues with awareness of DHH and accidents.

Awareness of Home Hazards and Accidents

Lack of knowledge on hazardous situations often ends up with disastrous consequences. Thus, the dearth of information about home hazards tends to increase the problems at home resulting into accidents.

Although everyone at home can be a victim, Huang (2005) found that the elderly in particular, record the higher numbers of these accidents. All residents should be aware of some pertinent things about domestic hazards such as what exactly they are; their common locations at home; prevalence of the accidents from these hazards; types of accidents (Majori et al., 1999); consequences of the accidents (Olayele, 2009); and precautions to take and live with them. Thorough health education on these hazards would not scare the elderly but will rather keep them alert and more cautious when moving about in some of these areas at home that were identified by Ang and Lim (2008), Newton (2008), and Shawon et al. (2012). On awareness about the consequences of home accidents, Greig (2007) argue that it can serve as motivation in adhering strictly to the habits geared towards safe livelihood. In

United States, Utah joined other states to recognise September 23, 2011 as the fall prevention and awareness creation day (Utah Department of Health, n.d.).

At times, household members unknowingly engage in unsafe practices. Ang and Lim (2008) found 75% of their subjects engaged in unsafe practices at home. In creating awareness in the elderly on home accidents, it is essential to emphasise on the dangers that slippery floors or paths, worn rugs, uneven surfaces, and trailing flexes pose at home. Huang (2005) found that 60.4% of the homes studied were found with environmental hazards. An under-rated danger at home is loose or badly worn footwear. Thus, where imbalance and instability are problems of the elderly, well-fitting shoes can save the elderly and awareness needs to be created on these. Grab rails in the bathroom should not be undermined as they rather provide support for the elderly and must be emphasised.

A study by Chirico, Boyle and Johnson (n.d.) also sought to identify the extent of elderly people's knowledge and awareness of home safety issues in Pittsburgh, Pensylvania (United States of America [USA]). Recruitment into the study was on voluntary basis involving a convenience sample of 67 elderly persons. Following pre- and post-tests administration, an analysis was done utilising paired t-tests. In the results, it emerged that the elderly population is interested in learning about effective strategies to eliminate risks associated with the home. They concluded that the elderly population is in need of more information on home safety, and that the knowledge and awareness of these issues can be improved with educational intervention. Participants in Chirico et al.'s study coming forward to express interest in

filling the knowledge gap raises a significant issue in elderly health matters. An obvious critique about the work done by Chirico et al. is that the work is undated; nevertheless, health education on home safety issues can never be an out-dated idea.

In a qualitative study, Anderson, Thompson, and Gearing (2000) used the health belief model to explore the perceived risk for falls among the elderly living at home. Twenty-three men and women aged between 64 and 89 years participated in in-depth interviews on perceived risks at home for the elderly. An objective of the qualitative study was to identify use of fall stories to increase awareness of risks at home. In the results, cues such as falls and learning about the experiences of others raised awareness of fall susceptibility and severity of outcome.

The sample size for the Anderson et al.'s (2000) study was quite small, but the health belief model used in the research would help those who had not been victims to seriously consider the health education and prevent such occurrences. Awareness created through falls stories could also ensure that the other vulnerable elderly persons would be extra careful during their movements at home. To the other elderly, such stories may however create undue fear in them whenever they made an effort to move about at home. This however should not be the case, but rather help them to be extra vigilant on the hazards at home as well as their location since the home has different types of domestic health hazards which are explored here.

Types of Domestic Health Hazards

The perfect home has the required features which serve different purposes to make life possible in the home. Unknown to most persons, some of these features even in their perfect state are dangerous to the elderly who are considered vulnerable. Many homes have environmental hazards. Some of these environmental conditions result in falls and other accidents for the elderly. It is most often dangerous as the person may sustain various degrees of injury to the body part on falling. Often, these injuries lead to hospitalisations and disability in the elderly as has been reported by D'souza et al. (2008) that 47.3% of their subjects received treatments from physicians.

The study by Ang and Lim (2008) was on the common types of environmental hazards that the elderly living in 1-flat apartments face in Singapore. In the study, 41 male and female respondents, 65 years and over, participated in the home safety checklist assessment. In addition, field analysis of the subjects' home was done. The results showed that the kitchen harboured most hazards. Concealed at most places in our homes are therefore dangers to human life (Edwards, 2013).

Electrical hazard was the least danger that emerged from the Ang and Lim (2008) study. Approximately, 75% of the subjects engaged in unsafe practices at home, and each home had an average of 12 unsafe items that can lead to risk of injury. The researchers were able to identify the safest and the most unsafe places at the home of the elderly. The study therefore serves to enlighten the elderly on the safest and most dangerous part of the home for

extra carefulness. Riley-Smith (2015) on his part observed that some two thirds of elderly homes in Britain lack electrical safety measures.

Ang and Lim's (2008) study is significant for four reasons. Firstly, the researchers did not only consider the checklist assessment data from the participants, but also used field analysis to cross-check the participants' information. This was a means of cross-checking information from two different sources in order to bring out the differences if there should be any biases in one method of data collection in a research. The same results obtained from both sides therefore give credence to the study, and therefore rendering the results very alarming. Secondly, with as much as 75% of the participants reporting 12 unsafe items in the home raises an issue about unsafe situations of our homes regarding domestic accidents. Thirdly, the study came out with safe and unsafe environments. If this research finding could be effectively disseminated to the public, that could be great leap in prevention of home accidents not only in the elderly, but in the entire family. Finally, in order to remain safe and age healthily, the elderly person who is well informed about safe and unsafe home environment would obviously ignore the unsafe areas and prefer spending most of the time at the relatively safer place at home.

The VIPP of Utah Department of Health identified environmental hazards as a common factor increasing the chance of an adult falling (Utah Department of Health, n.d.). From the accident theory, most of these accidents could follow hazards. Some of the hazards identified by VIPP that are unique to the home include slippery or wet floors, uneven floors and surfaces, poor

lighting, and unstable furniture. These hazards were similarly expressed by Rosen, Mack and Noonan (2013). Slippery floors and uneven walkways have been described by Tomey and Sowers (2009) as environmental barriers and challenges in the conceptual framework. Other hazards may include rug, clutter, stairs, poorly illuminated rooms, and possibly cords. Rosen et al (2013) reported that rugs and carpets were responsible for 45.8% and 54.2% of falls respectively; these sent the elderly 65 years and above to the emergency units of 66 US hospitals for treatment.

The hazards mentioned by VIPP are not peculiar to the American world. A careful examination of some homes in the study area revealed some of the environmental hazards. Some of the homes can be slippery during the rainy seasons. Similarly, poor lighting conditions can be common factors with the rural areas or homes without adequate lighting system. The issue of DHH is explored in research question two of the present study; and the relationship between hazard and accident is covered here.

Domestic Health Hazards and Accidents

Domestic injuries as the cause of morbidity and death in the elderly 65 years and over have become irritating in elderly health and these injuries are the results of unnoticed DHH. This is because the home environment has been found to be hazardous to the elderly, but it is not clear how many of such hazards can be found and which of them is the commonest. Carter, Campbell, Sanson-Fisher, Redman and Gillespie (1997) investigated the prevalence of environmental hazards, and the safety measures they can implement to prevent

the injuries. In a cross-sectional survey, 425 people aged 70 years and older in Australia responded to structured interview in the study.

The results of Carter et al.'s (1997) study indicated that 39% (n = 164) of the homes assessed had more than five hazards, with 80% (n = 342) of the homes having at least one hazard. Bathroom was found to be the most hazardous area of the home. This result of over a third of the homes having five hazards is quite frightening. If 80% of the homes also register at least one hazard, then it implies that there is a threat to elderly life in almost every home. On the cause of injury, 88% (n = 374) identified falls as the most common cause, followed by burns (liquid or dry), then poisonings, medication overdose, electrocution or other electrical mishaps. As much as 87% (n = 368) were able to name at least one safety measure.

A significant finding about the study was that 30% of the participants who rated their homes as very safe (n = 289) actually had more than five hazards. This infers that these 30% could not even identify the hazards in order to be careful about them and consequently were living in hazardous environment (WHO, 2013) and these dangers Edwards (2013) contend that were unknown to them; as a result, an accident could occur at any time. Carter et al.'s (1997) study is also very significant in the sense that over 80% were able to mention at least one safety measure which implies that if health education is taken up seriously, several homes could be rendered safer with greater reduction of the home accidents particularly in the elderly.

A descriptive study of 415 Chinese elderly who were 60 years and over was conducted to identify the hazards found in the elderly homes. In the study

by You, Deans, Liu, Zhang and Zhang (2004), the Home Fall Hazard Assessment (HFHA) tool was adjusted and used in Chinese homes. In the results, it was found that a large discrepancy existed between the actual hazards assessed by trained nurses and the perceived hazards reported by the participants ($p < .001$). The study suggests that the involvement of older adults in the assessment process will alert the elderly on existing risk factors in their everyday life. This study has raised an important issue on the elderly, DHH, and domestic accidents. Since the elderly did not know much about the hazards that existed in their homes, they could not avoid these hazards in order to escape the accidents.

The occasional presence of home hazards may be regarded normal since homes in their very new state are not without hazards; nevertheless, if the number of hazards increase arbitrarily, it becomes very frightening as it is an indication of domestic injuries. Lowery, Buri, and Ballard (2000) studied the prevalence of environmental hazards in their patients' homes. The investigators concluded that a rigorous assessment of the patient's environment revealed multiple rectifiable risks. There were hazards found in 95% of the patients' own home compared with 74% of residential home environments.

The literature is rich on prevalence of DHH. These dangers exist as extrinsic factors and together with the intrinsic factors in the elderly they pose great danger to elderly health. In the ensuing paragraphs, the link between hazards and accidents particularly as they affect the elderly at home are examined.

Human habitats contain potential threats to individual safety (WHO, 2013) and these threats are of different severities with some inherent in the home structure. For instance, moving from one level to the other, or exposure to naked electrical wire in the home carries some fear of falls and occurrence of electrical shock. Thus, an inevitable danger or risk exists in every home even though it is often foreseeable. A potential threat is therefore common in our homes which can be eliminated or carefully watched at home. In everyday life, these potential threats are likely to cause harm and thus are referred to as hazards.

A hazard is a situation that can be a possible source of danger and is capable of causing accidents. For the fact that the danger is foreseeable implies that it can be reduced or avoided, which eventually leads to reduction of home accidents which is the basis of home safety. The safety of individuals in the home depends on how to identify and avoid these hazards or live safely with them to minimise potential harm, if they are not preventable (Briggs, 2007). Thus, hazardous situations have the tendency to cause accidents in human life particularly in the elderly where their high vulnerability precipitates the occurrence. Nevertheless, an awareness of these hazards would go a long way to prevent such home accidents. Awareness of these hazards has been covered in research question one of this study.

Hazards and accidents are in direct relationship with each other, with the consequence being ill health (Shawon et al., 2012). A hazard is anything or condition that causes or has the potential to cause injury. An accident, on the other hand, is an unplanned event which has the potential to disrupt normal

life through causing fatality or injury. In other words, hazards precede accidents in most cases since the hazards make one prone to accidents. It is therefore essential to undertake risk assessment to ensure accident free environments both at home and elsewhere. Among other things, Briggs (2007) suggests searching for the hazard and deciding who may be harmed and how, as the initial steps in risk assessment.

An accident occurs if hazards are not obvious enough or escape detection at the appropriate time; and also as the result of combined circumstances that were difficult to foresee. There are several types of hazards that cut across all spheres of human life. Out of these, the physical and ergonomic types have factors related to this study. The physical hazards include unsafe conditions that can cause injury. They are the easiest to spot but sadly, are too often overlooked because of familiarity, or lack of knowledge. Carter et al. (1997) found 30% of the participants under-rating their homes as safe simply due to lack of knowledge on these dangers. An awareness of these dangers becomes more vital to serve as a strong pillar in accident prevention. Examples of this which are relevant to this study include spills on the floor or tripping hazards, live electrical wires, and accessing something from heights. An ergonomic factor related to this study is poor lighting in an environment as may occur in most low class homes. These household members may not worry much about these areas of poor illumination for either they are used to it and have no knowledge about the dangers or can do nothing about it. Poor lighting has been pointed out in Tomey and Sowers (2009) conceptual model as environmental barriers.

Electricity in use at home is another source of domestic hazard. Riley-Smith (2015) reported that most elderly in Britain live in homes that are in poor state with electrical wiring posing threats to their lives. With the upsurge of home fires attributed to electrical problems in Ghana similar home conditions could be prevailing in most of our aged homes since the cables in these homes may have out-lived their quality, turn dangerous and therefore require serious attention during the search for domestic hazards.

Hazards are either overt or covert and the covert in particular may elude identification thus resulting into accidents. It is also not clear if the household members are aware of the hazardous areas at home, since accidents can occur at these locations. Thus, some of these locations are discussed here to enlighten the uninformed.

Hazardous Areas at Home

It is hard to trust the home environment as a totally safe place so long as there are locations as the bathroom, toilet, sitting room, stairs, and even the kitchen. Intrinsic and extrinsic factors were identified by WHO (2007) in causing domestic accident such as falls. RoSPA (2015) went further to acknowledged environmental (extrinsic) factors as immensely contributing to home injuries. These facts suggest that the home environment is not totally safe, but it is rather full of hazardous areas such as the bathroom, stairs, toilet, sitting room, bedroom, and kitchen even in their perfect states.

In a prospective study in Hong Kong by Lee et al. (1999), patients aged 65 years or above formed the participants of the study. The researchers among other things examined the pattern of home accidents, and determined

the nature and mechanism of the accidents in the elderly. A convenient sample of 100 elderly who reported at the Accident and Emergency Department of the hospital in the eight-week period responded to the standardised questionnaire. The mean age was 75 years; and 66 of the sample were females.

The results of Lee et al.'s (1999) study revealed the most common accident sites as the toilet (29%), followed by sitting room (18%), the kitchen (14%), the bedroom (11%) and dining room (10%). In addition, 79% of the patients were alone at home during the time of the accidents. That the toilet is the most common site of injury at home in this study raises critical issues, especially when as many as 79% of the sample was living alone during the time of the accident. The common sites as the toilet, sitting room, and kitchen being high on the list also raises serious concerns about the elderly living alone at home. Some of these areas were similarly confirmed by other authorities (see Ang & Lim, 2008; Majori et al., 1999; Newton, 2008; Shawon et al., 2012). This implies that as the elderly advance in years, it is recommended that there should always be attendants/caregivers to provide continuous assistance. Goetsch (2007) asserts that an accident that affects the elderly living alone comes under the domino theory.

That the researchers in Lee et al.'s (1999) study used a convenient sample at the hospital raises a limitation to the study. A sound argument can be raised that most cases which may not be serious were not reported at the hospital to be included in the study. It is also possible that some of the cases might have passed through the AED to other long stay units who could not be captured in the convenient sample which was restricted to the AED.

The search for hazardous areas at home can be a major stride in the prevention of domestic accidents. Clemson, Roland and Cumming (1997), using a sample of 257 elderly patients, found traffic ways (48%) and bathroom (40%) as most dangerous areas in the elderly patients' homes. The sample was referrals to an occupational therapy department for specialist services. Newton's (2008) review of selected researches revealed level surface, stairs, and the bathroom as some of the common dangerous areas where domestic accidents often occur. On level surface, the elderly could slip, particularly when the surface is very polished or any liquid spills on the floor. The polished surface could be that of tiled floors. In our traditional homes, the floor can be slippery when it rains although this may depend on the nature of the floor surfacing. Un-cemented homes in particular can pose problems during the rainy seasons.

Stairs are not very common features with our homes in the research setting since the homes are mainly single storey buildings. With the exception of few homes with two or three steps, most homes only have a step-down from one level to the lower level as is common when one steps down from a room to the outside level floor. Bathtubs are features of some homes in the urban areas where not only the elderly but anyone could slip due to soapy water. In other communities, the bathroom can be dangerous if the cemented floor has not been scrubbed adequately and regularly.

The field analysis done in Ang and Lim's (2008) study identified the kitchen as the most hazardous place followed by bathroom, living room, and bedroom. These areas are very important in the home life of individuals

including the elderly who are more vulnerable. On the accidents that followed, falls accounted for over a third of the hazards with electrical hazards being the least. For the fact that the study found the kitchen as the most hazardous area makes it quite threatening since the elderly could not avoid the kitchen particularly if the elderly have no one to run the kitchen for them.

The study by Shawon et al. (2012) in a rural community of Bangladesh found the courtyards as the commonest place where most home accidents occurred with 49.7% of the cases. This was followed by kitchen (15.8%), the bedroom (9.4%) and the bathroom (4.7%). That the courtyard placed first in the rural study suggests that most courtyards in such homes can be very slippery as they are often not cemented. It therefore becomes a danger to all during the rainy season more especially to the elderly. This retards their movement as they would ever be scared of falling particularly, if there had been an earlier episode of falling as observed by Olaleye (2009). Lök and Akin (2013), suggested that the elderly living alone had the fear of falling. This panic could originate from previous episodes or stories of elderly falls.

The subject of domestic accidents affecting the elderly is a global concern in view of its repercussions. As the elderly population increases, many more people become worried about this problem. Scholars continue to stretch wider this subject and have gone beyond the intrinsic factors in home accidents. In one of such studies outside the elderly themselves Camilloni, et al. (2011) studied the housing factors that could contribute to home injuries among the elderly. Patients numbering 107 from emergency departments of 10 hospitals in Rome who were aged 65 to 85 years were the subjects in the

study. From the investigation, 33% of the accidents occurred in the sitting room. Another interesting finding from the study was poor household illumination, contributing to domestic accidents in the elderly. The researchers concluded that the results of the study could direct authorities in the areas of intervention for home injuries.

Recently, a study was conducted in Malaysia with the participants being the elderly of 60 years and above, among other things to locate injury areas for the elderly at home. Data was collected through face-to-face interviews from 4,842 respondents on injuries that occurred only in the previous one year. One year period was used to avoid recall bias in the interviews. Most common locations identified in the study in order of frequency were kitchen, garden, bathroom, living room, bedroom, and stairs (Lim et al., 2014).

From Camillioni et al.'s (2011) study on safety promotion, it emerged that-33% of the accidents occurred in the sitting room. This finding could have different interpretations. This could be quite high as in the western world where most people could end their day within the sitting room. In the present research setting, sitting room may not be a common feature. Instead, household members may choose to stay at the courtyard or if there is a veranda.

Hazardous locations at home have been discussed and are explored in research question three. The next section examines the accidents that are likely to occur at these locations.

Types of Domestic Accidents

Different types of accidents do occur at home and the elderly in particular are victims due to their high vulnerability. These accidents which are addressed in research question four are discussed in this section together with their extensiveness on the elderly.

Home accidents may be attributed to environmental barriers that pose serious threats to the elderly. With the ripe conditions in place, accidents can then occur to anyone that comes into such situations. Evci et al. (2006) in their sample of 3,277 from the Aydin Province of Turkey discovered that 38.6% among them experienced accidents for instance falls, cuts, electricity accidents, burns, and both chemical and gas accidents in the previous 12 months of their study. The 38% in this study for the elderly in particular is quite worrying, and shows that they can be victims to any form of accident at home and this places their life in a critical condition. In Evci et al.'s study, persons aged over 60 years were evaluated using questionnaire and home safety checklist to identify the main characteristics of the dwellings of the elderly and also to assess the impact of the characteristics on home accidents. These researchers also found that falls was the most common type of home accident experienced by 31.9% of the participants within the last 12 months of the study with the other accidents being cuts, electricity accidents, burns, and both chemical and gas accidents.

Camilloni et al. (2011) investigated the lifestyle, health and issues relating to housing that are relevant to home injuries in the elderly. The respondents were 107 patients who were aged 65 to 85 years who were

admitted to the emergency department of 10 hospitals in Rome, Italy. Among other things, the results revealed that 87% of the home injuries were through falls. Similarly, 38% of the patients in D'souza et al. (2008) fell. From this fall victims in D'souza et al.'s study, 58.6% used mobility aid/personal assistance.

Advanced technology was used as more objective evidence in data collection to identify the cause of the elderly falling in long-term care facilities. Robinovitch et al. (2012) used video coverage to collect data in a research conducted in British Columbia with 130 elderly. There were 227 falls captured with 48 (21%) that resulted from trip and stumbling while loss of support accounted for another 25 (11%).

Through face-to-face interviews with 4,842 elderly respondents, Lim et al. (2014) examined home injuries of the elderly in Malaysia. Their study aimed at determining the frequency and risk factors of elderly domestic injuries, and covered persons aged over 60 years. Lim et al. found that 5.8% of the respondents suffered home injury of some kind. Fall and cuts were the common injuries sustained by the elderly in the study. In a related exploratory study in China, Pi et al. (2015) used a convenience sample of 500 to investigate into the demographic characteristics of falls among the elderly. The respondents were frail elderly aged 60 to 99 years under home care. Interviews and questionnaires were used for data collection. In the results, the fall incident was higher in females, and peaked in persons 80 years and over with 50%.

Prevalence of Home Accidents

An individual experiencing the same or different accidents informed Majori et al. (1999) to conduct a study with 1,154 subjects aged between 69 and 99 years using questionnaire on home injuries in the elderly. The aims of the study among other things were to investigate the frequency, the kind, and associated pathologies of intra domestic accidents of the elderly in North-East Italy.

The results revealed an increasing prevalence especially among the participants over 75 years. Regarding the frequency of typology of domestic injuries, falls was found to be the highest (57%), followed by wound (5%), burns (3%) and crushing as 1%. Fall injury was associated with wet floor in the bathroom; wounds frequently occurred in the kitchen; and burns/scalds were prevalent due to boiled water in the kitchen or in the bathroom. Other causes worth noting in domestic injuries were stairs, carpet and polished floor. Gender differences were also found in the injuries with wounds being more common in males and females also having the higher incidence in burns. In the Indian study by D'souza et al. (2008), more women (47.0%) than men (31.2%) experienced falls within the past two years. RoSPA (2015) reported that falls could affect about a third of the elderly with 40% occurring in elderly above 80 years.

In a study by Keskinoglu et al. (2008) in Turkey, 497 elderly above 65 years were the participants. An objective of their study that is related to the present investigation was to determine the prevalence of domestic accidents. The home accident that topped the list was falls with 61.8% and followed by

cut with 22.0%. An aim of the study by Panatto, Gasparini, Vitale, Sasso, Lugarini, Cremonesi, Sensi and Badolati (2009) was to evaluate the characteristics of domestic accidents that the elderly suffer. The study was conducted in Northern Italy with 111 voluntary participants. Their results suggested that at the lead was bruises (39%) with fractures and cuts at 23.4% each. In a different study in Bangladesh, Shawon et al. (2012) also reported fall as the highest, followed by cut injury, burn and electrocution. In separate related investigations, Todd and Skelton (2004) found 30% of their subject who fell each year; Yasumura and Hasegawa (2009), suggested fewer than 10% to above 20%; and Pi et al. (2015) also reported on the incident rate of 41.5% of their sample. The frequency data from Milat, Watson, Monger, Barr, Giffin and Reid (2011) suggested that some of their elderly fall victims experienced the accident more than twice in a year.

Stumbling comes as another serious threat to elderly health at home as reported by Botek (2015). In the reviewed literature, Botek reported that through video clips taken in adults long term care facilities, it was observed that loss of balance accounted for 41% of the stumbling cases in the elderly. Video coverage used in the data collection has given credence to the investigation; and the result of this investigation is so worrying.

Prevalence of home accidents is explored in research question four. Home accidents are not mere happenings, but also come along with various degrees of health problems particularly on the elderly. Some of these consequences are covered here.

Consequences of Home Accidents

The outcome of falls depends on the nature of the fall. Individuals falling from height may be unlucky if they should land on objects that may further harm the victim. Fatal and non-fatal outcomes follow domestic injuries in the elderly hence home accidents remain a serious threat to the elderly population. This follows the observation by HSA (2011) that there had been an increasing number of the elderly above 65 years who attended the AED as the result of accidents at home. During their attendance, a number proceed to hospitalisation with socioeconomic implications. What makes it worrying is that in Ghana, some health problems are not included in the National Health Insurance Scheme (NHIS) list; moreover, only the elderly above 70 years can have free access to health services at a government health facility.

Consequences of home injuries for the elderly people vary and Moeller (2013) attests that an eighth of the elderly who fall may sustain serious injuries. RoSPA (2015) found that about three-quarters of the fall accident results in the victims breaking the limbs or having cuts and wounds. It is also unfair to overlook physical dependence as a serious consequence. The sheer fear of injuries occurring could render the elderly to decline in their house cleaning activities; thus ultimately affecting elderly health in diverse ways. This fear of falling (post fall syndrome) has been identified as psychological consequence of falls. Olayele's (2009) study in Ogun State, Nigeria, found that home accidents may also result in decreased mobility and severe effects on the physical and social well-being of the elderly. They may restrict their movements and become inactive and sometimes to the extent of depending on

caregivers to provide ADLs. Similar sentiments were also expressed later by Moeller (2013).

Anena and Muchane (2012), enthused by the worldwide problem of falls in the elderly, conducted a research with the aim of creating awareness in people on elderly falls, consequences, and effects on the quality of elderly life. Using qualitative analysis, the researchers found that falls in the elderly are both unpredictable and unexpected. The authorities also found some consequences of falls in the elderly categorised into physical, psychological, social and economic. Some specific problems include injuries, impaired mobility, hospitalisation, post fall syndrome, high cost of treatment to the family and society, home modification, and eventually premature death. On quality of life, they found such elderly victims experiencing functional decline in ADLs.

Pi et al. (2015) also studied home injuries affecting the elderly in Rome, Italy. This result is quite upsetting in view of the consequences of fall injuries where 50% of the same injury cases sustained leg fractures. These leg fractures vary in location and severity and in some cases could cause various degrees of disability in the elderly. This, we believe, could render the elderly home bound and also more dependent for some considerable period of time depending on the severity and location of the fractures. The researchers were also interested in the management strategies and found that about 35% of the respondents were hospitalised following the accidents.

Common types of accidents, their prevalence, and consequences have been covered. Household members are urged to be familiar with safe and

unsafe areas at home so they can be extra careful as they use the home facilities. The literature continues with the prevention of these hazards and ultimately to prevent or at least reduce domestic accidents in the most vulnerable persons.

Prevention of Home Hazards and Accidents

A discussion on prevention appears to be in abstract without having some idea about the contributing factors of the problem. Thus in this section, it is imperative to combine the discussion of the hazards/accidents together with the relevant preventive measures of DHH in order to connect the preventive measures to the specific hazards/accidents. The overall prevention of the hazards consequently averts domestic accidents.

Some elderly persons can be vulnerable to several dangers by their fragile condition. This vulnerability can be attributed to several conditions in the elderly including being weak as a result of ageing. Roche (2010) refers to CDC reporting falls as one of the leading causes of injury and death among the elderly today. The CDC (2013) reported on the alarming state of fall-related injuries in the elderly globally. In the report, such injuries were found five times exceeding injuries from other causes. In some cases, the elderly may not have anyone to come to their rescue. This sad situation may end up with the elderly subjected to more serious complications that would not occur, if a helper should be readily available. Floyd (n.d) observes that 53% of home accidents in the elderly are preventable. Supporting this point, Smith (2015) strongly suggests knowledge about the key risk factors in the home as the starting point in prevention of home accidents. It is against this backdrop that

home accident prevention must receive serious attention in elderly health and this issue is covered in research question five of the present study.

In view of the dwindling health status of the elderly, they most often use over-the-counter or prescribed medications as an elderly coping strategy. This habit has added danger for the elderly. An extra area noted by Roche (2010) as a home menace is medication mistakes. On medication, he observes that the problem may be with remembering to take the drug or taking overdose. RoSPA (2015) also attributes falls in the elderly to disorders of gait and balance. To offset all these dangers, Roche suggests the following measures to ensure safety at home particularly for the elderly:

1. Place guard rails in the bathroom;
2. Put rubber grips on slick, slippery surfaces;
3. Space your furniture evenly, leaving a lot of walking room; and
4. Keeping weekly pill holder with separate pill bottles for each day.

We tend to regard the home as the safest place; yet, this postulation cannot be absolutely acceptable. Insel and Roth (2004) observe that the home can be a dangerous place. This contention can only be doubtful if the home environment is made safe through home safety practices especially when the elderly in particular are vulnerable to household dangers. Varying degrees of fatalities follow these home accidents. For instance, Cora (2003) observes that fall accounts for two-thirds of accident deaths among the elderly. The report from CDC (2013) indicates that the elderly suffer moderate to severe injuries from falls making life difficult for them and also greatly reducing their independence, and eventually subject the elderly to early death. This

estimation implies that environmental hazards could be one of the greatest threats to the lives of the elderly at home and must receive serious attention in preventing home accidents.

Olson (2009) who even describes the home as the haven for the elderly also concedes that the hazards are serious threats to elderly health. Insel and Roth consider some common fatal home injuries occurring as a result of falls. Poisoning and suffocation may also occur. These home accidents are not exclusive to the elderly in the western world but equally apply to the aged in developing countries including those in Ghana living in Cape Coast Metropolis. An assessment of these dangers is therefore not only inevitable but also the prevention is getting late for the health of the residents.

Living in one's own accommodation has been the desire of everyone and further promotes independence in life. If however this is not possible particularly for the elderly, they are left with no other choice than to accept what is available, including living in rented premises. It is therefore not by mistake that some elderly live in rented premises. Berman et al. (2008) explain that some elderly may relocate due to decreased mobility and would want to access all the facilities on one floor (single-level home). Sometimes, the new apartment may even be a smaller residence. In such premises, space and facilities may be limited with the health of the elderly greatly compromised as furniture may compete for space. Very limited space would be left for walkways, a situation that can easily result in home accidents. The simple reason for an accident in this instance is congestion which makes the home situation unsafe. Hence, an effective strategy in this case would be orderly

arrangement of the furniture and any obstructive obstacle in the living environment to prevent home accidents that may be related to congestion at home.

Falls have been rated high in the aetiology of injury-related visits to hospitals particularly for the elderly. Fuller (2000) outlines demographic risk factors as old age equal to 75 years or more, of housebound status, and usually living alone. Several risk factors have been attributed to these causes of injury at home. An important issue that must not be overlooked is that frequency of falling is related to the accumulated effect of multiple disorders superimposed on age-related changes. In other words, conditions are ripe in the elderly for the development of several health problems including weakness and loss of balance which can contribute to accident such as falls.

Fuller observes that the risk factors responsible for a fall can be *intrinsic* or *extrinsic*. Intrinsic factors may be associated with age-related factors such as decreased vision, disequilibrium, strength and mobility, decreased functional reserve as well as medication side effects. With the external factors we must consider the hazards within the home (environmental hazards). Tomey and Sowers (2009) consider these as environmental barriers and challenges in the indoor home environment. Some of these environmental hazards include, inadequate bathroom lighting, irregular floor surfaces, unsafe stairways, dangerous pathways, and personal items placed close for convenience. Much can be done to modify the environmental conditions. Furthermore, the elderly reporting for regular medical check-ups can help in prompt detection and management of such health problems that make them

vulnerable. Reducing vulnerability in the elderly is the genesis of home accident prevention.

On interventions to reduce the risk of falls in the elderly, Fuller (2000) focused on different risk factors. The starting point, for him, should be the home environment. The home should be assessed for the environmental hazards. Removal of the necessary hazards and selection of safe furniture are some of the recommended interventions. The furniture should be of convenient height and more stable.

In her contribution to home safety, Floyd (n.d) also made the following suggestions in the home environment:

1. Removal of throw rugs and loose mats;
2. Removal of extension cords and other obstacles from pathways;
3. Ensuring that chairs are of the right heights;
4. Modifying the home environment;
5. Keeping medications within easy reach; and
6. Ensuring that the inner home environment is well lighted.

Floyd also approaches the prevention of home accident from perspective of elderly health. She suggested five tips on avoiding falls among which she stressed on annual eye examination for the elderly.

The seriousness of falls in the elderly has become a worry for the public at large. Critically examining the problem, one may conclude that prevention seems to be the solution as the elderly continue to get weaker as they advance in years thus being more vulnerable to falls. Hence, Tremblay Jr. and Barber (2005) observe among other things that the risk of falling increases

with age coupled with some other environmental factors. Thus on prevention, they recommend some tips such as:

a) Maintain night lights or motion-sensitive lighting throughout home
b) Arrangement of furniture to allow easy movement around them
c) Removing caster wheels from furniture
d) Adjusting heights of bed to make it easy to get in and out (Tremblay Jr. & Barber, 2005).

As falls continue to be a threat to the health and independence of the elderly, the ability to remain self-sufficient has also been limited in the elderly. It is against this backdrop that CDC (2009) addresses the prevention from the community level. The community level has been chosen and considered to be more effective as the accident is home-based; and any effective strategy should originate from the same source of danger which in this case is the home. In a comprehensive document, CDC proposes five major points as follows:

a) Education
b) Exercise programme
c) Medication management
d) Vision checking and improvement
e) Home hazards assessment and modification.

These recommended areas are broad and very involving. Nevertheless, the points raised require the contributions of all and sundry in the community which would help reduce the cost involved. Starting the prevention from the community to assess and modify the home environment would involve the

household members at no cost, yet with enormous benefits to all and for the elderly in particular. In recent times, HSA (2011) also contributes to the prevention of falls in the elderly at home. Home Security Action came out with seven guides to prevent falls in the elderly at home. Among the essential preventive measures raised by HSA were regular eye testing; using proper steps if one has to climb up; and adequate lighting of stairs.

Causes of falls are regarded as the risk factors; hence, knowledge about the risk factors would serve as the basis of the prevention of falls. Tremblay Jr. and Barber (2005) identified osteoporosis, lack of physical activity, impaired vision, medications, and environmental hazards as very strong factors that cause falls. Hence, the authorities identified the following prevention tips to be considered earnestly in the prevention of DHH and accidents:

a) For impaired vision of the elderly, there should be regular eye check-ups by an ophthalmologist and a possible prescription of fitting eye glasses to improve vision
b) On environmental hazards, adequate lighting system by doorways and keeping walk areas clear of obstacles is recommended
c) Regarding medications as a cause, the authorities recommended education should be done on all the side effects of all medications taken, discarding out-of-date medications, and limiting intake of alcohol as it may interact with medications.

Falls are not to be regarded as normal to ageing process, but they rather have causative factors and can be prevented or at least reduced. It is important to note that falls are not unavoidable. According to Moncada (2011), an

important recommendation on prevention of falls by American Geriatrics Society and British Geriatrics Society is annual screening of all elderly 65 years and above. The author contends that many vital risk factors must be considered in the prevention of falls. Some of these factors the author considered as modifiable and non-modifiable. Age above 80 years, female sex, history of falls, and cognitive impairment/dementia are some of the non-modifiable risk factors. Some potential modifiable risk factors include environmental hazards, use of psychoactive drugs, metabolic factors (e.g. dehydration, diabetes mellitus), musculoskeletal factors (e.g. impaired activities of daily living, balance and gait impairment, use of assistive devices), and sensory impairment (auditory and visual) are some of the critical risk factors outlined. Şimşek et al. (2012) studied the elderly and use of assistive devices in Turkey. Their data suggested that some 31% against 19% of female and male subjects respectively use assistive devices.

In view of the factors outlined, Moncada (2011) proposes primary and secondary preventive strategies for falls prevention. In the primary prevention, a fall has not yet occurred but the elderly may complain of difficulty with walking or balance. Secondary preventive measures are directed towards the elderly who had fallen in the previous year and also seeking medical attention following a fall. Both levels of prevention would require a multifactorial risk assessment and multifactorial intervention. In conclusion, Moncada proposes the following:

i. Group exercise

ii. Vitamin D supplements if the level is found low

iii. Environmental modification particularly in the phase of visual impairment

iv. Advise on appropriate footwear.

The WHO (2007) also came out with steps to protect loved elderly ones from fall injury following identification of some contributing factors in home injuries to the elderly. There is wide coverage in their recommendations. Relevant areas are: showing concern about their health conditions, asking about their last eye check-up, and finding more about their medications. At this stage of development, many elderly could be on daily and multiple medications as elderly coping strategies. Finally, the council stressed the need for an assessment of their homes. At the home, the council emphasised lighting, stairs, and bathrooms to receive special attention.

In a related opinion, Sollitto (2015) observed that the search for falls prevention in the elderly is more effective, if it is combined with the cause of the accident. Consequently, some six factors have been identified which also offered appropriate direction in the prevention. Some of the six causes identified were poor vision, medication, and environmental hazards. Subsequently, Sollitto provided some suggestions some of which were removal of unnecessary rugs, adequate lighting, controlling excess furniture, and taking care of spills on the floor.

The long list of DHH suggests that the home is not very safe for the elderly unless serious measures are taken to guard against the home environmental hazards. These measures have become inevitable in the world at large as life expectancy increases globally; as people age, their gait and

balance are compromised. Imbalance and compromised health states are some of the conditions that make the individual highly vulnerable to accidents occurring mainly from the environmental hazards. Predictors coming mainly from ageing also give a clue that the most effective means of reducing home accidents would be to consider pragmatic ways of modifying the home environment since ageing is inevitable, and also close to two-thirds of homes had environmental hazards.

The study by Todd and Skelton (2004) considered the risk factors in falls affecting the elderly and based on that offered some suggestions for intervention. The study was a WHO project in which 30% of elderly fell each year with the rate increasing with age above 75 years. The investigators suggested multifactorial intervention that should aim at behaviour change and risk modifications and strongly recommended policy supports for any effective intervention. It would be recalled that the UN General Assembly (Resolution 37/51) in 2002 recommended that member states should draw their own plan of action for the welfare of the elderly. Based on the risk factors in the aetiology of home accidents for the elderly, RoSPA (2015) recommends good lighting, eradication of the dangers, and modifications to be done in the home as some of the key interventions that can reduce domestic injuries.

Newton (2008) reviewed selected researches to identify components of home hazards as a step towards prevention of the problem in the elderly. In the analysis, about 44% of the falls occur on a level surface with 16% occurring on stairs or from a height, and as low as 4% happening in the bathroom. As

much as 75% of the falls happen during the performance of routine daily activities. It also emerged that 44% of the falls occur in the presence of one or more environmental hazards. An overall problem associated with falls is that only 20% of the elderly who fall seek medical attention; but falls from stairs were more frequently reported. From the selected researches reviewed, Newton suggested that effective home hazard reduction could be achieved through modifying the home environment.

Some critical issues can be raised in Newton's (2008) work. The first issue is with 44% of falls occurring on level surface which implies that the threat to falls is not only exclusive to the elderly who need to move from one level to the other. Focusing on the level floor through some form of modification can save a proportion of the elderly from falls at home.

Secondly, performance of routine daily activities could suffer particularly for elderly persons who live alone at the home. The strong reason supporting this issue is that 75% of the falls occur while the victims were engaged in routine daily works. Eventually, the elderly could take to inactivity and confinement which could affect their overall health. This is what makes a strong case for the prevention of these accidents through home modifications to avoid compromising elderly health. Home modification through the removal of rugs and unnecessary obstacles from walkways, as well as replacement of ceramic tiles in the elderly homes were suggested by Comfortkeepers (2014) and Floyd (n.d.). Concerning home modifications, Floyd suggested improving lighting system in the home environment as a measure. Inadequate lighting particularly in the areas of heavy human traffic at

home could conceal obstacles that could cause falls in the elderly. In addition, she also emphasised the removal of extension cords and rugs from walkways as well as placing medications within easy reach for the elderly. These steps could modify the home into a comfortable and safe place.

Thirdly, the presence of one or more environmental hazards accounting for 44% falls implies that, falls could easily occur in most homes but can be prevented through manipulation of the hazardous environment which falls in line with Tomey and Sowers (2009).

Anderson et al. (2000), in a qualitative study used active elderly men and women as their participants. The participants were aged 64 to 89 years; and the objective of the study was to recognise the focal points for environmental intervention of falls involving the elderly at home. Through in-depth interviews, the researchers found that familiarity with surroundings obscures recognition of hazards. With in-mates living there for a while, they often pay less attention to the floor.

This finding by Anderson et al. (2000) however raises an important issue for consideration. It appears that since the participants were elderly and active, it was a bit difficult for the researchers to identify the specific hazards for intervention, an issue which was rather vital in the study. From the research results, it appears some participants were not careful when they moved about since they felt they had perfect knowledge i.e. familiarity about the environment. Hence, in health education to prevent domestic accidents, persons need to be informed that being familiar or unfamiliar with the environment could not necessarily make a difference in falls at home. On this

note, household members (whether new or old) for preventive purposes, must *pay special attention* to the physical environmental features instead of misjudging them.

In the prevention of home accidents, it is also necessary to consider the effects of such accidents on the victims. In most cases, physical incapacitation of the victim and the cost of treatment become the concern of the entire family (Shawon et al., 2012). The study in Bangladesh was on the prevalence of domestic accidents, characteristics of the accidents and the victims. A strong recommendation by the researchers was on health education programmes aimed at prevention of domestic accidents. Olaleye's (2009) investigation also found home accidents affecting the physical and social well-being of the elderly in Ogun State, Nigeria. The social well-being of an individual in no uncertain terms can affect the health of the individual. Health consequences of domestic dangers are the compelling reasons why serious preventive measures should be taken on domestic accidents.

It is apparent that most of the host factors that were associated with home accidents could not be controlled as they are variables in ageing. Housing conditions however could be improved in order to reduce DHH thereby preventing home accidents. Finally, a regular medical check-up could prevent early onset of visual disturbances. A significant point that can be made about these control measures is to initially create the awareness in the elderly on the role of these numerous factors in home accidents.

Conceptual Framework

A research requires an appropriate model that serves as a framework for the new study. The new researcher may follow a model developed by an authority or develop their own. The potential or novice researcher may use an existing model in totality or modify it to suit the new study when it would be considered as an adapted model. In this study, the Tomey and Sowers (2009) Physical Functioning Assessment in Your Environment (PF-E) Model was found relevant in view of the delimitations of the study and hence adapted in line with the research questions.

Physical Functioning Assessment in Your Environment (PF-E)

Conceptual Model

Medical records suggest that people are living longer, evidenced by increasing life expectancy rates but sometimes not without limitations in physical functioning. Adams, Wilson and Barnes (2008) strongly support this limitation on physical functioning. In their study, it emerged that the proportion of the elderly with the inability to walk for 0.4km increased with age. Whereas among those aged 60 to 69 years the proportion was 21%, the figure went to 30% and 40% for the 70 to 79 year olds and above 80 year old group respectively. This suggests that many people who age have reduced ability to walk long distances. This limitation in walking long distances could be the result of multiple factors including injury which could be largely environmental.

The hazardous environmental conditions may have physical impediments to limit long distance walking besides being a danger to people's

life in the environment. It is therefore essential to develop appropriate strategies to improve on the individual's environment in order to improve the individual's independent functioning. This improvement would be particularly appropriate for the elderly who are more vulnerable in life. Elderly vulnerability in this instance could follow a combination of intrinsic and extrinsic factors. It is against this backdrop that Tomey and Sowers (2009) developed the conceptual model – Physical Functioning Assessment in Your Environment that ultimately improves on the individual's health status by ensuring easy movement through the neighbourhood and indoor home environment. Without easy movement, compensation or coping strategies are mobilised.

Hazard at the indoor (domestic or home) environment is the focus of the present study. Both assistive technology and human help could lessen health problems of some vulnerable persons. However, the home environment becomes very vital in the intervention if any useful help should be provided. The indoor home environment (IHE) in particular has been stressed as it forms a person's immediate setting. Tomey and Sowers (2009) therefore proposed a model to enhance mobility through modifying the neighbourhood which also contains the IHE with the individual at the centre of them all as individual performance capacity (IPC).

The individual's performance capacity could be high or low depending on how favourable the environment is. The model emphasises each unique environment endowed with barriers and support systems. These barriers and support systems are also unique to the individual, making the model very

flexible. Environmental conditions vary with more favourable environments in the upper part and the less favourable environments at the bottom. Varying degrees of modification determine the performance capacity of the individual who is the centrepiece of the model. The "high" or "low" represents the differences among people or in the same person over time as they experience decline in functioning capacity. Hence, with "high" performance capacity, the IHE is more supportive and facilitating, and vice versa. Some form of compensation i.e modification is required for the individual to function depending on the IHE being high or low, that is safe or hazardous.

The outcome of the modification that the individual would gain is the compensation or coping strategies. If the individual's performance capacity is on the high (better) side, there is less reliance on positive compensation strategies. On the other hand, with low performance capacity, negative coping strategies are inevitable. In the model, there is provision for supporting different forms of mobility such as walking, climbing stairs, etc. Less favourable conditions (located at the lower portions) pose various degrees of danger to individuals ultimately affecting their health status. The conceptual model ends with the physical functioning performance relevant to the individual (see Figure 1).

Tomey and Sowers (2009) conclude that the model explains the health status of persons living in a favourable environment. Such persons, they suggest, do not necessarily use compensatory strategies to ensure their physical functioning performance. Use of human help is a compensation strategy, where a family member or otherwise provides direct assistance as in

climbing stairs at home. The PF-E stresses physical functioning as may relate relevant home and community environmental factors.

From the model presented on Figure 1, the elderly person (in the smaller square box) becomes the individual who is the centrepiece located within the two larger circles (IHE and the neighbourhood). The environment containing supports and facilitators or barriers and challenges determine whether the elderly will have high or low performance capacity. This situation compels the elderly to use various compensation/coping strategies at home.

The PF-E model by Tomey and Sowers is appropriate for the research objective on awareness of indoor environmental hazards. More elderly friendly IHE (located above the square) do not pose any threat to elderly health as it constitutes clear walkways, adequate lighting and steady stairs. On the contrary, where the IHE is rich with barriers and challenges i.e. slippery floors, the elderly' health status requires improvement in the form of modification on the IHE. It is therefore applicable to the study since the contents are also relevant to the present study.

Tomey and Sowers (2009) framework was not developed and based on the environment for the present study. Thus, in the neighbourhood are conditions like ice and unshoveled snow that do not apply to our surroundings. The limitation in the use of PF-E is in the fact that the present study does not cover the entire neighbourhood as explained by Tomey and Sowers (2009). Besides, the original model does not cover all the research objectives in the present study of the elderly.

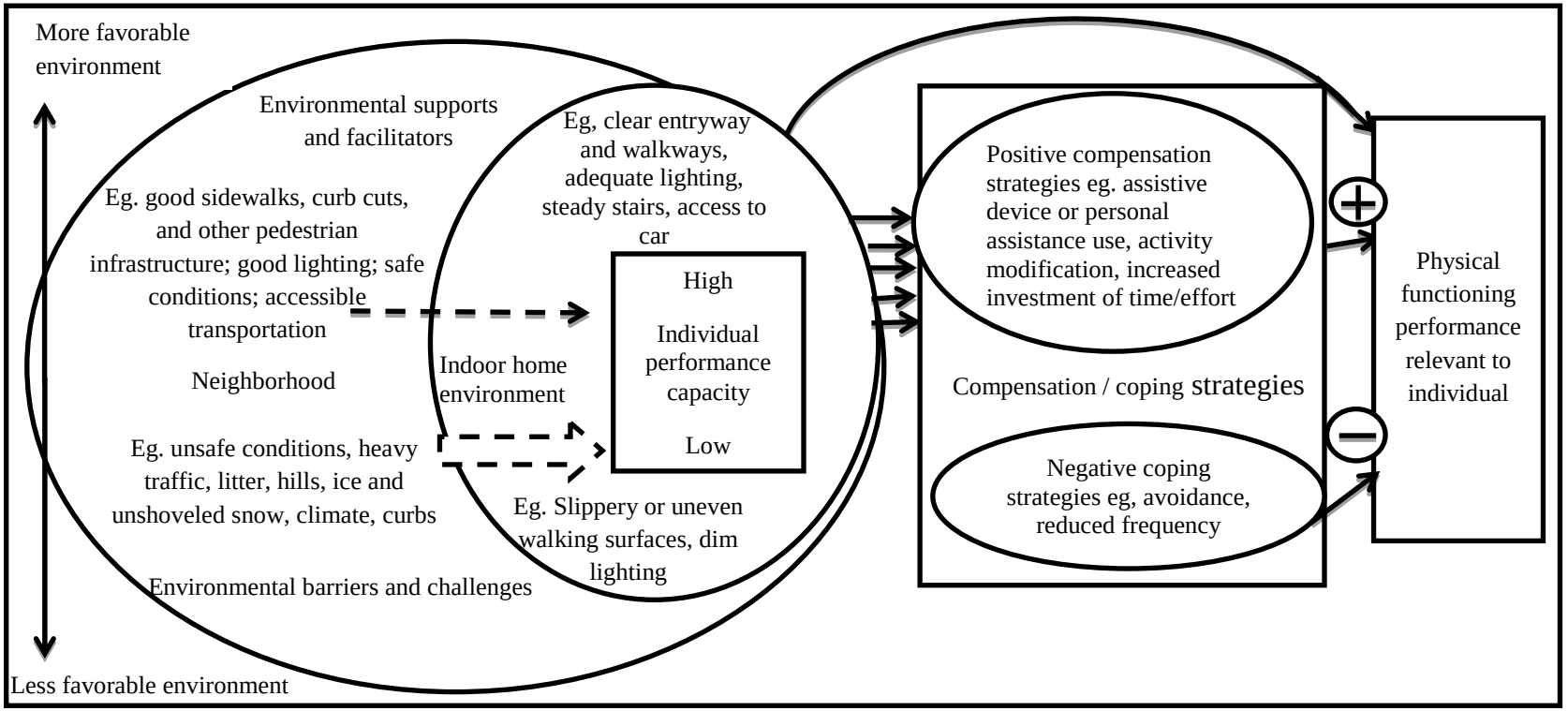

Figure 1: Physical Functioning Assessment in Your Environment (PF-E) conceptual model.

Source: Tomey and Sowers (2009).

In view of this, there was the need to adapt part of the original PF-E model in order to make it applicable to the present study with respect to creating awareness on DHH and prevention to reduce domestic accidents.

The present study is delimited to DHH; hence, the study could not use the entire bigger circle which comprises the neighbourhood. The inner circle with the indoor home environment thus becomes part of the model for adaption.

In view of the delimitations of the present study, the entire original model could not be used. Instead, the portion from the smaller circle which is referred to as the indoor home environment through the bigger box (compensation/coping strategies) has been adapted for the present study (see Figure 2).

Conditions in the IHE above and below the individual performance capacity (in the smaller box) are still valid in the present study and are therefore retained. Situations and conditions from the IHE continue with strong arrows into a bigger box which also has positive and negative sides reference to the compensation (positive) or coping strategies (negative). Finally in the adapted framework, the arrow from the bigger circle that captures neighbourhood runs beyond the larger box along its positive side. This arrow together with compensation and coping strategies connects with the box at the extreme right end where the individual experiences physical functioning performance.

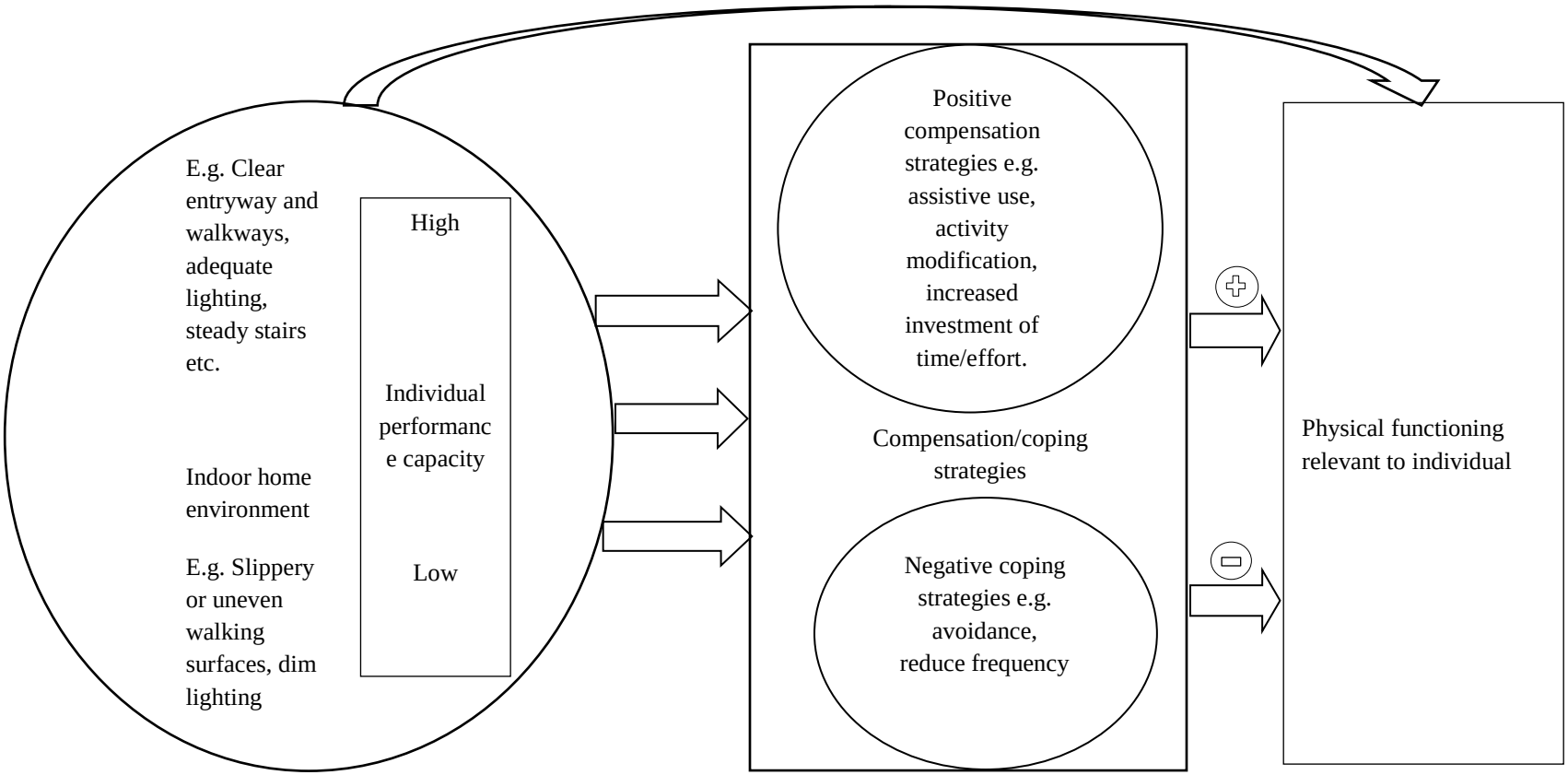

Figure 2: Adapted Conceptual Model for Domestic Health Hazards and Accidents in the Elderly. Source: Tomey and Sowers (2009).

Summary

This chapter has examined relevant areas under the literature review: definition of terms, optimising ageing, theories of ageing and accidents, home safety, domestic health hazards and accidents, hazardous areas at home, home accidents and their consequences, and prevention of home accidents. Elderly health in the phase of their vulnerability and living in DHH with the outcome as domestic accidents is the centerpiece of the thesis.

Both the UN and WHO vary on the chronological age of the elderly but the higher age by WHO was considered as the lower age limit for the respondents. Theories to explain the concept of ageing have been inconclusive. Nevertheless, regarding types of age, legal (chronological) age is more appropriate for this thesis.

Healthy ageing is the concern of everyone and thus requires home safety at the highest possible level including awareness of DHH as well as the accidents that these dangers may cause. Accidents are unplanned events; the victims end up sustaining various degrees of injury. Related theories of accidents were discussed to further explain domestic accidents in the elderly. Possible DHH hitherto unknown or underrated were discussed. Carpets, electrical cords and sharp implements which make a befitting home are equally threats to elderly health. This exposure of DHH and their prevalence exposed the predicament of the elderly at home particularly if they live alone or worse still if they are home bound.

Right from their modern and new state, homes can still harbour overt or covert dangers; these hazardous areas at home are associated with where the elderly often have accidents. The frequency of these accidents challenged all and sundry to seriously consider reduction and eradication of these DHH thus to reduce the home accidents that have become a thorny issue in elderly health. Tomey and Sowers' (2009) conceptual model adapted for the study is quite appropriate as the intrinsic and extrinsic factors helped to explain home accidents.

CHAPTER FOUR

METHODOLOGY

Introduction

Living in a hazardous environment is life threatening to everyone, as it places the individual's life at high risk level. This study focused on the life of elderly in such an environment, using Cape Coast Metropolis as a case in point. This chapter focuses on the methodology including design, research philosophy, and the main characteristics of the research area. It also highlights the instrument and measures used to ensure its validity and reliability. Finally, methods of data collection, challenges from the field and analysis are presented in this chapter.

Research Design

The study is a cross-sectional or survey design in which quantitative data was collected to answer research questions on DHH from elderly residents in the Cape Coast Metropolis. The cross-sectional design is appropriate as data is collected from a section of the society to explain a particular problem. Zakour and Gillespie (2013) attest that this approach enables the researcher to compare different variables at the same time. The design is appropriate as data is collected from a group (the elderly) all at one time but has the disadvantage that the researcher cannot measure changes in the variables over time.

Quantitative research approach was utilised for data collection and analysis. The research objectives as well as the hypotheses supported this method. Creswell (2013) asserts that the quantitative data yields numeric value and lends itself to statistical analysis.

Research Philosophy

The process of acquiring knowledge requires the investigator to follow appropriate principles. Research authorities have identified different approaches, (known as paradigms) which have been recommended for various types of investigations that may be appealing to the researchers. From this context a paradigm is a philosophical and theoretical framework of a scientific school or discipline within which theories, laws, and generalizations and the experiments performed in support of them are formulated.

Research traditions may be positivism or constructivism; each of these philosophies has its inherent strengths and weaknesses. The strength in one philosophy could be used to reduce the weakness in the other philosophy. In such situations, a third philosophy – mixed method is available and recommended to enrich the quality of social science investigations.

In positivist research, the investigator focuses on gaining knowledge in a world which is objective using scientific methods of inquiry. Appropriate for this paradigm are experiments and surveys where quantitative data is the normal feature. The ageing population is the pressing need why society must take steps to assist the elderly in meeting their needs at the developmental stage in life. Ageing

goes with degenerative conditions and health consequences; and these require systematic approaches to effective solution. In this study, the DHH of the elderly are explored as an attempt to reduce the hazards and consequently, the accidents that befall the elderly. Positivism is the research philosophy chosen to guide this investigation since the hazards and accidents fall under quantitative data. In obtaining the quantitative data, typical positivist research questions may be on What? How much? Relationship between? Or Causes of this effect? These questions are best answered with numerical precision often formulated as hypotheses.

The positivist adheres to the view that knowledge acquired through observation including measurement is of a better quality. Data collected in such investigations is through the objective approach which makes the research findings to be observable and quantifiable; and presupposes that positivists need to concentrate on facts. Thus, positivism largely depends on statistical analysis to ensure that deductive approach is in use (Crowther & Lancaster, 2008). Some key principles of positivism philosophy are summarised below:

a. There are no differences in the logic of inquiry across science

b. The research should aim to explain and predict

c. Research should be empirically observable via human senses

d. Science is not the same as common sense and should not be allowed to bias the research findings

e. Science should be value-free and it should be judged only by logic.

Investigators may decide to use constructivism if they find the strengths to offset positivism. Constructivist philosophy uses inductive and subjective process in knowledge acquisition. This approach values truth constructed and not reduced to numbers; hence, the results are presented in words. Thus, in this paradigm, qualitative instead of quantitative approach is accepted. The following features are typical of the constructivists:

a. Inductive reasoning dominates the design

b. Unstructured or informal observation and interview are the recommended instruments

c. Respondents are sampled purposively with ongoing data collection until enough information is gathered

d. Data analysis is basically ongoing and done through content analysis.

Mixed method research (pragmatism) tends to provide solution to the argument on supremacy of qualitative or quantitative research. In pragmatism, both aspects of research philosophies are applied to pursue a research agenda in making knowledge about a particular problem. Mixed methods therefore utilise data collection and analysis inherent in both positivist and constructivist approaches.

The present research is positivist in its approach since data is quantifiable by the nature of the research instrument, data collection, and analysis. This approach cannot escape criticism; and thus serves as a limitation and weakness on the design since rich information could be obtained from qualitative instrument. One can use other paradigms to improve the design.

One of such paradigms is ontology which involves ways of constructing reality. Ontology is the science or theory of being. To explain this further, ontology means how things really are and how they really work. Research scientists describe ontology as an objective reality by which one can understand issues through the laws which govern it. Ontology is concerned with "What is there?" It also addresses the question of how the world is built: "Is there a 'real' world 'out there' that is independent of our knowledge of it?" Tuli (2011) suggests that qualitative methodology treats their people as research participants. Thus, the researcher is actually a participant and collects qualitative data. Ontological position deals with the fundamental nature of existence, and for which there is no right or wrong answer as different people view topics differently depending on their role, values set or background. Bryman (2001) also supports ontology as concerned with the nature of social entities, and describes the two positions positivism and social constructionism (or interpretivism) as relevant in social research**.** In essence, positivism says that social phenomena have an existence that is independent or separate from the actors within it.

The Study Area

Overview

The setting for this study was the Cape Coast Metropolis in Central Region of Ghana which comprises both urban and rural communities. The urban areas stretch from the coast and the metropolis ends up in the rural communities in the hinterland. Cape Coast, which is the capital of the metropolis, is situated on latitude $5^{o}6^{N}$ and longitude $1^{o}15^{W}$ about 144 km by road from Accra, which is the capital of Ghana. Cape Coast Metropolitan Assembly is one of the 17 political divisions of Central Region; and Cape Coast was one time the seat of government for the then Gold Coast from 1830 to 1877 before the capital was relocated to Accra. The study area comprises Cape Coast (the regional capital) and its adjoining communities (see Figure 3).

The Metropolis is bounded to the south by the Gulf of Guinea and to the west is the Komenda Edina Eguafo Abrem Municipality. The Abura Asebu Kwamankese District lies at the East of the Cape Coast Metropolis, and at the northern end is the Twifu Heman Lower Denkyira District. It occupies an area of approximately 122 square kilometres, with the farthest point at Brabedzie which is about 17 kilometres from Cape Coast (GSS, 2013).

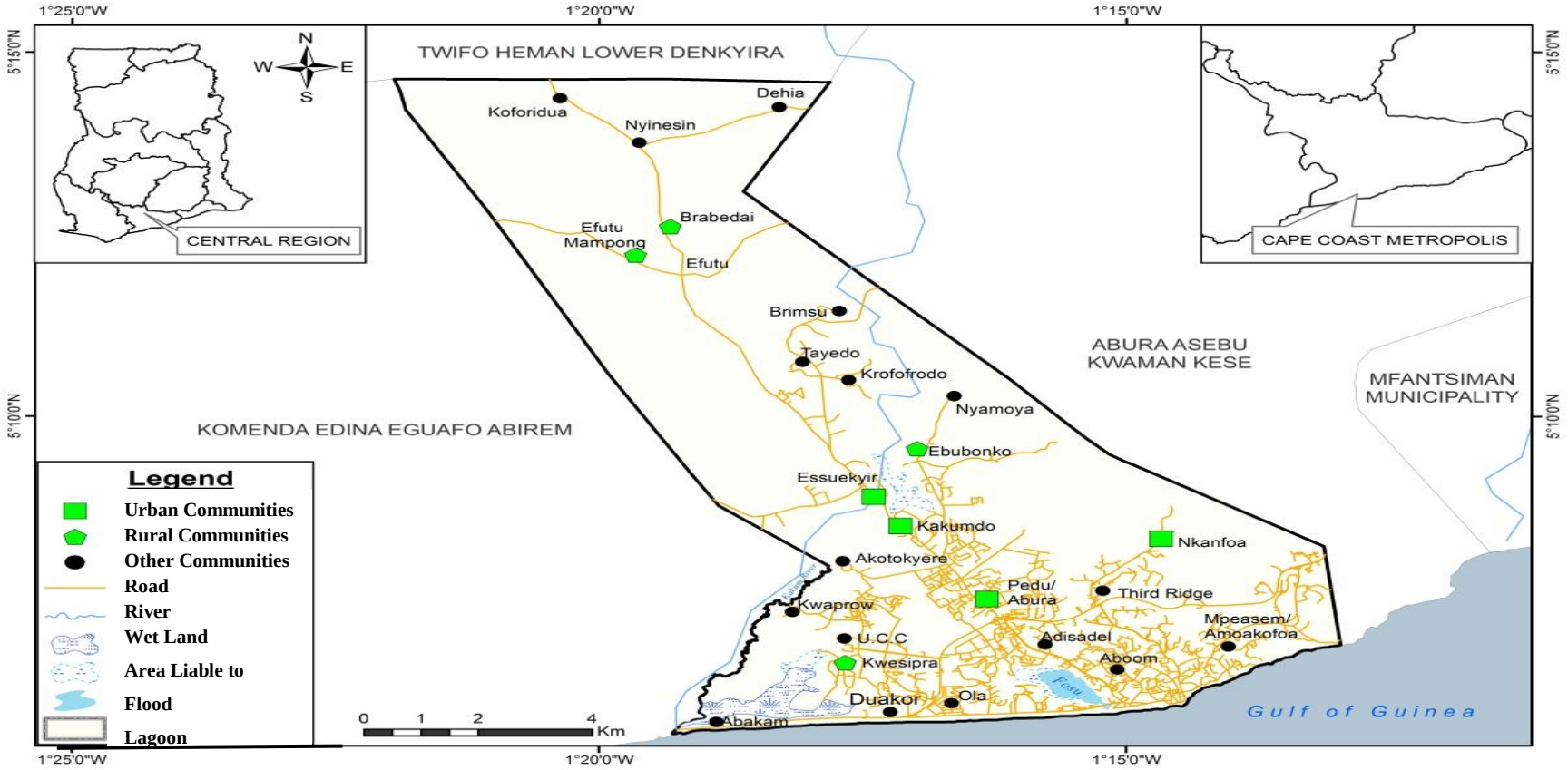

Figure 3: Map of Cape Coast Metropolis showing the research sites.
Source: Geography Department, University of Cape Coast (2013).

The research area is relatively rich in social services and host a number of educational institutions such university, technical university, college of education, nursing and midwifery training college and a number of second cycle institutions (both public and private). Health facilities in the Metropolis also vary from regional hospital to Community-based Health Planning Services (CHPS] centres.

Each sub-district has at least one government health facility that provides different forms of health needs of the community. Besides, there are a number of private clinics and maternity homes in the communities for the residents to access health care services. Aged Clinic is also available and located in the urban area of Cape Coast. The elderly could report their ailments at any of these health facilities.

The dominant ethnic group is the Fante, with the main language spoken as Fanti; and this should be noted for health education. There are other ethnic groups such as Gas, Ewes, Ashantis and people from all other parts of the country in the metropolis. These various ethnic groups can be attributed to the fact that Cape Coast is well known for its educational institutions. Thus, these institutions attract many people to the metropolis as public servants with some of them who later reside in the metropolis during their retirement period. The study area having the regional capital also houses other establishments such as judicial services, government ministries, banks and financial institutions, as well as regional and municipal police headquarters.

Housing

The research area covers both urban and rural communities as indicated in the communities selected for the study (see Figure 3). Residential areas are found in the urban communities with relatively better houses and safer indoor environments. Houses in these residential areas have adequate toilet facilities; and household members do not need to go out to meet such needs. In the rural areas, the houses are of lower quality. The environmental conditions are not very satisfactory and most homes use the public toilets; a situation which can inconvenient most household members particularly the elderly who have mobility problems. In addition, most of these homes in the rural communities lack cemented courtyards and the yards may be slippery, especially during the rainy seasons; and such a situation turns hazardous for the occupants.

Home conditions vary within the length and breadth of the metropolis. Some homes in the urban communities have relatively safer courtyards (cemented) and also use electricity supply for adequate illumination. The rural electrification project has improved the condition for the rural folks; yet, some rural homes still have to do without electricity. The typical interruptions in utility services are common problems in the entire metropolis.

Justification of Study Area

Cape Coast Metropolis was selected for the study in view of the population growth rate which reflects on the health of the elderly population. Records from 2010 PHC indicate that Central Region had intercensal growth rate

of 3.1 which is the highest and only comparable with the Greater Accra Region. Regarding population density, Central Region recorded 224 placing next to Greater Accra which had 1,236. On regional distribution of the elderly in Ghana, Central Region was the fifth with 9.9 after Ashanti, Greater Accra, Eastern, and Volta regions. Within the region on district basis, Cape Coast Metropolis is the fourth (169,894) after Gomoa East (207,071), Mfantsiman Municipal (196,563), and Ewutu Senya (195,306) (GSS, 2013).

Studies were available on chronic diseases of the elderly (Adoma & Yendaw, 2014; Ayernor, 2012); and Amfo-Otu and Agyemang (2017) studied health hazards and safety practices among mechanics in Sekyere East District. No records were available with the GHS on domestic injuries sustained by the elderly in particular. Again, the Cape Coast Metropolis has the only Aged Clinic in the region located within an urban community and the clinic set up to meet the health needs of the increasing elderly population. There is an increasing patronage of this facility by the elderly who report all kinds of ageing problems to seek intervention. The facility could however not provide statistics on elderly home accidents since it is not the primary focus for setting up of the facility. In a personal interaction with the nurse practitioner in charge of the facility, it came to light that increasing number of the aged clients also report home accidents which are secondary to their ageing health problems that take them to the facility.

The metropolis also has Old Age Association which organises meetings fortnightly for the elderly resident in and outside the metropolis. The executives

of this group also complain of declining attendance which they partly attribute to reports of ill-health of the aged members. Records are not available to support elderly home accidents although they are aware of these injury problems of the members who could not continue with their meetings.

Target Population

This population, also known as theoretical population, in this study comprised all the elderly who were 65 years and over and were resident in the Cape Coast Metropolis. Population has specific common characteristics; and in this study, the population comprises adults (both male and female), living in Cape Coast Metropolis, with the key characteristic and the inclusion criteria as 65 years and above. In this work, an elderly is considered as an adult who is 65 years and over. Sixty-five years was used as the lower limit as defined by WHO (WHO, 2010), despite the retiring age in Ghana being 60 years. Some adults are still active during their retirement period; and some self-employed older persons also work into their seventies which often keeps them active and helps them to meet some of their financial needs. Increased vulnerability through intrinsic factors combine with environmental hazards which constitute the extrinsic factors which could result in domestic accidents in the elderly. In view of this, the study used 65 years as a benchmark age in line with the WHO report instead of that of the UN.

The use of the elderly principally in this study on DHH and home accidents is informed by empirical results from the literature which suggest that as people age, they are more involved in elderly coping strategies such as using

assistive devices in mobility and taking multiple drugs on daily basis for management of chronic and degenerative diseases. The coping strategies used by the elderly including walking sticks constitute additional support for the elderly in mobility; and the medications may produce side effects for example, drowsiness that could cause home accidents. Some elderly may also have poor vision which could be a factor in the accidents. The elderly are of interest to the investigator as besides children, the elderly is the age group that is also vulnerable to and also prone to accidents at home as a result of ageing. Moreover, the elderly population of the municipality is poised to increase as suggested in 2010 PHC which projected a further increase in view of the increasing life expectancy.

Finally, the elderly should have been living in their residence for at least 12 months at the time of the study. It is assumed that within this time the participants would experience both dry and rainy seasons at the homes, and also have clear memories of hazardous locations and accidents suffered throughout the year (if any). The population of the elderly who were above 65 years during 2000 and 2010 PHC in the selected communities is shown in Table 3.

In 2010, the total population of Central Region was 2,201,863 and on district basis, the CCM had a total of 169,894 which is 7.7% of the region. The total population of the elderly who were 65 years and over in Central Region was 116,369 when the entire CCM recorded 7,699 (GSS, 2013). The figures in Table 3 exclude the communities that were not included in the sampled communities.

Table 3

2000 and 2010 Age Distribution of the Elderly in the Sampled Communities.

Community	Population for the Year 2000	2010
Cape Coast (Pedu/Abora)	570	632
Nkanfoa	124	207
Kakomdo	92	217
Essuekyir	60	55
Kwesi Pra	16	16
Ebubonko	23	42
Efetu Mampong	24	6
Brabedzie	27	7
Total	936	1182

Source: Ghana Statistical Service (2005, 2013).

Sampling Frame

There were 20 urban and 20 rural communities used for enumeration during the 2010 PHC. These communities constituted the sampling frame for the study. Four communities each were randomly selected to ensure a fair representation from both urban and rural communities in the study area. The elderly who were 65 years and over and were residing in these eight selected communities were contacted individually in their homes after few of them were identified by Community Health Volunteers (CHV).

Community Health Volunteers (CHV) were engaged to compile the sampling frame from house to house. These CHV were considered appropriate and useful as they were residents in the communities and knew some resident elderly persons. In these communities, the CHV assist the Community Health Officers (CHO) in their duties in the same communities and therefore are appropriate for the task. The CHO work at the health facilities and come round for outreach services but do not necessarily reside in these communities. By the nature of their work, both CHN and CHV often get in contact with the elderly.

Sampling Procedures and Sample Size

Various methods have been recommended to access valid respondents in any study. The choice however depends on the population and design of the study among other things. In order to get the nearest accurate population of the elderly in the study area, the enumeration centres in the 2010 PHC were used to get the entire CCM demarcated into communities (GSS, 2013).

It was necessary to use the multistage sampling method in this study. The electoral areas in 2010 PHC guided the stratification for the sampling. Stratified sampling was used in order to ensure that the respondents are obtained from both urban and rural communities for the study since the homes may vary in indoor physical structures that may be hazardous to the elderly. From the stratification, four communities each were randomly selected from each of the 20 urban and 20 rural communities. Through simple random sampling, four towns: Essuekyir, Kakomdo, Nkanfoa, and Pedu/Abura were selected from the urban communities;

and four towns: Brabedzie, Ebubonko, Efutu Mampong, and Kwesi Pra were sampled from the rural communities.

With the initial assistance of the Assembly Men/Women together with the CHO and their CHV, we identified some known elderly persons in the communities while others were reached, through the snowball sampling method. In research, snowball sampling (or chain sampling, chain-referral sampling, referral sampling) is a non-probability sampling technique where existing study subjects recruit future subjects from among their acquaintances. In this technique, participants recruit other participants for the study. It is used where potential participants are hard to find. The method consists of two steps:

1. Identifying the potential subjects in the population
2. Requesting the identified subjects to recruit other people

The advantage in the snowball sampling was that most of the elderly particularly the indigenes, grew together in the same localities and were friends in the neighbourhood since their childhood periods. These initial respondents then directed the CHV to the other persons that they knew would be 65 years and over in the communities for inclusion in the study as shown in Table 4.

In order to arrive at the sample size, it was necessary to use the entire elderly population in the eight selected communities (1,182) and that of the sampling frame was 973 (counted in 2013 by the research team).

Table 4

2000, 2010 Target Population, and Sample Size of the communities

Community	Target Pop. Fig			Sample size
	2000	2010	2013*	
Pedu/Abora	570	632	585	176
Nkanfoa	124	207	127	38
Kakomdo	102	217	105	32
Essuekyir	60	55	62	17
Kwesi Pra	16	16	17	9
Ebubonko	23	42	24	14
Effutu Mampong	24	6	25	8
Brabedzi	27	7	28	14
Total	946	1182	973	308

Source: Field survey, 2013 and Ghana Statistical Service, 2005, 2013

*Figures in this column were the enumerations done by research team in 2013.

Table 4 shows the population from 2000 to 2013 (counted in 2013 by the research team) and the sample size. Proportional representation was used to ensure that each community was adequately represented since they differ grossly in population size.

Target population figures differ in 2010 and 2013 enumerations. 2010 elderly population for CCM was 7,699 (GSS, 2013). There was no official census done in 2013; these figures shown in Table 4 were obtained through the

enumeration done by field workers. There were sharp differences between the 2010 and 2013 enumerations; 2013 figures were used in order to get high coverage of the elderly from the communities with less elderly populations. The Krejcie and Morgan (1970) Sample Size Determination Table was used to arrive at the sample size. Going by the table, the population size of 7,699 corresponds to sample size of 382. Proportional representation was used for the selection of the final respondents from the communities; this produced final 308 valid questionnaires. The Krejcie and Morgan Table, with the confidence interval of 95% and 5% margin of error, is presented in Appendix A.

Sources of Data

The data for this study was from primary sources collected from selected aged persons in Cape Coast Metropolis with the help of structured interview schedule. The selected respondents were visited at home where the instrument was administered to them. Elderly persons who were aged 65 years and over were the primary sources as they were the real subjects of interest to the researcher and could provide valid and direct data for the study. In any home where there were more than one qualified respondent, the oldest among them was selected as the sole participant, as vulnerability is most often (but not always) associated with old age. The study also relied on secondary data on DHH (Carter et al., 1997; Edwards, 2013; Rosen et al., 2013; WHO, 2013); hazardous locations at home (Ang & Lim, 2008; Camilloni et al., 2011; Lim et al., 2014; RoSPA, 2015); domestic accidents (Bhanderi & Choudhary, 2008; Camilloni et al., 2011; Pi et

al., 2015; Shawon et al., 2012); prevention of domestic hazards and accident (Botek, 2015; CDC, 2009; Comfortkeepers, 2014; HSA, 2011; Slocum, 2010; Smith, 2015); as well as research studies in Ghana, the internet and other publications.

Research Instrument

The study was designed to use quantitative method; hence, questionnaires in the form of structured interview schedules were used to collect quantitative data. The researcher used items in other related studies to develop the research instrument for the present study in order to provide for comparison of the findings with earlier studies.

The questionnaire was organised in two main sections comprising 34 main items. Section A of the questionnaire had 14 items that elicited information on the respondents' demographic data and other items that formed the basis of the research objectives. For instance, the information elicited in this section include age, gender, marital and literacy status of the respondents. These items helped to collect basic data on the previous and present background of the elderly in Cape Coast Metropolis.

Section B was organised under five parts which focused on the research questions that explored DHH of the respondents. There were six items in Part I which focused on the respondent's awareness, elderly coping strategies (RoSPA, 2015; Van Pelt, 2012), state of their homes (RoSPA, 2015), and some examples of DHH (Carter et al., 1997; You et al., 2004). In Part II, two main items explored

the types of home hazards available in the respondents' residences. These two main items were sub-divided into the presence of the hazards (Edwards, 2013; Tomey & Sowers; 2009) and degree of availability in their homes (Rosen et al., 2013). In Part III of the instrument were two items which explored the hazardous areas at their homes (Edwards, 2013; Lim et al., 2014; RoSPA, 2015; Tomey & Sowers, 2009). Prevalence of domestic accidents was covered in Part IV with five main items which were also sub-divided based on some selected common home accidents (Bhanderi & Choudhary, 2008; Camilloni et al., 2011; Lim et al., 2014, Pi et al., 2015). Finally, five main items elicited the suggestive preventive measures of domestic health hazards (Botek, 2015; Comfortkeepers, 2014; WHO (2007)) in Part V of the research instrument.

The instrument contained closed and contingency questions to ensure achievement of the research objectives and also to test the relevant research hypotheses. For instance, in some of the items, respondents were to select from options provided; and such information provided quantitative data for the study. Participants were also requested to provide responses to open-ended items and give reasons to some of their responses. For instance, elderly persons gave reasons for their preference to change their living environment after attaining 65 years. The idea was to find out whether the elderly could still live with the original features which could be health risks. Other items were presented in the form of Likert scale and were intended to elicit information on varying degrees of

some conditions in the home environment. A sample of the detailed instrument used in the study is provided in Appendix B.

Validity and Reliability

The quality of the instrument was improved, by subjecting it to thorough screening so as to give credence to the results. In view of this, peers read through the instrument for their inputs. Later, authorities in the field and the researcher's supervisors scrutinised the instrument for approval before it was taken out to the field for pilot study. Results of the pilot study directed the final correction on the instrument. This measure was taken at least to ensure face and content validity of the instrument.

Pilot Study

The pilot study was conducted at Ankaful Village among 20 participants. This locality has the characteristics of the other communities from which the final research participants were selected. Although classified under urban communities, it is not densely populated and has blend of typical features of both rural and urban communities. Residents visited provided responses which helped the research team achieve the objectives of the pilot test.

The results helped to improve on validity and reliability of the instrument, and also helped to sharpen the skills of the researchers. The field experience during the pilot guided the research team in strategies to adopt for more efficient work to be done in the main study. Some items were deleted since they were

similar and appeared as repetitions and therefore confused the respondents. Responses to an item on what the respondents were doing during the accident appeared unrealistic and hence the item was deleted from the final instrument. The number of items appeared to bother the respondents in the pilot study; thus, regrouping was considered in the final instrument. In addition, the analysis of the field data guided the researcher in the final work on the instrument. A qualitative item on the modification of structures at home to prevent DHH was changed into "Yes" or 'No" item, and this altered it into quantitative item. The pilot study, also provided a clue on the most convenient time it was to meet the respondents at home for interaction.

Training of Field Assistants

The spread of the localities and the age group of the subjects involved in this study required the services of eight research or field assistants and two supervisors. These two field supervisors were required to direct the work of the research assistants on daily basis. These assistants and supervisors were nurses and teachers who understood the issue under investigation and yet were also taken through thorough one day training on the use of the instrument and data collection.

These field assistants for the study were trained together as a group to ensure uniformity in their fieldwork. This group training was useful as they helped one another particularly in the interpretation of the items in the instrument. All field assistants and supervisors were nurses and teachers who were fluent in

English language, Fanti, and Twi which were required in interacting with the participants in order to obtain valid field data. This selected supporting staffs were preferred since they were level-headed in the community and had an earlier chance in data collection. At the workshop, both supervisors and assistants were taken through the instrument thoroughly, in order not to adulterate the instrument in the field. Other issues that were covered include community entry, establishment of rapport, ethical issues, and the process of data collection as a whole.

Unit of Analysis

Unit of analysis is very significant in social research as it is the source of the information that would be analysed. In the present study, the elderly as considered by WHO (2010) represented the unit of analysis. An elderly is an adult, male or female who is 65 years and above. The rationale for this choice was that it is the age at which someone could be vulnerable to health problems attributed to ageing process. This age is the higher of the two ages recognised by the world bodies for an elderly (WHO, 2010). The assumption is that it is the age at which adults start facing health problems (Krugu, 2014); moreover the elderly could be vulnerable to DHH.

One vital limitation in using persons above this age is that some persons younger than this age could be vulnerable as humans age differently.

Method of Data Collection

Data collection was through structured interview guide. This method, sometimes called a standardized interview, entails the administration of an interview schedule by an interviewer. Interviewees received exactly the same context of questioning; hence, each respondent received exactly the same interview stimulus as any other. With this method, interviewers were supposed to read out questions exactly and in the same order as the questions are printed on the schedule. Questions are usually very specific and very often offer the interviewee a fixed range of answers (this type of question is often called closed, close-ended, pre-coded, or fixed choice). Bryman (2001) recommends the structured interview in survey research. Administration of the questionnaire was on one-on-one basis for two reasons: first to ensure privacy and also to ensure that the data collected was of high quality to give credence to the study.

The real process of the fieldwork commenced with negotiating our entry into the site by obtaining an introductory letter from the Head of Department (see Appendix C). By this letter the researcher and the team used community entry procedure to contact the key personalities in the localities for the necessary help throughout the research.

In this study, Assembly Men/Women, CHV, CHO, and opinion leaders were of immense benefit in advancing preparation for the data collection through identification of the qualified respondents. The data collection took place between June and September 2013.

Trained research field assistants and supervisors assisted in the data collection. In all, 308 respondents participated in the study; these numbers of respondents varied from eight in rural communities to 176 participants from the urban communities (see Table 4). In situations where there were more than one respondent, the oldest person among them was considered much more qualified as a participant. This decision was taken as the study focused on DHH from which the vulnerable elderly could suffer accidents. Among the elderly from the same household, the oldest may be more vulnerable to domestic accidents (Bhanderi & Choudhary, 2008; Camilloni et al., 2011; Pi et al., 2015; Shawon et al., 2012). Research assistants explained every item on the questionnaire thoroughly to the respondents (more especially to the illiterates) not only to avoid confusion but also ensure that the correct information was obtained.

The interview lasted between 30 and 50 minutes; the long duration in some cases was attributed to the differences in the participant's response to the items as some of the elderly were quite slow and some suffered hearing disability. Each research supervisor met with the field research assistants who worked under them daily to inspect their work and ensure that they were on the right track in the data collection. Finally, the lead investigator went through the communities to check on the field assistants at random and also organised the daily meetings with the assistants to ensure that the data collected would be valid to give credence to the results.

Response Rate

In the study, data was collected from 350 respondents in eight randomly selected localities. The 350 was not achieved although an appreciable number was obtained. The one-on-one interaction offered a high response rate in the study. Reduction in the number was attributed to some of the questionnaires which were rejected finally as a result of some inconsistencies detected in the clean-up. After the data clean-up 308 questionnaires were found valid for the eight communities, giving a response rate of 88%. Fryrear (2015) recommends a response rate of 80% and above for surveys of this kind.

Validation of Field Data

As a good step to ensure quality of the study results, the validation of data commenced right from the point and time of data collection. Each field worker searched thoroughly through each dataset to find out whether there was any deviation from the respondents, particularly the few who responded to the questionnaire on their own. Furthermore, intermittent meetings were held with the research supervisor to inspect the completed questionnaires. The outcome of the inspection led to some few corrections in data collection instrument, which helped to validate the data.

Data Processing

Field supervisors edited the questionnaires daily from the field; yet, editing was repeated to ensure data quality. Questionnaires were organised

according to communities and were serially coded. This ensured that it would be possible to identify questionnaires from each locality, if necessary. In inputting the data, Statistical Package of Service Solution (SPSS) version 20 was used.

The statistical method used in the data analysis was the correlation co-efficient. This method was used to test hypothesis on the degree to which changes in one variable were closely associated with the other. For instance, the method was used to test the hypothesis on some selected demographic variables that influenced awareness of domestic hazards. This was followed by running linear regression. Similarly, the same was used to test the hypothesis on demographic variables and sustaining some selected accidents; and the availability of DHH and sustaining accidents at home.

Analysis of Data

In the quantitative analysis, a computer programme with SPSS version 20 was used to analyse the data obtained, using both descriptive and inferential statistics. Analysis was done according to the research questions. Three research hypotheses were tested to measure the degree to which changes in the value of one variable related to changes in the value of another. Awareness was measured in categorical terms. Thus, among the four options given for the item, "What is domestic hazard?", only one is correct. A respondent therefore choosing any other option is given a score of zero. Demographic measurements were as follows:

Gender: It was dummified whereby 1 – represented male, 2 – represented female

Age: Age was categorised into 3 ordinal groups where 1- represented 65 to 74 years, 2- represented 75 to 84 years, 3-represented more than 85 years.

Education: It was categorised into levels of highest education attained by the respondent, where 1- represented tertiary education, 2- represented second cycle education, 3-represented basic education/middle school leavers and 4- represented no formal education.

Living Alone: It was measured in form of a dummy variable, where 1-represented living alone and, 2- represented not living alone.

Marital Status: For the descriptive, marital status was measured on categorical level, where 1- represented married, 2- represented divorced, 3- represented separated, 4- represented widow/widower, and 5- represented never married. These variables were later on dummified into married (1), and not married (0) for the purpose of testing hypothesis.

Ethical Considerations

The study required interacting with the elderly who could be hurt in diverse ways. Interaction with the respondents for data collection was done in their homes, and the meeting with the elderly was done anywhere in their living environment. These situations could interfere with the privacy of some elderly participants who did not have very decent living environment; a situation that could be embarrassing and possibly caused psychological harm.

As an initial step in the ethical procedure, all the participants offered to participate in the study voluntarily. Elderly members that were identified as

subjects in the selected localities for the study were given detailed explanation about the research including its objectives. Through this explanation, they were informed about the nature of the study and what the entire elderly population stood to benefit in future. They were also given the opportunity to ask questions for clarification. This briefing convinced most of the elderly from the initial stages of the research to give verbal consent for the research. Assurance was given to the consenting elderly that their anonymity would be ensured; and all information would be handled at a highly confidential level. Participants were encouraged to withdraw from the interview if they felt uncomfortable to continue with their participation in the study even after giving their approval. It was observed that one participant denied attaining 65 years, although he clearly seemed to be in his seventies. Few others also refused outright to participate in the study with their main reason that there were some earlier similar interactions with no material rewards.

At a more formal level, participants who were willing to participate in the study were required to sign voluntary informed consent form prior to the commencement of the study (Please find the copy of the informed consent form in Appendix D).

Although participants were adequately prepared prior to the interviews, there is the tendency for anyone of them to break down emotionally depending on the issues that may crop up. In view of this, contact telephone numbers of some

religious heads and counsellors were solicited for, for immediate intervention if their services should be needed.

Challenges from the Fieldwork

The process of interviewing elderly respondents in their homes in survey research was not smooth since there were different challenges encountered at various stages of the data collection. These challenges were sourced from some opinion leaders, respondents, the research assistants and the weather condition.

The initial process required identification of the local opinion leaders such as the chiefs and the Assemblymen/women. After getting their contact numbers, it was still difficult to reach some of them, particularly those working or studying in various departments and institutions some of which were outside their localities. One assemblyman claimed that he was then a student at University of Ghana, Legon and only came home at weekends.

It was not difficult locating the assemblymen who worked in their localities or were at Cape Coast. Nevertheless, some of them could not honour the appointments which were earlier booked through phone calls. They either forgot the appointment date and time or had some genuine emergency duties which coincided with the appointed time. Some of the traditional leaders were not only hard to reach, but also demanded alcoholic drinks; in some cases, the cash equivalent was demanded in line with their traditional beliefs, before they could grant permission for community entry and data collection, despite the introductory letter from the Department of Population and Health and the detailed

explanations given to them. It is however worth stating that the demand was not made by all the traditional leaders as some were very co-operative and allowed free entry to their communities.

Through the opinion leaders, Assemblymen/Women and the Municipal Health Directorate CHV were contacted to assist in preparation of the sampling frame. These health volunteers assist the Ghana Health Service staff who run Child Welfare Clinics (CWC) in the communities. In most communities, this was done without much hindrance; yet, with others, it was a very challenging task. For instance, in one community, it was clear that the assemblyman deliberately turned down the CHV and replaced him with a personal friend; later, the assemblyman and his friend could not be traced, despite phone calls and personal visits to the assemblyman's home were made.

Poorly assigned house numbers in some communities delayed identification of some participants. The volunteers who compiled the sampling frame for the final sample were different from the research assistants who were engaged for the interviews. These research assistants had difficulty locating some of the residences by the house numbers provided; as such, this made the work very challenging.

It was during the raining season when the fieldwork was done in some communities. The weather had both positive and negative effects on the quality of the data collected. On the strengths, it was not difficult for the respondents to recall the slippery nature of their homes. The rainy weather nevertheless

interrupted with home visits on some occasions, causing disappointment between fieldworkers and some respondents. These research assistants could only interview a few respondents on a day and were compelled to call back. This delay led to replacements of some respondents in such localities; and also extended the period for the data collection.

During the data collection, there were other special challenges that the research assistants encountered from some of the respondents. For instance, the research assistants found it difficult to meet the respondents at home although they had agreed earlier on an appointment. We were told by some other people at home that they had left for their farms or have left to attend a funeral. Whereas some respondents were very co-operative when the research assistants called on them, others demanded material rewards prior to they giving their consent for the interviews.

Fanti was the predominant language spoken by most respondents; yet, there were few cases where people from other ethnic groups qualified as respondents. Communicating with such respondents had to be done through an interpreter, most often a co-resident or a family member.

Participants who were illiterate in particular, demanded material things such as bread which were provided in some cases. A problem that also came from some of them was that the research assistants had to come back with compensation after the research. This however followed clear explanations that the research was a course requirement instead of a sponsored research project.

The more fascinating challenge was on insecurity. Participants who were illiterate felt unsecured about their participation despite thorough explanation given about the study and the rapport established with them. In effect, such qualified persons decided to give wrong ages which disqualified them from participation. No documentary evidence existed to challenge the participants; hence, they gave ages which seemed to be far below their apparent age.

Sensory loss as degenerative challenge of the age also affected some respondents. For instance, some respondents were not audible enough; therefore, fieldworkers had to be patient with them to ensure that they clearly understood everything before providing the responses. In some other cases, it was difficult to sustain the attention of some of the aged throughout the interview, and this also delayed the interview. In most cases, there were frequent interruptions from visitors. Some respondents exaggerated their co-operation through providing long answers to the extent of contradicting earlier answers.

Challenges from the fieldworkers bothered on their time as they were all employees. The data collection exercise was done by nurses and classroom teachers. Time for the research field work became secondary issue to them. This situation shifted the fieldwork mainly to the afternoons.

As a novice researcher, these challenges were useful for the purpose of having a feel on survey involving some special age group in the community. These problems cut across involving persons in authority who matter in health and welfare of the entire communities. Chiefs and Assemblymen/women were

hard to reach, respondents also had a host of problems concerning insecurity, and the problem of illiteracy and health affected the fieldwork. A final challenge is that the fieldworkers had to work as part-time staff.

Summary

This chapter addressed the methodology of the study and among other things, it covered the design, research philosophy, instrumentation, data collection and analysis. A cross-sectional or survey design was used as the study compared different variables at the same time. The study used quantitative method to explore the DHH of the elderly; there were a few contingency questions.

The Cape Coast Metropolis was the research setting where eight communities were selected through a multistage sampling technique. The setting comprised tertiary educational facilities and health facilities where most of the respondents were working prior to their retirement. The inclusion criterion was that respondents should be 65 years and over. Community Health Nurses and CHV assisted immensely in the subject identification, as they used snowball sampling to sample the respondents. In all, 308 valid questionnaires were analysed. The structured interview guide was developed around the research questions and the literature guided the development of the research instrument which comprised 34 items.

Validity of the instrument was ensured by both colleagues and supervisors who scrutinised the items for content validity. The instrument was also tested in a pilot study conducted at Ankaful village. Nurses and teachers resident in the

communities were trained in data collection and used in the fieldwork as research assistants. As the instrument used was a structured interview schedule, each research assistant spent an average of 40 minutes on each respondent.

Data collected from the field was cleaned and analysed with SPSS version 20. Ethical issues were considered carefully in order not to harm any respondent in the data collection as some of them may recall past home accidents which may be traumatizing to them. There were also few challenges in the fieldwork which delayed the data collection period.

CHAPTER FIVE

SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE ELDERLY

Introduction

This chapter focuses on the demographic data of the respondents including gender, age, marital status, level of education, religious denomination and occupation of the respondents which have been presented in Table 5. Other items on the characteristics of the sample include living arrangements, residence, and NHIS membership. The chapter does not address any research question in particular.

Gender

The data showed that from the random selection of the sample, females formed 58.4%; a particular gender was not an inclusion criterion. This figure does not correspond to the elderly national and global percentages for males and females. In Ghana, according to 2014 estimates, persons aged 65 years and over constitute 4.1% of the population with 46.4% being males and 53.6% females (Ghana Demographics Profile, 2014).

Age Distribution

Age was one of the criteria for participation in the study. The youngest respondent was 65 years for both sexes, with the oldest being 98 for males and 120 for females and the mean age of the sample being 73 years. This wide range can be categorised into three as presented in Table 5.

Table 5

Socio-Demographic Characteristics of the Respondents by Gender.

Socio-Demographic Characteristics	Gender		
	Male (%)	Female (%)	Total (%)
Gender	41.6	58.4	100
Age			
65 to 74	63.3	66.1	64.9
75 to 84	32.0	25.0	27.9
85 years and above	4.7	8.9	7.2
Total	100	100	100
Marital status			
Married	46.1	27.8	35.4
Divorced	14.1	15.0	14.6
Separated	7.0	6.1	6.5
Widow/Widower	32.8	50.0	42.9
Never married	0.0	1.1	0.6
Total	100	100	100
Educational status			
Tertiary education	23.4	5.0	12.7
Second cycle education	7.0	7.8	7.5
Basic education/MSLC.	30.5	18.9	23.7
No formal education	38.3	67.8	55.5
Other	0.8	0.5	0.6
Total	100	100	100
Religious Affiliation			
Christian	68.8	77.8	74.0
Moslem	21.1	14.4	17.3
Traditionalist	7.8	4.4	5.8
Other	2.3	3.4	2.9
Total	100	100	100
Occupation before age 65			
Teaching	21.0	10.0	14.6
Medical officer	1.6	0.6	1.0
Nursing	1.6	1.1	1.3
Farming	25.8	31.7	29.2
Fisherman	0.8	1.1	1.0
Mechanic	8.6	0.6	3.9
Unemployed	1.6	3.9	2.9
Other	39.0	51.0	46.1
Total	100	100	100
Maintaining job after 65 years			
Yes	29.7	30.6	30.2
No	70.3	69.4	69.8
Total	100	100	100

Source: Field survey, Kumfo (2013) N=308

It was reported that the respondent who was 120 years spoke coherently although these responses from this participant could be a limitation in the results. A typical broad based demographic structure was depicted in Table 5 with 64.9% of them falling between 65 and 74 years which is known in elderly categorisation as the young-old (Baltes & Smith, 2003; Cora, 2003; Santrock, 2006). At the apex of the structure is found the oldest old who are 85 years and above, who comprised 7.2% of the population. The female dominance in the sample is obvious with the widest margin in the young-old and it was followed by the oldest old.

Marital Status

The marital status of the respondents is presented in Table 5 with the distribution very typical of the developmental period i.e. old age. About a third of the respondents (35.4%) were still married. The divorcee group of the sample constituted 14.6% of the respondents. A relatively large number of the sample comprised widows/widowers numbering 42.9%. This number suggests that nearly half of the elderly had lost their spouses through death as a result of ageing.

The percentages in Table 5 on widows/widowers suggest that a relatively large number of the elderly had been living alone with the health implications that may accompany living alone. If all the 42.9% of widows/ widowers were living alone, it would suggest that this proportion of the elderly had been facing problems of loneliness and additionally require assistance in ADLs in some cases from other family members or hired caregivers.

Educational Status

The literacy state of the sample was shown in Table 5. Literacy helps people in their health practices as they can access health information in diverse ways. Considering the developmental stage of the respondents, most of the elderly could not benefit from the free and compulsory educational policy of the post-independence governments; and hence, the 55.5% elderly with no formal education. Although the elderly have often been accredited with wisdom, this proportion of the group may lack awareness of DHH, if the awareness could only be acquired through reading the information about the topic. About 20.2% of this sample had some form of education that could support them regarding issues on education. These figures translate into about 20% of the sample being able to read and write as shown by the numbers who had had tertiary and second cycle education. This is the proportion of the sample that can effectively use literature on aged health matters. From the 12.7% elderly who indicated that they had tertiary education, two (0.7%) did not know what was meant by DHH. Gender differences in the various educational levels are also shown in Table 5.

Religion

Religion satisfies the spiritual needs of humanity. The elderly who were active could use the advantage to interact with old friends at least once in a week. The religious denomination of the respondents is indicated in Table 5. The elderly were mostly Christians (74.0%), while others were Muslims (17.3%).

Primary Occupation

It was necessary to find out about the occupation of the respondents prior to their attainment of 65 years. The results as shown in Table 5 indicate that the respondents were mostly farmers. A number of them were teachers while very few were fisher folks.

About 30.0% of the sample was into farming. Also, 14.6% of the elderly were into teaching. At the age of the respondents, most of them could be retired teachers or possibly holding unto the job in private institutions and are most likely from the urban communities where they settled after retirement.

Other identified occupations are presented in Table 5. A relatively large number (46.1% of the sample) were into trading, kenkey selling, fish mongering and other minor trades such as selling palm wine. Some males were also into carpentry and block laying. This suggests that close to half of the sample did their own businesses to earn a living; and many of these elderly were from the 65 to 74 years old group.

Some elderly could still work after 65 years, as people age differently (Holmes et al., 2009). This was argued by Santrock (2006), who claimed that most elderly are still active. From the data, 30.2% still maintained their jobs (see Table 5). This characteristic would not only keep the elderly active to promote health but was also for socio-economic benefits.

The remaining 69.8% of the sample were no longer in their jobs. This was attributed to their gradual physical deterioration. With this number, “no more

working" suggests that in old age, almost 70% remain dependent on social security (if they were ever employed), their children or other family members for their survival. With 30.2% still maintaining their jobs after 65 years suggests that they are still fit for their jobs and this confirms the observation by Holmes et al. (2009) that persons age differently. Obviously, maintaining the jobs meant they could sustain their health status.

Living Arrangements

People occasionally move from one home to the other for different reasons. This study considered living in the present home for not less than one year as a criterion for subject selection and this is presented in Table 6. The rationale for using one year was for the elderly residents to have had enough time living in the homes and to identify the hazards that they may experience during both dry and rainy seasons.

It is important to stress that residents require ample time to identify health hazards in their environment. Even with enough time of living in the same home, You et al. (2004) attest that the elderly though lived with the dangers, sometimes fail to identify them in interviews. Table 6 shows that about 80% of the sample had lived in their present homes for three years and over. This forms a significant number who could genuinely report on the conditions prevailing in their homes. The least was 3.9% of the sample who had only lived there for one year.

Table 6

Living Arrangements by Gender

Characteristics	Gender		
	Male (%)	Female (%)	Total (%)
Period the elderly lived in the home			
One year	3.9	3.9	3.9
Two years	16.4	15.6	15.9
Three years and above	79.7	80.5	80.2
Total	100	100	100
Living alone in the room/apartment			
Yes	19.5	15.0	16.9
No	80.5	85.0	83.1
Total	100	100	100
Co-residents			
Spouse	35.6	24.5	29.0
Brother	7.7	1.9	4.3
Sister	4.8	5.3	5.0
Son	18.3	7.7	12.0
Daughter	16.3	33.5	26.6
Hired caregiver	2.9	1.9	2.3
Other	14.4	25.2	20.8
Total	100	100	100

Source: Field survey, Kumfo (2013) N=308

At the present age of the respondents, some were living alone as they had passed beyond the child bearing stage in life; and these children might have left home for work, marriage or both. It was therefore imperative to find out about the living conditions of the respondents which is shown in Table 6.

At the time of the study, 16.9% of the sample lived alone. It is encouraging that 83.1% of the participants lived with someone. It is worrying to know that Lee et al. (1999) reported 79% of their subjects to be living alone at the time of the accidents at home. The health implication of this is that these elderly with someone living with them could receive some support during an emergency. It does not matter much who these people are; it is just good for the elderly to have someone living with them. The relationships of these co-residents to the elderly are shown in Table 6. The higher the elderly proportion living with children, the better it is, since they would benefit from family care that may be available in co-residence.

Co-residence

On co-residence, 83.1% of the sample had someone living with them at the time of the study. Obviously, these co-residents would be supportive to the elderly in various ways. The practice of sharing a house; independent living; living with co-residents; and advantages in co-residence have been discussed in chapter three under cultural context of ageing. All things considered, the elderly have more to take in co-residence than independent living.

The elderly who live independently are not very safe at home and it is worth reporting on them. Lee et al. (1999) found 79% of the elderly studied in Hong Kong to be in independent living when they experienced home accidents. In another study conducted by Lök and Akin (2013), the results indicated that the elderly living alone expressed fear of falling. This fear could originate from past experience or stories of elderly falls. In case of fatal accidents, the casualty could die from preventable death. Goetsch (2007) considers an accident involving the elderly in independent living coming under the domino theory. Home accident falls under this theory as there might be no one at home (that is, the elderly living alone).

In terms of respondents' marital status, 29.0% of the sample was living with their spouses at the time of the study. Lim et al. (2014) found that the elderly who remained in marriage were less likely to suffer home injury. The other co-residents were children (38.6%), with the percentage of daughters being higher (26.6%). At the age of 65 years and over, 2.3% of the elderly had hired care givers residing with them. The remaining 20.8% lived with people such as grandchildren, children and their families, family members, and house helps in some cases. On a rare occasion, an elderly aged 68 years was living with the girl friend. A critical look at Table 6 also shows a pattern of the co-residence in which the male elderly prefer to live with their brothers. Similarly, the female elderly prefer to live with their daughters. This distribution shows some gender preference in choice of co-residence. It suggests that same gender may be more

comfortable living together in old age, proposing that people of the same sex are more likely to understand each other and get along better at this developmental period of life.

Residence

The elderly most often would like to enjoy the comfort and safety at their age by living in their own residences. Data on the participants' residence are shown in Table 7.

Table 7

Residence of Respondents

Variables	Gender		
	Male (%)	Female (%)	Total (%)
Ownership			
Own residence	69.5	50.0	58.2
Hired premises	16.4	16.2	16.2
Child/children's home	3.1	8.9	6.5
Brother's home	1.6	3.3	2.6
Sister's home	0.8	2.8	1.9
Family home	7.0	14.4	11.4
Other (specify)	1.6	4.4	3.2
Total	100	100	100
Toilet facilities			
Home latrine	15.6	15.0	15.3
Water closet	35.2	16.1	24.0
Public latrine	44.5	60.0	53.6
Others	4.7	8.9	7.1
Total	100	100	100
Source of lighting			
Kerosene lantern	17.2	18.9	18.2
Electricity	82.8	81.1	81.8
Total	100	100	100

Source: Field survey, Kumfo (2013) N=308

Ownership

The field data showed that a total of 58.1% of the participants had the dream of living in their own residences fulfilled. It was not encouraging, however, that at their present age, 16.2% of the respondents lived in hired premises. This number would not only let the elderly miss the comfort of their age but it also suggests that they are vulnerable to home accidents due to congestion in these homes.

Twenty elderly (6.5%) were living with their children due to their ages; and the same applied to those who lived with their siblings. A striking feature also suggests that more female elderly than males were residing with their children, siblings, and in the family house with congestion. Congestion at homes can result in a situation where stools and other obstacles could obstruct walkways; and could be health hazards for the residents. This issue of congested walkways was mentioned in Tomey and Sowers' (2009) conceptual model for the study. It is suggested that the higher number of the elderly females in their family house were widows whose spouses did not have their own residences.

Among the other places where the elderly lived were with spouses and friends. Two of the elderly still lived in government bungalows. It was however not clear whether these elderly respondents still living in government residences were dependents who lived with family members in government employment.

Toilet Facilities

Elimination is vital in life and can be very disturbing if facilities are not adequately provided at home. It is clear that just about a quarter of the sample (24.0%) used water closet at home (see Table 7). This form of toilet is the safest and also very close to the elderly who may have some problems with mobility as they advance in years and suffer degenerative conditions. Forty-seven (15.3%) of the sample used home latrines which is not very comfortable for them at their age.

From a contingency question, other means of attending nature's call emerged besides the options provided for the elderly in Table 7. Some of the elderly also said they attend natures call by going to the bush, while others used pampers or the refuse dump. A 95 year-old widow used the chamber pot and polythene bag while her daughter discards it. It is not clear where her daughter discards it; perhaps, she discards it in nearby gutters and this situation has some health implications. One can hardly believe that a person at this age in life had no other choice than to use bushes and refuse dumps. The discomfort and the inconvenience that accompany these is unbearable for the elderly. Besides these personal problems, community health is compromised as they could easily serve as favourable means of faecal-oral (from faeces to mouth) disease transmission. A little above 50% of the sample used the public toilet.

Source of Lighting at Home

Good lighting system is very important at home particularly for the safety of the elderly. It was therefore imperative to explore the source of lighting for the

elderly in the present study (see Table 7). In view of the metropolitan status of the research setting, 81.8% of the elderly responded that they use electricity at home. Homes without electricity are likely to have dim environments; and poor illumination at some areas in the home could result in poor vision and its consequences. Tomey and Sowers (2009) identify this in their model as harmful conditions which are highly dangerous to the vulnerable elderly.

Where Respondents Spend Day Time at Home

In the Ghanaian set up, family members spend most part of the day anywhere that may be comfortable for them. Table 8 indicates where the elderly in the research setting spent the day time.

As indicated in Table 8, it is suggested that 45.4% of the elderly were exposed to accidents such as stumbling which may be common at the courtyard than elsewhere at home. The elderly who spent the day on the veranda may have to struggle through obstacles in their way particularly if there is inadequate illumination coupled with over-population of household members. Another 9.1% spent the day at other places with their unique hazards. Some of these other places included the living room, bedroom and at the door entrance. One respondent who could not walk was always indoors.

Table 8

Gender distribution of Where the Elderly spend the day time

Location	Responses according to Gender		
	Male (%)	Female (%)	Total (%)
Porch/Veranda	31.2	22.2	26.0
Courtyard	35.2	52.8	45.4
Under the shade	24.2	16.1	19.5
Other	9.4	8.9	9.1
Total	100	100	100

Source: Field survey, Kumfo (2013) N=308

National Health Insurance Subscription

Old age may go with ill-health which the elderly must attend to mostly at a health facility; and this comes with cost to the elderly. It is known in Ghana that the elderly who are 70 years and are registered with the NHIS can only access free medical care at government facilities. Ghanaians currently access health care under the National Health Insurance (NHI) policy. Table 9 shows the number of the elderly respondents who had valid National Health Insurance cards at the time of the study.

In Table 9, a total of 67.9% of the elderly interviewed indicated that they could access health care at NHIS designated facilities if they were taken ill. It was however not clear if they could get all their needs met at these clinics; some of the ageing conditions may not be included in the NHIS disease list. This also meant

that close to a third had to pay for their medical bills fully when they fell sick. It would be recalled that only 30.2% of the sample (see Table 5) retained their jobs from which they could earn some income to pay their medical bills and other remittances.

Table 9

Gender Distribution of Elderly with Valid NHIS Cards

Response	Gender		
	Male (%)	Female (%)	Total
Yes	62.5	71.7	67.9
No	37.5	28.3	32.1
Total	100	100	100

Source: Field survey, Kumfo (2013) N=308

Summary

More females than males were covered in the research, with the mean age of 73 years; close to two-thirds of the sample were less than 74 years. Slightly over one-third of the sample was married at the time of the study with 0.6% who had never been married. Over half of them had no formal education. Christians dominated the sample with about three-quarters of the respondents than Moslems – an advantage for Christians to educate the elderly on their health during their worship time.

About four-fifth of the elderly had been living in their current residence for three years and above which is adequate for the respondents to provide valid responses to the items on DHH. On co-residence, fewer than 20% of them live

alone, while the others lived with their children, other family members and care givers.

Residential status is vital in the study, and it emerged that about 60% live in their own residences. It arose that over half of them use public toilet. On illumination, less than a fifth of them relied on kerosene lantern or candle for lighting at home. The interviews also revealed that close to half the sample spend most time of the day at the courtyard.

CHAPTER SIX

AWARENESS ABOUT DOMESTIC HEALTH HAZARDS AND TYPES

Introduction

An accident is regarded as an unforeseen event that occurs without a prior warning and yet, results in different degrees of fatalities. Prevailing conditions at home may make the environment prone to accidents for different age groups particularly the elderly. These elderly may have different health problems that could render them more vulnerable and hence more prone to home accidents. It is against this backdrop that the study was set to focus on the elderly who may neither be aware of these hazards nor the types at home. This chapter presents a discussion on research questions one and two which focus on awareness of the elderly about domestic health hazards and on the most common types of domestic health hazards that affect the elderly.

Awareness about Domestic Health Hazards

One of the research questions was to find out whether the elderly were aware of DHH. Awareness of DHH by the elderly is very crucial as it would motivate them to take precautions at home. Chirico et al. (n.d) reported that the elderly in Pittsburg, Pensylvania (USA) required more knowledge on home safety. In order to address the awareness issue, the respondents were interviewed on a total of five items comprising ability to identify the correct description of DHH; elderly coping strategies that could lead them to hazardous situations;

nature of the floor surfacing in their homes; nature of their courtyard; and whether they had potential health hazards. Later, they were also interviewed on specific situations at home. The adapted conceptual model from Tomey and Sowers (2009) includes some of these hazards.

The first item was the respondents' ability to identify the correct description of DHH. The level of awareness was based on the results of this item and supported by later items. An overall score of 70% and above was considered for the elderly to have a high level of awareness of DHH, between 40% and 69% score was considered as medium level awareness, and below 40% measured the elderly to have low level of awareness of DHH.

Meaning of Domestic Hazard

The respondents were again interviewed on the meaning of DHH from the options provided. The results showed that 0.3% of the elderly understood health hazard as "something that brings joy at home." A worrying outcome was the fact that 17.5% of them declared their complete lack of knowledge on health hazards. Another 18.2% of the sample considered it as sad news at home (see Table 10).

However, the larger proportion (64.0%) who considered it as anything that causes home accident is encouraging, although the figure ought to be quite higher than that. By selecting the correct meaning of health hazards, the elderly would be very careful when they move about at home since they are aware of the danger.

Table 10

Gender Distribution of Respondents' Understanding of DHH

Meaning of Domestic Health Hazard	Gender		
	Male (%)	Female (%)	Total (%)
Something that brings joy at homes	0.8	0.0	0.3
Sad news at home	14.8	20.5	18.2
Anything that can cause home accident	67.2	61.7	64.0
Don't know	17.2	17.8	17.5
Total	100	100	100

Source: Field survey, Kumfo (2013) N=308

Close to two-thirds were able to describe DHH correctly, and less than 20% could not describe DHH from the options provided. In order to improve on safety at home for the elderly, there is the need to target over 90% awareness level among the elderly on DHH. Appropriate strategies on awareness creation and how to reach them become the crucial issue stemming from this finding.

The results in Table 10 were limited to gender awareness and other perceptions of DHH by the respondents. It was assumed that some other demographic characteristics may promote or hinder awareness of DHH, that is, awareness about DHH. This requires a hypothesis to test for power of the association between the selected demographic characteristics and awareness. The demographic characteristics tested in the hypothesis were gender, age, education, living arrangements and marital status. To assess the demographic factors that

influence knowledge about DHH, a correlation co-efficient was used to test the hypothesis that:

There are no statistically significant relationships between awareness of DHH and selected demographic characteristics.

Data for the hypothesis was obtained from the results on awareness of DHH (dependent variable [DV]) and selected demographic characteristics of the elderly (independent variables [IV]). Awareness was measured in categorical terms. Thus, among the four options given for the item "What is domestic hazard?", only one was correct. A respondent therefore choosing any other option is given a score of zero.

The aim was to observe the statistical relationship, if any, between awareness of DHH and some selected demographic background of the elderly studied. The Pearson correlation was used to determine the relationship at 0.05 significant level (see Table 11).

From Table 11, we see that there was no significant relationship between level of awareness of domestic health hazards and gender, marital status and living arrangement. There was a positive statistically significant relationship between level of awareness and age of respondents ($r = 0.161$, $p < 0.05$). Thus, the more they grow older, the more they become aware of domestic hazards. Though there is a significant relationship, it is a weak one. On the other hand, level of education had moderately positive relationship with awareness of domestic hazards ($r = 0.311$, $p < 0.05$). Thus, those respondents who had higher

level of education tend to be more aware of domestic hazards than those with less or no level of education. The co-efficient of determination indicates that increase in the level of education could lead to about 10 percent increase in the level of awareness of domestic hazards and vice versa.

Table 11

Correlation Co-efficients of Relationships Between Selected Background Characteristics and Awareness of Domestic Hazards

Variables	Awareness of DHH	Gender	Age	Education	Loneliness	Marital Status
Gender	-0.057					
Age	0.161**	0.011				
Education	0.311**	0.306**	0.044			
Living alone	0.005	0.060	0.097	-0.045		
Marital Status	-0.010	-0.189**	-0.109	-0.079	0.207**	

Source: Field survey, Kumfo (2013) N=308 **P < 0.01

The null hypothesis of no significant relationship between awareness and demographic characteristics in terms of age and level of education is therefore rejected but for that of "gender," "living alone" and "marital status," the study fails to reject the hypothesis that there were no significant relationships.

The results presented in Table 11 indicate a positive statistically significant relationship between awareness and age of respondents

($r = 0.161$, $p < 0.05$). Thus, the more they grow older, the more they become aware of domestic hazards. It is suggested that living with hazards from younger ages tend to alert the elderly on the danger at home. Although accidents are not good for any age group, the outcome could be fatal for the oldest old than any younger age in the elderly categorization. Therefore, experiencing the accident earlier in life to gain knowledge about it quite early in life could be of immense help to the elderly in later life.

Additionally, formal education also had a significant relationship with awareness of domestic dangers ($r = 0.311$, $p < 0.05$). The elderly in this study who attained higher formal education tended to be more aware of domestic hazards. It was assumed that the knowledge could be obtained from the print or electronic media through the literacy advantage. Thus, it is suggested that if issues on DHH could be stressed quite early in formal education and sustained, both young and old could gain knowledge on the problem and hence be saved a lot from domestic accidents. A logistic regression was ran for awareness of domestic hazards using demographic variables that correlated significantly with it. The results are presented in a regression table (see Table 12).

Table 12

Regression analysis for awareness of domestic hazards using demographic variables

Variable	B	S.E.	Wald	Df	Sig	Exp (B)
Constant	2.478	.638	15.079	1	000	11.92
Age	.688**	.220	9.796	1	.002	1.989
Education	-.843**	.164	26.447	1	.000	.430

Model Summary

-2 Log likelihood	357.539
Cox & Snell R Square	0 .136
Nagelkarke R Square	0.187

The results indicate that older respondents are twice more likely to be aware of domestic hazards than the younger counterparts. On the other hand, educational level has a negative relationship of awareness with domestic hazards. This indicates that those who are more educated have about 2.3 times chance of being aware of domestic hazards than those who have less level of education. These two variables are predicting between 13.6 and 18.7 percent of the variation in awareness of domestic hazards.

Elderly Coping Strategies

Individuals may live in different ways that could render them vulnerable to some dangers such as accidents. In this research, we considered some selected

ones that were typical of elderly life yet could be dangerous to their health. The coping strategies of the elderly are presented in Table 13.

The data indicated that 44.5% of the sample admitted taking some daily medications. The elderly might have been on medication for some chronic diseases. Van Pelt (2012) reported that as people age, the number of drugs they take increases. In fact, some elderly believe in taking an orthodox drug daily thinking the practice would maintain their health. The side effects of these drugs could make the elderly vulnerable to home accidents; nevertheless, medication related falls are often overlooked. It is suggested that some of the elderly may not even know that what they were going through were side effects of the drugs they were taking. These effects could be mild or fatal depending on the drug and the physical health status of the person taking the drug. Robinovitch et al. (2012) also report that dizziness and side effects from medications can be contributory factors to falls. RoSPA (2015) observes that medications such as pain relievers and antidepressants (mood elevators) are risk factors in the elderly being exposed to falls.

The data also revealed that some 33.1% of the sample used some form of assistive devices such as walking sticks to facilitate mobility. Şimşek et al. (2012) studied the use of assistive device in the elderly who were 65 years and above in Turkey. Their research indicated that 31% of the women used assistive devices against 19% of men. Within this proportion of assistive device use, the most common device found was a walking stick.

Table 13

Gender Distribution on the Use of Elderly Coping Strategies

Livelihoods	Gender					
	Yes			No		
	M%	F%	T%	M%	F%	T%
I wear eye glasses	43.0	21.1	30.2	57.0	78.9	69.8
I use assistive devices	32.8	33.3	33.1	67.2	66.7	66.9
I move about with wheel chair	3.1	3.9	3.6	96.9	96.1	96.4
I am taking some daily medicines	50.8	40.0	44.5	49.2	60.0	55.5
I sometimes take a little alcohol	51.6	15.6	30.5	48.4	84.4	69.5

Source: Field survey, Kumfo (2013) N=308

This finding by Şimşek et al. compares with the present study in which 33.1% of the sample were using assistive devices but with almost equal number of males and females. The number of people using walking stick rather raises an important issue. It implies that this proportion of the sample would have some restriction in their movement at home in the absence of these devices; and would also be liable to home accidents particularly where the courtyard is rough.

The results also showed that 3.6% of the elderly move about at home in wheel chair. This proportion was quite small but would have been better if there was none. The remaining 96.4% did not require the device for mobility, but understood that they should be more careful as they moved about at home in case the home environment contains hazards against their safety. From the field data, a total of 30.2% of the respondents said they used eye glasses, while 30.5%

sometimes took some alcohol. The gender differences in the other coping strategies have been shown in Table 13.

The picture in Table 13 suggests that whereas more male elderly than females wear eye glasses, more female elderly than males also used assistive devices to facilitate mobility. More males also took daily medication and also drunk a little alcohol as their coping strategies. These results suggest that the elderly on medication may take wrong medicine, suffer side effects of medicines and may be vulnerable to home accidents. In a related report by RoSPA (2015), medications such as analgesics and antidepressants are included in the multiple risk factors for falls in the elderly. Daily alcohol consumption and the visually challenged acting as coping strategies and intrinsic factors could render the elderly prone to home accidents.

Characteristics of House

Homes within the study area were of different floor surfacing with most of them either cemented, un-cemented, or with green grasses planted in the courtyard to prevent erosion. The percentages for these different homes are shown in Table 14. In all, 50.1% of the sample reported on homes with some sort of cement work for the floor. This situation would prevent the elderly from slipping on the muddy floor in rainy seasons. A total of 42.5% of the sample lived in homes with un-cemented floor surface. The remaining types of floor and their proportions are shown in Table 14.

Table 14

Gender Distribution on the Characteristics of the House

Characteristic	Gender		
	Male%	Female%	Total%
Courtyard			**N=308**
Cemented	54.7	46.7	50.1
Un-cemented floor surface	35.9	47.2	42.5
Green grass	3.2	1.1	1.9
Rough surface with stones	6.2	5.0	5.5
Total	100	100	100
Slippery courtyard			**N=308**
Yes	37.5	44.4	41.6
No	62.5	55.6	58.4
Total	100	100	100
Managing slippery courtyard			**N=125**
I stay indoors	68.1	64.1	65.6
I come out freely anytime	17.0	10.3	12.8
Other	14.9	25.6	21.6
Total	100	100	100

Source: Field survey, Kumfo (2013) N=308

From the above features, it can be suggested that half of the sample were not at risk of slipping in their courtyard and sustaining fall injury. It is however clear that 5.5% of the sample could stumble as a result of the rough nature of surfaces in their homes. Besides, such homes may not be comfortable for the elderly who use wheelchairs and assistive devices as the floor would disturb their

free mobility. The elderly living in homes planted with green grass also face the risk of slipping, particularly if it rains. This however was found to be relatively small (1.9%) in the study area.

There can be advantages and disadvantages in the different types of floor conditions at the homes. An important issue from the nature of the homes is that all the elderly should be warned on the implications of living in their respective homes. Awareness creation among the elderly in particular on the disadvantages associated with each condition is very important in order to prevent home accidents.

Slippery Courtyards

It was necessary to find out if some elderly lived in homes with the courtyard slippery whenever it rained. The results in Table 14 indicate that 41.6% admitted to be living in such homes. The remaining 58.4% of the elderly did not consider their courtyards to be slippery. Those who claim not to be living in slippery homes require education on the condition of the courtyard in the homes. This has become obligatory since they may not walk with extra care as they would not consider the courtyard to be slippery and for that matter harmful to their lives. Those who admitted having slippery courtyards were more likely to take extra care in their movement.

Managing Slippery Courtyard

Among the 41.6% of the elderly who admitted that their courtyard was slippery whenever it rained, 65.6% said they often stayed indoors on such occasions. Only 12.8% of them admitted that they could come out freely anytime for their usual duties.

The fact that as much as 65.6% would stay indoors whenever it rained indicated that they sense some danger in coming out on such occasions. This result supports the observation by RoSPA (2015) on slippery floors as an environmental factor contributing to falls among the elderly. These elderly persons would want to protect themselves from accidents such as falls, hence the decision to rather stay indoors. It is suggested that these elderly who stay indoors whenever it rains would require some help particularly in providing IADLs (if it so requires).

Besides these two options, there was provision for those who adopt other means to live in such homes. From a contingency question 21.6% of these elderly came out with different strategies. On protection, some of the elderly decided to add sand or gravel to the original floor. Some other elderly did not think about the floor, but rather used supportive devices such as walking sticks to prevent any injury. Some of the elderly on the other hand took their time while walking on the slippery floor. In other cases, an elderly required support to come out. This elderly in particular indicated earlier that she used an assistive device to walk; and she described domestic hazard as "sad news at home," which implied that she in

particular was not aware of DHH. Lack of knowledge in DHH makes this woman's case very pathetic as she also uses an assistive device to walk. In the absence of her guide, she could not avoid the DHH, as she does not know what it is about.

Potential Health Hazards in Home Environment

It was necessary to find out whether the respondents considered hazards in their homes. The responses from the sample to this item are presented in Table 15. If the elderly thought about hazards at home, they would make conscious efforts to be more careful while moving about, or better avoid them by changing the home. Going by the data, it is seen that only 29.2% of the elderly considered their homes to have health hazards. Carter et al. (1997) after a study in Australia reported that 39% of the elderly named over five hazards and 80% of the homes had at least one hazard.

Table 15

Gender Distribution on the Availability of Potential Hazards at Home

Availability	Gender		
	Male (%)	Female (%)	Total (%)
Yes	29.7	28.9	29.2
No	70.3	71.1	70.8
Total	100	100	100

Source: Field survey, Kumfo (2013) N=308

It is possible to suggest that the participants who lived in homes with one hazard were conscious of the situation and hence took precautions to safeguard their lives in the home. A contingency question requested for the name of specific hazard, and this brought out various examples of hazards. Most of these elderly considered slippery floors or courtyards, and rough surface of the floor as dangerous. Some elderly also reported on steps and uneven floor levels. An 81-year old man lamented on the high stairs for his age. It was on record for this respondent that he used a supportive device for mobility and this elderly also selected "anything that can cause home accident" from the options provided on the meaning of DHH. Other elderly considered the dilapidated nature of the building itself with one being more specific on faulty electrical wires. These are clear hazards that could threaten the health of the residents.

The remaining larger population of 70.8% however disagreed to having potential DHH. The difficulty associated with this number is that they would, under all circumstances, consider the home to be safe whereas it was actually not always so. On the other hand, it implies that these persons could not identify the dangers they lived with at home. This finding is in line with Carter et al. (1997) who found 30% of the participants rating their homes as safe; yet, they actually had more than five observed hazards at home. Similarly, Edwards (2013) also reported that dangers are hidden in our homes.

Specific Situations at Home

Hazardous situations in the residences of the elderly were examined. Respondents were asked earlier whether their homes had potential DHH and the results are presented in Table 15. A follow-up item in the instrument requested for some specific domestic situations/conditions mentioned in the instrument as present in their homes. Some of the situations in the list are DHH. The purpose of this item was to cross-check the elderly on their decision in Table 15; and also lead them to identify specific DHH if that could be better to promote their health at home. In addition, the item also contained some situations which were rather safety conditions. These results are presented in Table 16.

On source of possible fire, the results showed that 75.0% of them agreed on the home condition. Concerning slippery floors, as much as 68.8% of the sample also agreed. It would be recalled from Table 16 that 19.2% of the participants accepted "adequately lighted walkways" as a home condition. This result about adequately lighted walkways appears widespread in the sense that only 19.2% considered this healthy condition to be available at home. It is therefore suggested from this that close to 80% of the elderly was prone to accidents related to darkness in the walkways.

Table 16

Gender Distribution of the Elderly in Agreement with Situation at Home

Situations	Gender responses					
	Yes			No		
	M %	F %	T %	M %	F %	T %
Slippery floors	69.5	68.3	68.8	30.5	31.7	31.2
Climbing stairs	53.1	57.8	55.8	46.9	42.2	44.2
Adequately lighted walkways	18.8	19.4	19.2	81.2	80.6	80.8
Sharp implements at kitchen	48.4	64.4	57.8	51.6	35.6	42.2
Walkways clear from obstacles	18.8	20.6	19.8	81.2	79.4	80.2
Dark areas	64.1	64.4	64.3	35.9	35.6	35.7
Heights	52.3	50.0	51.0	47.7	50.0	49.0
Non-slippery floors	25.0	22.8	23.7	75.0	77.2	76.3
Floor with scattered obstacles	60.2	60.0	60.1	39.8	40.0	39.9
Fire source	73.4	76.1	75.0	26.6	23.9	25.0
Exposed / live electrical wires	57.8	59.4	58.8	42.2	40.6	41.2

Source: Field survey, Kumfo (2013) N=308

Responses to the other specific home conditions are shown in Table 16. More females admitted to the selected home conditions than the males. Besides, the gap was quite wide with 64.4% females against 48.4% of males going in for sharp implements at kitchen, a decision which perhaps suggests that more females than males use the kitchen and can testify to this.

Regarding the specific items which were on safe conditions (adequately lighted walkways, walkways clear from obstacles and non-slippery floors), the

results indicated totals between 19.2% and 23.7% who accepted having them in their homes. The fact that a higher percentage of the elderly disagreed to these safe conditions rather raises a critical issue. Since the reverse forms of these situations were also included in the list, there should be some consistency in the responses to these conditions; rather there were discrepancies shown in the responses.

A critical analysis therefore postulates that respondents were more comfortable with specific home situations rather than asking them whether they had the conditions in general since the results in Table 15 were completely in the reverse when compared with those in Table 16 where 70.8% on average disagreed to potential hazards at home. These results indicated that respondents may not know what was meant by DHH in general (Carter et al. 1997, You et al. 2004); but could be familiar with the specific home conditions.

Common Types of Domestic Health Hazards

Research question two was formulated to explore the different types of DHH that could be identified in the homes of the elderly. In order to answer this research question, the elderly were interviewed on harmful conditions identified in the homes; and the degree of specific harmful conditions in the same home environment.

Harmful Conditions Identified in the Homes

According to WHO (2013), human habitats contain potential threats to human life. Human life is in danger when such potential threats turn out to be real sources of danger that could cause accidents if they cannot be identified for the necessary precautions to be taken promptly. Different conditions and situations exist at home and we continually live with them. The elderly were interviewed on some of these unsafe conditions and the results are presented in Table 17. It would be recalled that earlier in the interview, both *safe* and *unsafe situations* were presented for the same purpose and the results are shown in Table 16. Table 17 therefore contains only the unsafe conditions.

The elderly responded to nine different types of hazards that could be found in homes at the research setting. A careful examination of the results in Table 17 depicted the prevailing unsafe situations in our homes. Fire source in this study refers to the type of fuel mostly used for cooking. Among the nine different conditions, 63.0% accepted fire source as a domestic hazard at their homes.

This high percentage again suggests that almost every home has some danger in different forms with fire, as source reported by two-thirds of the sample in the interview. Some elderly may also have the habit of warming their bodies particularly during the cold rainy and harmattan weathers. Most homes used charcoal for cooking and others within the study area also used a combination of charcoal and liquefied petroleum gas for cooking. In recent times, most homes

have gradually changed from the electric source of fire in view of the high cost and unreliable supply. However, few homes particularly in the rural communities still relied on firewood for cooking as it was relatively cheaper and available. This high percentage of the elderly accepting fire source as a harmful condition is commendable in the sense that they could be extra watchful on handling fire during its use.

Table 17

Gender Distribution of the Presence of Harmful Conditions at Elderly Homes

Harmful conditions	Gender					
	Yes			No		
	M %	F %	T %	M %	F %	T %
Slippery floors	44.5	47.8	46.4	55.5	52.2	53.6
Climbing stairs	34.4	35.6	35.1	65.6	64.4	64.9
Sharp implements at kitchen	53.9	64.4	60.1	46.1	35.6	39.9
Dark areas (indoors)	34.4	27.2	30.2	65.6	72.8	69.8
Varying levels of floor	35.2	25.6	29.5	64.8	74.4	70.5
Floor with scattered obstacles	29.7	22.8	25.6	70.3	77.2	74.4
Fire source	58.6	66.1	63.0	41.4	33.9	37.0
Exposed / live electrical wires	15.6	9.4	12.0	84.4	90.6	88.0
Slippery bathrooms	33.6	22.2	26.9	66.4	77.8	73.1

Source: Field survey, Kumfo (2013) N=308

Almost every home has a designated area where family meals are prepared. In most cases, these areas, known as kitchens, may not be structurally designed as found in the western homes. Some of these dangerous items found in the kitchen include grater, knife, blender and meat cutter. Items such as knives and graters were available in low class kitchens. These items which were mostly sharp instruments were identified by 60.1% of the respondents. This finding suggests that most people throughout their lives might have had an injury from kitchen knife or any other implement used in food preparation. This result suggests that the elderly are extra alert when using sharp implements from the kitchen. The third highest percentage (46.4%) of the elderly identified slippery floors as one of the home conditions that could be described as harmful.

Domestic hazards and their possible contributing factors have been a matter of concern globally. For instance, in America, VIPP of Utah Department of Health (n.d) mentioned slippery or wet floors, uneven floors and surfaces, poor lighting and unstable furniture as some factors that increase the chances of falls among adult. Most of these factors were reported by respondents in the current study. For instance, slippery floors, poor lighting (dark areas), and uneven floors (varying levels of floors) were common in both studies. Carter et al. (1997) in a study conducted in Australia also reported that 80% of the homes studied had at least one hazard, and a third of the homes had five hazards. This implies that no home whatsoever can be proud of a hazard-free environment as Edwards (2013) considers them as hidden. Trembley Jr. and Barber (2005) identified tripping over

objects on the floor as the most common hazard at home. Such objects can be toys or peels. Shawon et al. (2012) found that hazards and accidents are in direct relationship. These variables are related in the sense that the former exposes people to the risk of accidents particularly if they escape identification. The conceptual model by Tomey and Sowers (2009) shows some of these in the indoor home environment as environmental barriers and challenges.

Degree of Specific Harmful Conditions at Home

Homes in the study area had the courtyard in different forms. As shown in Table 14, there were 41.6% of the elderly who agreed that the courtyard was slippery during rainy days as against 58.4% who disagreed. In a separate item, respondents were requested to indicate the degree of availability of slippery floor as a domestic hazard. The degree of availability is measured by three or more of the conditions indicating "very common," two instances as "common," and one instance as "rare." These results are presented in Table 18. In the interview schedule, the respondents indicated "Yes" or "No" for each hazard before proceeding to rate the danger if they ticked "Yes." Thus, in Table 18, a percentage who did not find the danger at home has been represented by "Not Found" (NF). A striking feature of the result is the percentages that indicated "Not Found."

In response to slippery floors as DHH, 44.8% did not perceive the hazardous situation in their homes. This number was against 25.6% who declared it "very common" with 23.1% rating it as "common." By adding 6.5% from those

who rated it "rare" to other ratings, there would be a total of 55.2% accepting the presence of slippery floors at their homes.

Homes may have staircase depending on the landscape, and some rooms may be accessed through stairs. In view of musculoskeletal degeneration which is a common feature in the elderly, mobility in environments with rare stairs (or better still without stairs) would be easier for the elderly. This rating suggests that accidents that could occur from steps would be absent in 59.1% of the elderly homes. This suggests that most homes in the study area were one-storey building.

Total absence of kitchen implements would be impossible in any home as every kitchen must have some basic implements such as knife to enable it function effectively. Other dangerous ones include blenders and graters depending on the family's affordability. Edwards (2013) included sharp kitchen implements among the top ten safety hazards hidden in our homes. In the present study, a total of 63.6% found the dangers in various degrees at the kitchen.

It is important to note how Edwards describes these hazards as "hiding in plain sight throughout your home." This suggests that these may not be seen or known to the household members. That is, sometimes, a related home accident is what leaks such home dangers. The report further provides strategies to safeguard the household members.

About 63% of the respondents in the present study acknowledged that sharp implements exist in various degrees but another 36.4% of the sample *could not* find sharp implements in any form at the kitchen. Perhaps, most of these

elderly either depended on food vendors for their meals or someone served them with meals prepared outside their homes. These meals could be from children who did not live with their parents, yet these children were responsible for preparing food for their elderly parents.

These children possibly had left home as they had their own families, as typical of Ghanaian families. Tradition however demands that the children continue to prepare food for their parents who are unable to do so. It is a common practice that the grandchildren who send these meals to their grandparents daily also report back on the health status of the elderly to their parents. Through this strategy of grandchildren sending meals daily from parents to grandparents, people are in regular contact with their aged parents.

Poor building plan may result in bad ventilation and dark areas at home. Homes with dark areas would pose a great threat to humanity particularly the elderly who sometimes may have problems with vision. Interview results on the extent to which these dark areas were available are presented in Table 18. Nearly 19% of the elderly indicated that dark indoor areas were rare in their homes. This number together with “common” (20.8%) and “very common” (10.4%) appear alarming as these could pose a threat to the elderly, particularly those with vision problems. The elderly in this category could walk into furniture or other obstacles such as rugs, ropes, buckets and kitchen stools placed in a congested walkway without noticing them in the dim or dark environment (Tomey & Sowers, 2009).

Table 18

Gender Distribution of the Degree of Harmful Conditions at the Elderly's Home

Harmful conditions	Degree of harmful conditions									
	Very common			Common			Rare			
	M (%)	F (%)	T (%)	M (%)	F (%)	T (%)	M (%)	F (%)	T (%)	NF(%)
Slippery floors	28.9	23.3	25.6	23.4	22.8	23.1	6.2	6.7	6.5	44.8
Climbing staircase	10.9	11.1	11.0	25.8	26.1	26.0	4.7	3.3	3.9	59.1
Sharp implements at kitchen	14.1	10.0	11.7	40.6	45.6	43.5	5.5	10.6	8.4	36.4
Dark areas (Indoors)	11.8	9.4	10.4	23.6	18.9	20.8	18.9	18.9	18.9	49.8
Varying levels of floor	11.7	6.7	8.8	20.3	16.7	18.2	4.7	6.1	5.5	67.5
Floor with scattered obstacles	7.0	6.1	6.5	18.0	15.0	16.2	18.8	15.0	16.6	60.7
Fire source	10.2	7.2	8.4	39.1	54.4	48.1	16.4	5.0	9.7	33.8
Exposed/lived electrical wires	4.7	1.7	2.9	5.5	3.3	4.2	16.4	18.9	17.9	75.0
Slippery bathroom	10.2	5.0	7.1	23.4	14.4	18.2	14.8	15.6	15.3	59.4

Source: Field survey, Kumfo (2013) N=308

Movement for the elderly could be easier on level floor as they may not need to bother lifting their feet much while walking. Accessing the next level becomes difficult for the elderly particularly for those who may have to depend on walking stick for support and the 3.6% (see Table 13) who used wheel chair for mobility. Mobility may be impaired for most elderly. This situation could be worsened by the presence of scattered obstacles in the home.

The results in Table 18 showed that 60.7% of the elderly do not have the floor scattered with obstacles. This implies that the elderly in these homes could move about freely without any fear of walking into obstacles such as stools, rugs, rope and carpets. Carpets for instance are materials used at home for aesthetic purposes; nevertheless, ignorance of the dangers could take the elderly to the hospital and beyond. It is also worth reporting that 6.5% of the sample rated these things as being "very common" in their homes. Rosen et al. (2013) reported on rugs and carpets as responsible for 45.8% and 54.2% of falls respectively that sent the elderly who are 65 years and above to the emergency units of 66 US hospitals for treatment.

On fire sources such as gas stove and candle lights that may cause fire outbreak at home, about a third did not admit that they were available at their homes. This assertion was not true in the sense that fire sources in any form could not be absent in our homes. It could be assumed that these elderly never considered it as a danger at home, or had less regard for it; Edwards (2013) regards them as hiding in plain sight. You et al. (2004) found a disparity between

actual hazards and perceived hazards reported by participants in a descriptive study to identify common hazards in the elderly homes. The suggestion is that these states of under-rating or total ignorance could be more serious since they could not be alert and guard against the danger they face at home. It is therefore suggested in this study that the elderly were likely to underrate hazards associated with sources of fire.

It would be recalled that 81.8% of the respondents admitted using electricity for their source of light as shown in Table 7. From Table 18, the 25% who faced the danger at home is still worrying since the sheer rare existence of the hazard in one's home was enough to cause complex accidents. For instance, fire (leading to loss of property), burn, or electrical shock could affect one person. Any of these problems could arise through overloading the extension board with different appliances including water heaters which are used mostly by the elderly to warm water. As a matter of urgency, these homes would require technical assessment and if possible, re-wiring.

Less than 20% of the elderly used kerosene and other sources of light at home (see Table 7). If 75% did not find this danger in their homes, one would suggest that the elderly population that was interviewed did not observe the dangers associated with electricity. It is also important that the 25% of the elderly who admitted having the danger in existence at various degrees should take the necessary measures to mend those problems since electrical accidents could occur without any warning. Riley-Smith (2015), a British news reporter, observed that

about two-thirds of elderly homes in Britain lacked the required safety measures. The report regarded electrical safety as one of the greatest concerns for elderly caregivers. It is possible that such homes could abound in Ghana. It is suggested that a periodic inspection of all homes of the elderly by the staff of Electricity Company of Ghana (ECG) for electrical safety be introduced in order to protect life and property.

Bath tubs could be slippery and hence could be a form of home danger. Sometimes, traditional bathrooms and those that have bare cement floor could be slippery depending on how frequently these places are scrubbed. The data indicated that about 40.0% could face the danger of falling in the bathroom. Rosen et al. (2013) reported that 35.7% of the fall injuries occurring at home to the elderly occurred at the bathroom. This danger may elude some of the victims.

The theory of accidents postulates that hazards precede accidents; however, accidents may occur when hazards elude identification. It was therefore necessary to determine the statistical relationship between DHH and domestic accidents in the hypothesis that: There is no statistically significant relationship between domestic health hazards and domestic accidents.

Data for the hypothesis was obtained from DHH prevailing in the elderly homes (independent variables) and the accidents suffered by the elderly within the last 12 months of the study (dependent variables). The aim was to observe the statistical relationship, if any, between the DHH and the accidents that may be

associated with these hazards. The Pearson correlation was used to determine the relationship. The results are shown in Table 19.

From Table 19, fall at level floors posted a positive and statistically significant relationship with slippery floor, dark areas, varying level of floors, floors with scattered obstacles and slippery bathrooms. Thus, most of the respondents, who had the hazards mentioned, tended to fall at level floors. Elimination of these hazards could reduce the risk of falling on level floor.

Similarly, falls from height had a positive and significant relationship with slippery floor, climbing staircase, dark areas, varying levels of floors, floors with scattered obstacles and slippery bathrooms. In addition, the elderly who reported about the presence of these hazards were likely to slip on smooth surfaces.

There was also a positive and significant relationship between burns on the one hand and dark areas and floor with scattered obstacles on the other. Thus, elderly who had poor illumination and many obstacles in their rooms were likely to report more burns than those who had brighter lights and less obstacles in their rooms. On the other hand, though fire source and exposure to electrical wires in dwelling place had a positive relationship with burns, these relationships were not statistically significant.

Further, there was a positive and significant relationship between wounds, and floors with scattered obstacles. There was also a positive relationship between wounds and sharp instruments at the kitchen though it was not statistically significant.

Table 19

Correlation Co-efficients of Relationships between Selected Domestic Health Hazards and Domestic Accidents

VARIABLES	Slippery floor	Climbing stair case	Sharp implements at kitchen	Dark areas	Varying levels of floor	Floor with scattered obstacles	Fire source	Exposed electrical gadget	Slippery bathrooms	Number of hazards
Falls at level floor	0.163**	-0.024	0.223**	0.292**	0.128*	0.341**	0.110	-0.019	0.238**	0.323**
Falls from height	0.165**	0.127*	-0.026	0.139*	0.244**	0.110	-0.126	0.058	0.156**	0.182**
Slipping on smooth surface	0.189**	0.057	0.183**	0.239**	0.250**	0.387**	0.086	0.085	0.220**	0.369**
Burns	0.085	-0.028	0.200**	0.257**	0.142*	0.355**	0.063	0.049	0.275	0.304**
Wounds	0.132*	0.035	0.034	0.230**	0.153**	0.243**	-0.013	0.140*	0.241**	0.253**

*p<0.05, p**<0.01

Table 19 continued

VARIABLES	Slippery floor	Climbing stair case	Sharp implements at kitchen	Dark areas	Varying levels of floor	Floor with scattered obstacles	Fire source	Exposed electrical gadget	Slippery bathrooms	Number of hazards
Stumbling	0.111	0.087	0.172**	0.234**	0.276**	0.269**	0.098	-0.013	0.331**	0.346**
Electric shock	0.032	0.001	-0.006	0.058	0.093	0.053	-0.080	0.129*	0.206**	0.096**
Taking wrong medication	-0.026	0.037	-0.209**	-0.013	0.127*	-0.046	- 0.149**	0.056	0.082	-0.040
Number of accident	0.199**	0.066	0.155**	0.333**	0.314**	0.402**	0.025	0.091	0.383**	0.426**

Source: Field survey, Kumfo (2013) N=308 *p < 0.05, **p<0.01

The number of accidents experienced by the elderly had positive relationship with all the domestic hazards identified. In terms of magnitude, slippery floor, sharp implements, dark areas, varying levels of floor, floors with scattered obstacles and slippery bathrooms were significantly related with the number of accidents experienced by the respondents (ranging from 0.155 to 0.402, $p < 0.05$). This is evidently expressed in the relationship between number of hazards and number of accidents which showed a moderately positive significant relationship ($r = 0.426$, $p < 0.05$). Thus, an increase in the number of hazards in a respondent's dwelling place was associated with an increase in the number of accidents.

The hypothesis of no significant relationship between hazards and domestic accidents was thus rejected in favour of its alternative of significant relationship between domestic accidents and domestic hazards. The results of a further statistical analysis done using linear regression are presented in Table 20.

The linear regression was conducted to investigate the influence of domestic hazards. The domestic health hazards entered into the model include: slippery floors, climbing stair case, sharp implements in the kitchen, dark areas (indoors), varying levels of floor, floors with scattered obstacles, fire source, and exposed electrical wires. The results revealed that, these variables contribute more than 25 percent of the variations in the number of accidents experienced by the respondents in the study area. The most predictor variables which were

significant in explaining the number of domestic accidents were dark areas, floor with obstacles, and varying levels of floors

Table 20

Linear Regression on the Influence of Domestic Hazards.

Variable	B	Std. Error	T	Sig
Constant	.974	.182	5.344	.000
Slippery Floor	.241	.201	.1.198	.232
Climbing Stair Case	-.001	.203	-.005	.996
Sharp implements at Kitchen	.157	.242	.648	.518
Dark Areas (Indoors)	.676	.227	2.974	.003
Varying levels of Floor	.832	.216	3.849	.000
Floor with Scattered Obstacles	1.211	.236	5.128	.000
Fire Source	-.217	.237	-.919	.359
Exposed/Live electrical wires	-.121	.295	-.410	.682

Model Equation

NA = 0.947 + 0.2421 SF – 0.001 CS + 0.157 SI + 0.676 DA + 0.832 VL + 1.211 FO – 0.217 FS – 0.121 EW.

Where NA = number of accidents, SF = slippery floors, CS = Climbing Stair case, SI = Sharp implements at kitchen, DA = Dark areas, VL = Varying levels of floor, FO = Floors with scattered Obstacles, FS = Fire source, EW = Exposed electrical wires.

Model Summary	
R	0.502
R Square	0.252
Adjusted R Square	0.232
Standard Error of the Estimate	1.61687

Summary

Research questions one and two have been examined in the chapter. These questions focused on the awareness of the elderly of and on the hazards that were available at home. An overall score of 70% and above was considered as high level of awareness of DHH. There were worrying results particularly when a respondent thought DHH refers to something that brings joy at home. A larger proportion of 64.0% however considered it as anything that causes home accident. Correlation co-efficients calculated found positive statistically significant relationship between awareness and age ($r = 0.161$, $p < 0.05$) and similarly for level of education ($r = 0.311$, $p < 0.05$). From the logistic regression results, age and level of education are found to be predicting between 13.6 and 18.7 percent of the variation in awareness of domestic hazards. Formal education can therefore include information on home hazards from very early years.

Five selected elderly coping strategies were presented for the elderly to identify whichever applied to them. The highest proportion (44.5%) of them agreed to take some daily medications. The least proportion of 3.6% used

wheelchair for mobility. These livelihoods make the elderly vulnerable to home accidents.

On characteristics of the home, about half of them had their homes cemented. Some of the elderly who had slippery courtyards stayed indoors whenever it rained whereas a few of them moved about with caution. Besides slippery floors during rainy days, about a third of the elderly agreed on existence of potential hazards in their homes. The remaining proportion however disagreed and this is quite worrying since they could not identify any form of DHH and could easily fall victims to accidents caused by these hazards. A list of hazards and safe situations were presented to the elderly to identify those available in their homes. What is even worrying is that some also could not accept the safe situations at home.

Nine selected harmful conditions were presented to the elderly in the interviews to identify those that were available in their residences. Between 12% and 63% of the elderly agreed that they had some of the hazards in their homes. These responses indicate that the homes are not safe without the household members being extra careful. For instance, 63% agreed on fire source while 60.1% accepted sharp implements in their kitchens as harmful. Another worrying danger was slippery floors identified by 46.4% of the respondents. The other worrying side of the interview responses was the 49.8% who disagreed to the availability of indoor dark areas at home. Personal observation found this to be partially false. On how common the same hazards could be at home, about a

quarter of the elderly confirmed slippery floors in particular to be "very common" hazard in their homes. Close to 20% of the respondents went further to consider indoor dark areas to be rare in their homes. These results are worrying considering the high vulnerability of the elderly.

It was necessary to find the statistically significant association between DHH and the accidents sustained by the elderly within the last 12 months of the study. On the whole, the hypothesis of no significant association between hazards and domestic accidents was rejected, suggesting a significant association between domestic accidents and domestic hazards. Further, logistic regression was ran to identify the predictor variables. The results indicate that the most predictor variables which were significant in explaining number of domestic accidents were dark areas, floor with obstacles, and varying levels of floors. This calls for the need to prevent domestic accidents in the elderly by eliminating DHH in order to promote accident-free life for the elderly to ensure healthy ageing.

CHAPTER SEVEN

UNSAFE LOCATIONS AND OVERRIDING DOMESTIC ACCIDENTS

Introduction

Chapter six recounted the awareness about domestic health hazards and types. Close to two-thirds agreed that DHH is dangerous to human life; and a sizeable percentage granted that they had some of these hazards in their homes. This chapter discusses research questions three and four on the areas that the elderly considered as hazardous at home and the dominant home accidents that the respondents suffered during the last 12 months of the study.

Research question three aimed at identifying the hazardous areas at home for the elderly. This we hope would remind others or alert some elderly who did not yet know of these areas at home. Two main items to explore this research question were framed as differentiating between safe and unsafe areas at home; and specific areas where the elderly had an accident at home. Hazardous areas are accident prone if other factors persist.

Accidents that the elderly sustain within the last 12 months of the study were explored in research question four. Five main items were developed and the respondents were interviewed on these items to answer the research question. These items focused on: a) Identification of an accident suffered within the last twelve months prior to the study; b) Time of the day when the accident occurred; c) Possible cause of the accident; d) Number of times the accident occurred within

the period; and e) Interventions used following the accident. These items were sub-divided along the specific accidents during the interviews. To complete this section, there were contingency questions asked to explore any issues that could not be covered.

Unsafe Areas at Home

Elderly health at home depends on an environment free from dangers that could cause accidents. Unidentified hazards are very dangerous as the elderly could not readily see them to take the necessary protection. Some particular locations may be safe or hazardous to the elderly at home and these areas must be identified and the necessary measures taken to render the home safer.

Locations Considered as Safe or Hazardous

Our home environment is supposed to offer protection to all, including the elderly. In order to provide protection, the home must be safe as much as possible, yet, this safety may not be guaranteed in all cases (Ang & Lim, 2008; Newton, 2008; Shawon et al., 2012). The structure of the home may not guarantee total safety for all the areas. Tomey and Sowers (2009) stressed that hazardous environments negatively affect the health of the elderly as the elderly gradually deteriorate in some sense organs. Some areas at home had been selected for the respondents to affirm their safety status. These facilities/locations were not physically inspected, but mentioned to the elderly to declare their safety status. Respondents who had the selected locations at their homes rated them

accordingly. In some cases, the selected facilities were not found; hence, the respondents could not rate them but simply responded as "Not Found" (N/F). These results are presented in Table 21.

Table 21

Gender Distribution on Areas at Home as Safe and Unsafe by the Elderly

Areas at home	Conditions						
	Safe			Harmful			
	M (%)	F (%)	T (%)	M (%)	F (%)	T (%)	N/F
Kitchen	75.0	80.0	77.9	7.8	8.3	8.1	14.0
Bathroom	75.0	86.7	81.8	18.0	7.8	12.0	6.2
Living room	61.7	60.0	60.7	2.3	2.8	2.6	36.7
Bedroom	89.8	93.9	92.2	3.1	3.3	3.2	4.5
Porch/veranda	58.6	55.0	56.5	4.7	3.9	4.2	39.3
Courtyard	72.7	76.7	75.0	8.6	13.3	11.4	13.6

Source: Field survey, Kumfo (2013) N=308

The process of preparing family meals requires using sharp implements, liquefied petroleum gas or electric cookers, and in some cases, domestic fuel like firewood, and charcoal. This process could render the kitchen unsafe. We suggest that the respondents hardly had accidents at the kitchen, but never ascribed the accident to hazards at the kitchen. This assertion if correct suggests that the elderly should be alerted that the accidents follow the hazards at the kitchen and therefore should consider the kitchen as hazardous.

The data from Table 21 indicated that bathroom was the most harmful area (12.0%), but only a small proportion of the sample may not have bathrooms at home. These people, we think used public bathroom or bathed anywhere in the house at night as it is a common practice in some homes.

In some homes, particularly those built on the plans from the western world, the sitting room is where the entire family often stay for most part of the day. However, in some traditional homes, the sitting room may not exist. The sitting room is a common place at home where there may be overcrowded furniture for the family and visitors. Overcrowded furniture sometimes compete for space at home. Most often, it is this situation that leads the elderly and most people at home bumping into furniture particularly in the night or when the sitting room is poorly illuminated.

It is likely that the bedroom is where most people spend the greater part of the night. For some, in addition to the night, those who may be home-bound and bed-ridden may spend more than 12 hours of the day in the bedroom. From the bedroom, some people may spend the day in the porch/veranda (provided the facility is available at home), whereas others may opt for the courtyard.

Over half of the sample considered the selected areas in the home as safe. This was revealed by the high percentages in Table 21 which presented safe and harmful areas at home from the elderly. The low percentages in Table 21 that declared the areas as harmful were quite encouraging; and the areas were not dangerous to the elderly at home. It would be recalled that Ang and Lim (2008) in

a study in Singapore found the leading hazardous areas in the home as the kitchen, bathroom, living room and bedroom which are completely contrary to the findings of this study. Since some implements would be basic to all kitchens, it can therefore not be accepted wholly that about two-thirds of the kitchens would be safe. We suggest that the respondents under-rated these implements as dangerous. From her point of view, Edwards (2013) regards the hazards as indiscernible, although in plain sight. Alternately, as mentioned earlier, we suggest that these elderly received the meals prepared elsewhere for them, and hence have very little or nothing to do at the kitchen.

In separate studies (Carter et al., 1997; Edwards, 2013; You et al., 2004), the elderly could not identify the hazards, although they were living with them at home. This, however, is more dangerous since the elderly who use the facilities cannot identify that the hazards are less likely to be careful in using these areas at home. This is the unfortunate situation which is showing up in this study, a situation which can be very dangerous to them. Tomey and Sowers (2009) describe the home environment as favourable or unfavourable for the elderly. The authors consider individual performance capacity to be low when the environment is slippery, uneven, or poorly illuminated. RoSPA (2015) also identified slippery environment as an area that should not be underrated in unsafe home environments. These situations render the environment dangerous and actually result in accidents. Therefore, the interview continued to ascertain the actual accident spots at home.

Where Respondents Ever Had Accidents at Home

The home is a place where everyone moves about freely at any time except in cases where one is incapacitated or confined to bed. Earlier, respondents were interviewed to declare some selected locations at home as safe or hazardous. As a follow up question in the interview, the elderly were asked whether they ever had accidents at those same areas. The responses to this question are presented in Figure 4.

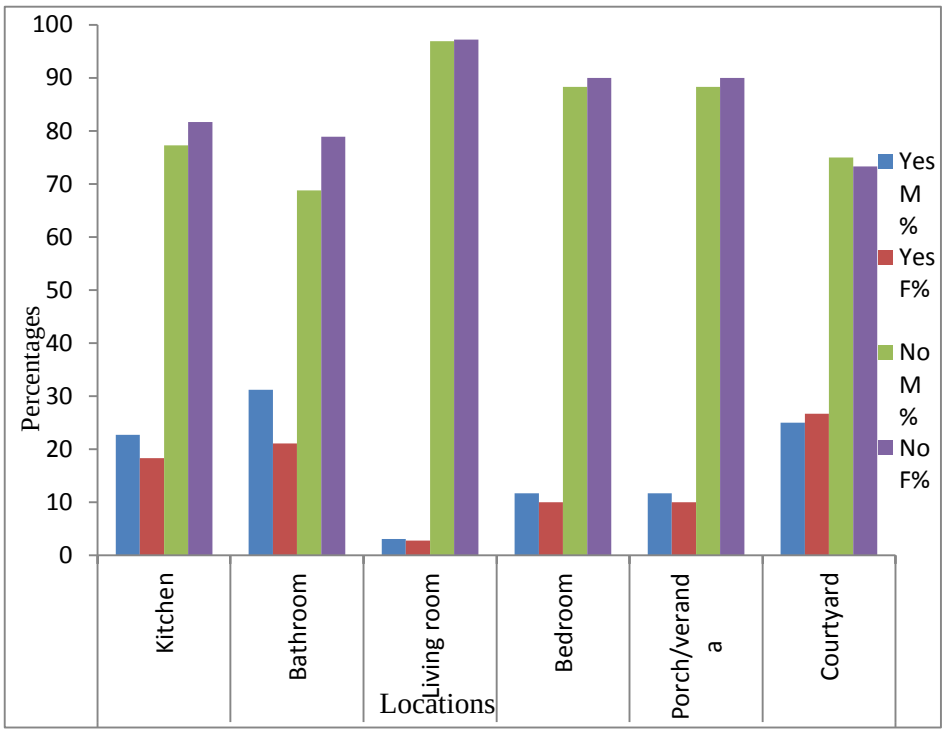

Figure 4: Locations Where the Elderly Ever Had an Accident at Home by Gender.
Source: Field survey, Kumfo (2013) N=308

These results revealed that a large proportion of the elderly did not regard injuries they sustained as accidents, and would therefore not perceive the selected

areas as dangerous; an issue which could be deceptive and worrying. On a more solemn note, they would not be careful at these areas since they had not considered the injuries as accidents in these areas.

This study can be compared with Lee et al. (1999) who identified the kitchen (14%) as the third leading site, after toilet (29%) and sitting room (18%), as where the elderly had accidents at home. Camilloni et al. (2011) found that 33% of the domestic accidents occurred in the living room. Lim et al.'s (2014) study reported the common injury locations as the kitchen, garden, bathroom/toilet, living room, bedroom, and stairs, in decreasing order. Similar reports were from other investigators (see Ang & Lim, 2008; Camilloni et al. 2011; Majori et al. 1999; Newton, 2008; Shawon et al., 2012). From a recent report by RoSPA (2015), most accidents involving the elderly occurred on the stairs or at the kitchen. In the present study, the kitchen came third with 20.1% following courtyard (26.0%) and bathroom (25.3%); and the living room was the least area (2.8%) where accidents occurred at home since most of the elderly in the sample may not have the sitting room facility in their home plans. The courtyard and bathroom are ranked as such for the fact that they were locations which are common in most homes of the elderly in the study area.

A careful examination of the results in Table 21 and Figure 4 reveals a critical issue in the study. For instance, fewer people had accidents at the kitchen and the bathroom with higher numbers who rated the same places as safe. This trend also applied to the bedroom, courtyard, porch and the living room,

signifying some consistency in the responses from the two charts. This therefore presumes that on the whole, the respondents' rating of the selected places as "safe" was consistent with higher numbers who had not been involved in accident at the selected places.

The report has so far covered locations that the elderly considered safe and hazardous, and where they ever had an accident at home. From these accident-prone areas, it was necessary to examine the dominant accidents that the elderly suffered within the last one year to the study.

Overriding Domestic Accidents

Accidents Suffered Within the Last Twelve Months

Domestic accidents could be painful and sometimes be disabling and not easily forgotten. The elderly were asked whether they experienced some sort of domestic accidents within the last 12 months. The responses to these selected accidents are shown in Table 22.

Considering the nature of the homes, the results in Table 22 were in line with some other studies in the literature. Evci et al. (2006) in Turkey, found that 38.6% in their sample of 3,277 elderly persons suffered some type of domestic accident in the previous 12 months of their study. In Rome, the study by Camilloni et al. (2011) reported that 87% of the home injuries were from falls. In another study conducted in Malaysia, Lim et al. (2014) found 5.5% of the sample who sustained some form of home injury of which fall was the commonest and

followed by cuts. Fall incidents in the study by Pi et al. (2015) recorded 41.5% of occurrence. In the present study, between 5.5% and 39.6% of elderly persons experienced some form of domestic accident during the same period.

Table 22

Gender Distribution of Victims to Domestic Accidents Within the Last 12 Months

Accident	Gender					
	Yes			No		
	M %	F %	T %	M %	F %	T %
Falls at level floor	36.7	38.3	37.7	63.3	61.7	62.3
Falls from height	21.9	11.7	15.9	78.1	88.3	84.1
Slipping on smooth Surface	39.1	27.8	32.5	60.9	72.2	67.5
Burns	17.2	12.2	14.3	82.8	87.8	85.7
Wounds	28.1	17.8	22.1	71.9	82.2	77.9
Stumbling	45.3	35.6	39.6	54.7	64.4	60.4
Electric shock	9.4	2.8	5.5	90.6	97.2	94.5
Taking wrong Medication	14.1	9.4	11.4	85.9	90.6	88.6

Source: Field survey, Kumfo (2013) N=308

From Table 22, it is seen that stumbling topped the list of the home accidents suffered by a total of 39.6% of the elderly victims. Stumbling was followed closely by falls on level floor with 37.7% of the elderly. Newton (2008) reviewed selected researches on home accidents, and some of the results compared closely with the data in Table 22. For instance, Newton's 16% accident

from heights compared with 15.9% in the present study. Falls from height in the present study refer to someone accidentally landing on the floor after mounting a chair or kitchen stool in an attempt to pick some items from shelves. However, the 44% of the falls that occurred on level surface in Newton's research review was higher than the 37.7% in the present study. Todd and Skelton (2004), on their part, found that 30% of persons over 65 years fell each year. In a study by Bhanderi and Choudhary (2008), fall was reported as the most common accident.

In a study conducted in North-Eastern Italy, 63% of females and 41% of males suffered domestic accidents in the previous year. Majori et al. (1999) in the study reported falls representing 57% of the accidents in the elderly and possibly due to stairs. On specific domestic accidents, the authors found fall, wounds, burns, and crushing as the commonly reported accidents in their study. Panatto et al. (2009) also reported the most common injuries as bruises (36.9%), fractures (23.4%), and cuts (23.4%).

The home accident with the least number of victims was electric shock recorded by 5.5% of the elderly. This percentage, however, appears quite high when compared with 1% recorded in a study by Lee et al. (1999) who conducted the study using data retrieved from records available at AED of a hospital. At least, two reasons accounted for the difference. Lee et al.'s study was about 15 years earlier than the present study, and also the investigations were conducted in different settings. Besides, it was not known how many elderly in the Lee et al.'s study used electricity in their homes. There was no information about the

residential background of the participants in the research. The results of other home accidents with the number of victims within the period are seen in Table 22.

Demographic characteristics have also shown up in the literature on home injuries. Lim et al. (2014) found more females sustaining home injuries than males in their research and the injuries peaked between 70 and 74 years. On marital status, injuries were less common in married elderly than in the singles and those who lost their spouses. Pi et al. (2015) also found that the incidence of falls was higher in females. However, in that study by Pi et al., 50% of the falls occurred in persons who were over 80 years. In the present study, there was not much gender difference in fall injury. Regarding other injuries, more males than females sustained injuries as shown in Table 22.

The results also indicated that level of education had no significant association with falls at the level floor, falls from height, slipping on smooth surface, burns, wounds, and stumbling.

It is assumed that any person exposed to DHH could have home accidents; nevertheless, some demographic characteristics may either promote or hinder one's ability to do so. Therefore, the following hypothesis was formulated to test the assumption: There is no statistically significant relationship between domestic accidents and selected background characteristics of the elderly.

Data for the hypothesis was obtained from the results on some home accidents suffered by the elderly within the last 12 months of the study (dependent variable) and some demographic characteristics of the elderly

(independent variables). The Pearson correlation was used to determine the relationship at 0.05 significant level. The results are shown in Table 23. The aim was to identify which background characteristics are associated with the accident that these elderly may suffer, if they have some prevailing DHH at home.

The results in Table 23 specified valuable findings to compare with findings from other studies as indicated in Lim et al. (2014), Pi et al. (2015) and RoSPA (2015). Gender of the respondents had a negative relationship with all the domestic accidents identified in the study. Thus, more males tended to have encountered domestic accidents than females, though falls at level floors, burns, stumbling, and taking wrong medications failed to return a significant relationship with the gender of respondents. However, there was a weak negative relationship between gender of respondents and falls from height ($r = 0.138$, $p < 0.05$), slipping on smooth surface ($r = 0.119$, $p < 0.05$), wounds ($r=0.123$, $p < 0.05$), and electric shocks ($r = 0.142$, $p < 0.05$). The hypothesis of no significant relationship between gender and domestic accidents was rejected for falls from height, slipping on smooth surface, wounds, and electric shocks while the study failed to reject the hypothesis of no significant relationship between gender and falls at level floor, burns, stumbling, and taking wrong medication.

With respect to age, there was no significant relationship with falls at level floors, falls from height, slipping on smooth surface, burns, and wounds and stumbling. There were statistically significant relationships between ages and electric shock and taking wrong medication ($r = 0.118$, $p < 0.05$; $r = 0.144$, $p <$

0.05 respectively). Thus, the young elderly tended to experience these two accidents (electric shocks and taking wrong medication) than the old elderly.

Level of education recorded a negative relationship with falls at the level floor, falls from height, slipping on smooth surface, burns, wounds, and stumbling. Thus, most of the respondents who experienced these domestic accidents had little or no formal education. From these results, the study failed to reject the null hypothesis of no significant relationship between education and electric shock and taking wrong medication. On the other hand, the study rejected the null hypothesis of no significant association between education and falls from level floor, falls from height, slipping on smooth surface, burns, wounds, and stumbling.

In addition, living arrangement of the respondents did not have any significant relationship with the identified accidents except falls from height. This result indicates that those who live alone tend to experience falls from height than those elderly who live with others. With reference to living arrangement (living alone), the study failed to reject the null hypothesis of no significant relationship with all the domestic accidents except falls from height. Similarly, the study failed to reject the null hypothesis of no significant relationship between marital status and all the domestic accidents with the exception of wounds, and electric shock.

Table 23.

Correlation Co-efficients of Relationships Between Selected Background Characteristics and Domestic Accidents

	Falls at level floor	Falls from height	Slipping on smooth surface	Burns	Wounds	Stumbling	Electric Shock	Taking Wrong medication	Number of Accidents
Gender	0.016	-0.138*	-0.119*	-0.070	-0.123*	-0.098	-0.142*	-0.072	-0.150**
Age	-0.010	-0.067	-0.031	-0.038	-0.047	-0.027	-0.118*	-0.144*	-0.072
Education	-0.197**	-0.226**	-0.356**	-0.305**	-0.233**	-0.305**	-0.028	-0.033	-0.388**
Living alone	-0.025	-0.112*	0.053	-0.088	0.031	0.011	-0.043	-0.002	-0.028
Marital Status	-0.057	-0.049	-0.020	0.008	-0.116*	0.053	0.118*	-0.013	0.004

Source: Field survey, Kumfo (2013) N=308 **p<0.01, *p < 0.05

Linear regression was conducted for further statistical analysis on the prediction of factors influencing the number of accidents and the results presented in Table 24.

Table 24

Linear Regression on the Prediction of Factors Influencing the Number of Accidents

Variables	B	Std. Error	B	T	Sig.
Constant	4.139	0.391			10.583
Gender	-0.131	0.207	-.035	-0.631	0.000
Educational Status	-0.661	0.097	-0.377	-6.812	0.000

Model Equation

NA = 4.139 – 0.0131 G – 0.661 ES

Where NA = Number of accidents, G = Gender, ES = Educational Status

Model Summary

R	0.389
R Square	0.152
Adjusted R Square	0.146
Standard Error of the Estimate	1.70512

Table 24 shows the demographic characteristics (gender and educational status) which were significantly correlated with number of accidents. These two demographic variables contribute over 15 percent of the prediction of the factors influencing number of accidents. Out of these two variables, educational status

was significant in predicting the number of accidents where those with higher education have 66.1 percent chance of not having accident than those with lower educational status. On the other hand, the males are about 13.1 percent less in having domestic accidents than their female counterparts.

A contingency question in the interview schedule that requested for other forms of accidents revealed that some respondents were bitten by their own dogs; others had cement block falling on their legs, hot iron dropping on the foot, or a hammer hitting their hands. This indicates that there are several other forms of accidents that the elderly are prone to and do suffer; some outside the home and several others within the home. It is therefore suggested that the elderly studied were prone to several other accidents than were specified in the interview. These accidents can affect their health in different ways, depending on the nature and severity of the accidents.

The results in Table 22 raised very critical issues about health of the elderly at home. It was not surprising that stumbling had the highest victims, followed by falls at level floor. An important issue worth noting about this result is that people who stumble, particularly the elderly could end up falling flat with the resultant injuries. This was shown clearly in the results that only 1.9% of the elderly stumbled and not ending up in falls at level ground.

It was necessary to find out if falls on level floor could have some possible contributing factors. One of such factors suspected was illumination in the environment. It will be recalled that only 18.2% of them admitted using kerosene

lantern as source of lighting (see Table 7). It was therefore necessary to find out from the respondents the time of the day that these accidents occurred.

Time of the Day Selected Accidents often Occur

Some home accidents may be more prevalent in some time of the day; perhaps, due to heavy activity, poor visibility or otherwise. The elderly were therefore interviewed on when the home accidents often occurred. The time of day when the different accidents occurred is shown in Table 25. In Table 25, some respondents did not experience the accident and therefore indicated this by "Not Experienced" (N/E).

Though not expected to be of very high percentages, falls at night on level floor for the elderly were low in the current study (1.3%). This could be justified as there is less movement and activity particularly for the elderly during the night. Falls at the level floor in the morning topped the list with 26.6% of the sample. About 10% of the sample acknowledged that they encountered accidents in the evening. It is not clear what could be responsible for these differences within the day; but the evening figure of 10.1% could be due to fatigue from the long day's activities.

In a study by Bhanderi and Choudhary (2008), fall was reported as the most common accident which occurred during the morning and evening hours. Falls as the leading domestic accident for the elderly was also noted by Sudhir et al. (2014) but most of the falls occurred in the afternoon.

Sometimes, falls may occur when people attempt to pick items from shelves when they mount objects such as a chair or kitchen stool. The least number of falls from heights occurred in the night, involving 1.9% of the elderly. This could be possible as most people may not have to climb to heights to remove something in the night, except if they used stairs at the time of the day.

Respondents reported on different times of the day when they had burn as shown in Table 25. This table showed the highest and the lowest occurrence in the evening and afternoon respectively. Perhaps, burns mostly occurring in the evening for the elderly may be from cooking. Thus, if people can be more alert with fires at the kitchen, this home accident may reduce considerably. Sudhir et al. (2014) reported burns as the second highest among their subjects studied. A critical look at the results presented in Table 25 indicated that less burns occurred in the afternoon when most people may not be cooking. This suggests that there may be other causes of burns that the elderly may suffer at home, besides cooking.

Wounds may be due to injuries of different kinds. It is apparent that the high number for the evening may be due to injuries sustained while cooking since many more people may be cooking in the evening than in the night. Rough stony environments may promote stumbling in the vulnerable. Stumbling can occur anytime within the day, particularly during the hours when the elderly may not be able to see clearly.

Table 25

Gender Distribution of the Occurrence of Elderly Accident and Time of the Day

Accidents	Time of day for the accident												
	Morning			Afternoon			Evening			Night			N/E
	M(%)	F(%)	T(%)	M(%)	F(%)	T(%)	M(%)	F(%)	T(%)	M(%)	F(%)	T(%)	T(%)
Falls at level floor	28.9	25.0	26.6	3.1	3.3	3.2	7.0	12.2	10.1	2.3	0.6	1.3	58.8
Falls from height	7.0	3.9	5.2	6.2	3.9	4.9	14.8	10.0	12.0	3.1	1.1	1.9	76.0
Slipping on smooth surface	5.5	6.1	5.8	7.8	2.2	4.5	18.8	13.9	15.9	5.5	4.4	4.9	68.5
Burns	3.1	3.3	3.2	1.6	3.3	2.6	13.3	8.3	10.4	5.5	1.7	3.2	80.5
Wounds	5.5	5.0	5.2	7.0	4.4	5.5	18.8	8.9	13.0	3.1	1.1	1.9	74.4
Stumbling	8.6	10.0	9.4	7.8	4.4	5.8	16.4	15.6	15.9	12.5	7.2	9.4	59.4
Electric shock	2.3	1.1	1.6	1.6	0.6	1.0	6.2	0.6	2.9	1.6	0.6	1.0	93.5
Taking wrong medication	1.6	1.1	1.3	1.6	1.1	1.3	7.0	3.3	4.9	4.7	2.8	3.6	89.0

Source: Field survey, Kumfo (2013) N=308

Stumbling as home accident occurring mostly in evening suggests that most people were in a hurry at this time of the day than the other times. Most often, it could be linked with poor illumination in the courtyard, and perhaps worsened by poor vision and fatigue, and environmentally by the rough courtyard a contributory factor we can relate to the conceptual model by Tomey and Sowers (2009).

It would be recalled that 81.8% of the sample used electricity in their homes (see Table 7). This power source could cause home accidents if care was not taken in its use. It was not surprising (that the highest incidence was in the evening) as during this time, users of electricity could not see the live wire even if they were aware of the danger earlier during the day. If users of electricity were enlightened on the source of danger, then they would be very careful in using it at any time of the day. A more permanent solution would be to take measures and correct the faults to prevent the danger from occurring.

Medications prescribed from the hospital are taken at different times of the day, depending on the dosage and disease condition. Most hospital medications are taken three times a day with the third dose taken in the evening, and very few people may take the last medication at night (bedtime). Medication accident could occur if people have to take different types of drugs at the same time. Sometimes, persons could not make out the differences in the drugs, particularly, if the label was not clear; and the situation even worsens when there is inadequate illumination to help one see the colour and shape of the tablets which the illiterate

in particular use to identify their medicines. This may be a problem for the elderly (Roche, 2010), particularly those who may be living alone as there would be no one to identify the drugs for them. Wrong medications were taken more often in the evenings by 4.9% of them.

Table 25 revealed crucial information that could be useful in elderly health education. From the data, 26.6% of fall cases in the sample occurred in the morning. All other accidents had their highest occurrences in the evening; but it is not clear why the evening time in particular had the highest occurrence. This suggests that the activities that resulted in the accidents mostly took place during the evening. Therefore, this is a strong point to note in the health education of the elderly on preventing home accidents.

Possible Health Conditions as Cause of Home Accidents

Progressive deterioration in health is a typical feature of ageing. Thus, as we age differently (Holmes et al., 2009), and steadily, we continue to grapple with different disease conditions as explained by Berman et al. (2008). The elderly who struggle with chronic diseases were found in an earlier research by Evci et al. (2006) to be among those who had domestic accidents. Some of the illnesses respond well to medications whereas others become prolonged for the elderly, consequently affecting some particular organ systems with implications on the elderly. Illnesses that turn out to be chronic sometimes become intrinsic factors in causing home accidents in the elderly. Huang (2005) found poor gait and poor balance as significant predictors to falls in a study conducted in Taiwan.

Studies by Robinovitch et al. (2012) and Woolrych et al. (2014) involved video footage to determine the causes of falls in the elderly. Robinovitch et al. described "incorrect transfer or shifting of body weight" as a contributory factor. In this situation, the center of gravity of the body changed improperly. Similarly, through video coverage for data collection in Botek (2015), the study revealed loss of balance emerging with 41% as the cause of stumbling. Furthermore, CDC's (2015) recommendations on avoiding fall-related injuries mentioned lower body weakness, gait and balance problems together with poor vision as some of the fall risk factors as reported in the study. Table 26 shows the elderly in the sample with some specific home accidents and the associated health conditions.

Some of these conditions that were measured against the various accidents at home for the elderly include weakness in the lower limbs, poor vision, and poor balance. In Table 26, a percentage of the elderly did not suffer the accident at home and have therefore entered "Not Suffered" (N/S) on the schedule.

Weakness in the lower limbs can interfere with the individual's support system in diverse ways. The elderly sometimes support themselves with walking sticks in order not to place too much pressure on the weakened lower limbs. This supporting situation makes the elderly walk with some caution for the fear of falling. It is therefore not surprising that 23.4% of them fell at a level floor due to weakness in the lower limbs.

Table 26

Gender Distribution of Possible Health Conditions Causing Home Accidents in the Elderly

Home accidents	Possible health conditions									
	Weakness in Lower Limbs			Poor Vision			Poor Balance			N/S
	M (%)	F (%)	T (%)	M (%)	F (%)	T (%)	M (%)	F (%)	T (%)	(%)
Falls at level floor	28.1	20.0	23.4	8.6	5.6	6.8	5.5	12.8	9.7	60.1
Falls from height	18.0	10.0	13.3	11.7	6.7	8.8	2.3	1.7	1.9	76.0
Slipping on smooth surface	14.8	8.3	11.0	14.1	7.2	10.1	8.6	9.4	9.1	69.8
Burns	2.3	2.8	2.6	6.2	5.6	5.8	14.1	8.3	10.7	80.5
Wounds	13.3	5.0	8.4	10.9	7.8	9.1	6.2	4.4	5.2	77.3
Stumbling	18.0	11.7	14.3	19.5	16.7	17.9	8.6	6.7	7.5	60.4
Electric shock	1.6	1.1	1.3	7.0	0.6	3.2	0.8	1.7	1.3	94.2
Taking wrong medication	3.1	2.2	2.6	7.0	5.6	6.2	0.8	1.1	1.0	90.3

Source: Field survey, Kumfo (2013) N=308

CDC (2015) observes that 24% of elderly in nursing home fall from muscle weakness and gait problems. Disorders of gait and balance also contribute to elderly falls (RoSPA, 2015). These are some examples of intrinsic factors in the conceptual model (Tomey & Sowers, 2009) adapted for the study.

In a research to determine what may precipitate a fall, Robinovitch et al. (2012), reported that after effects of medications can cause falls among the elderly. Report from RoSPA (2015) also identified risk factors as after effects of analgesics (pain relievers) and antidepressants medications. Sometimes people may fall from objects which they mount in order to reach things that have been kept at heights such as on shelves. The support that the lower limbs provide to the entire body cannot be underestimated. The elderly, particularly those with problems with the support system need to be careful and more prudently desist from climbing on to heights for any reason.

The courtyard or floor elsewhere in our homes may be cemented or left bare depending on the person's preference or the ability to meet the cost (see Table 14). Depending on the floor type and the season, floors may be slippery and turn into a domestic danger. Sometimes, the elderly underrate the slippery nature of the floor, or do not see water spilled on the smooth surface and therefore can slip if they have any predisposing condition.

Stumbling is common when the floor surface is full of stones projecting on the surface at the courtyard. These projections may serve as obstacles to people particularly the elderly who could hardly lift their feet high while

walking. The result under poor vision suggests that the inability to see clearly is associated with stumbling. With such health conditions, the elderly need to have the environment modified to prevent such home accidents.

A critical look at Table 26 explains some contributing conditions to the accidents specified in this study. Apart from burns which most respondents attributed the accident to poor balance, the elderly mostly associated their home accidents to weakness in the lower limbs. These high figures for weakness in the lower limbs could be justified for stumbling, slipping on smooth surface, as well as falls from heights and level floor. A careful examination of Table 26 also revealed that poor vision scored the highest for wound, stumbling, electric shock, and taking wrong medication. It was not clear why the highest cause for wound should be poor vision; but this is justifiable for stumbling, electric shock, and taking wrong medication. It could be suggested from the data that most of the elderly attributed their selected home accidents in this study to weakness in the lower limbs and poor vision as these are clear ageing problems.

This study therefore partly supported that of Fuller (2000), who concluded that conditions are ripe for home accidents in the elderly who grapple with weakness and loss of balance. In a report by RoSPA (2015), balance and disorders of gait are included in the multiple risk factors that may result in falls for the elderly. RoSPA also included environmental hazards in the contributing factors for falls in the elderly. It would be recalled that Tomey and Sowers (2009) placed a stress on the role of dangerous environmental factors in home

accidents for the elderly. Writing on ageing care, Sollitto (2015) identified six things that are most likely to cause fall in the elderly which include, lack of physical activity, impaired vision, medications, diseases, surgeries and environmental hazards. Although the present study was not specifically on falls, impaired vision stood out clearly accounting for 17.9% of the victims in stumbling.

The critical issue is that provided the intrinsic factors prevail, accidents could recur in the victim's life. For instance, fall victims could fall again (Milat et al., 2011). The interview report now continues with the number of accidents that the elderly suffered within a specified period.

Number of Times Victims Suffered Specific Home Accidents

It was necessary to find out from the respondents the number of times they suffered some selected home accidents within the last 12 months preceding the study. This could provide a rough idea on the predicaments of the elderly in the study. The results on the kinds of accidents the elderly suffered are presented on Table 27.

In Table 27, some percentage of the elderly did not experience the accident and have therefore entered for "Not Experienced (N/E). Some falls in the elderly can be serious resulting to hospital admission with broken bones and head injury (CDC, 2015) or serious disablements.

Table 27

Gender Prevalence of Specific Accidents in the Elderly Within the Last 12 Months

Accident	Once			Twice or more			N/E
	M%	F%	T%	M%	F%	T%	
Falls at level floor	21.1	17.8	19.1	21.1	20.0	20.5	60.4
Falls from height	16.4	12.2	14.2	11.7	7.8	9.5	76.3
Slipping on smooth	10.9	11.1	11.0	26.6	15.6	20.1	68.8
Burns	18.0	13.9	15.6	7.0	3.9	5.2	79.2
Wounds	18.8	13.9	15.9	10.9	5.6	7.8	76.3
Stumbling	17.2	13.9	15.3	29.7	22.8	25.6	59.1
Electric shock	8.6	4.4	6.2	0.8	0.6	0.6	93.2
Wrong Medication	5.5	3.3	4.2	7.0	6.1	6.5	89.3

Source: Field survey, Kumfo (2013) N=308

Yu et al. (2009) reported the prevalence of falls as 18.0% which is 1.2% less than those who fell once on the level ground within the last 12 months of the present study. The same study by Yu et al. found falls to be higher in females. In Japan, Yasumura and Hasegawa (2009) also found incidence of falls ranging from just fewer than 10% to above 20%, and also higher in females.

In a study conducted in Ecuador among persons aged 60 years and above, the prevalence rate was 34.7% in the previous year and also higher in women (Orces, 2013). An elderly who had ever fallen had the likelihood of falling again.

Cases of repeated falls have been documented by Milat et al. (2011), using telephone interviews with 5,681 residents aged 65 years and above. In their study, 25.6% of the respondents fell within the last year of the study. The researchers also reported that from the number that fell, 61.2% fell once, 21.4% fell twice, 7.8% suffered thrice, and with 9.5% falling four times or more.

Reaching for items from a height such as shelves may not be easy for many people and may require mounting other objects in order to assess objects reserved at heights. The danger associated with this strategy is the object which the elderly mounts giving way underneath and resulting into falls with severe outcomes. Results presented in Table 22 indicated that slipping on smooth surface is quite a common feature in the homes. Considering safety of the elderly at home, these figures are on the high side.

Burn injury causes some degree of damage to the skin and could render the body vulnerable to serious infection and dehydration depending on the extent of the injury. The prevalence of burn within the stated periods was shown in Table 27; the percentage for this accident did not increase for those who sustained burn injury twice in the same year. It is however a momentous result in the sense that depending on the severity of the injury, one occurrence could be very fatal or at least disfigure the victim.

Wound is a common domestic accident that one can experience several times. The field data reported 15.9% of the sample sustaining wound “once” within the 12 months preceding the study. This percentage reduced appreciably

for “twice or more” as seen in Table 27. Some wounds may last for few days, hence causing fewer problems to human life. On the other hand, the wound could be quite big involving wide tissue damage. In such instances, the wound could disable the elderly and may affect their mobility thereby leading to dependency. The health problem associated with this accident also depends on the size of the wound and how long the elderly nursed the wound. Wound care may be done at home for minor injuries or be done better at a health facility for more serious wounds. Home care for wounds is not recommended as we cannot guarantee aseptic technique in the wound care. The traditional home care for wound delays wound healing as the wound most often gets infected. At the hospital, it is most likely to be through daily wound dressing, and this obviously would be at a cost particularly if the elderly is not having a valid health insurance card.

Stumbling at home may be more prevalent in homes with rough and projecting stones (see Table 14). The elderly who stumbled once (15.3%) within the past 12 months nearly doubled (25.6%) for those who stumbled twice or more. This record must be considered seriously in the sense that stumbling may end up with the person falling down, if they cannot maintain their balance in the process. The outcome would be more serious accidents with the fatalities. Wound may occur with the victim going through the ordeals as discussed above. Sometimes, in the absence of wound, there may be fracture or dislocation if the accident ended in a fall; and any of these injuries could be serious to the elderly in view of their age.

Ageing often goes with many elderly taking some form of medication to support their health (see Table 13). From Table 27, it is seen that 4.2% of the sample took wrong medication "once" and this almost doubled for "twice or more" within the year. These percentages were not encouraging; nevertheless, as people grow old, they tend to take in medications for different conditions. This result implies that out of the 44.5% of the sample who take daily medicines (see Table 13), a relatively small proportion took wrong medication. With the increasing number of drugs for the different diseases, there is the tendency to mix the drugs and take the wrong medicine. These percentages (though appear small) were quite alarming since taking wrong medication may end up with the victims developing different health problem. Sometimes, it may require the use of an antidote which the elderly may not have; and may ultimately end up in the death of the victim.

Table 27 showed falls at level floor, wounds, burns, and stumbling as the four leading accidents that the elderly suffered once in the 12 months preceding the study. For two or more episodes, stumbling topped the list, followed by falls on level floor, slipping on smooth surface, and falls from height.

Managing Elderly Home Accidents

Home accidents may be of different intensities and hence require different approaches to their management. Some minor accidents may be overlooked and the victim recovers spontaneously. However, others of more serious intensities would require intervention at the hospital. It is therefore

necessary to examine the intervention taken for the various accidents investigated in the study and the results presented in Table 28. Accidents not experienced are noted by N/E.

Falls at level floor with minimal injury could be overlooked. Traditional medical practice is still common in our societies as indicated by some respondents (1.9%) who went in for this intervention following their accidents. Some 4.9% of the respondents received treatment at hospital or clinic for the accident. It is suggested that these 4.9% had more serious accidents through the fall and hospital care was inevitable; hence, they preferred orthodox medicine to the other interventions.

Falls from height could result in relatively more serious accidents. The data showed evidence to this regarding the intervention they had for the accident when 76% of the elderly who fell from height received hospital care. In Milat et al. (2011), 20.0% of similar victims attended a health facility following fall injuries.

Moeller (2013) and RoSPA (2015) also report on serious consequences of their fall victims; some elderly respondents in Anena and Muchane (2012) also ended up at the hospital. Above all, Home Security Action (2011) reported increasing elderly home accident victims in Accident and Emergency Departments. Pi et al. (2015) recorded 35% of their accident victims hospitalized. It is therefore suggested that falls from height could be more serious accidents hence, the interventions received at the hospital.

Table 28

Gender Distribution of Managing Elderly Home Accidents in the Past 12 Months

Accident	Management												N/E
	No Treatment			Self-Medication			Herbal Treatment			Hosp./Clinic			
	M (%)	F (%)	T (%)	M (%)	F (%)	T (%)	M (%)	F (%)	T (%)	M (%)	F (%)	T (%)	
Falls at level floor	9.4	5.6	7.1	28.9	26.1	27.3	0.8	2.8	1.9	3.1	6.1	4.9	58.8
Falls from height	2.3	0.6	1.3	12.5	7.2	9.4	3.1	0.0	1.3	11.7	12.2	12.0	76.0
Slipping on smooth surface	3.9	3.9	3.9	18.8	11.7	14.6	7.8	5.6	6.5	5.5	5.0	5.2	69.8
Burns	0.8	2.2	1.6	7.8	2.8	4.9	3.9	6.7	5.5	10.2	7.8	8.8	79.2
Wounds	3.1	1.1	1.9	11.7	8.9	10.1	5.5	6.1	5.8	11.7	5.6	8.1	74.0
Stumbling	10.9	7.8	9.1	28.1	20.0	23.4	4.7	3.9	4.2	3.9	5.0	4.5	58.8
Electric shock	2.3	0.0	1.0	1.6	0.6	1.0	0.0	0.6	0.3	4.7	1.1	2.6	95.1
Taking wrong medication	3.9	5.6	4.9	2.3	1.7	1.9	0.8	0.0	0.3	6.2	1.7	3.6	89.3

Source: Field survey, Kumfo (2013) N=308

Depending on the severity of burn injury, the mild accidents can be managed at home while more serious ones may be managed at the hospital. Burn can be disfiguring if adequate care is not given to the victim. Furthermore, depending on the body part that is affected, there may be contractures limiting maximum use of the body part. In severe cases, the victim may require plastic surgery which in itself can be very expensive, and could exceed the National Health Insurance support.

Wound may receive attention at home except in very serious cases where surgical intervention may be given at a health facility. The results indicated that most respondents did not have to go to hospital for attention on their wounds.

Stumbling is one of the home accidents that may not require hospital attention. This home accident is so common that it could be considered as "everyday accident" in our homes; and in some cases, no wound may occur at the site. This finding on stumbling and hospital care is a wakeup call for the elderly to regard stumbling as a serious home accident as it could drive some elderly into hospital care with the cost implications.

The results also indicated that 4.9% of the elderly had no treatment following ingestion of wrong medication. Eleven (3.6%) of the sample received treatment at the hospital after taking wrong medications. This suggests that the after-effect of the elderly taking wrong medication could be serious to demand hospital attention, which ultimately would go with cost implications.

Given the above issues, it was necessary to consider the cost of management for the accidents which were seen at the health facilities. Data from the interviews indicated that a significant number of the accident victims were sent to a health facility for management; one out of a lot had no valid NHI card. Those without the card had to bear the cost of management for any one accident that was reported. If these elderly were no longer in any gainful employment, then they had to bear the cost from elsewhere. This is sad because the Government of Ghana accepts the elderly for free medical care only when they attain 70 years. Appiah (2012) reported on HelpAge Ghana criticising the government on the 70 years minimum age for free medical care at state health facilities when the retirement age is 60 years. In most cases, money for meals may be forfeited for this purpose and nutrition may be compromised with the resultant malnutrition in the elderly.

Most interventions in Table 28 centered on self-medication and hospital care. The elderly home accident victims had self-medication for falls at level floor, slipping on smooth surface, wounds, and stumbling. More serious ones such as falls at height (12.0%) and burns (8.8%) received hospital care. Similarly, Newton (2008) found that only 20% of the elderly who fell went in for medical attention; Pi et al. (2015) reported that about 35% of their subjects went for hospital treatment following fall injuries sustained at home. These figures vary widely between 35% in Pi et al. and the 4.9% in the current study. The difference could be attributed to the difficulty in accessing medical services in our part of the

world. This also suggests that without the NHIS, the figure would have been even quite lower if those who received treatment from the hospitals did so in view of the NHIS card they possessed.

Summary

This chapter has brought to light very striking results on hazardous locations and the accidents that the elderly had within the last 12 months to the study. An encouraging result from the data indicates that all the six selected areas at home were rated as "safe" - a decision which is quite cynical. Among these selected areas regarded as "safe," the bedroom was in the lead and the least was porch/veranda. From the data, the courtyard followed the bathroom narrowly as the most "harmful" areas at home. By this decision, at least the courtyard was recognised as comparatively harmful.

On where the respondents ever had an accident at home from the same list, the courtyard and bathroom emerged with the highest percentage by both genders. Between 74.0% and 97.1% of the elderly never had accidents at these same places. These responses somehow support the data that rated these same places as "safe" or "hazardous"

Among the selected home accidents, "stumbling" had the highest percentage from the elderly victims and was followed closely by "falls at level floor." There were other accidents such as pet bites and cement block injuries that were revealed.

Accidents may occur any time; nevertheless, some home accidents may occur at a particular time of the day which may be associated with a particular problem. Between 1.1% and 26.6% of the elderly sustained the accidents in the morning. Poor visibility may be associated with the night or inadequate illumination (indoor dark areas) at home. The results indicated that more elderly persons had accidents in the evening than other times of the day. High on the list for the evening accidents were slipping on smooth surface and stumbling. It was also observed that stumbling topped the list of accidents suffered in the afternoon, evening and the night. Electric shock emerged as the accident with the least victims throughout the day as working with live wires is not very common.

It is not rare for the elderly to be suffering from chronic and degenerative diseases. In other studies elsewhere, it was reported that poor gait and poor balance were the significant predictors to falls. Some common ageing health problems were indicated for the elderly to identify whichever they felt was behind the selected accidents they suffered. Between 1.3% and 23.4% of the elderly attributed the injuries they sustained to weakness in the lower limbs.

This result in particular points to the fact that correcting poor vision invariably could help in home accident prevention in the elderly. Between 60.1% and 94.2% could not attribute their accidents to any of the selected ageing health problems. This result suggests that the causes of the home accidents in the elderly may be found in other conditions.

Accidents could occur several times so long as the contributing factors remain in place and this is common with falling. The data indicated that the elderly interviewed reported that they suffered each accident twice or more within the stipulated period. Falls in particular was noted for repeated occurrences (Milat et al. 2011; Orces, 2013).

Depending on the type and severity of the home accident, the elderly may resort to different means of intervention. Between 1.0% for electric shock and 7.1% in falls at level floor simply had no treatment for the accidents sustained. Self-medication was given to falls on level floor by 27.3% closely followed by 23.4% for stumbling. It is assumed that hospital care which would be expensive should receive the least number of the accidents but this intervention has relatively high percentages for wounds, burns and falls from heights. Besides the other inconveniences, the immediate problem is the cost implication as most of them may not meet the medical bill, especially if these are not included in the conditions on the NHIS list. Self-medication at very high percentages may have some health implications. Percentages ranging from 58.8% to 95.1% used other interventions outside the options indicated in the study; it is not known whether these other interventions were cheaper and more effective.

CHAPTER EIGHT

PREVENTIVE MEASURES OF DOMESTIC HEALTH HAZARDS

Introduction

The availability of DHH and these same dangers to elude identification serve as the initial stride in the occurrence of home accidents (Smith, 2015). Some of these accidents that the elderly suffer in the last 12 months to the study have been identified in the last chapter. This section of the report discusses research question five on prevention of DHH. There are five items used in the interview to explore the research question on the prevention of DHH. These include awareness of OAA; changing living environment after 65 years; suggested locations for modification at home; suggestion on prevention of home hazards and domains of health education of the elderly.

It has therefore become essential to consider any possible means including institutional support (if any) that could provide effective means to reduce DHH and the ensuing accidents. One of such support groups is the Old Age Association.

Membership of Old Age Association (OAA)

A non-governmental organisation for the elderly originating from the western world is the OAA. From Figure 5, only 20.1% of the sample had heard about such an organisation in the research setting. Out of the 20.1% who heard

about OAA, 5.6% were under the young-old range. In Figure 5, as much as 82.0% of the sample belonging to the 65 to 74 year group had no information about OAA. This is sad as this is the population of the elderly presumed to be physically capable of attending their meetings for the benefits of the association.

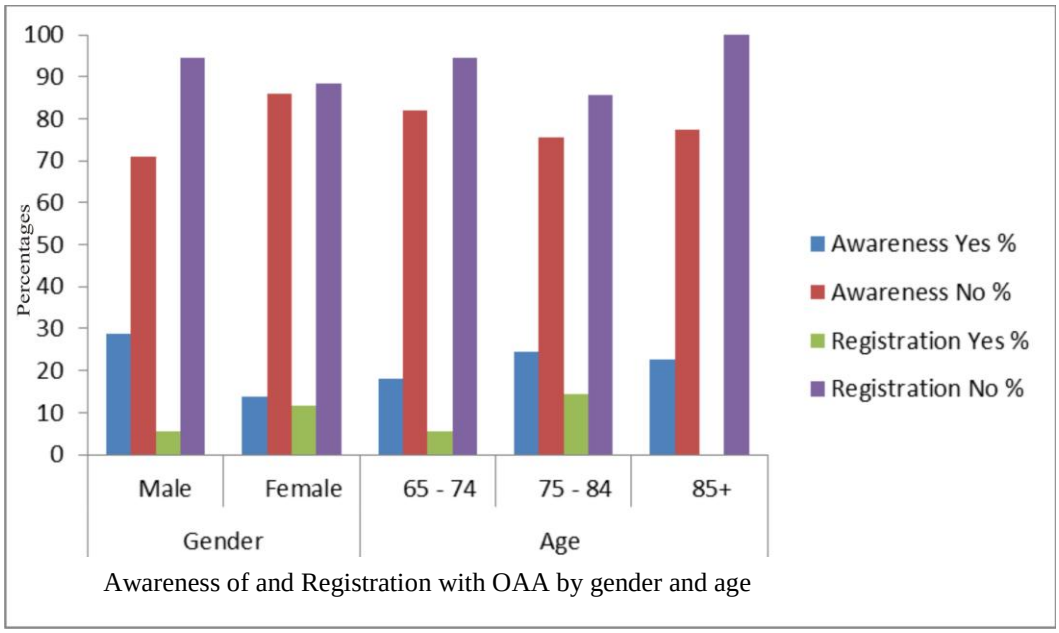

Figure 5: Awareness of and Registration with OAA by gender and age.
Source: Field survey, Kumfo (2013) N=308

The interview further touched on the percentage of the elderly who were aware of the association. The results as shown in Figure 5 indicate that of the 20.1% of the elderly who had some idea about the association, only 8.1% of the participants had registered with the association. The worrying issue arising from the result is that none of the 8.1% registered elderly came from the oldest old age range. This was strange as this age range had the potential to benefit from the activities of the association. From the records available at the association's executives, the Cape Coast association was formed in 2006. This age of the association suggests that it was formed within the last 10 years when the oldest

old were about 75 years old. We suggest that publicity was poor at the initial stages. Alternatively, they heard of the OAA but they were less interested or weak to attend their meetings.

In the Cape Coast Metropolis, the meeting venue of the OAA is located at the main Cape Coast township, where the group meets fortnightly. In an interview with the secretary, he said that members of this association are given health talk pertaining to elderly life and occasionally receive health screening such as checking their blood pressure. The venue for the meeting is quite far from most of the people in the research areas; the meeting ground is in an urban community which did not fall into the communities selected through random sampling. Besides the distance, most of them are not aware because of their illiteracy which was compounded by inadequate publicity on the existence and functions of the group. This situation requires urgent attention in view of the vital functions of OAA. It is suggested that the health talks would enlighten most of the elderly who attend the meetings on DHH and home safety.

From a contingency question, one registered member who was a teacher however had no idea about the benefits. We suggest that deterioration in physical health is one of the reasons that discouraged the elderly in the activities of OAA as they relocated to more convenient homes.

Home safety issues could be handled from different dimensions. For instance, some elderly may be compelled to change their living environment as

the last option. The interview report therefore continues with the elderly having changed their living environments after turning 65 years.

Changing Living Environment after Turning 65 years

Occasionally, individuals may move from their homes for various reasons. Moving or changing home is not a typical lifestyle of most Ghanaians. Some people may move from a home to another in the same environment because of the high rent charged by the former landlord. Special interest in this study was whether some of them had to change home on account of being an elderly but could not bear with the physical structures. Decreased mobility was one of the reasons given by Berman et al. (2008) as what could compel the elderly to change home. Almost the same percentage points of males and females (16.2%) changed their homes. The remaining 83.8% of them had not changed home since they turned 65 years as indicated in Table 29.

Table 29

Gender Distribution of Changing Living Environment Among the Elderly After 65 years

Responses	Gender		
	Male (%)	Female (%)	Total (%)
Yes	18.8	14.4	16.2
No	81.2	85.6	83.8
Total	100	100	100

Source: Field survey, Kumfo (2013) N=308

A contingency question probed why the 16.2% of the elderly changed their homes since they turned 65 years. Those who changed their living apartment did so for various reasons, most of which were neither related to their health nor ageing. Whereas some of the elderly mentioned high rent, others said they left the previous residence because those former homes were hired premises. These were the lucky ones who acquired their own premises on retirement. On health related reasons, it emerged that some elderly preferred quiet environment and also wanted their freedom. It is suggested that if any of these elderly did not change home for any reason, they may alternatively modify some structures at the same places and can be safe in their residences. The respondents were then interviewed on things that they may suggest for modification in their current home.

Structures/places Suggested for Modification at Home

Prior to the elderly attaining 65 years, it is suggested that the elderly were comfortable with the structures at home as they were physically fit to live within the existing physical structures. This is because they were in a better physical health to endure life within the selected structures where they easily adapt to the structures. These structures were in their original states of the home. However, as ageing set in, people thought about alternatives that would not only ensure their safety at home, but also their easy movement. This compelled some of them to change their living environments. In a contingency item in the interview, an 81 year old man was uncomfortable with the high steps he was living with at his age. It was on record for this elderly respondent that he uses a supportive device for

mobility. From Table 29, 16.2% changed their living environment after turning 65 years. In this state of health, the 81 year old man could live safer and happier in a home without steps due to his age, and hence would prefer some form of modification to prevent DHH. Table 30 shows places at home that the elderly preferred to undergo structural transformation in order to make their lives safer in their living environment at their present age.

A large proportion of them (64%) felt they were no longer safe with the rough un-cemented courtyard of the home. We suggest that they had suffered an accident attributed to the rough surface of the un-cemented courtyard or saw the danger associated with it as they grow older.

Table 30

Gender Distribution of Structures/Places Where the Elderly Would modify at Home

Structures/Places	Gender						
	Yes			No			N/A
	M (%)	F (%)	T (%)	M (%)	F (%)	T (%)	
Steps	33.6	25.0	28.6	25.0	40.0	33.8	37.7
Smooth floor tiles	19.5	20.6	20.1	17.2	17.2	17.2	62.7
Slippery bathroom	39.1	40.0	39.6	18.8	16.1	17.2	43.2
Too much living room Furniture	15.6	20.6	18.5	39.1	29.4	33.4	48.1
Dim environment	45.3	50.0	48.1	27.3	31.1	29.5	22.4
Un-cemented courtyard	57.8	68.3	64.0	18.8	11.7	14.6	21.4

Source: Field survey, Kumfo (2013) N=308

An additional striking result from Table 30 is on the dim environment and the slippery bathrooms for modification. Floyd (n.d) and WHO (2007) recommended adequate lighting at home as a vital strategy in home safety. Although the elderly may have various reasons to be in agreement or otherwise, it is suggested that the number that opted for modification on the dim environment had gone through some experience in the dim environment which possibly threatened their safety.

As in the other cases, the total of 48.1% for dim environment and 39.6% for slippery bathroom raise some concern. The elderly selecting modification in these parts of the home suggested that this proportion of the elderly identified a looming danger at these locations as they advanced in years and thus became increasingly vulnerable. Newton (2008) suggested home modification as an effective home hazard reduction.

In a response to a contingency question, an elderly in the present study recommended renovation of areas prone to accidents. Home modification has been strongly recommended by Comfortkeepers (2014) and Floyd (n.d). In the conceptual model used in this study, Tomey and Sowers (2009) consider highly favourable environment as one that is devoid of obstacles that could render the environment hazardous to human life. Modification of dim areas indicated by 48.1% in the present study supports the finding from Camilloni et al. (2011) that poor household illumination was a risk factor in domestic accidents among the elderly admitted to emergency departments in 10 hospitals at Rome. These

general modifications often help to maintain quality of life which can be achieved through prevention of injuries. Injuries may consequently lead to gradual loss of independence. Besides high dependency, this can gradually lead to an assisted living or finally being taken to long-term care facility. Besides home modification, the interviews also covered their inputs to prevent home accidents and the responses were reported.

Suggestions on Preventing Home Accidents

As some of the elderly could identify hazardous areas in their homes and also areas that needed modification, it was possible they could also come out with some recommendations on the means of preventing home accidents that could lead to their welfare. These can be backed by implementing policies in order to be more effective. Policies on the welfare and protection of the elderly were documented in elderly health (Global Action on Ageing, 2009; UN, 2002). Table 31 indicates the results of the recommendations provided.

Table 31

Gender Distribution on Recommendations to Prevent Home Dangers

Recommendations	Gender responses		
	M (%)	F (%)	T (%)
Good lighting at home for 24 hours	18.8	17.2	17.9
Education on home dangers	56.2	57.2	56.8
Regular vision/sight testing	18.8	20.6	19.8
Other	6.2	5.0	5.5
Total	100	100	100

Source: Field survey, Kumfo (2013) N=308

Lack of information on home hazards could be causing a lot of harm in the lives of the elderly. Recommendations by the respondents in this study support the CDC (2009) document that came out with five preventive strategies of which education tops the list. Smith (2015) also recommends knowledge on important risk factors in the home as an initial step in ensuring home safety for the elderly. On the environment, Botek (2015) on her part, tasks caregivers to remove obstacles such as rugs, furniture and electrical cords from walkways. These points suggest that with adequate education in the relevant areas, home accidents could be prevented in the lives of most elderly persons. It is worthwhile recalling that Floyd (n.d) observed that 53% of home accidents in the elderly are preventable.

With ageing, most people suffer from degenerative conditions including visual challenges. The option of regular vision testing by these elderly supports vision checking and improvement which was one of the recommendations by Floyd (n.d), CDC (2009), Home Security Action (2011) and Slocum (2010). It is suggested that this total of 19.8% of the sample perceived poor vision accounting for most of the accidents at home; thus it was necessary for them to receive regular vision testing as a means of preventing accidents at home.

From the options provided in Table 31, a total of 17.9% of them considered good lighting for 24 hours as the most recommended means of preventing home dangers. This choice of good lighting by the respondents supports Slocum, Floyd, and WHO (2007) in recommending good lighting at home as a condition for home safety. It is alleged therefore that this 17.9% of

them in the present study considered dark areas or dim environments to be dangerous to them at home.

Other responses in Table 31 support the literature on recommendations for preventing home dangers. On general strategies of preventing home accidents, Tremblay Jr. and Barber (2005) and Floyd (n.d) recommended comprehensive means including installation of night lights, better arrangement of furniture and making adjustment to bed heights for preventing falls. Pertaining to DHH, they suggested regular eye examinations, adequate lighting and avoiding alcohol since it could interact with medications.

The respondents also through contingency questions brought out other areas that they thought could be seriously considered in prevention of home accidents. Some of their suggestions did not vary much from the three options provided in Table 31. For instance, some elderly recommended education on safety precautions at home; free hospital care for the elderly; and special education on how to prevent such accidents. An elderly who missed the point on the recommendations made an interesting but very vital point that hospitals should provide free treatment for accident victims. It is suggested that this elderly had home accident that was treated at the hospital at a high cost or was unable to meet the cost and came home without treatment, or heard of a sad incident in line with that. It would be recalled that free medical care is not available for the aged until they attain 70 years unless they have valid NHIS card. Even with the valid

card, it is on record that all the health problems of the elderly are not included in the NHIS diseases list.

Other respondents raised critical issues that must be seriously considered. Earlier in the interview, safe and hazardous areas were discussed (see Table 21). On other recommendations, the elderly suggested renovating areas prone to accident, identifying accident prone areas, and education on safety precautions at home. These statements raised two vital issues for critical analysis. Firstly, the elderly were aware of possible accident prone areas at home; and secondly something could be done to prevent home accidents. These contributions support those of Smith (2015) and Floyd (n.d) who recommended knowledge about the significant risk factors available in every home. On what could be done, the elderly also mentioned renovation and education on safety precautions. Since education was stressed by most authorities, there was the need to explore the domains of health education among the sample that could help in preventing home accidents.

Domains of Health Education for the Elderly

The results in Figure 6 indicate that an average of 94.0% of the elderly judged education on the selected areas as important at their age. The high percentage of the elderly valuing education on all the selected areas is a strong indication of how much education the elderly still require at their age.

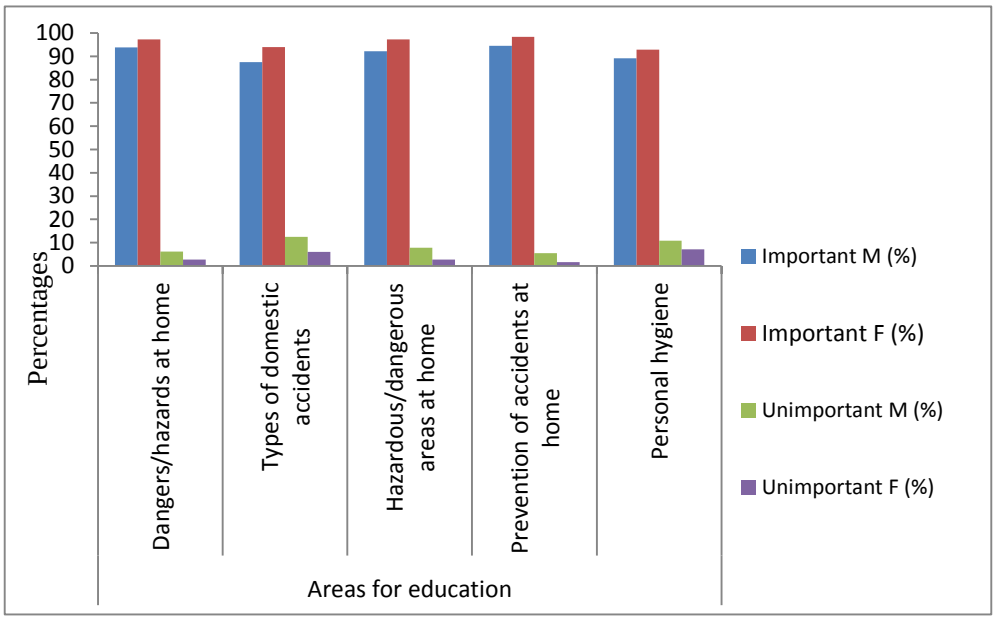

Figure 6: Areas Rated by the Elderly as important/unimportant for education at present age by gender.
Source: Field survey, Kumfo (2013) N=308

As can be seen from Figure 6, all the selected areas bother on their health. A score of 96.8% for "prevention of accidents at home" is a clear indication that home accidents have posed a serious threat to the lives of the elderly.

Summary

Old Age Association has been considered to provide institutional support on health issues of the elderly; but only a fifth of them were aware of OAA in Cape Coast with less than 10% of them being registered members. Responses to a contingency question revealed that even the registered members lacked information on the benefits of the association. Less than 20% (16.2%) changed their homes because of high rent, disturbances in the previous environment, or wanted their freedom.

Concerning the prevention of DHH and accidents through home modification, it turned out that about two-thirds of them saw the need to modify un-cemented courtyards as this part of the home was perceived as hazardous and a threat to their health. On the prevention of such hazards at home, more than half of the elderly recommend education on home dangers.

CHAPTER NINE

SUMMARY, CONCLUSIONS, POLICY IMPLICATIONS AND RECOMMENDATIONS

Introduction

The elderly population is progressively growing and posing public health challenges to nations globally. Besides this elderly population explosion are other subjects such as the increasing vulnerability and the progressive physical deterioration in the health of the elderly vis-à-vis the prevalence of DHH. These are some of the issues that informed the researcher to settle on this investigation. In this final chapter of the report are the summary, conclusions, policy implications, and recommendations of the study.

The broad objective of this study was to assess the DHH of the elderly in the Cape Coast Metropolis. The study investigated awareness of the elderly about domestic health hazards; followed by the most common types of DHH that the elderly face. The investigation also examined the areas of the home environment that could negatively affect the health of the elderly, and appraised the accidents sustained by the elderly within the last 12 months with the dominance of such domestic accidents among the elderly. Finally, suggestive preventive measures of DHH were also examined. Among other things, the literature covered ageing, domestic health hazards to the elderly, locations, frequency, interventions and suggestive preventive measures on home hazards. The study adapted the

framework by Tomey and Sowers (2009). Data was collected through an interview with 308 elderly persons aged 65 years and over and analysed with SPSS version 20.

Summary of Main Findings

The results of 14 items on socio-demographic characteristics of the elderly revealed that more females than males participated in the study; 65 years was the minimum age for both genders, with mean age as 73 years. The illiterate class dominated in literacy of the respondents; a high percentage of the participants could be reached through churches and mosques; these are issues which should be seriously considered when planning health education for the population.

Over two-thirds of the respondents had valid National Health Insurance subscription to access virtually free health care from government health facilities so long as the NHIS continues. People age with degenerative conditions; hence, this two-thirds percentage could meet most of their medical expenses through the NHIS.

More than half of the respondents lived in their own residences; about half of them relied on public latrines as their places of convenience. Dim environment which could be a source of danger to the elderly was not a problem to a majority of them who used electricity as source of lighting.

Some elderly coping strategies could make persons highly vulnerable and the results indicated that from the five selected elderly coping strategies, close to

half of the respondents were on daily medications. About a third also used assistive devices to facilitate mobility. Half of the participants reported of cemented courtyard which is quite good in view of stumbling and slipping during rainy days. Less than half of the elderly agreed to have slippery courtyard, with about two-thirds from such homes who preferred to stay indoors.

About two-thirds of the respondents had the correct meaning of DHH. Further statistical analysis that used correlation coefficients to test the strength of the association between awareness of DHH and some demographic characteristics revealed statistically significant association between awareness and age as well as formal education of the respondents. This finding implies that as people grow older and get advanced in formal education, they become more informed about DHH and can therefore be more careful to live in those hazardous environments. Further statistical analysis using logistic regression indicates that the two variables are predicting between 13.6 and 18.7 percent of the variation in awareness of domestic hazards.

Presented with the list of specific situations (safe and hazardous) at the respondents' homes, fire source was accepted by three-quarters of the sample as a situation which rendered the environment quite hazardous. The same fire source was identified from eight hazards by almost two-thirds as the leading DHH in their homes.

Field data also revealed that DHH abound in the elderly homes with common ones being slippery floors and fire source. Stumbling emerged as the

accident that mostly worried the elderly within the last 12 months preceding the research. The statistical test on association between demographic characteristics and domestic accidents sustained by the elderly revealed weak negative relationship between gender of respondents and some accidents such as falls from height, slipping on smooth surface, wounds, and electric shocks. There were statistically significant associations between ages and electric shock and taking wrong medication. With reference to living arrangement (living alone), the study failed to reject the null hypothesis of no significant relationship with all the domestic accidents except falls from height.

Almost the entire sample had unanimously appraised the bedroom as a safe place in their homes and the bathroom endorsed as the most harmful area by a handful of them. The field data showed that the respondents had accident at the courtyard; nevertheless, they affirmed the bathroom as the most harmful location at home. Stumbling was the most prevalent home accident suffered; it occurred frequently in the evening, and was mostly attributed to different health problems.

Herbal treatment was found to be the intervention for most minor accidents suffered with expensive hospital interventions mostly reserved for falls from height as injuries sustained from such accidents may be serious to affect the elderly in diverse ways.

To prevent home hazards, the elderly selected un-cemented courtyard for structural modification in their homes. Beyond half of them declared their support for education on home dangers as a suggestive measure to reduce DHH thereby

preventing home accidents in the elderly. These findings which provide answers to the research questions informed the researcher on the conclusions and recommendations of the study.

Conclusions

The investigation led to the conclusion that the elderly studied had medium level of awareness with much more education required for the young olds and those with lower level of formal education. Fire source as a danger at home was accepted by most of the elderly, with almost half the sample who stumbled in the last 12 months of the study. The bathroom was judged the most unsafe area at home. Awareness and membership in OAA was limited; hence, the elderly lacked information about their healthy lifestyle that could be obtained through health education at their meetings. In spite of the bathroom reported as the most unsafe location, the respondents selected un-cemented courtyard for modification in their homes to prevent DHH. Finally, a good proportion of them declared their support for education on home dangers as a suggestive measure to reduce DHH thereby preventing home accidents in the elderly.

Ageing of the population with its health implications has become a public health issue. The theories on ageing and accidents contributed to hazards and accidents which have been the focus of the investigation. A critical examination of both theories indicates that they are highly applicable to the investigation. For instance, "cross-linking" in damage theory on ageing explains the basis of degenerative conditions in ageing; and the combination theory in accidents

explains the elderly's position in accidents. These theories support the fact that prevention of home hazards and accidents is more of a collective responsibility involving family members, state agencies, and policy makers.

Evaluation of Conceptual Framework

The study adapted Physical Functioning Assessment in Your Environment conceptual model developed by Tomey and Sowers (2009) as the framework to examine domestic hazards and accidents among the elderly in Cape Coast Metropolis. In the original model, the authors used two main types of environment, commencing from the neighbourhood to the indoor home environment; the individual's performance is located in the indoor home environment. The authors identified environmental supports and facilitators and environmental barriers and challenges as components in the neighbourhood. The supports and facilitators account for the good factors while the barriers and challenges refer to negative factors in the neighbourhood. Towards the facilitators are examples such as good sidewalks, good lighting and accessible transportation as some examples. Similarly, there are unsafe conditions such as heavy traffic that serve as the barriers and challenges. All these are typical topographies of our neighbourhood environment.

In view of the delimitations of the present study, the entire original model could not be used. Instead, the portion commencing from the smaller circle which is referred to as the indoor home environment through the bigger box (compensation/coping strategies) has been adapted for the present study.

Conditions in the IHE above and below the individual performance capacity (in the smaller box) are still valid in the present study and are therefore retained.

The portion of the model adapted from Figure 1 and presented in Figure 2 worked appropriately for the study as the features mostly reflect on the true situations in the elderly homes. A careful examination of the compensation and coping strategies reveal that the model improves the physical functioning of the elderly. Issues in both circles of the compensation/coping strategies are supported by the literature.

The field data also indicates that the elderly have their individual coping strategies. Furthermore, successful identification of the unsafe locations at home guides the elderly to avoid such areas and promote elderly health. The ultimate gain to the elderly would be healthy and successful ageing. These also fall in line with the accidents in the field data. Domestic accidents affecting the elderly in everyday life often require compensation or coping strategies as reported in the model as well as the field data.

Contribution to Knowledge

The study was on DHH of the elderly in the Cape Coast Metropolis and covered areas such as awareness of these hazards, types and locations of the hazards, types and frequency of the accident and lastly, suggestions to prevent the hazards. The results revealed crucial issues that need to be mentioned in this section.

The field data revealed three vital issues which are interconnected and require careful attention and policy issues. These have been identified from theories on ageing and accidents that were covered in the literature. The damage theory postulates that degenerative changes in the body lead to problems in the eye and eventually result in poor vision. On accidents, the domino theory and the person theory cover environmental and host theories respectively. Intrinsic and extrinsic factors came up for consideration as contribution to knowledge. Stumbling placed very high under poor vision in the possible causes of the accidents suffered. The same stumbling emerged as the dominant accident suffered in the evening. Finally, stumbling victims received no treatment and form the second highest on the list for the elderly who went in for self-medication.

A critical examination of these inter-connected issues indicates that the elderly with vision problems stumble in the evenings particularly where the indoor environment is rough. Receiving no treatment or taking to self-medication brings to the limelight other serious issues. It suggests that the victims were unable to afford the appropriate treatment. It is therefore right at this point in time that the state seriously and urgently develops policies to address these problems. A proposed framework to be known as, "Three As in optimising ageing through policies" has been developed and presented in Figure 7 for consideration.

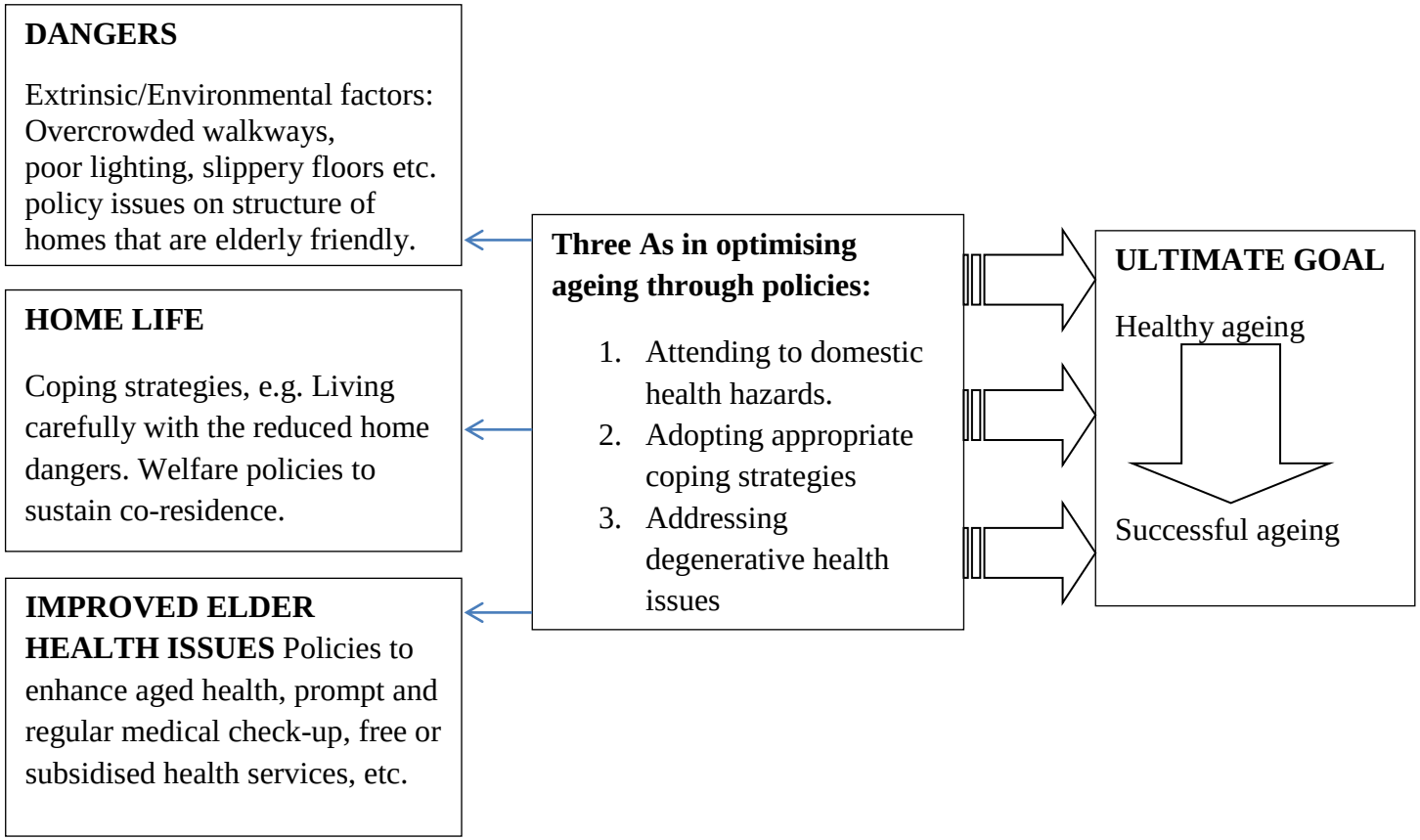

Figure 7: Conceptual Framework on Three As to Optimise Ageing through Policies.
Source: Author.

Recommendations and Policy Implications

From the conclusion and the new knowledge gained from the study a few recommendations are worth considering:

1. Education on prevention of DHH to the elderly is highly valuable. This should be given earlier in life to the entire family and regularly intensified to serve as reminders. This is the responsibility of the Community Health Officers in the Ghana Health Service as they are on the ground giving health education talks in the communities.
2. Fuel for food preparation is inevitable at home yet it is equally a highly rated danger at home. Therefore, users, particularly the elderly living alone, must be extra careful anytime they use fire for any domestic purpose; services of co-residents are highly commendable. Therefore, inter-departmental collaboration between the Department of Social Welfare and Ghana Health Service is required to educate the society and stress on the vital role of the traditional family system. These state agencies should enlighten family members on the strengths inherent in co-residence and encourage the public to improve upon co-residence and elder care in Ghana and elsewhere.
3. Elderly homes in particular require special attention to conditions that could result in stumbling. This recommendation is necessary as the respondents identified stumbling as a leading domestic accident. The

Building Inspectorate Division of Town and Country Planning should enforce regulation on safety measures while inspecting building plans for approval and award of building permit.

4. Bathroom is a location at home that is frequently visited; yet, this has been rated as the most unsafe place at home. This conclusion requires that the elderly in particular need to be extra careful at the bathroom; and even need extra support by other close family members anytime they visited the bathroom. Therefore, for any structural modification of the home to reduce DHH and domestic accidents, the bathroom should receive the priority for the sake of the elderly.

The recommendations continue with policy implications.

Documents from WHO and UN covered the increasing elderly population and the role of governments in elderly health. Regulations from these world bodies require governments that support these policies to develop their own strategies to implement the policies. The results from this study also suggest some policy implications on the Ghana government besides the July 1st social activity that is organised for the elderly annually. Besides, the media also recall 1st of October with local and world news on the elderly. The elderly enjoy these occasions as a form of entertainment and means of relieving loneliness; nevertheless they need more than these as revealed by the findings.

The Government of Ghana should earnestly consider a realistic health policy for the elderly. About twenty percent of the elderly have identified vision

testing as a strategy for the prevention of home accident. As a policy, it is suggested that the Republic Day social activity should be planned to include health screening of the elderly at regional, district, and sub-district levels to give it a wider coverage when the public still remember these days. It is worth to recall the success rate and the health benefits of National Immunisation Day in Ghana. It is further suggested here that these screening programmes can be sponsored by philanthropists or slated under corporate organisations social responsibilities in the same communities if these costs would be considered too much on the state assets. It is suggested that government policy backing on this would enable it function more effectively as in the case of the National Immunisation Day activities in Ghana.

In 1982, the UN General Assembly (resolution 37/51) requested Member States to draw their own plans of action on the welfare of the elderly. Data from this study indicates that over 80% of the sample comprises Christians and Moslems; this serves as a convenient ground for the UN General Assembly plan of action to take off. The Christian Council of Ghana, the Muslim Council of Ghana working in collaboration with all other religious bodies should consider programmes to address the welfare and safety of the elderly. This action is regarded as a policy by which Ghana as a member state implement the UN General Assembly (resolution 37/51).

Fragmentation and reduction in family size pose a lot of challenges to elder care in the present era. It is not clear whether there is State support for elder

care in Ghana. It is hereby suggested that there can be a state policy to establish a fund to be known as: "Aged Care Fund" (ACFUND) for elderly care as in Ghana Education Trust Fund (GETFUND) and NHIS tax deductions since ageing is a natural process that awaits all and sundry with neither political nor religious boundaries.

Much as OAA try to educate the elderly, there is still much room for improvement as they hardly reach the entire aged population. It is hereby suggested that the government should have a policy whereby Ghana Health Service in collaboration with the Ministry of Health will take over OAA, organise and run their meetings at health facilities as done in special clinics for diabetes and hypertension patients. Through this strategy, higher numbers of the elderly could access the benefits of OAA. Where some of the elderly may live far the CHO in the GHS should take up these tasks in their fieldwork.

Research Implications

The study has exposed some areas that are worth considering by prospective researchers in elderly health which is an emerging area in health and policy. Ageing comes with increasing vulnerability of individuals to health problems at the later stages of life. From the study, it was observed that about 80% of the elderly can be reached through churches and mosques. An essential research area that can be considered from this finding is the role of religious bodies in assisting their elderly members besides spiritual support in the society which is provided through home visits.

The present study was delimited to the DHH of the elderly which is just an aspect of the emerging ageing problems. Other areas of elderly health that the researcher recommends for empirical studies include abuse and neglect during elder care in Ghana. It is suggested that mixed methods design should be considered to ensure quality data from the victims as well as care givers and household members (co-residents) in order to give credence to the results. The Department of Social Welfare through the state should have a policy on elder abuse. Depending on the results of such studies, relatives and care givers who would be found guilty of elder abuse should be penalised to serve as deterrent to others.

Empirical literature reviewed also indicated that some of the elderly who encountered falls suffered the accident again within the next 12 months, which this piece of work also supports with one-fifth falling twice or more. It is not known exactly which ways these accidents affected the victims. Therefore, as a research gap, follow-up studies are required to investigate the effects of home accidents on the elderly. The more serious the effects on them, the more they may lack the ability to perform ADLs, a situation which increases their dependence. Respondents should therefore include the elderly, caregivers, and the other co-residents.

REFERENCES

Adams, P. F., Wilson, L. J., & Barnes, P. M. (2008). Summary health statistics for US population: National Health Interview Survey, 2006. National Centre for Health Statistics. *Vital Health Stat, 10*(236), 1-104.

Adoma, P. O., & Yendaw, E. (2014). Ageing and chronic diseases in Ghana: A case study of Cape Coast Metropolitan Hospital. *International Journal of Nursing, 1*(1), 25-36.

Alidu, S., Dankyi, E., & Tsiboe-Darko, A. (2016). Aging policies in Ghana: A review of the Livelihood Empowerment against Poverty and the National Health Insurance Scheme. *Ghana Studies, 19*(1), 154-172.

Amfo-Out, R., & Agyemang, J. K. (2016). Occupational health hazards and safety reactions among the informal sector auto mechanics. *Applied Research Journal, 1*(4), 59-69.

Anderson, J. S., Thompson, N. J., & Gearing, M. J. (2000). *Perceived risks for falls among elderly at home: A qualitative study*. Retrieved from http://apha.confex.com/apha/128am/techprogram/paper_10993.html.

Anena, E., & Muchane, E. (2012). *A General perspective of falls amongst the elderly*. (Unpublished Master's thesis) submitted to Arcada University of Applied Sciences, Finland. Retrieved from https://publications.theseus.fi/.

Ang, A. L. & Lim, Y. E. (2008). *Home safety of elderly in rental flats*. Retrieved From_aSsiaforum.tsaofoundation.org/pdfDownloads/Day1/free_papers/abstract_home%20safety.

Appiah, S. (Dec. 2012). *Help age calls for National Council for Ageing*. Graphic Online. Retrieved from http://graphic.com.gh/General-News/helpage-calls-for-national-council...

Apt, N. A. (1971). *The socio-economic conditions of the aged in Ghana*. Accra: Department of Social Welfare and Community Development Monograph. Retrieved from https://www.google.comgh/search.

Apt, N. A. (1995). *Coping with old age in a changing Africa*. Aldershot: Avebury.

Aras, R. Y., Narayan, V., D'souza, N. D. & Veigas, I. (2012). Assessment of accident risk among elderly in domestic environment: A cross-sectional study in rural South Kanataka, India. *Annals of Tropical Medicine and Public Health. 5*(6), 565-568.

Ayabilla, R. A. (2008). *Social support system for the aged in the Bawku Municipality*. (Unpublished Master's Thesis). Department of Population and Health, University of Cape Coast. Cape Coast.

Ayernor, P. K. (2012). Diseases of ageing in Ghana. *Ghana Medical Journal, 46*(Suppl), 18-22.

Ba-Ama, E., & YaabaAckah, P. (2014). Causes of neglect of the aged in Sekondi-Takoradi Metropolis, Ghana. *International Research Journal of Arts and Social Sciences, 3*(1), 8-16.

Baltes, P. B., & Smith, J. (2003). New frontiers in the future of aging: From successful aging of the young old to the dilemmas of the fourth age. *Gerontology*, *49*(2), 123-135.

Basaraba, S. (2013). *What is chronological age? Longevity*. Retrieved from http://longevity.about.com/odLongevity-Terms-And-Concepts/gwha...

Bassitt, C. (Ed.). (2010). *What are the top 5 health concerns with aging?* Retrieved from http://www.nutralegacy.com/blog/general-healthcare/what-are-the-top-5-health-conce...

Berman, A., Snyder, S. J., Kozier, B., & Erb, G. (2008). *Kozier & Erb' fundamentals of nursing concepts, process, and practice.* (8th ed.) Upper Saddle River, New Jersey: Prentice Hall.

Bernstein, D. A., Penner, L. A., Clarke-Stewart, A. & Roy, E. J. (2006). *Psychology*. (7th ed.) Boston: Houghton Mifflin Company.

Bhanderi, D. J., & Choudhary, S. (2008). A study of occurrence of domestic accidents in semi-urban community. *Indian Journal of Community Medicine, 33*(2), 104-106.

Biritwum, R. B., Mensah, G., Minicuci, N., Yawson, A. E., Naidoo, N., Chatterji, S. & Kowal, P. (2013). *Household characteristics for older adults and study background from SAC Ghana Wave 1*. Retrieved from http://www.bglbalhealthaction.net/index.php/gha/article/view/20096.

Botek, A. (2015). *The number one thing that causes seniors to stumble. AgiengCare*.com Retrieved from https://www.agingcare.com/News/causes-of-senior-falls-153897.htm .

Bowling, A., & Dippe, P. (2005). What is successful ageing and who should define it? *British Medical Journal, 331*(7531), 1548-1551.

Briggs, E. (2007). Safety in Nursing Practice. In C. Brooker, and A. Waugh. (Eds.) *Foundations of nursing practice fundamentals of holistic care.* Edinburgh: MOSBY ELSEVIER.

Brown, C. K. (1984). *Improving the social protection of the aging population in Ghana*. Legon: University of Ghana, ISSER.

Brown, C. K. (1995). *Aging and family care in Ghana: A study in caring relationships*. Cape Coast: University of Cape Coast, Centre for Development Studies. Research Report Series No. 26.

Brown, C. K. (1999). *Caring for the elderly: Perspectives of Ghana and Japan*. Cape Coast: Catholic Mission Press.

Bryman, A. (2001). *Social research methods*. Oxford: Oxford University Press.

Camilloni, L., Farchi, S., Rossi, P. G., Chini, F., Di Giorgio, M., Molino, N., Iannone, A. Borgia, P., & Gusticchi, G. (2011). A Case-control study on risk factors of domestic accidents in an elderly population. *International Journal of Injury Control and Safety Promotion. 18*(4), 269-76.

Carter, S. E., Campbell, E. M., Sanson-Fisher, R. W., Redman, S. Gillespie, W. J. (1997). Environmental hazards in the homes of older people. *Age and Ageing, 26* (3), 195-202.

Central Intelligence Agency (2015). *Life expectancy at birth. The World Factbook*. Retrieved from https://www.cia.gov/library/publications/the-world.../210rank.html .

Centres for Disease Control and Prevention (CDC) (2009). *Home and recreational safety. Cost of falls among older adults.* Retrieved from http://www.cdc.gov/homeandrecreationalsafety/falls/fallscost.html .

Centres for Disease Control and Prevention (CDC) (2009). *Preventing falls: How to develop community-based fall prevention programmes for older adults. Preventing falls among older adults.* Retrieved from http://www.cdc.gov/HomeandRecreationlSafety/Falls/preventfalls.html .

Centres for Disease Control and Prevention (CDC) (2013). *Home and recreational safety. Important facts about falls.* Retrieved from www.cdc.gov/homeandrecreationalsafety/falls/adultfalls.html

Centres for Disease Control and Prevention (CDC) (2015). *Important facts about falls.* Retrieved from http://www.cdc.gov/homeandrecreationalsafety/fall/adultfalls.htmi.

Centres for Diseases Control and Prevention (CDC) (2015). Falls in nursing Homes. *Home and Recreational Therapy*. Retrieved from http://www.cdc.gov/homeandrecreationalsafety/falls/nursing.html.

Chandwani, H., Jivarajani, P., & Jivarajani, H. (2009). Health and social problems of geriatric population in an urban setting of Gujarat, India. *The Internet Journal of Geriatrics and Gerontology*. Retrieved from http://ispub.com/IJH/9/2/6497.

Chirico, T. L., Boyle, A. J., & Johnson, S. L. (n.d). *Home safety and disaster preparedness in the elderly population.* Retrieved from http://www.chatham.edu/departments/healthmgmt/documents/research/HomeSafetyAbstract.pdf.

Clemson, L., Roland, M., & Cumming, R. G. (1997). Types of hazards in the homes of elderly people. *OTJR: Occupation, Participation and Health*. Retrieved from http://otj.sagepub.com/content/17/3/200.abstract.

Cohen, B., & Menken, J. (Eds) (2006). *Aging in sub-Saharan Africa: Recommendation for furthering research*. National Research Council (US) Committee on Population. The National Academies Press. (US).

Comfortkeepers (2014). *Adapting homes to seniors' changing needs*. Retrieved from http://www.comfortkeepers.com/home/info-center/aging-in-place/adapting-homes-to-seniors-changing-needs .

Constitution of the Republic of Ghana [Ghana] (7 January, (1993). Retrieved from http://www.refworld.org/docid/3ae6b5850.html .

Cora, V. L. (2003). Elder Health. In K. S. Lundy & S. Janes, *Essentials of Community-Based Nursing*. Boston: Jones and Bartlett Publishers.

Creswell, J. W. (2013). *Steps in Conducting a Scholarly Mixed Methods Study*. DBER Speaker Series. Paper 48. Retrieved from http://digitalcommons.unl.edu/dberspeakers/48 .

Crowther, D., & Lancaster, G. (2008). *Research Methods: A Concise Introduction to Research in Management and Business Consultancy.* Butterworth: Heinemann Educational Books.

Crumbie, A. (2007). Ageing and Health. In M. Walsh, and A. Crumbie, (Eds) *Watson's Clinical Nursing and Related Sciences*. 7th ed. Edinburgh: ELSEVIER.

D'souza, S. A., Shringarpure, A., & Karol, J. (2008). Circumstances and consequences of falls in indian older adults. *The Indian Journal of Occupational Therapy. XXXX* (1), Retrieved from *medind.nic.in/iba/t08/i1/ibat08i1p3 .pdf* .

Darkwa, O. K. (1999). Towards a national policy for the elderly in Ghana. *Ageing International. 25*(1), 31-45.

Darteh, E. K. M., Nantogmah, B., & Kumi-Kyereme, A. (2014). If your parents help you grow teeth; you help them lose theirs: Family support for the aged in Yamoransa, Ghana. *Ogua Journal of Social Sciences, 7,* 38-50.

Donatelle, R. J. (2001). *Health the Basics*. (4th ed). Boston: ALLYN AND BACON.

Edlin, G., Golanty, E. & Brown, K. M. (1999). *Health and Wellness*. (6th ed.) London: Jones and Bartlett Publishers International pg. 4.

Edwards, R. (2013). *The SafeWise Report*. Retrieved from http://www.safewise.com/blog/10-safety-hazards-to-watch-out-for-around-the-house/ .

Evci, E. D., Ergin, F. & Beşer, E. (2006). Home accidents in the elderly in Turkey. *Tohoku Journal of Experimental Medicine 209*(4), 291-301.

First International Conference on Health Promotion. (1986). *Ottawa Charter for Health Promotion*. WHO/HPR/HEP/95.1; 1986. Nov 21, Retrieved from www.who.int/hpr/NPH/docs/ottawa_charter_hp.pdf .

Floyd, J. (n.d). *Home alone a guide to home safety for the elderly. Better caring*. Retrived from www.bettercaring.com.au .

Ford, A. F. (2005). *Exploring health behaviour in older Black women*. Published Doctoral Thesis. University of Pittsburg. Retrieved from https://scholar.google.com/scholar?q.

Fryrear, A. (2015). *Survey response rates*. Retrieved from https://www.surveygizmo.com/author/afryrear/ .

Fuller, G. F. (2000). Falls in the elderly. *American Academy of Family Physicians. 61*(7), 2159-2168.

Gbogbo, D. Y. (2011). *Evaluation of Population Census Data and Population Growth in Ghana through Demographic Analysis* Unpublished Doctoral dissertation, Department of Mathematics, Kwame Nkrumah University of Science and Technology.

Gerrar, F. G. (1998). *The Economics of Retirement*. Accra: Ghana Publishing Corporation.

Ghana Country Report (2007). *Ghana country report on the implementation of the Madrid International Plan of Action on Ageing (MIPAA)*. Retrieved from www.un.org/ageing/documents/review-map GHANA .

Ghana Demographics Profile (2014). *CIA World Factbook.* Retrieved from http://www.indexmundi.com/ghana/demographics_html .

Ghana News Agency (2005). *The dilemma of ageing in Ghana*. *GNA Health*. Retrieved from http://www.modernghana.com/news/91059/1/the dilemma of ageing in Ghana...

Ghana Population Growth Rate (2011). *Population trends in Ghana*. Retrieved from https://www.google/.com.gh/search?q .

Ghana Statistical Service (GSS) (2002). *2000 Population and Housing Census, Special Report on 20 Largest Localities*. Accra: Ghana Statistical Service.

Ghana Statistical Service (2002). *2000 Population and Housing Census, Summary Report of Final Results*. Accra: Ghana Statistical Service.

Ghana Statistical Service (2005). 2000 Population and housing Census Central Region Analysis of District Data and Implications for Planning. *Ghana Statistical Service.* 13-14.

Ghana Statistical Service (2012). *2010 Population and housing Census. National Analytical Report*. Retrieved from www.statsghana.gov.gh/pop_stats.html

Ghana Statistical Service (2013). *2010 Population and Housing Census District Analytical Report Cape Coast Municipality*. Ghana Statistical Service. Retrieved from https://s3.amazonaws.com/ndpc-static/.../CR-+Cape+Coast+Municipal_2013_APR.pdf.

Global Action on Aging (2009). *Aging Watch at the UN*. Retrieved from http://www.globalaging.org/agingwatch/index.htm .

Goetsch, D.L. (2007). *Occupational Safety and Health.* (6th ed.) Upper Saddle River, New Jersey: Prentice Hall.

Government of Ghana (2010). *NATIONAL AGEING POLICY OF GHANA. 'AGEING WITH SECURITY AND DIGNITY.'* Ministry of Employment and Social welfare, Government of Ghana. Retrieved from https://s3.amazonaws.com/ndpc-static//Ageing+Polocy_July+2010.pdf .

Government of Ghana (2011). *National Ageing Policy of Ghana*. Ministry of Employment and Social welfare, Government of Ghana. Retrieved from: http://www.ghanaweb.com/GhanaHomePage/blogs/blog.article.php...

Greig, J. (2007). Understanding health and health promotion. In C. Brooker and A. Waugh. (Eds.) *Foundations of nursing practice Fundamentals of holistic care*. Edinburgh: MOSBY ELSEVIER.

Haaga, J. (2010). *Family care for an ageing population*. Population Reference Bureau. Retrieved from http://www.prb.org/multimedia/Video/2010/healthcareandaging.aspx.

Healthy Aging Health Center (2008). *Healthy aging – Normal aging*. Retrieved from http://www.webmd.com/healthy-aging/tc/healthy-aging-normal-aging.

Hollnagel, E. (2004). *Bariers and Accident Prevention*. Hampshire: Ashgate.

Holmes, J., Powell-Griner, E., Lethbridge-Cejku, M., & Heyman, K. (2009). *Ageing differently: physical limitations among adults aged 50 years and over. United States, 2001-2007*. Centres for Disease Control and Prevention. National Centre for Health Statistics.No. 20 Retrieved from www.cdc.gov/nchs/products/databriefs/db20.htm .

Home Security Action (2011). *Home safety for the elderly... How to prevent accidents in the home*. Home Security Action. Retrieved from http://www.home-security-action

Huang, T. T. (2005). Home Environmental Hazards Among Community-dwelling Elderly in Taiwan. *Journal of Nursing Research, 13*(1), 49-57

Insel, P. M., & Roth, W.T. (2004). *Core Concepts in Health*. (9th ed.) Boston: McGraw-Hill.

Jin, K. (2010). Modern Biological Theories of Aging. *Ageing and Disease, 1*(2), 72-74.

Keskinoglu, P., Picakciefe, M., Bilgic, N., Giray, H., Karakus, N., & Ucku, R. (2008). Home accidents in the community-dwelling elderly in Izmir, Turkey How do prevalence and risk factors differ between high and low socioeconomic districts? *Journal of Ageing and Health, 20*(7), 824-836.

Kokkola, C. (2014). *Attitudes towards ageing in different cultures.* Retrieved from https://www.slideshare.net/ckokkola/attitudes-towards-aging-in-different-cultures.

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement, 30*, 607-610.

Krugu, J. (2014, Sept. 23). *Health of the elderly and policy implications in Ghana.* Health News of Tuesday Retrieved from http://www.ghanaweb.com/GhanaHomePage/health-of-the-elder...

Kwatei, N. K. K. (2009). *The Ghanaian (African) extended family (system).* Retrieved from https://www.ghanaweb.com/GhanaHomePage/NewsArchive/The-Ghanaian-African-E...

Lee, V. M., Wong, T. W., & Lau, C. C. (1999). Home accidents in elderly atients presenting to an emergency department. *Accident Emergency Nursing, 7*(2), 96-102.

Lim, K. H., Jasvindar, K., Normala, I., Ho, B. K., Yau, W. K., Mohmad, S., Lai, W. Y. & Sherina, M. S. (2014). Risk factors of home injury among elderly people in Malaysia. *Asian Journal of Gerontology & Geriatrics, 9*(1), 16-20.

Livelihood Empowerment Against Poverty (LEAP). (2016). *Ministry of Gender, Children, and Social Protection. Republic of Ghana.* Retrieved from http://mogcsp.gov.gh/projects/livelyhood-empowerment-against-poverty-leap/.

Livingston, G., Cooper, C., Woods, J., Milne, A., & Katona, C. (2008). *Successful ageing in adversity: The LASER-AD Longitudinal Study*. Retrieved from http://jnnp.bmj.com/content/79/6/641.full

Lowery, K., Buri, H. & Ballard, C. (2000). What is the prevalence of environmental hazards in the homes of dementia sufferers and are they associated with falls. *International Journal of Geriatric Psychiatry, 15*(10), 883-886.

Lök, N., & Akin, B. (2013). Domestic environmental risk factors associated with falling in elderly. *Iran Journal of Public Health, 42*(2), 120-128.

Lundy, K. S., & Janes, S. (2003). *Essentials of Community-Based Nursing*. Boston: Jones and Bartlett Publishers. Pg 9.

Macnee, C. L. (2004). *Understanding Nursing Research Reading and Using Research in Practice*. Philadelphia: Lippincott Williams & Wilkins.

MADRID INTERNATIONAL PLAN OF ACTION ON AGEING (2002). Retrieved from https://www.un.org/development/desa/ageing/madrid-plan-of-action-and-its-implementation.html .

Maeba, K., & Takenaka, K. (2010). Factors affecting falls self-efficacy of home bound elderly people. *Nippon Ronen Igakkai Zasshi. Japanese Journal of Geriatrics*, *47*(4), 323-328.

Majori, S., Signorelli, D., Bonizzato, G. Poli, A., & Romano, G. (1999). Evaluation of home Injuries in elderly people (HIEP) in Verona area (North-East Itally). *Journal of Preventive Medicine and Hygiene*, *40*, 67-71.

Martin, P., Kelly, N., Kahana, E., Kahana, B., & Poon, L. W. (2012). *Paper 1: Defining successful ageng: a tangible or elusive concept?* Retrieved from https://healthyandsuccessfulaging.wordpress.com/2012/11/12/paper- .

Martin, P., Kelly, N., Kahana, B., Kahana, E., Willcox, B. J., Willcox, D. C., & Poon, L. W. (2015). Defining successful aging: A tangible or elusive concept? *Gerontologist*, *55*(1), 14–25.

Mba, C. J. (2010). Population Ageing in Ghana: Research Gaps and the Way Forward. *Journal of Ageing Research.* Retrieved from http://dx.doi.org/10.4061/2010/672157.

Mba, C. J. (2013). Living arrangements of the elderly men and women in Ghana's urban areas. *International Journal of Educational Development*, *2*(1), 001-008.

Mba, C., Addico, G., & Adanu, R. (2007). *An in-depth analysis of socio-demographics, living arrangements and health conditions of Ghana's older population.* Retrieved from http://www.ajol.info/index.php/rrias/article/view/22972/0 .

McLaughlin, S. J., Jette, A. M., & Connell, C. M. (2012). An examination of healthy ageing across a conceptual continuum: prevalence estimates, demographic patterns, and validity. *Journal of Gerontology Series A: Biological Sciences and Medical Sciences*. 67(7), 783-789.

Medical Dictionary (2006). *Definition: "Ageing."* Retrieved from http://www.medilexcon.com/medicaldictionary.php?t=1769 .

Milat, A. J., Watson, W. L., Monger, C., Barr, M., Giffin, M., & Reid, M. (2011). Prevalence, circumstances and consequences of falls among community-dwelling older people: results of the 2009 NSW Falls Prevention Baseline Survey. *New South Wales Public Health Bulletin, 22*(4), 43-48.

Moeller, P. (2013). *Preventing falls in older age is essential. Simple measures you can follow to reduce the odds of falling. The best life success and happiness in older age*. Retrieved from http://money.usnews.com/money/blogs/the-best-life/2013/02/05/preventing-falls-in-older-age-is-essential .

Moncada, L. V. C. (2011). Management of falls in older persons: A prescription for prevention. *American Family Physician, 84*(11), 1267-1276.

Moody, H. R. (2002). *Aging concepts and controversies*. (4th ed.) London: Pine Forge Press.

Newton, R.A. (2008). *Prevention of falls at home: Home hazard and safety assessment and management*. Retrieved from http://www.annalsoflongtermcare.com/article/6407 .

Nicks, J. (2010). *Elderly health issues.* Retrieved from http://www.buzzle.com/articles/elderly-health-issues.html.

Ocansey, S., Awusabo-Asare, K., Kumi-Kyereme, A. & Boadi-Kusi, S. B. (2013). Ocular health of the emerging elderly population in Ghana: Evidence from peri-urban community. *Healthy Ageing and Clinical Care in the Elderly*. 5, 21-31.

Olaleye, Y.L. (2009). Home accidents effects on the physical and social well-being of the aged in Ogun State, Nigeria. *African Journal for the Psychological Study of Social Issues*. Retrieved from http://www.ajol.info/index.php/ajpssi/article/view/48157.

Olson, M. (2009). Health tip: Home safety checklist for the elderly. News. Retrieved from http://www.usp.edu/newsEvents/newsDetails.aspx?Channel=%2FC... .

Oppong, C. (2006). Familial roles and social transformations: Older men and women in sub-Saharan Africa, *Research on Aging*, *28*(6), 654-668.

Orces, C. H. (2013). Prevalence and determinants of falls among older adults in Ecuador: An analysis of the SABE I Survey. *Current Gerontology and Geriatrics Research*. Retrieved from https://www.hindawi.com/journals/cggr/2013/495468/.

Oyetunji, T. A., Ong'uti, S. K., Bolorunduro, O. B., Gonzalez, B. S., Cornwell, E. E. & Haide, A. H. (2011). *Epidemiologic trend in elderly domestic injury.* Retrieved from http://dx.doi.org/10.1016/j.jss.2011.05.003 .

Panatto, D., Gasparini, R. Vitale, A., Sasso, T., Lugarini, J., Cremonesi, I., Sensi, S., & Badolati, G. (2009). Survey of domestic accidents in the elderly in the Province of Genoa (Northern Italy). *Journal of Preventive medical Hygiene*, *50*(1), 53-57.

Phelan, E. (2004). *Older adults' views of "Successful ageing": Discussion.* Medscape. Retrieved from: http://www.medscape.com/viewarticle/467925_4 .

Pi, H., Hu, M., Zhang, J., Peng, P., & Nie, D. (2015). Circumstances of falls and fall-related injuries among frail elderly under home care in China. *International Journal of Nursing Science*, *2*(3), 237-242.

Rana, A. K. M. M., Wahlin, A., Lundborg, C S., & Kabir, Z. H. (2009). Impact of health education on health-related quality of life among elderly persons: Results from a community-based intervention study in rural Bangladesh. *Health Promotion International*, *24*(1), 36-45.

Riley-Smith, B. (2015). *Hundreds of thousands of elderly Britons "at risk from electrical fires."* Retrieved from http://www.telegraph.co.uk/news/politics/11371051/Hundres-of-thousands

Robinovitch, S. N., Feldman, F., Yang, Y., Schonnop, R., Lueng, P. M., Sarraf, T., Sims-Gould, J., & Loughin, M. (2012). Video capture of the circumstances of falls in elderly people residing in long-term care: An observational study. *The Lance,381*(9860), 47-54.

Roche, C. (2010). *Senior safety issues- The dangers of living alone*. Retrieved from http://ezinearticles.com/?Senior-Safety-Issues---The-Dangers-of-Living-Alone&id=3...

Rosen, T., Mack, K. A., & Noonan, R. K. (2013). Slipping and tripping: Fall injuries in adults associated with rugs and carpets. *Journal of Injury and Violence Research, 5*(1), 61-69.

Rosenbloom Jr, A. A. (October, 2012). *Primary Care Optometry News. Look Beyond a patient's chronological age.* Retrieved from http://www.healio.com/ptometry/low-vision-geriatrics/news/print ...

Rowe, J. W., & Kahn, R. L. (1997). Successful aging. *Gerontologist, 37*(4), 433-40.

Santrock, J.W. (2006). *Life-span Development*. (10th ed.) New York: The McGraw-Hill Companies.

Seo, N.S., & Chung, Y. (2007). *A Study on ADL, Perceived Health Status, Depression, and Life Satisfaction of Rural Elderly in Korea.* Paper presented at The 39th Biennial Convention (November 3-7, 2007) Retrieved from http://stti.confex.com/stti/bc39/techprogram/paper_35977.htm .

Shawon, S. R., Hossain, F. B., Rahman, M., & Ima, S. Z. (2012). Domestic accidents in a rural community of Bangladesh: A cross-sectional study on their incidence and characteristics. *Development Country Studies*, *2*(7), 14-19.

Şimşek, T. T., Yümin, E. T., Sertel, M. Öztürk, A., & Yümin, M. (2012). Assistive device usage in elderly people and evaluation of mobility level, *Topics in Geriatric Rehabilitation, 28*(3), 190-194.

Slocum, M. (2010). *Elderly safety in the home*. Retrieved from http://www.livestrong.com/article/164013-elderly-safety-in-the-home/ .

Smith, N. (2015). 5 Reasons home care services is the safest option for your elderly loved one right now. Retrieved from http://www.goldenheartcharlotte.com/5-reasons-home-careservices-i...

Sokolovsky, J. (2001). *Living arrangements of older persons and family support in less developed countries.* Population Bulletin of the United Nations, (42-43). Retrieved from www.un.org/esa/population/publications/bulletin42_43/sokolovsky.pdf .

Sollitto, M. (2015). *6 things that cause the elderly to fall*. Retrieved from https://www.agingcare.com/articles/Falls-in-elderly-people-133953.htm

Stibich, M. (2015). Why we age – Theories and effects of ageing. *Ageing and Longevity*. Retrieved from http://longevity.about.com/od/longevity101/a/why_we_age.htm .

Stucki, B. R. (1995). *Managing the social clock: The negotiation of elderhood among rural Asante of Ghana*. (Unpublished doctoral dissertation). Northwestern University, Evanston, IL.

Sudhir, D. K., Krishna, D., Channabasappa, A. N., & Dhar, M. (2014). Prevalence of domestic accidents in rural India: A cross sectional study. *Scholars Journal of Applied Medical Sciences, 2*(2B), 657-659.

Tawiah, E. O. (2011). Population ageing in Ghana: A profile and emerging issues. *African Population Studies, 25*(2), 623-645.

Taylor, C., Lillis, C., & LeMone, P. (2005). *Fundamentals of Nursing the Art and Science of Nursing Care*. 5th ed. Philadelphia: Lippincott Williams & Wilkins.

The Royal Society for the Prevention of Accidents (RoSPA) (2015). *Older People Safety.* Retrieved from http://www.rosper.com/home-safety/advice/plder-people/ .

Todd. C., & Skelton, D. (2004). *What are the main risk factors for falls among older people and what are the most effective interventions to prevent these falls?* Copenhagen, WHO Regional Office for Europe (Health Evidence Network Report). Retrieved from http://www.euro.who.int/document/E82552.pdf .

Tomey, K. M., & Sowers, M. R. (2009). Assessment of Physical Functioning: A Conceptual Model Encompassing Environmental Factors and Individual Compensation Strategies. *Physical Therapy, 89*(7), 704-714.

Tremblay Jr. K. R., & Barber, C. C. (2005). *Preventing falls in the elderly.* Retrieved from http://www.ext.colostate.edu/pubs/consumer/10242.html

Tuli, F. (2011). The basis of distinction between qualitative and quantitative research in social science: Reflection on ontological, epistemological and methodological perspectives. *Ethiopian Journal of Education and Science, 6*(1), 97-108.

United Nations (1990). General Assembly. Implementation of the International Plan of Action on Aging and Related Activities. Retrieved from http://www.un.org./docments/ga/res/45/a45r106.htm .

United Nations (2002). *Key conference outcomes on ageing.* Retrieved from http://www.un.org/en/development/devagenda/ageing.shtml

United Nations (2002). *Political Declaration and Madrid International Plan of Action on Ageing. Second World Assembly on Ageing, Madrid, Spain*. 8 – 12 April 2002. New York: UN.

United Nations (2007). *Programme on Ageing. Vienna International Plan of Action on Ageing.* Retrieved from http://www.un.org/ageing/Vienna_intlplanofaction.html .

United Nations, Department of Economic and Social Affairs, Population Division (2013). *World Population Ageing 2013*. New York: UN.

University of Michigan Health System (UMHS) (2007). Geriatric Health Conditions Have Major Effect On Half Of All Seniors. *ScienceDaily*. Retrieved from http://www.sciencedaily.com .

Utah Department of Health (n.d). *Violence and injury prevention programme. Falls among older adults.* Retrieved from http://health.utah.gov/vipp/olderAdults/overview.html

Van der Geest, S. (1996). *The elderly people in Ghana: On-going Anthropological Research.* Retrieved from www.ghanastudies.com/gsa/gsc/97geest.html .

Van der Geest, S. (2002). Respect and Reciprocity. Care of the Elderly people in Rural Ghana. *Journal of Cross-Cultural Gerontology, 17*(1), 3-31.

Van Pelt, J. (2012). Medication Related Elder Fall Prevention. *Social Work Today, 12*(1), 12.

Velhal, G. D. (2012). Domestic accidents among the elderly. *Annals of Tropical Medicine and Public Health*. Retrieved from http://www.atmph.org/text.asp?2012/5/2/61/95950.

Velkoff, V. A., & Kowal, P. R. (2007). *Population aging in sub-Saharan Africa: Demographic dimensions 2006*. United States Census Bureau. Washington, DC: US Government Printing Office.

Wiener, J. M., & Hanley, R. J. (1989). *Measuring the activities of daily living among the elderly: A guide to national surveys.* United States Department of Health and Human Services. Retrieved from http://aspe.hhs.gov/daltcp/reports/guide.htm .

Williams, J. S., Kowal, P., Hestekin, H., O'Driscoll, T., Peltzer, K., Yawson, A., Biritwum, R., Maximova, T., Rodríguez, A. S., Espinoza, M., Wu, F., Arokiasamy, P., Chatterji, S., & SAGE collaborators (2015). *Prevalence, risk factors and disability associated with fall-related injury in older adults in low- and middle-income countries: Results from the WHO Study on global AGEing and adult health (SAGE).* BioMed Central. Retrieved from https://bmcmedicine.biomedcentrl.com/articles/10.1186/s12916-015-0390-8.

Woolrych, R., Zecevic, A., Sixsmith, A., Sims-Gould, J., Feldman, F., Chaudhury, H., Symes, B., & Robinvitch, S. N. (2014). Using video capture to investigate the causes of falls in long-term care. *The Gerontologist. 55*(3), 483-494.

World Health Organization (1946). *Preamble to the Constitution.* Geneva: WHO

World Health Organization (2007). *WHO Global report on falls prevention in older age.* Retrieved from www.who.int/ageing/publications/Falls_prevention7March.Pdf .

World Health Organization (2010). *Definition of an older or elderly person, Proposed working definition of an older person in Africa for the MDS project.* Retrieved from .http://www.who.int/healthinfo/survey/ageingdefnolder/en/index.html.

World Health Organization (2013). *Housing and Health - Home safety and accidents.* Regional Office for Europe. Retrieved from http://www.euro.who.int/enwhat-wedo/health-topics/environment...

Yasumura, S. & Hasegawa, M. (2009). Incidence of falls among the elderly and preventive efforts in Japan. *Japan Medical Association Journal, 52*(4), 231-236.

You, L., Deans, C., Liu, K., Zhang, M. F., & Zhang, J. (2004). Raising awareness of fall risk among Chinese older adults: Use of the home fall hazard assessment tool. *Journal of Gerontology Nursing, 6*, 35-42.

Yu, X., Wang, X., Kittipanya-Nyan, P., Eng, H. L. & Cheong, L. (2009). *Fall detection and alert for ageing-at-home elderly*. Retrieved from ftp://ftp.prip.tuwein.ac/pub/outgoing/zamba/fallpapers/Yu09.pdf .

Zakour, M.J. & Gillespie, D. F. (2013). *Community disaster vulnerability: Theory, research, and practice*, New York: SpringerScience+Business Media.

Zimmer, Z. & Dayton, J. (2007). Older adults in sub-Saharan Africa living with children and grandchildren. *Population Studies A Journal of demography, 59*(3), 259 – 312.

APPENDICES

APPENDIX A

TABLE FOR DETERMINING SAMPLING SIZE OF A KNOWN POPULATION

Table for Determining Sampling Size of a Known Population

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	346
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	354
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	191	1200	291	6000	361
45	40	170	118	400	196	1300	297	7000	364
50	44	180	123	420	201	1400	302	8000	367
55	48	190	127	440	205	1500	306	9000	368
60	52	200	132	460	210	1600	310	10000	370
65	56	210	136	480	214	1700	313	15000	375
70	59	220	140	500	217	1800	317	20000	377
75	63	230	144	550	226	1900	320	30000	379
80	66	240	148	600	234	2000	322	40000	380
85	70	250	152	650	242	2200	327	50000	381
90	73	260	155	700	248	2400	331	75000	382
95	76	270	159	750	254	2600	335	1000000	384

Note: N = Population Size *Source: Krejcie & Morgan 1970*

Source**:** Krejcie & Morgan (1970)

APPENDIX B

STRUCTURED INTERVIEW SCHEDULE

UNIVERSITY OF CAPE COAST
FACULTY OF SOCIAL SCIENCES
DEPARTMENT OF POPULATION AND HEALTH

DOMESTIC HEALTH HAZARDS OF THE ELDERLY
RESIDENT IN CAPE COAST METROPOLIS

This is a doctoral study, conducted in the Department of Population and Health with the aim of exploring domestic health hazards of the elderly resident in the Cape Coast Metropolis. This work is exclusively academic and the respondents are fully assured of complete confidentiality of any information they may give out during the study. We therefore appeal to you to answer the following questions honestly.

Thank you in advance for your cooperation.

Questionnaire number…… Date of Interview.....

Status of community

01. Large [ ]
02. Small [ ]

Name of large communities

01. Essuekyir [ ]
02. Kakomdo [ ]
03. Nkanfoa [ ]
04. Pedu/Abura [ ]

Name of small communities

01. Brabedzi [ ]
02. Ebubonko [ ]
03. Efutu Mampong [ ]
04. Kwesi Pra [ ]

INSTRUCTIONS:

1. Kindly indicate your response with a tick [√] in the box against the most appropriate option/s.
2. For other items that do not require ticking, write your response in the space provided under each.

SECTION A: DEMOGRAPHIC DATA

1	Gender	
	01. Male	
	02. Female	
2	Age	....
3	Marital status	
	01. Married	
	02. Divorced	
	03. Separated	
	04. Widow/Widower	
	05. Never married	
4	Educational status	
	01. Tertiary education	
	02. Second cycle education	
	03. Basic education/Middle School Leaving Certificate	
	04. No formal education	
	05. Other (Specify)	
5	What is your religious affiliation?	
	01. Christian	
	02. Moslem	
	03. Traditionalist	
	04. Other (Specify)	
6a	What was your main (primary) job/occupation before you attained 65 years?	
	01. Teaching	
	02. Medical officer	
	03. Nursing	
	04. Farming	
	05. Fisherman	
	06. Mechanic	
	07. Unemployed	
	08. Other Specify).....	
6b	Do you still do the same job/occupation since you reached 65 years?	
	01. Yes	
	02. No	
7	How long have you been living in this house?	
	01. One year	
	02. Two years	
	03. Three years and over.	

8	As at the time of this interaction, do you live ALONE in your room/apartment/residence?	
	01. Yes	
	05. No	
	If YES skip question 9 and move to question 10	
9	Who lives together with you for MOST of the time at your room/apartment/residence?	
	01. Spouse	
	02. Brother	
	03. Sister	
	04. Son	
	05. Daughter	
	06. Hired care giver	
	07. Other (Specify)	
10	What is the ownership of your present room/apartment/residence?	
	01. Own residence	
	02. Hired premises	
	03. Child/children' home	
	04. Brother's home	
	05. Sister's home	
	06. Family house	
	07. Other (Specify).....	
11	Which type of toilet facility do you use?	
	01. Home latrine	
	02. Water closet	
	03. Public toilet (Proceed to item 13b if you tick public toilet)	
	04. Other (Specify).....	
12	What is the source of lighting in your home?	
	01. Kerosene lantern or candle	
	02. Electricity	
13	Where do you spend the day time when you are at home?	
	01. Porch/veranda	
	02. Court-yard	
	03. Under the shade	
	04. Other (Specify)	
14	Do you have valid National Health Insurance Card?	
	01. Yes	
	02. No	

SECTION B: DOMESTIC HEALTH HAZARDS

PART I: Awareness of domestic health hazards

15	What is domestic hazard?		
	01. Something that brings joy at home		
	02. Sad news at home		
	03. Anything that can cause home accident		
	04. Don't know		
16	Indicate whether or not any of the following elderly coping strategies applies to you.	Yes	No
	01. I wear eye glasses		
	02. I use assistive device to walk (Eg. Walking stick, Zimmer frame)		
	03. I move about with a wheel chair		
	04. I am taking some daily medicines		
	05. I sometimes take a little alcohol		
17a	What is the nature of the floor surfacing of your courtyard?		
	01. Cemented		
	02. Un-cemented floor surface		
	03. Green grass		
	04. Rough surface with stones		
17b	Is your courtyard slippery whenever it rains?		
	01. Yes		
	02. No		
	If "No," skip item 18 and proceed to item 19		
18	How do you live in this house whenever it rains?		
	01. I stay indoors		
	02. I come out freely anytime		
	03. Other, specify).....		
19a	Does your home environment have anything that has potential to cause harm to your health (Health hazard)?		
	01. Yes		
	01. No		
19b	If "Yes," what is the name of that potential hazard?		

20	Indicate whether or not the following are harmful situations at home:	Yes	No
	SITUATIONS		
	01. Slippery floors		
	02. Climbing staircase		
	03. Adequately lighted walkways		
	04. Sharp implements at kitchen		
	05. Walkways clear from obstacles		
	06. Dark areas		
	07. Heights		
	08. Non-slippery floors		
	09. Floor with scattered obstacles		
	10. Fire source (e.g. Gas, lantern, candle)		
	11. Exposed/live electrical wires		

PART II: Types of home hazards

21	Indicate whether or not any of the following harmful conditions can be identified in your living environment by ticking YES or NO as appropriate.	Yes	No
	HARMFUL CONDITIONS		
	01. Slippery floors		
	02. Climbing stair case		
	03. Sharp implements at kitchen		
	04. Dark areas (Indoors)		
	05. Varying levels of floor		
	06. Floor with scattered obstacles (eg. Rags, furniture, buckets, etc)		
	07. Fire source (eg. Gas, lantern, candle)		
	08. Exposed/live electrical wires		
	09. Slippery bathrooms		

22. Indicate the availability of the following harmful conditions in the table below that can be identified in your living environment on the scale of "Very Common" to "Not Found" as follows:
Very common [VC] Common [C]
Rare [R]
Not Found Use Not Found (N/F) if the condition does not exist

22	**CONDITIONS**	YES			N/F
		VC	C	R	
	01. Slippery floors				
	02. Climbing staircase				
	03. Sharp implements at kitchen				
	04. Dark areas (Indoors)				
	05. Varying levels of floor				
	06. Floor with scattered obstacles (eg. Rags, furniture, etc)				
	07. Fire source (eg. Gas, lantern, candle)				
	08. Exposed/live electrical wires				
	09. Slippery bathroom				

PART III. Safe and Hazardous areas at home
23. Identify the following areas at home as Safe (S), Harmful (H) to your health at your age or the facility not found (N/F) at home.
Safe [S] Hazardous [H] Not Found [N/F]

23	**AREAS AT HOME**	COND.		N/F
		S	H	
	01. Kitchen			
	02. Bathroom			
	03. Living/sitting room			
	04. Bedroom			
	05. Porch/veranda			
	06. Court-yard			

24	At which of the following areas have you ever had an accident at home?	Yes	No
	01. Kitchen		
	02. Bathroom		
	03. Living/sitting room		
	04. Bedroom		
	05. Porch		
	06. Court-yard		

PART IV: Prevalence of domestic accidents

25	Indicate whether or not you suffered any of the following accidents/injuries at home within the LAST TWELVE MONTHS preceding this interaction.	Yes	No
	ACCIDENTS		
	01. Falls at level floor		
	02. Falls from height		
	03. Slipping on smooth surface		
	04. Burns		
	05. Wounds		
	06. Stumbling		
	07. Electric shock		
	08. Taking wrong medication		
	09. Other (Specify).....		

26. Indicate the time of the day when you suffered the most serious home accident using the options provided. Indicate an accident that you had not experienced.

TIME OF THE DAY: Morning [M] Evening [E]
Not Experienced [N/E] Afternoon [A] Night/Dawn [N]

26	**ACCIDENTS**	N/E	YES			
			M	A	E	N
	01. Falls at level floor					
	02. Falls from heights					
	03. Slipping on smooth surface					
	04. Burns					
	05. Wounds					
	06. Stumbling					
	07. Electric shock					
	08. Taking wrong medicine					
	09. Others (Specify).....					

27. Which of the following health conditions provided in the options has been the cause of your home accident if you suffered any one of the accidents stated below? Tick N/S if you have not suffered the accident.

Not suffered [N/S] Poor vision [PV]
Weakness in lower limbs [WL] Poor balance [PB]

27	**ACCIDENTS**	N/S	YES		
			WL	PV	PB
	01. Falls at level floor				
	02. Falls from heights				
	03. Slipping on smooth surface				
	04. Burns				
	05. Wounds				
	06. Stumbling				
	07. Electric shock				
	08. Taking wrong medicine				
	09. Others (Specify).....				

28. Indicate the home accident and the number of times you experienced each at home within the LAST TWELVE MONTHS. Tick N/E if you did not experience the accident.

28	**ACCIDENTS**	N/E	YES	
			ONCE	TWICE/MORE
	01. Falls at level floor			
	02. Falls from heights			
	03. Slipping on smooth surface			
	04. Burns			
	05. Wounds			
	06. Stumbling			
	07. Electric shock			
	08. Taking wrong medicine			
	09. Others (Specify)			

29. If you ticked YES to any of the accidents stated below, indicate what you did after that using the options provided. Tick N/E if you did not experienced the accident.

OPTIONS I had no treatment [NT] I did self-medication [SM]
I had traditional/herbal treatment [TH] Not Experienced [N/E]
I had treatment at hospital/clinic [HC]

29	**ACCIDENTS**	N/E	YES			
			NT	SM	TH	HC
	01. Falls at level floor					
	02. Falls from heights					
	03. Slipping on smooth surface					
	04. Burns					
	05. Wounds					
	06. Stumbling					
	07. Electric shock					
	08. Taking wrong medicine					
	09. Others (Specify).....					

PART V. Preventive measures of DHH

30	Have you heard of Old Age Association at Cape Coast?	
	01. Yes	
	02. No (Proceed to item 10a)	
	If "Yes," are you a registered member?	
	01. Yes	
	02. No	
	If YES, what benefit do you derive from being a member of Old Age Association?	
31a	Did you have to change your living environment/home/room because you turned 65 years?	
	01. Yes	
	02. No	
	If "No" then skip to item 32	
31b	If "Yes" what occasioned the change?	

32	Indicate by "Yes" or "No" the following structures/places you would modify at home to make your life safer at your present age. Use N/A for structures that are not available.	Yes	No	N/A
	STRUCTURES/PLACES			
	01. Steps			
	02. Smooth (shiny, polished) floor tiles			
	03. Slippery bathroom			
	04. Too much living room furniture			
	05. Dim environment			
	06. Un-cemented courtyard			
33	What do you recommend MOST towards preventing home dangers?			
	01. Good lighting at home (indoors) for 24 hours			
	02. Education on home dangers			
	03. Regular vision/sight testing			
	04. Other (Specify).....			

34. Indicate from the following list on the scale of IMPORTANT to UNIMPORTANT the areas you would want to be educated on at your age.
Important [IP] Unimportant [UI]

34	**HEALTH EDUCATION AREAS**	IP	UI
	01. Dangers/hazards at home (Slippery floors, fire, etc.)		
	02. Types of domestic accidents		
	03. Hazardous/dangerous areas at home		
	04. Prevention of accidents at home		
	05. Personal hygiene		

APPENDIX C

LETTER OF INTRODUCTION

UNIVERSITY OF CAPE COAST
FACULTY OF SOCIAL SCIENCES
DEPARTMENT OF POPULATION AND HEALTH

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0289538048
Fax: 233-3321-34072/30416, UCC, GH
Telex: 2552, UCC, GH.
Telegrams & Cables: University, Cape Coast

UNIVERSITY POST OFFICE
CAPE COAST, GHANA

Our Ref: DPH/G.3/50

24th May, 2013

Your Ref:

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

LETTER OF INTRODUCTION

The bearer of this letter Mr. John Kumfo is a PhD student of the Department of Population and Health, Faculty of Social Sciences, University of Cape Coast.

His research topic is **"Domestic Health Hazards of the Elderly Resident in Cape Coast Metropolis."** Kindly provide him with the relevant data/information for his PhD thesis.

We should be very grateful if you would give him your maximum cooperation.

Thank you.

Yours faithfully,

Dr. Akwasi Kumi-Kyereme
Head

APPENDIX D

INFORMED CONSENT FORM

UNIVERSITY OF CAPE COAST
FACULTY OF SOCIAL SCIENCES
DEPARTMENT OF POPULATION AND HEALTH

INTERVIEWER'S IDENTIFICATION NUMBER.....

PURPOSE OF THE STUDY

Good morning/afternoon/evening. I am a research field assistant called ..... among others conducting a study on

DOMESTIC HEALTH HAZARDS OF THE ELDERLY

RESIDENT IN CAPE COAST METROPOLIS

In respect of this, we are administering questionnaires or having interviews with persons who are 65 years and over and are residing in the Cape Coast Metropolis. The information required in the questionnaire/interview is centred on specific areas pertaining to health hazards and accidents of the elderly at home. Your contribution in these areas would assist policy makers as well as anyone who would be willing to help the elderly population to be more focused.

Procedure

In the process of our interaction, I would have to document some information about your background, threats to your health at home, accidents you had ever sustained at home and other related issues on home accident prevention. We may in the process bring out some personal issues about your life; however,

you are hereby assured that all such discussion end between you and the interviewer. The proceedings of the interaction will be STRICTLY CONFIDENTIAL. Our interaction may last for about half an hour. Your participation in this exercise is STRICTLY VOLUNTARY.

Confidentiality

In order to conceal your identity, you name and address are not required. In addition, all the information you would provide would not be handled by any other person outside the research team.

You are free to ask any question that makes you feel uneasy for further explanation.

You are always encouraged to contact the main researcher on **0209036580**.

THE CONSENT/AGREEMENT

I have read this entire informed consent form/it was explained to me in the language I understand, I asked the relevant questions which were answered to my satisfaction. I therefore agree willingly to participate in the study by endorsing this form.

Signature/Thumbprint of Respondent.....

Date.....

Signature/Thumbprint of Witness in cases of illiterate respondents.

Date.....

Signature of Interviewer.....

Date.....

Interviewer's Statement

I, the undersigned have explained the objectives of this study to the respondent in the language that he/she understands and hence agreed willingly and to participate voluntarily in the study.

Signature of Interviewer.....