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FACTORS ASSOCIATED WITH DISABILITY IN GHANA

BY

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ACCEPTANCE

Accepted by the Faculty of Social Sciences in partial fulfillment of the requirements for the degree of M.A (Population Studies).

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PROF. FRANCIS DODOO

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DATE

DECLARATION

I, AKUA DANQUAH OBENG-DWAMENA, declare that except for references to other studies duly cited, this research is part of my own work under supervision at the Regional Institute for Population studies, University of Ghana, Legon from August, 2013 to July 2014 and that neither part nor whole has been presented elsewhere for the award of another degree.

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AKUA DANQUAH OBENG-DWAMENA

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DATE

DEDICATION

I dedicate this work first to God for His mercies and strength throughout my studies. To my mum, Madam Margaret Donkor and my brother Kojo Adjaley for their love, constant support, encouragements and for always seeing the best in me. God bless you.

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ABSTRACT

Abstract

Worldwide, the proportion of aged and chronic diseases are increasing. In Ghana, rapid urbanization and social change makes disability a problem. This study seeks to identify factors associated with disability in Ghana. The WHO Study on Global AGEing and Adult Health (SAGE) Wave 1 2007-2010 dataset was used. The mean age was 60 ±13.9 years. About 33.6%, 33.7% and 33 % reported none, mild and severe disability respectively. Also, 11.9%, 11.4%, 3.4% and 1.9% were living with hypertension, arthritis, diabetes and stroke respectively. About 9 percent used tobacco daily , 41 percent were current users of alcohol, more than half had servings of fruits and vegetables less than the recommended, 53 percent had engaged in no vigorous physical activity in the week prior to the survey while one-tenth of the respondents were obese. The multinomial logistic regression results showed age, sex (being female), place of residence, education, employment status, ethnicity, religion, wealth quintile, diet, physical activity, stroke, hypertension arthritis, injuries due to road accidents as predictors of severe disability. All the aforementioned factors, in addition to marital status and alcohol use were found to be predictors of mild disability. Adoption of healthy lifestyles through educational programmes and establishment of rehabilitation centres and training of physiotherapists could help reduce disability prevalence in Ghana.

Keywords: Disability, Age, Lifestyle Behaviour, Obesity, Chronic diseases, Ghana.

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ABBREVIATIONS

ADL	Activities of Daily Living
CRPD	UN Convention on the Rights of Persons with Disability
ESCAP	Economic and Social Commission for Asia and the Pacific
GSS	Ghana Statistical Service
IADL	Instrumental Activities of Daily Living
ICF	International Classification of Functioning, Disability and Health
LEAP	Livelihood Empowerment against Poverty
NDPC	National Development Planning Commission
NHIS	National health Insurance Scheme
NPC	National Population Council
OHCHR	Office of the United Nations High Commissioner for Human Rights
SAGE	Study on Global Aging and Adult health
UNAIDS	The Joint United Nations Programme on HIV and AIDS
WHO	World Health Organization
WHS	World Health Survey

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Worldwide, 15 out of every hundred people are disabled. Eighty per cent of this number live in developing countries, many of which are in Africa (WHO, 2011). Rates of disability vary by country, 1 percent in Kenya and Bangladesh, 20 per cent in New Zealand (Mont 2007) and 3 per cent in Ghana (Ghana Statistical Service, 2012). In many parts of the world, physical, social, institutional and information barriers prevent persons with disability from having equal access to resources and opportunities in society. This limits their ability to contribute to development in society.

Disability over the years has been defined by the medical model, which defines disability by an individual's impairment. In the last two decades, to capture the changing nature of disability in our world today, there has been a gradual shift from the medical model to the social model and then to the psychosocial model of defining disability. The social model considers disability as arising from barriers such as stigma, unequal education and employment opportunities, a person with an underlying condition experiences created by the physical, cultural and policy environment of a society (Drum, 2014, Mont, 2007, WHO, 2011). According to the biopsychosocial model of the International Classification of Functioning, Disability and Health (ICF) the individual is not only disabled because of the impairment alone but by barriers created by society via inaccessible buildings, lack of access to health services, unequal opportunities in education and employment, stigma and social exclusion.

The shift towards the biopsychosocial model has come about as a result of, first, the need to reflect the multi-dimensional nature of disability as studies have shown that a single model is

inadequate in measuring disability. Thus disability should be defined based on both the medical and social models rather than solely on the physical impairment or the medical model which suggests that persons with disability fall within a few categories with clear boundaries such as physical impairment, sight impairment, hearing loss, speech, intellectual, and emotional disability without considering persons with less apparent disability.

In the past few decades, there has been a transition of disease burden from infectious to chronic diseases. This has resulted in less apparent disability. In relation to this epidemiological transition, there is the need to capture the emerging trends of disability by using the biopsychosocial model in measuring disability. With this done, it would help policy makers formulate policies based on the specific needs of persons with less apparent disability.

Disability varies by timing as it could occur at birth, during childhood or adulthood; by degree as it could be mild, moderate, or severe; by duration as it could be temporal or permanent; and from society to society (Almazan-Isla et. al., 2014; Mitra et. al., 2011). As such, some persons are born disabled as a result of congenital diseases; others develop impairments through infectious diseases, old age, injuries from accidents, and engaging in risky lifestyles that are injurious to their health leading to chronic diseases.

In many developing countries especially Africa, the number of persons with disability is rising through the processes of urbanization and poverty, HIV/AIDS, conflicts, malnutrition, disasters, mental impairments, congenital diseases and chronic diseases (Coleridge P., 2008 cited in Groce et. al., 2011; Olaogun et al., 2009). Studies have identified factors such as age, gender, marital status, lower educational levels, ethnicity, unemployment, lower income, war, chronic diseases, accidents, work-related injuries, congenital diseases, malnutrition, HIV/AIDS among others as being associated with disability (Naami and Hayashi, 2012; Cabieses et al., 2012; Chappelle and

Cooke, 2010; Chakrabarty et. al., 2010, Liu et.al., 2009; Metts, 2004).With some of the poorest countries in the world, the situation of disabled persons is made worse for persons with disability as due to poverty and limited resources, disability issues are often not considered priority when it comes to resource allocation. It is to be noted that in Africa and many low income countries, cultural norms influence people's attitudes and conceptions about disability determining behaviour towards persons with disability (Reid-Cunningham 2009). In this vein, disability is seen as a punishment for disobedience, anger of the gods, ancestors and witchcraft and as such are not seen as equal to other members of the society thus restricting participation in society (Bayat, 2014, Avoke, 2002; Olaogun et al., 2009).

Although Ghana is a signatory to the UN Convention on the Rights of Persons with Disability (CRPD) the African Decade of the disabled persons, and has passed the Ghana Disability Law (Act 715) persons with disability continue to experience barriers that prevent them from participating in society equally. They are marginalized, seen as less productive and a burden on society. An example is with the National Health Insurance Scheme where persons with disability are categorized as indigents when it comes to receiving healthcare services (Odoom et. al., 2013). Social protection programmes in Ghana targeting the disabled (mainly persons with more apparent disability) include the Educational Strategy Policy (2003-2015), National health Insurance Scheme (NHIS), Livelihood Empowerment against Poverty (LEAP), and 2 percent allotment of the District Assembly Common Fund. These social protection programmes have shortcomings as any social programme will. However, it is to be noted that the shortcomings in disability programmes are not only because of inadequate resources but as a result of views of disability held in the Ghanaian society. By this, many communities and districts do not see disabled persons as a priority when it comes to resource allocation as they do not expect much return from investing in them. This leads to unequal access to health, education, and employment

and lower standards of living leaving persons with disability as an untapped resource who become a burden on the Ghanaian society.

As socio-demographic characteristics are universal, a study of the factors associated with disability will lead to first a change in societal attitudes as almost everyone at a point in time is at risk of disability.

1.2 Statement of the Problem

In the last two decades in Ghana, there have been more persons with disabilities- from 47,397 persons in 1990 (National Population Council, 1994) to 737,743 persons in 2010 representing 3 per cent of the population (Ghana Statistical Service, 2012). This is largely because, the proportion of persons aged 65 years and above has increased from 3.2 per cent in 1960 to 4.7 in 2010 with life expectancy increasing from 33.6 years in the late 1930s to 62.7 in 2007 (Ghana Statistical Service, 2012). As people grow older, their physical health declines and their ability to actively engage in normal daily functions is reduced. With life expectancy expected to increase as part of development efforts on poverty reduction over the years the proportions of the aged, prevalence of chronic diseases, as well as persons with disability have been projected to further increase in the near future.

Ghana Statistical Service (2013) and NDPC (2013) highlight the fact that there are more people, that is 50.9 percent, living in the urban areas in Ghana now than ever. Increasing urbanization and modernization come with changing lifestyles, and a large number of people indulging in risky lifestyles such as excessive alcohol intake and drug abuse. Adoption of unhealthy lifestyles and changes in diet have been reported to account for a large number of people in Ghana being obese than before hence accounting for an increase in chronic diseases (de-Graft Aikins, 2007, Agyei-Mensah and de-Graft Aikins, 2010). Those in the rural areas and poor urban areas are not

left out of the disease burden in that they have a risk of both infectious and chronic diseases due to high poverty levels (de-Graft Aikins, 2007).

Also, the change in disease pattern which has occurred over a long period of time as a result of development not only has an impact on the aged but on younger persons as well, with rising prevalence of obesity and chronic diseases. Because disability is also associated with medical expenditure, rising disability among younger persons has implications for medical care, and labour needs of the nation. The presence of chronic diseases such as hypertension, stroke, arthritis and cancer results in impairments and limit the individual's ability to execute everyday tasks.

Again, aging makes disability universal; accordingly, limited resources for managing disability in Ghana will put a burden on the healthcare services and personnel available. A burden on healthcare services will increase demand for healthcare services thereby increasing cost of healthcare. Studies have shown that persons with disability are likely to be poor (Mitra et. al., 2011, Landry et. al., 2007, Hoogeveen, 2005). Their inability to afford these healthcare services would lead to increased mortality levels and increase in morbidity. Again, for those employed, it will lead to reduction in work output and lower income. Increased unemployment rates and high dependency rates further put a burden on family resources and lead to high levels of poverty in the nation retrogressing national development efforts.

Many studies have been carried out using the biopsychosocial or the multi-dimensional model to measure disability and health of the population in many developed countries (Roempke et al., 2014; Drum 2014; Burgio et al., 2014; Lillie et al., 2013; Mitra & Vick, 2013; Munsaka & Charnley, 2013; Alexandre et al., 2012; Michalík, 2012; Cabieses et al., 2012; Liu et al., 2010; Song, & Zheng, 2009; Von Korff et al., 2005; Way et. al, 2004). In contrast very few have been

done in Africa and for that matter Ghana. With variations in social and cultural norms, factors associated with disability vary from one society to another, it would therefore be interesting to conduct this study to find out which ones apply in the Ghanaian context. For instance in Ghana, the first time since 1960 census that questions on disability were asked at the national level was in 2010; the questions being based solely on the medical model. Additionally, almost all the studies done on disability in Ghana have also bordered on measuring disability using the medical model, which measures solely apparent disability. Although it aids in understanding disability, the multi-dimensionality of disability requires measures that will capture disability in all its manifestations thus giving a more comprehensive understanding of disability. Consequently the limited number of studies in this area leaves much to be done. Having identified this gap, this study sought to answer the subsequent questions.

1.3 Research Questions

The questions this study seeks to answer are:

- What are the socio-demographic correlates of disability in Ghana?
- To what extent do chronic diseases explain disability in Ghana?
- Which of the factors (socio-demographic characteristics vs. chronic diseases) are likely to be highly correlated with severe disability in Ghana?

1.4 Rationale of the Study

Disability as a developmental issue has an influence on the quality of life of people (Chakrabarty, et al., 2010). It is both a cause and consequence of poverty. On the one hand, persons with disabilities often have low educational attainment, are unemployed and are more likely to have poorer health compared with persons without disabilities and so have higher rates of poverty. On the other hand, as a result of poverty, many are unable to access basic services

such as health care and education. They are unemployed due to lack of skills required for a well-paid job. Thus the rationale in this study of disability first lies in the fact that it is a key to poverty reduction

Secondly, persons with disability, especially the blind and deaf are not likely to receive much education on certain health risks such as HIV/ AIDS, breast cancer and other health issues thus have limited knowledge, on them and their prevention to be able to function in society (Riewpaiboon et. al., 2009, Berman et. al., 2013). With this knowledge gap, they are likely to be at higher risk of exposure to these conditions. Studies have shown that infection levels for deaf populations are equal to or higher than the rest of the community. As such from a national survey of HIV/AIDS prevalence in South Africa it was found that HIV/AIDS prevalence is higher, 14 per cent among people with disability compared to 10.9 per cent for the general population (Rohleder et. al., 2010). This has been attributed to reasons such as sexual violence, limited access to HIV education, information and prevention services and risky sexual behavior (UNAIDS, WHO, & OHCHR, 2009).

Again, human development of a nation is determined by the health, education and income of its citizens (Landry et. al., 2007).With all of these being of limited access to persons with disability, knowing the factors associated with disability in Ghana will first help identify deficient areas in our healthcare system. Secondly, it will help identify the individual and composite factors to focus on in reducing disability and managing the health needs of those already disabled hence useful for policy purposes. This study will further help identify groups at risk of disability, first for those who develop impairments later in life and those with less apparent disability. This study will also aid in identifying the level of functioning in the Ghanaian population thus help inform government planning and policies. Knowing the risk factors also helps to prevent disability.

Prevention contributes to economic development in a nation by decreasing the proportion of the population with the most limited ability to contribute to economic development.

Understanding both the health and the environmental aspects of disability allows for the examination of health interventions that improve functioning as well as interventions to change the environment to improve participation of people with disabilities.

Also, studies in Ghana have focused on chronic diseases as a cause of death but not as a cause of disability (de-Graft Aikins, 2007, Agyei-Mensah and de-Graft Aikins, 2010). Additionally, studies on disability in Ghana have mainly measured disability either solely on the medical model or the social model (Naami & Hayashi, 2012; Naami et al., 2012; Kelemen et al., 2013) therefore a study combining the medical and social models in measuring disability would contribute to knowledge in the study of disability in Ghana.

1.5 Objectives

Generally, this study seeks to achieve the objective of examining the factors associated with disability in Ghana.

Specifically:

- To determine the socio-demographic correlates of disability in Ghana.
- To assess the extent to which chronic diseases and age explains disability in Ghana.
- To find out which of the factors are likely to be highly correlated with high levels of disability in Ghana
- To make recommendation(s) for policy.

1.6 Operational Definitions

i. **Disability**: It is a state of decreased functioning associated with disease, disorder, injury, or other health conditions, which in the context of one's environment is experienced as an impairment, activity limitation, or participation restriction.

ii. **Impairments**: This refers to problems in body structure, appearance, and function the most common being chronic sensory and musculoskeletal conditions.

iii. **Activity Limitations**: Activity limitations refer to difficulty in executing tasks such as walking, eating, working due to the impairment.

iv. **Participation Restriction:** This refers to barriers that persons with disability experience in any area of life. Barriers are environmental or societal factors such as lack of assistive products and technologies, human changes to the environment, lack of family and community support, attitudes and beliefs, unavailability of assistive products and technology, unfavourable policy environment, formal services, governmental systems, and policies that affect the disabled in the society within which they find themselves which excludes them from full participation in society. **Traditional/ Classic/Apparent Disability:** This is based on the classification in the medical model which defines disabled persons as blind, deaf, dumb, mentally and emotionally disabled.

v. **Less Apparent Disability:** Disability as a result of chronic diseases which might not be visible to the eye and leads to reduced functioning in normal activities of daily living.

1.7 Organization of the Study

This study is divided into seven main chapters. Chapter one consists of the introduction; background of study, statement of problem, research questions, rationale of the study, objectives, operational definition, hypotheses, organization of the study and significance of the study. Chapter two consists of literature review, conceptual framework and hypotheses. Chapter three consists of the methodology used in the study.

Chapter four consists of the profile of the study area as well as background characteristics of respondents. Chapter five examines the association between chronic diseases, accidents, socio-

demographic characteristics and disability in Ghana. Chapter six looks at a multivariate analysis of predictors of disability in Ghana

Finally, chapter seven presents a summary of findings, conclusions, recommendations for policy formulation

1.8 Significance of the Study

This study is important as it would identify not only persons with extreme visible disability but also persons with not so apparent disability manifesting as a decrease in functioning which are less clearly defined by law in Ghana to enable the design of effective and an all-inclusive health and social service provision. Again, it would help identify in order to manage risk factors that make individuals susceptible to developing disabilities later in life.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter is divided into three sections and it has the aim of reviewing the literature on factors associated with disability. In the first section, literature on the concept of disability is reviewed in examining definitional issues as well as models related to the concept. The second section examines literature on factors such as chronic diseases, road accidents and socio-demographic characteristics associated with disability. The third section consists of the conceptual framework as well as proposed hypotheses guiding the study.

2.1 Literature Review

According to Tagoe (2009), the review of related literature allows the researcher to survey scholarly literature in order to understand and investigate the research problem. Majority of studies on disability most often aimed at understanding disability in order to address imbalances in access to opportunities in societies so as to improve social wellbeing and standards of living of persons with disability.

2.2.1 The Models of Disability

In understanding disability, the medical model, the social model as well as many other models have been developed. Many researchers have opined that the definition of disability is difficult or controversial as perceptions of disability vary from society to society (Drum, 2014; Bines & Lei, 2011; WHO, 2011; Loeb et al., 2008; Bhattacharya, Choudhry, & Lakdawalla, 2008; Traustadottir & Kristiansen, 2004; Groce, 1999; LaPlante, 1991). Consequently, different studies use different definitions and measures (Mont, 2007) resulting in different prevalence rates.

2.2.2The Medical Model

Historically, the conceptual measurement of disability was limited to the medical model. This model narrowly saw disability as solely arising from the individual thus based on the individual's impairment or health condition. And so if someone cannot see, walk or hear it is understood as their disability (Gronvik 2009; Carson, 2009). Additionally, the model carried a notion of a 'normal human being' and thus saw disability as a sickness requiring isolation and intervention as opposed to inclusion (Bayat, 2014; Llewellyn & Hogan, 2000). In this view, disability was perceived as a pathological condition, a deficit, a disorder, a tragic condition, a personal burden, in need of cure, rehabilitation and adaptation to society (Linton 2006). The medical model therefore affected the way disabled persons thought about themselves as they internalized the negative message that all disabled persons' problems stem from not having 'normal bodies'. Accordingly, failing to address social factors such as discrimination, unequal opportunities which disabled the individual, the medical model was seen by many researchers as an inadequate measure of disability.

2.2.3The Social Model

Through the social model, disability is understood as an unequal relationship within a society in which the needs of people with impairments are often given little or no consideration. Also, their experience of the health and welfare system made them feel socially isolated and oppressed (Carson, 2009). Riewpaiboon and Stuart (2009) reported that, a disabled sociologist in 1990 Michael Oliver, raised an issue about the fact that disability was defined as a problem of the individual therefore was subject to the authority of medicine. He questioned the failure of the social sciences, that is, sociology and anthropology, to critically address the absence of the social aspect of disability in studies related to disability. After years of research by key sociologists the social model of disability emerged. It posits that disability is socially determined (Emerson et al.,

2010;Lancet, 2009; Lezzoni & Freedman, 2008; Mwachofi & Broyles, 2008; Llewellyn & Hogan, 2000) and thus persons are not disabled by their bodies but by the way society responds to these impairments (Carson, 2009; Officer & Groce 2006).

The social model focuses on the environmental, economic and political barriers to inclusion such as societal attitudes, inaccessible buildings, open gutters, lack of speed ramps, unavailability of assistive products and technology, unfavourable policy environment, formal services, governmental systems, lack of access to health services among others. As a result, the social model aims at full integration of persons with disabilities into society.

2.2.4 The Multidimensional Model

The International Classification of Functioning, Disability and Health (ICF) integrates both models by defining disability as, " an umbrella term for impairments, activity limitations and participation restrictions" thus providing a definition to capture the universal and multidimensional nature of disability (Walsh et al., 2014;WHO, 2011; Mitra et al. 2011; Cabieses et al. 2012; Whyte, 2012; Lamb & Jacob, 2004).

The ICF model therefore combines the medical and social model by giving cognizance to the fact that medical and rehabilitative interventions are relevant to disability. In the same vein, environmental and social interventions are relevant to deal with restrictions in a person's participation in educational, economic, social, cultural and political activities (WHO & ESCAP, 2008; Mont, 2007).

To elaborate, WHO (2011) identified common stereotypical views of disability by the medical model which emphasized the blind, deaf or persons using wheel chairs as only disabled. However, disability also included a child born with a congenital disease such as cerebral palsy, a soldier who loses his leg to war, a middle-aged woman with severe arthritis or an older person

with dementia. The ICF model again stresses the fact that disability is in levels by expressing disability as a continuum, or in relation to severity that is, whether you were more or less disabled than whether you were or you were not disabled, the latter requiring a yes or no answer (Lezzoni & Freedman, 2008; Loeb et al., 2008).

Critical to lowering disability prevalence is the use of an all-inclusive approach comprising both the medical and social approaches, to address the multidimensional nature of disability. However, due to the fact that the health delivery systems, especially in many developing countries, are rooted in the classical view of disability, products and services such as mobility aids, speed ramps, accessible transport, hearing aid, eye glasses which might address environmental factors by promoting participation generally is not covered by the national health insurance nor generally a priority of policy makers thus usually left to non-governmental organizations.

According to Fox and Kim(2004) the all-inclusive approach will bring out the populations exhibiting less apparent physical disability. By the all-inclusive approach, society would aim at both preventing diseases that bring about disability while maximizing participation in society through community based rehabilitation. Many studies using the International Classification and Functioning and Disability (ICF) model have however focused on Western societies, with few on Sub-Saharan Africa due to limited data on disability using the all-inclusive approach.

2.2.5 Factors Associated with Disability

Disability varies by factors such as age, sex, ethnicity, socio-economic status, living in rural areas and etc. (Cabieses et al., 2012). Disability varies in degree, that is whether mild, moderate, severe or extreme, varies in timing, that is whether at birth, during childhood or adulthood and varies in duration that is whether temporary or permanently (Mitra et al. 2011) . By the factors

identified therefore, many will experience disability temporarily or permanently at some point in life while persons who survive to old age will be increasingly disabled as they age. The increasing rates of disability in many parts of the world have mainly been attributed to the increases in chronic diseases and injuries, mental impairment, malnutrition, HIV/AIDS and other communicable diseases (Cabieses et al., 2012; Chappell & Cooke, 2010; Metts, 2004). Also, Naami & Hayashi (2012) identified factors associated with disability in Ghana to include congenital conditions, traffic accidents, work-related injuries, and diseases such as leprosy, measles, and polio.

2.2.5.1 Lifestyle Behaviour, Obesity, Chronic Diseases and Disability

Many studies have shown that chronic diseases, characterized by long periods of illness, which are rarely cured such as stroke, hypertension, diabetes, chronic respiratory diseases, cancer have increased over the years, and together comprise the leading cause of death and disability in many developed and developing countries (Drum, 2014; Khoury et al., 2013; Habib & Saha, 2010 Magnusson, 2009; Bhattacharya et al., 2008; de-Graft Aikins, 2007; Beaglehole & Yach, 2003). Chronic diseases accounted for over 36 million deaths worldwide in 2010. Out of this number, 48 percent died mainly from cardiovascular diseases, 21 percent from cancers, 12 percent from chronic respiratory diseases and 3 percent from diabetes (WHO, 2011). A further 41 million persons in developing countries have been projected to die from chronic diseases by 2015 if measures are not taken (Abegunde et al., 2007). Furthermore, in Ghana non-communicable diseases caused 34 percent of all deaths in 2004 (Biritwum, 2013).

de-Graft Aikins, Agyei-Mensah, & Agyemang (2013) noted that the increase in the burden of non-communicable diseases in low and middle-income countries, has been pointed to a demographic transitioning of populations from being largely youthful with high fertility to an increasingly aged population with low fertility, the processes of modernization and associated

technological advancement, unmanaged urbanization leading to poverty, risky lifestyle behaviours such as physical inactivity and unhealthy diets. In many societies, four main behavioral risks that have been associated with increasing levels of non-communicable diseases include tobacco use, physical inactivity, excessive alcohol, and unhealthy diets leading to raised blood pressure, raised blood glucose and obesity (WHO, 2011; Habib & Saha, 2010). Populations which are physically active and have healthy diets tend to have reduced chances of being obese, having chronic diseases and being disabled in the long run. Additionally, risky lifestyle behaviours have been reported to be on the increase in Ghana in a study by Awuah & Afrifa-Anane (2013).Studies in Ghana have also reported that infectious diseases were considered as the major health issue however, providing evidence on the epidemiological transition occurring in Accra from the pre-independence era to date, Agyei-Mensah & de-Graft Aikins (2010) noted that Accra is experiencing a co-existence of chronic and infectious diseases.

According to Chappell & Cooke (2010), 90 percent of expected disability in high income countries was as a result of non-communicable diseases and the rest was as a result of injury while in low income countries, almost half of expected disability was as a result of chronic diseases. Increased levels of chronic diseases in a population has implications for disability as ability to carry out day-to-day activities is reduced or hindered as such having an effect on the quality of life of persons.

Chakrabarty et al. (2010) observed in India that chronic diseases such as osteoporosis, osteoarthritis, diabetes, tuberculosis, neuropathy, and hypertension were major causes of disability. Among Canadian adults, Griffith et. al., 2010, identified the following twelve common medical conditions: cognitive impairment, Parkinson's disease, hypertension, heart problems, stroke, diabetes, respiratory problems, hearing problems, vision problems, arthritis, foot problems and fracture as being related to high levels of disability. In Ghana, a study by Ayernor

(2012) on individuals aged 50 years and above found out that 33 percent had hypertension, 14 percent had arthritis; 45 percent had oral health problems, 7 percent had been diagnosed with diabetes , 6 percent Angina and 4.9 percent were receiving treatment for stroke or had been diagnosed with stroke. Studies have also mentioned that certain chronic conditions are particularly related to disability including stroke, diabetes, cognitive impairment, arthritis and visual impairment. (Jagger et al. 2007a; Andrade 2009; McGuire et al. 2006 as cited in Chappell & Cooke, 2010).

Chronic diseases contribute to disability by decreasing the individual's ability to carry out day-to-day activities hence lack of ability to live independently consequently lead to poverty (Chakrabarty et al., 2010). It also leads to increased demand for health care services thus raising cost of healthcare. At the national level, for those not able to afford healthcare, there would be increased morbidity in the population as well as premature deaths. This would have socio-economic implications on development. In Ghana, de-Graft Aikins(2007) observed that chronic diseases have been neglected by policy makers and health providers as they channel the inadequate financial commitments more to the eradication of infectious diseases such as malaria, tuberculosis, sexually transmitted infections among others rather than to chronic diseases. Drum(2014) in indicating a relationship between chronic diseases and disability noted that not only do chronic diseases lead to disability; a disabled person from birth could also develop chronic diseases as such there is a bi-directional relationship between disability and chronic diseases.

2.2.5.2 Road Accidents and Disability

Injury as a result of road or occupational accidents, conflicts, landmines, burns and violence have been identified to contribute to disability (Chappell & Cooke, 2010; Ingstad & Grut, 2007). Worldwide, 1.2 to 1.4 million persons die annually as a result of road accidents while 20 to 50

million become disabled. However data on the extent of its contribution is limited in many countries especially in developing countries (WHO, 2011) with Ghana inclusive. For instance with road accidents, the number of deaths is recorded therefore easier to access compared to the number of persons disabled in the accident (Afukaar et al. 2003). Disability occurs from injury from accidents when from these accident cases, persons are not given adequate medical treatment then an infection sets in resulting in amputation or functional limitations. It has been reported that road accidents mostly occur in the urban areas (Afukaar et al. 2003). Additionally, disability caused by injuries from accidents is associated with high economic costs being a burden on individual or family income as well as the national economy. WHO (2011) notes that injury can lead to disability while the disabled have a higher risk of unintended injury.

2.2.5.3 Socio-Demographic Characteristics Associated with Disability

Studies on socio-demographic factors associated with disability have increased in recent times. A number of these studies in many countries have identified age, sex, marital status, religion, urban or rural place of residence, ethnicity, socioeconomic status (income, education, and employment status), race, immigrant status, material factors (overcrowding, sanitation, and housing quality) as socio-demographic factors associated with disability (Cabieses et al., 2012; Alexandre et al., 2012; Chappell & Cooke, 2010;Chakrabarty et al., 2010; Pascual & Cantarero, 2007; Gureje et al., 2006). Little is however known of socio-demographic factors associated with disability in Ghana.

2.2.5.3.1 Age and Disability

Age has been found to be an important factor that affects health and mortality. In relation to disability, as persons grow older, their physical health declines and their ability to actively engage in normal daily functions is reduced, therefore disability progresses as persons age and has been found to be higher for aged persons (Gureje et al., 2006). Though many low income

countries have a younger population relative to the high income countries, the incidence of disability among persons 45 years and older is higher than in high income countries (WHO, 2011). This could be attributed to poverty and unavailable resources to provide public health services to persons with disability. The proportion of persons aged 65years and above in Ghana increased from 3.2 per cent in 1960 to 4.7 in 2010 with life expectancy increasing from 33.6 years in the late 1930s to 62.7 years in 2007(Ghana Statistical Service, 2013). Also the median age has increased from 18.1 years in 1984 to 20years in 2010 (Ghana Statistical Service, 2013). This indicates that with time, Ghana's population is aging. An ageing population allows manifestation of cardiovascular diseases, diabetes, cancer and mental disorders, which also result in high prevalence of chronic disability (Habib & Saha, 2010)

Reduced fertility and increased life expectancy has been attributed to improved public healthcare over the years, education, nutrition, and sanitation leading to an increased proportion of aged persons in Ghana, (Agyei-Mensah & de-Graft Aikins, 2010). This however leaves much to be done in the health sector as aging makes disability universal, and the increasing number of aged persons has not led to a corresponding increase in policies or funding for social care in Ghana over the years (Mba, 2001 as cited in Ayernor, 2012).Many studies have focused on the incidence of disability among the aged with little on factors associated with disability and disability among the working population however, the need for studies on disability among the younger population is vital as there is an emerging trend of chronic diseases causing disability in younger persons even before they age.

2.2.5.3.2 Sex and Disability

Men and women differ in relation to disability. Studies have reported disability prevalence to be higher among women than among men (Almazán-Isla et al., 2014;WHO 2011; Mitra et al. 2011; Chakrabarty et al., 2010; Gureje et al., 2006). This has been attributed to a generally higher life

expectancy for women than for men. Lillie et al.(2013) and de Menil et al. (2012) found out that a greater proportion of women than men reported a mental co-morbidity. In many European countries however, gender difference in incidence of disability is marginal (Pascual & Cantarero, 2007). Similarly, a study by Mitra et al. (2011) reported a marginal difference in disability prevalence of between 3 percent to 5 percent between males and females in most developing countries. Contrastingly, Bangladesh had the largest difference of disability prevalence with 23 percent among women compared to 10 percent among men.

2.2.5.3.3 Marital Status and Disability

Marital status has been found to influence health and mortality. Studies in the industrialized countries have shown that married persons enjoy better health, make fewer demands on the healthcare system and experience fewer disability and death rates than the single, widowed and divorced (Verbrugge, 1991 as cited in Chappell & Cooke 2010;Goldman et al., 1995; Waldron et al., 1997).Two distinct processes that researchers deem makes this possible is the process of marital protection where couples protect each other and marital selection where in marrying and remarrying, persons select physically and psychologically healthy partners on average as well as persons of higher socio-economic status, leaving among the single and formerly married groups a disproportionately large proportion of persons with serious health problems(Goldman et al., 1995). In contrast, a study of disability prevalence in 15 developing countries, reported that in Zimbabwe disabled persons were married at higher rates than persons without disability (Mitra et. al. 2011).

2.2.5.3.4 Education and Disability

Formal education has been seen as a powerful tool for poverty reduction thus when educated, persons with disability are given more economic options which would further reduce poverty. Studies have established that persons with disability tend to be less educated than the general

population (Gureje et al., 2006; Mitra et al., 2011). Research has again demonstrated that the socio-economic status of parents and membership in a particular society would determine whether they will educate their children or not (Szumski and Karwowski, 2012). For instance, parents with lower socio-economic status in many developing countries may not invest in their disabled children's education because they do not expect much return from their investments (Mitra et al. 2011). In industrialized societies, the higher the social status of parents with children of disabilities, the more likely they are to invest in their children as well as being able to meet expensive rehabilitative needs (Szumski and Karwowski, 2012). In children, disability may prevent school attendance or lead to lower school attendance rates. Persons with disability who progress to the other levels of education may drop out or have lower educational attainment. In the event where disability occurs after completion of education, a person's employment options become limited. On a national level, expanding education to improve access by including all persons in the population will ensure a country has a skilled workforce which would go a long way to grow the country's economy. On the individual level, educating persons with disability is important as it would improve their socio-economic status, help them make informed choices and prevent ill health.

2.2.5.3.5 Poverty and Disability

Disability issues are deemed important by key international development agencies such as the World Bank, WHO, among others because disability is linked with poverty and social exclusion. Empirical research has shown that persons with disability have comparatively lower educational attainment, lower employment and worse living conditions than the general population (Mitra et al. 2011; Lang et al., 2011) thus identified as being the poorest among the poor in many societies. This is because they have an unequal access to education, healthcare, employment among others. In this sense, unequal access to education deprives disabled persons of knowledge

and the opportunity to acquire employable skills. Unequal access to healthcare services denies disabled persons the health needed to contribute to societal development while unemployment deprives disabled persons of a source of livelihood and ability to afford medical care. These factors working together make persons with disability the poorest among the poor in many societies.

Improvement in the quality of life of a population should also include improvement in access to these basic resources by persons with disability in order to ensure holistic development. A two-way causal relationship of disability determining poverty and poverty determining disability has been established by many researchers. On the one hand, because persons with disability do not have equal access to education and employment, they tend to be unemployed. They are therefore unable to afford basic needs and health care leading to poverty. On the other hand, Lang et al., (2011) note that persons who are poor are predisposed to chronic diseases. This is affirmed in a study by Chappell & Cooke (2010) who found that poor persons are likely to engage in risky behavior such as smoking. They are predisposed to chronic diseases which in the long run leads to disability. They have less access to safe water and good nutrition, they are likely to live under unsanitary conditions, they are unable to access healthcare, accordingly would be disabled because they are poor.

2.2.5.3.6 Religion, Culture, Ethnicity and Disability

Nukunya (2003) defines religion as beliefs and practices associated with the supernatural. Ethnic and cultural backgrounds have influence on health. This is because disease and mortality are functions of social culture as different diseases and mortality levels exist in different cultures.

In many societies, views about persons with disability are mainly based on diverse cultural beliefs, membership of a particular ethnic group and religious practices (Reid-Cunningham 2009;

Groce, 1999). For instance, in many ethnic groups in Ghana, Nigeria and among the Binga ethnic group in Zimbabwe, disability is often associated with having offended the gods or ancestors, witchcraft or being cursed and a sign of bad luck or karma (Munsaka & Charnley, 2013; Abang, 1988). Additionally, in Cote D'ivoire, the general public see disabled persons as cursed as such children with disability are often abandoned therefore, cared for by religious institutions or non-governmental organizations (Bayat, 2014). These cultural and religious beliefs often translate into pity, stigma or ostratisation leading to depression thus less participation in society. Again, Christians may attribute disability to sin while to Muslims, disability is fate or the will of God (Reid-cunningham, 2009). On the contrary, Avoke (2002) states that due to modernization and westernization, the view that disability is an atonement for sin is gradually becoming outdated thus diluting the effect of the traditional belief system on many societies.

2.2.5.3.7 Place of Residence and Disability

Metts (2000) emphasizes that the prevalence rates of disability is higher in urban areas than rural areas as a result of traffic and industrial accidents. However in a study by Mitra et al. (2011), in 11 out of 15 developing countries under study, disability prevalence was higher in the rural than urban areas. Furthermore, the Ghana Population and Housing Census, 2010 also reported a higher proportion of persons with disability, that is 54 percent, living in the rural areas than persons with disability living in the urban areas. This has been attributed to the fact that those in the rural areas have a risk of both infectious and chronic diseases due to high poverty levels (de-Graft Aikins, 2007).

2.2.5.3.8 Employment Status and Disability

In both developing and developed countries, persons with disability of working age have lower employment rates than persons without disabilities (Mitra et al. 2011; WHO, 2011). Literature has established that employment status among persons with disability varies across gender, types

of disability, co-morbidity and wealth quintile. For instance, in relation to types of disability and employment, in a study in Canada which compared types of disability with employment status, it was reported that in all, the prevalence of unemployment among persons with disability was 20 percent, unemployment was higher at 35 percent for persons with both physical and mental disability while unemployment among persons with physical disability was 18.5 percent (Lillie et al., 2013).

In relation to gender, women were likely to be unemployed than men. In relation to the wealth quintile, persons with disability who are poor tend to have lesser opportunities in education, and so lack basic employable skills hence remain unemployed. In this sense those unemployed might resort to begging on the streets or engaging in a trade or business thus self-employed (Pagán, 2009; Groce, 1999). In the youth or persons of working age, disability may hinder or reduce work leading to reduced productivity and a lower pay. Employers avoid employing or maintaining persons with disability because they deem them as a cost as they expect much lower returns from their labour. Mitra et al. (2011) noted that the extent of negative effect of disability on employment varies across factors such as the individual's disability type, timing of the onset (at birth, during childhood or adulthood), its duration (temporary or permanent) and how it relates to his or her occupation.

2.3 Conceptual Framework

Given the review above, this study draws from studies on disability and morbidity to explain factors that contributeto increases in prevalence and severity of disability in Ghana.

The conceptual framework for this study was based on factors such as globalization, urbanization, energy dense diets, physical inactivity, alcohol abuse and tobacco use, obesity, chronic diseases, sociodemographic characteristics, injuries and other factors mentioned in studies by Naami & Hayashi (2012), Cabieses et al., (2012), Scott et. at., (2012), Chappell and

Cooke (2010), Habib & Saha (2010), de-Graft Aikins (2007). Explaining the framework, globalization and urbanization have been identified as distal factors, that is fundamental macro-level socio-economic factors associated with unhealthy lifestyles and obesity. The increasing interconnectedness of people, governments, economies, culture and technologies have been mentioned as having an impact on the nutrition transition in developing countries. Through global trade and importation of obesogenic processed foods, traditional staple foods such as wheat, maize, exotic fruits and vegetables have been replaced by processed westernized high fats, salts and sugar foods. This has brought about an increase in obesity and chronic diseases.

With globalization has come a rapid migration by persons to the urban areas to take advantage of perceived opportunities for employment and improvement in standard of living. In these urban centres, are increased access to westernized diets, alcohol and tobacco abuse as a result of commercialization and mass marketing.

Intermediate forces such as diet/nutrition, physical inactivity, alcohol and tobacco abuse mediate the relationship between proximate and distant forces. Hence, energy-dense nutrition coupled with less physical activity as result of more sedentary occupations leads to obesity (Scott et. al., 2012), obesity would then lead to chronic diseases and then disability. Alcohol is a major contributor to violence, injuries and risk of chronic diseases while tobacco use increases the risk of chronic diseases.

Proximate forces such as chronic diseases, sociodemographic characteristics, injuries, and other factors have the most direct impact on disability (Naami & Hayashi 2012; Cabieses et al., 2012; Chappell and Cooke ,2010). The chronic condition of an individual will influence his or her ability to carry out daily activities as before in the situation where the chronic condition was acquired later in life. While an individual could be disabled by a chronic condition, a person with disability could also acquire chronic disease. However this study will be limited to the unidirectional association between chronic diseases, sociodemographic factors and disability. As

a chronic disease, diabetes could lead to disability in a situation where the individual can no longer carry out his or her day-to day activities after a limb amputation or loss of eye sight. Stroke could lead to disability when one loses one's speech, one's ability to swallow or the functioning of one side of the body.

In relation to injury, road accidents are more likely to cause disability as persons could lose their limbs or lose function of their limbs as such limit the individual's ability to perform activities.

With socio-demographic characteristics, in relation to age, the aged are more likely to be disabled compared to their younger counterparts as functioning of the body declines due to chronic diseases and the natural process of aging. Females are more likely to be disabled than males. In relation to marital status, widowed and divorced persons are likely to be disabled. Again, persons in ethnic minorities are likely to be disabled. Also, persons in the rural areas are likely to be disabled than persons in the urban areas and unemployed persons are likely to be disabled. Persons of the lowest wealth quintile are more likely to be disabled than persons of the highest quintile.

This study will however limit itself to chronic diseases, injury caused by road accidents and socio-demographic characteristics as the data only allow for the measurement of solely these three groups of factors. Variables not included in the analysis have been indicated by an asterisk and shaded boxes

2.4 Hypotheses

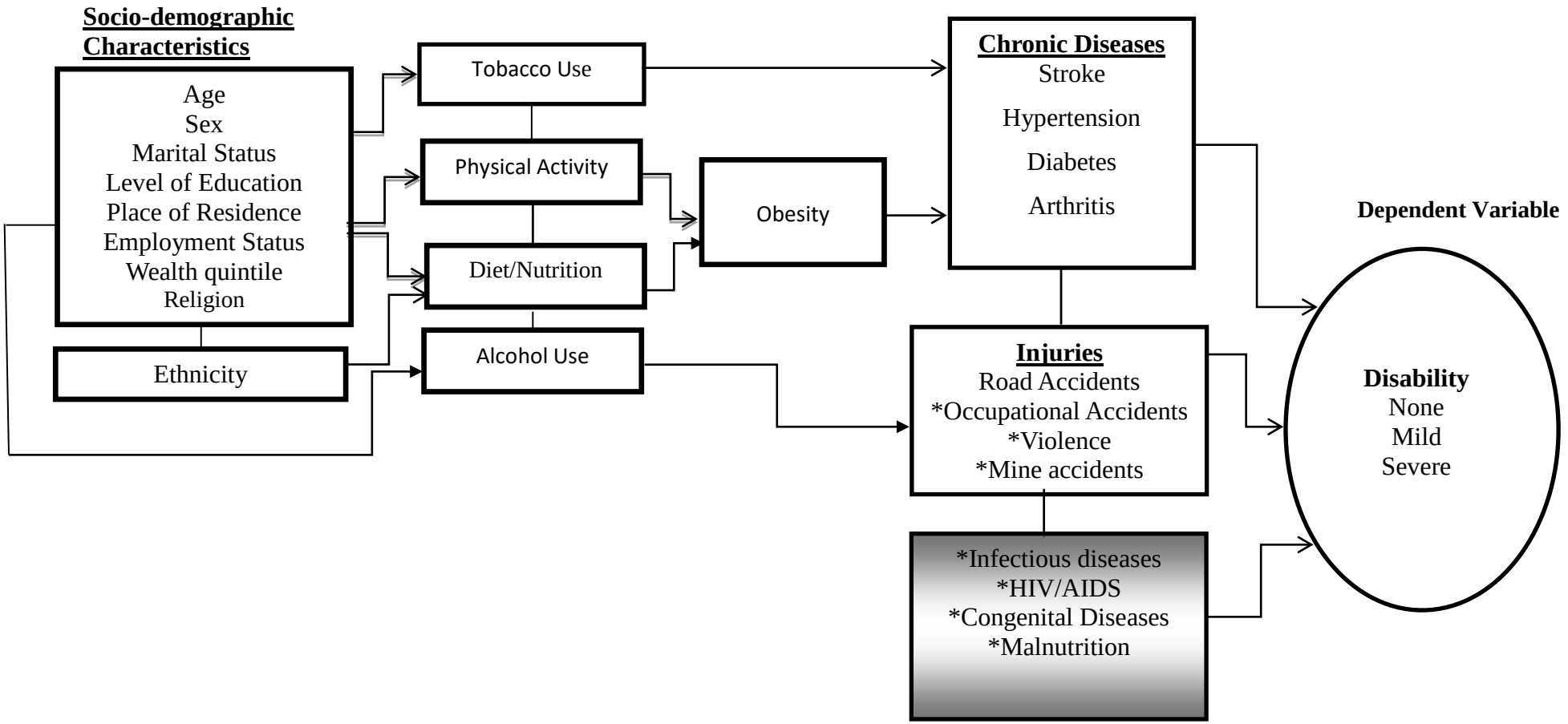
Based on the conceptual framework, the study hypothesizes that:

Chronic diseases are more likely to account for higher levels of disability than socio-demographic characteristics of respondents.

Persons in older age groups are more likely to experience severe disability than persons in younger age groups.

Figure 1 gives a pictorial view of the independent and dependent variables in the study, the relationship between them and how they explain disability in Ghana.

Figure 1: A Conceptual Framework of Factors associated with Disability



Source: Adapted from Naami & Hayashi (2012), Cabieses et al., (2012) Chappell & Cooke (2010), Habib & Saha, (2010) and de-Graft Aikins(2007)

**Variables not included in the analysis have been indicated by an asterisk and a shaded box.*

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter provides information on the source of data, sampling technique, the research design, sample size, how the dependent and independent variables were measured and how the results were analyzed, interpreted and hypotheses tested.

3.1 Data Source

The source of data for this study was the Ghana Study on Global AGEing and Adult health (SAGE) 2007/2008 Wave 1 carried out by the Department of Community Health, University of Ghana Medical School and the National Health Research Unit for WHO and Ministry of Health. This is the second wave of the longitudinal study, the first being the World Health Survey (WHS) or SAGE Ghana Wave 0. The goal of SAGE is to strengthen, collect, process and manage data on older persons in Ghana for policy purposes, planning and research (Biritwum, et al., 2013).

3.2 Sampling Technique

The 2000 Population and Housing Census Enumerated Areas (CEA) were used as the sampling frame. In the first stage, sampling was done by stratification according to the 10 administrative regions of Ghana and place of residence (rural/urban) using a stratified multistage cluster design. This resulted in a 20 nationally representative strata out of which Enumeration Areas (EAs) were to be selected. The number of EAs to be selected from each stratum was to be based on proportional allocation of the number of EAs in each stratum specified on the census frame

and again proportional to size; the measure of size being the number of individuals aged 50 years or more in the EA.

A sample of 251 EAs was selected from the strata as primary sampling units. One of the primary sampling units was not used because the EA, which was expected to be located at Korle-bu Teaching Hospital, could not be traced. In each selected EA, a listing of the households was conducted to classify each household into the following mutually exclusive categories of: households and new settlements with one or more members aged 50 years or more and households or new settlements with residents aged 18-49. In all, 5269 households and 5573 individuals were surveyed. Information on respondents' household and related characteristics, socio-demographics, income and work history, perceived health status, chronic conditions, disability assessment among others were collected. The response rate at household level was 86 per cent while cooperation rate was 98 per cent. At the individual level, response rate was 80 per cent while the cooperation rate was 92 per cent (Biritwum, 2013). In all, since the sample is nationally representative, results can be generalized to the total population.

3.3 Research Design

There were two types of questionnaires namely the household and individual questionnaires. The household questionnaire was administered to all households eligible for the study. An individual questionnaire was administered to eligible respondents identified from the household roster. A proxy questionnaire was administered to individual respondents who had cognitive limitations. The questionnaires were developed in English and were piloted as part of the SAGE pretest in 2005. All documents were translated into some local languages: Akan and Ga, to facilitate understanding by respondents (Biritwum 2013).

3.4 Sample Size

Valid cases used for the analysis was 4988.

3.5 Dependent Variable

In this study, the dependent variable, disability was measured using ADL and IADL items which consisted of the following self-reported questions in the questionnaire: How much difficulty they (the respondent) had in the last 30 days performing tasks of daily activities such as:

1. … in sitting for long periods
2. … in walking 100 meters
3. … in standing up from sitting down
4. … in standing for long periods
5. … with climbing one flight of stairs without resting
6. … with stooping, kneeling or crouching
7. … picking up things with your fingers (such as picking up a coin from a table)
8. … in taking care of your household responsibilities
9. … in joining in community activities (for example, festivities, religious or other activities) in the same way as anyone else can
10. … in extending your arms above shoulder level
11. … concentrating on doing something for 10 minutes
12. … in walking a long distance such as a kilometre
13. … in bathing/washing your whole body
14. … in getting dressed
15. … in your day to day work
16. … with carrying things
17. … with moving around inside your home (such as walking across a room)
18. … with eating (including cutting up your food)
19. … with getting up from lying down

20. … with getting to and using the toilet
21. … with getting where you want to go, using private or public transport if needed
22. … getting out of your home

To each of the questions, respondents were offered five responses in levels of severity and assigned scores ranging from none=0, mild=1, moderate=2, severe=3 and extreme or cannot do=4, for which they were to respond based on their score of disability.

Prior to analysis, all items were checked for univariate and multivariate normality assumptions associated with exploratory factor analysis. No significant issues were noted. To generate a disability index, a principal component analysis (PCA) was conducted on the 22 items with orthogonal rotation (varimax). The Keiser-Meyer-Oklin measured sampling adequacy for the analysis, KMO=0.97 which is above the limit of 0.5 (Field, 2009) and all KMO for individual values were > 0.94, also above the limit of 0.5 (Field, 2009). The Bartlett's test of sphericity χ^2 (231) =85924.63, p<.001 indicated that correlations between items were sufficiently large for PCA. An initial analysis was ran to obtain eigenvalues for each component in the data. Two components had eigenvalues over Kaiser's criterion of 1 and in combination explained 63.4 percent of the variance. The first component identified was titled mobility. This component comprised 11 items and demonstrated a high reliability, above the cut-off point of 0.70, i.e. Cronbach's α=94. The items together present a measure of the extent of mobility by the respondent. The second component identified was titled personal activities. This also comprised 11 items and equally demonstrated a high reliability, also above the cut-off point of 0.70, i.e. Cronbach's α=94. The items in this component together present a measure of degree to which respondents can carry out personal activities. Prior to the reliability test, the items in the component were examined to ensure that

they were not reversely phrased. This is to ensure that the Cronbach's alpha would not produce negative values which would not make sense statistically and so affect the reliability of the data. From the PCA, the two-component factors grouped together were ranked using SPSS. This ranking, specifically the Ntile command in SPSS is meant to distinguish one level of disability from another by dividing the categories into percentile groups with each group containing approximately the same number of cases. For this study, the Ntiles were divided into 3 (tertiles). This was to aid categorize the cases into none, mild and severe disability.

The WHO Disability assessment scale which was used in this study offers the advantages of the following: First, it has proven psychometric qualities, that is, (sensitivity 3, specificity 4, reliability and validity) which have been demonstrated in general population surveys, in clinical sensitivity-to-change studies (WHO & ESCAP, 2008). Again, the impairment or medical model tends to assume that disability status is dichotomous, that is either one is disabled or not disabled however the ICF model regards it on a continuum of difficulty as people differ in terms of functional limitations (WHO & ESCAP, 2008).

3.6 Independent Variables

The independent variables are factors identified by studies as being associated with morbidity and mortality in many societies (Naami & Hayashi, 2012; Cabieses et al., 2012; Chappell and Cooke 2010, de-Graft Aikins 2007; Liu et al., 2009). Accordingly in this study, these factors associated with disability have been classified into three groups which include chronic diseases, socio-demographic characteristics and injury. Though congenital diseases, polio, cerebrovascular disease, osteoarthritis, diseases of the spinal cord, communicable diseases such

as tuberculosis, injury from occupational accidents and conflicts have been identified as factors associated with disability, chronic diseases, socio-demographic characteristics and injury have been identified to be the major factors associated with disability in many developed countries. Also, the data allowed only for the measurement of mainly chronic diseases, injuries from road accidents and socio-demographic characteristics thus this study used these three groups of factors.

The first group included chronic diseases such as stroke, hypertension, diabetes and arthritis. The second included injuries caused by road accidents, and the third group included socio-demographic characteristics as age, sex, marital status, ethnicity, religion, place of residence and employment. The ages were grouped into 18-24, 25-34, 35-44…75+. Employment was measured by currently working or not working. Marital status was measured by never married, currently married, separated, or divorced and widowed. The highest level of formal schooling that respondents had ever attended or were currently attending was measured by whether they had no education, primary, secondary or higher education. Religion was measured by, no religion, Christian religion, Islamic religion, Traditional religion, other religions, which consisted of Chinese Traditional religion, Jainism, Judaism Sikkism, Hinduism and Buddhism. Ethnicity was measured by Akan, Ewe, Ga-Dangbe, Gurma, Mole Dagbani and other ethnic groups which consisted of Guans, Grusi, and Mande. Injury from road accidents was measured by whether the respondent had had an injury from an accident while prevalence of and chronic diseases was measured by whether the respondent had been diagnosed by a doctor of having stroke, hypertension, arthritis or diabetes. Multicollinearity between the independent variables was tested using the correlation matrix, to find out if there was any relationship between the

independent variables which could distort the regression results. There were no highly correlated variables as all the correlations were well below 0.8. The correlation matrix though a good test for multicollinearity has a tendency to miss subtle forms of multicollinearity as such a further test using the collinearity diagnostics in SPSS, that is the variance inflation factor (VIF) and the tolerance statistic was carried out. The VIF values for the individual dependent variables were well below 10 while for tolerance, there were no values below 0.1 indicating that there were no highly correlated variables.

3.7 Techniques of Analysis

The statistical analysis was carried out using the statistical software package, IBM SPSS version 20. Analysis was done across the three levels, that is, univariate, bivariate and multivariate analyses.

Univariate analysis was used to describe the data by showing the frequency distribution for categorical variables and proportion of respondents in each variable category under disability, socio-demographic characteristics with tables being used to display the results.

The bivariate analysis assessed the gross effect of socio-demographic characteristics, injury from road accidents and chronic diseases on disability. Contingency tables showed the link between the various socio-demographic characteristics, injury from accidents and chronic diseases on disability. They were used to examine associations between the factors and disability. Chi-square tests were performed to determine whether or not the observed associations were significant.

The multivariate analysis assessed the net effect of all the independent variables of factors on disability to determine which factors remained significant predictors of disability after adding other variables in each model. The dependent variable was categorized into none, mild and severe disability with the reference category for the dependent variable being no disability. The Nagelkerke R-square was used to test the significance of each model. The individual significance of each variable was tested at p-values of 0.001 and 0.05.

The ordinal logistic regression analysis is recommended for multivariate analysis in situations where there is a logical order to the dependent variable's categories, for instance in this study the disability categories (none, mild and severe) however, the objective of this study was to consider categories in the disability variable as distinct from each other (i.e. nominal) and not rank them in order to enable the researcher examine the effect of the factors on the categories as distinct from each other.

Additionally, in choosing to analyse data using ordinal regression, part of the process involves checking to make sure that the data to be analysed could actually be analysed using ordinal regression. As such this requires the proportionality assumption test. When data 'pass' or meet the assumption test, the regression would give valid results, when data do not pass the assumption test, the regression would not give valid results. Pearson and Deviance goodness-of-fit in SPSS version 20 and the Brant's test in Stata version 12 performed. For these tests, a good ordinal logistic regression model should not have a significant test statistic. A model which does not fit well has a significance level less than 0.005. After assumption tests for ordinal regression were ran for this study, the observed significance level was small, that is, (p=0.001) providing sufficient evidence to reject the null hypothesis which states that the model

fits well as such the data did not pass the assumption test. Since the data did not 'pass' the assumption tests for ordinal logistic regression, the multinomial logistic regression was used as the data had met the assumption tests for multinomial logistic regression. To conclude, though multinomial regression does not assume proportionality as the ordinal regression does, it is more flexible as such providing a better fit and valid results than the ordinal model and it is also best suited for the achievement of the objectives of this study.

3.8 Limitations of the Study

A limitation of this study is that, since SAGE gathered data from individuals aged 18 years and above, all respondents were adults. No information was collected from individuals below age 18. This is a limitation in the sense that disability levels and factors associated with disability in those younger ages will not be known.

Also, factors such as congenital diseases, infectious diseases, injury from occupational accidents, land mines and violence which have been mentioned in the literature as being associated with disability were not measured in the SAGE data. This served as a limitation as it is possible that the association observed between the chronic diseases and disability might be due to unobserved variables such as the factors mentioned above which were not controlled for in the regressions or measured in the survey. This could affect the results in that it potentially creates a bias by either overestimating or underestimating the effect of one of the other observed factors in the model. Notwithstanding, this study incorporated a variety of essential variables that the literature has indicated to be related to disability, thus are reasonably sufficient in explaining disability in Ghana. Future surveys could incorporate the aforementioned factors for further studies.

Another limitation is that the data were cross-sectional, which limits their usefulness for drawing inferences about their causality. They were mostly limited by the fact there is no clear indication of whether certain variables such as lifestyle behaviour occurred before or after disability. Despite this, however, the factors have been established as predictors of many health outcomes thus it is practical to say that the factors in this study led to disability.

It is possible that there are bi-directional associations between employment, poverty, chronic diseases and disability. In relation to employment, on the one hand, disability hinders or reduces work leading to reduced productivity, lower pay and unemployment. On the other hand, unemployment deprives persons of a source of livelihood and ability to afford medical care thus conditions that could be easily managed deteriorates to disability. With regard to poverty, because persons with disability do not have equal access to education and employment as their counterparts, they tend to be unemployed. They are therefore unable to afford basic needs and health care leading to poverty. Lang et al., (2011) note that persons who are poor are predisposed to chronic diseases. This is affirmed by Chappell & Cooke (2010) who found that poor persons are likely to engage in risky behavior such as smoking. They are predisposed to chronic diseases which in the long run lead to disability. Again, chronic diseases contribute to disability by decreasing the individual's ability to carry out day-to-day activities hence lack of ability to live independently. Disability contributes to the burden of chronic diseases as disabled persons are mostly sedentary predisposing them to chronic diseases. Although these bidirectional relationships may exist between disability and the aforementioned predictors, the study sought to explain the effect of factors, such as employment, relative to the other sociodemographic factors, and disability and not the other way round. This is because with

bidirectional relationships the aim is to examine the effect of the independent variable on the dependent and vice versa to find out which direction affects the significance of the variables the more. However this study's intent was to solely consider the effect of the independent variable on the dependent variable.

The analysis was based on self-reports. The validity of using self-reports is often questioned Drѐze and Sen, 2001; Sen, 2002; Frankenberg & Jones, 2004). It has been argued that some disadvantaged subgroups of the population may fail to report the presence of illness, some may overrate while others may underrate their level of disability. For instance, older individuals are more likely to report poor health than their younger counterparts while women report worse health than their male peers at each age group. However, studies in other parts of the world and in Ghana have shown that although they are subject to misreporting, self-reports are reasonably accurate and sufficiently sensitive for public health surveillance (Martin et. al., 2000; Sacks et al., 2005).

Finally, analysis could be taken a step further with computing the marginal effects or predicted probabilities to find out how the probability of disability is increased or decreased by the individual factors however this is not in the scope of the study. Further studies could consider these analytic technique.

CHAPTER FOUR

SOCIO-DEMOGRAPHIC BACKGROUND OF RESPONDENTS

4.0 Introduction

To be able to understand factors associated with disability in Ghana, it is important to know how these factors vary within and across different categories of people. Knowledge of the socio-demographic background of respondents allows the researcher to determine how close the sample replicates the population. This chapter therefore provides information on the background characteristics of respondents in the study. These features include age, sex, education level, marital status, religion, place of residence, ethnicity and employment status.

4.1 Study Area

The study on Global Aging and Adult health (SAGE) Wave 1 was conducted in Ghana between 2007 and 2008 by the Department of Community Health, University of Ghana Medical School and the National Health Research Unit for WHO and Ministry of Health. Ghana is located in the West African Sub-Region. It is bounded to the north by Burkina Faso, south by Gulf of Guinea, east by Togo and west by Cote D'ivoire. It lies on a stretch of landmass of 238, 533 square kilometres. Ghana's population was 24,658,823 as of 2010. The annual growth rate was 2.5 percent according to Ghana Statistical Service (2013). Ethnic groups found in Ghana include the Akan constituting 47.5 percent of the population followed by Mole Dagbani, 16.6 percent, the Ewe being 13.9 percent, the Ga-Dangme, 7.4 percent, the Gurma, 5.7 percent Guan, 3.7 percent, Grusi, 2.5 percent, Mande, 1.1 percent and others being 4.4 percent. In relation to religious affiliation in Ghana in 2010, Christians formed 71.2 percent of the population with

Muslims forming, 17.6 percent, Traditionalists being 5.2 percent, others being 0.8 percent and persons with no religion being 5.3 percent (Ghana Statistical Service, 2013).

Administratively, Ghana has been divided into 10 regions which include Greater Accra, Western, Eastern, Central, Brong-Ahafo, Northern Region, Upper East and Upper West. These regions have been sub-divided into 170 districts. According to the 2010 census, persons living in the urban areas were 50.9 percent, which was an increase from an initial 43.8 percent with the rest living in the rural areas. According to the 2010 Population and Housing Census, persons with disability form 3 percent of the population. Over the years in Ghana, policies and legislation have been put in place for persons with disability in order to improve their wellbeing and ensure their participation in society. These include the Education Strategy Policy, labour market initiatives, National Health Insurance Scheme (NHIS) and 2 percent allocation of the District Assembly Common Fund. Ghana is also a signatory to the UN Convention on the Rights of Persons with Disability (CRPD), 2006 which spells out the cultural, social, civil, political and economic rights of Persons with Disability as well as the Disability Rights Bill (Act 715), 2006 which has as its goal to provide Ghanaian citizens with disability a variety of services and equal employment. Persons with disability still face barriers in participating in society as a result of persistent stigma stemming from non-biologic conceptions of disability (Tuakli-wosornu & Haig, 2014), unequal access to education, health and employment which are considered key determinants of human development leaving much to be done when it comes to issues concerning persons with disability.

4.2 Distribution of Respondents by Level of Disability

In this study, respondents with disability were defined as persons in a state of decreased functioning which in the context of the environment is experienced as an impairment that limits the respondent in his or her daily activities, as well as restricts his or her participation in society (Leonardi & Bickenbach, 2006). The dependent variable was categorized into three levels of disability. These include no disability, mild disability and severe disability.

Table 4.1 shows the distribution of respondents by level of disability. It shows that a high proportion of respondents had mild disability. This is supported by the fact that majority of the respondents are between the ages of 45 and 75 hence would have a high proportion being mildly disabled than having no disability.

4.3 Age of Respondents

In the data, age of respondents were recorded in complete years; thus, the days and months that passed or yet to reach one's birthday was not added to the complete years. Also in this study, the ages of respondents were categorized into less than 45 years, 10-year age groups up to age 75 after which the ages were left open ended. Table 4.1 indicates that more than one out of four of the respondents (28 percent) were between the ages of 55 to 64 years. Also, 73.1 percent of the respondents were between the ages of 45 to 74 years while persons less than 45 years were the smallest proportion surveyed.

4.4 Distribution of Respondents by Level of Education

Education has been identified as one of the socioeconomic determinants of health and mortality. It is a means of reducing poverty and improving health as it provides persons with skills and

knowledge about health to improve their health status as well as level of living (Gribble & Bremner, 2012). Table 4.1 shows that 51.4 percent had had at least some form of education. A higher proportion of respondents (48.6 percent) had no education, followed by persons with secondary or higher education. Also, less than 24 percent of the respondents had primary education.

4.5 Distribution of Respondents by Sex

Sex is an important factor that influences health and mortality. In relation to life expectancy or mortality, men and women differ as women on average tend to live longer (Lillie et al. 2013; de Menil et al. 2012). Table 4.1 shows the distribution of respondents by sex. More than half of the respondents in this study, 53.6 percent were males. `

4.6 Distribution of Respondents by Marital Status

Marital status has been found to influence health and mortality in populations (Waldron et al., 1997; Goldman et al., 1995). The data has therefore been categorized by marital status to measure the differences in levels of disability in Ghana. In this study, all respondents were asked a question on their marital status as they had attained the eligible age for marriage in Ghana which is 18 years. In relation to marital status, Table 4.1 shows that majority of the respondents were currently married followed by 23.8 percent who were widowed. The least proportion of the respondents were never married (4.7 percent)

4.7 Distribution of Respondents by Religion

Nukunya (2003) defines religion as beliefs and practices associated with the supernatural. In Ghana, religion is part of culture thus inseparable from every aspect of life hence largely

accounts for the worldview of Ghanaians. It influences their perceptions about disability as they see disability as being caused by the individual's or ancestor's disobedience to a supernatural being. Forms of religion in Ghana include the Traditional, Christian, Islamic religion among others. From Table 4.1, more than six out of ten of the respondents (69.4 percent) were Christians and less than one-fifth (15.7 percent) were Muslims. The smallest proportion of respondents (0.9 percent), were persons in other religions.

4.8 Distribution of Respondents by Employment Status

Employment has been identified as a major socioeconomic determinant of health. This is because it provides individuals with earnings to enable them to cater for their health needs (Ozawa & Yeo, 2006). Under employment status, respondents were either categorized as not working or currently working. Table 4.1 shows that majority, of the respondents (72.3 percent) were working.

4.9 Distribution of Respondents by Type of Place of Residence

In relation to type of place of residence, respondents either dwelt in the rural or urban areas. In Ghana classification of type of place of residence into rural or urban is based on the size of population. By this, localities with 5000 or more persons were considered urban while localities with less than 5000 people were classified as rural (Ghana Statistical Service, 2012). Data must show differences between persons in the rural and urban areas to provide information on how disability varies across these types of place of residence. According to Table 4.1, more than half (59.1 percent) were living in the rural areas at the time of the survey.

4.10 Distribution of Respondents by Ethnicity

In this study, respondents were categorized according to the ethnic group they belonged. There were six main ethnic groups identified. They include the Akan, Ewe, Ga-Dangme, Gurma, Mole Dagbani and other ethnic groups. Table 4.1 reveals that a larger proportion of the respondents were Akan (48.5 percent). This confirms results from the 2010 Population and Housing Census which reported that the Akans were the largest ethnic group in Ghana. In this study, Guans, Grusi, Mole Dagbani, Mande forming other ethnic groups were the second largest constituting 25.4 percent of the respondents.

4.11 Prevalence of Injury from Road Accidents

Injury from road or occupational accidents, conflicts, landmines, burns and violence have been reported to contribute to disability (Cabieses et al. 2012; Chappell & Cooke, 2010; Ingstad & Grut, 2007; Beaglehole & Yach, 2003) with road accidents accounting for 2.5 percent of deaths in developing countries (Beaglehole & Yach, 2003). This study limited itself to injury from road accidents as the data collected was solely on injury from road accidents. From Table 4.1, we see that less than two percent of respondents reported to have had injuries from road accidents.

4.12 Distribution of Respondents by Wealth Quintile

The wealth index is a composite index of a household's cumulative living standard. In this study the wealth index was categorized into three namely the poor, middle and rich. Table 4.1 shows that about 41 percent of the respondents were rich, 39 percent were poor and close to 20 percent belonged to the middle group.

4.13 Distribution of Respondents by Lifestyle Behaviour

A number of studies have reported that the lifestyle behavior of a population leads to chronic diseases which also contributes to functional limitations (Lahti-Koski et al., 2008; Magnusson, 2009; Habib & Saha, 2010; Gualdi-Russo et al., 2014).

4.13.1 Tobacco Use

Tobacco use as a health risk results in a greater probability of disability (Mwachofi & Broyles, 2008). Table 4.1 reports that more than three-quarters of the respondents had never used tobacco while 15.2 percent had ever used tobacco but not on a daily basis. Less than one-tenth of the respondents smoke tobacco on a daily basis.

4.13.2 Alcohol Use

Alcohol is a major contributor to injuries and violence which most often leads to disability (Mwachofi & Broyles, 2008; Habib & Saha, 2010). According to Table 4.1, 41.4 percent of respondents have never drank alcohol while about 27 and 32 percent were previous and current drinkers.

4.13.3 Diet

Gualdi-Russo et al., 2014 state that dietary patterns of an individual, depending on whether healthy or unhealthy in the long run either tends to enhance or reduce an individual's ability to function. Table 4.1 shows that almost three-quarters of the respondents reported eating at least 5 servings of fruits and vegetables as part of their diet.

4.13.4 Physical Activity

Physically active populations tend to have reduced chances of being obese, having chronic diseases and being disabled in the long run. In table 4.1, more than half of the respondents reported that they did not engage in any form of physical activity during the week. 35 percent had engaged in physical activity daily for 6 days prior to the study.

4.14 Distribution of Respondents by Obesity

The greatest odds of disability are experienced among persons who are obese (Williams et al., 2014). Table 4.1 shows that one-tenth of the respondents were obese.

4.15 Prevalence of Chronic Diseases

Chronic diseases such as cardiovascular diseases, cancer, chronic respiratory diseases and diabetes have been mentioned as causes of mortality and disability in many parts of the world (Khoury et al., 2013; WHO, 2011; Abegunde et al. 2007; de-Graft Aikins, 2007; Beaglehole & Yach, 2003). In Ghana studies have identified hypertension, arthritis, diabetes, angina and stroke as causes of disability. In order to better understand how these chronic diseases relate to disability, in Ghana, it is important to know the prevalence of these factors. Table 4.1, shows that more than one tenth of the respondents had been diagnosed of hypertension and arthritis (11.9 percent and 11.4 percent respectively). Further 1.9 percent had stroke and 3.4 percent had suffered from diabetes.

Table 4.1 : Frequencies and Percentages of Independent Variables

Variables	Number	Percent
Disability Status		
None	1677	33.6
Mild	1682	33.7
Severe	1629	32.7
Age (Years)		
>45	588	11.8
45-54	1083	21.7
55-64	1395	28
65-74	1168	23.4
75+	754	15.1
Sex		
Male	2672	53.6
Female	2316	46.4
Place of Residence		
Rural	2946	59.1
Urban	2042	40.9
Marital Status		
Never Married	232	4.7
Currently Married	2917	58.5
Separated/Divorced	654	13.1
Widowed	1185	23.8
Level of Education		
None	2426	48.6
Primary	1191	23.9
Secondary or Higher	1371	27.5
Employment Status		
Currently Working	3605	72.3
Not Working	1383	27.7
Ethnicity		
Akan	2419	48.5
Ewe	328	6.6
Ga-Dangme	601	12.0
Gruma	249	5.0
Mole-Dagbon	124	2.5
Others	1267	25.4

Source: Computed from SAGE Ghana 2007/2008 Data

Table 4.1 continued

Variables	Number	Percent
Religion		
None	244	4.9
Christianity	3461	69.4
Islam	784	15.7
Traditional Religion	454	9.1
Other	45	0.9
Wealth Quintile		
Poor	1952	39.1
Middle	982	19.7
Rich	2054	41.2
Tobacco Use		
Never	3771	75.6
Yes Daily	461	9.2
Yes, Not Daily	756	15.2
Alcohol Use		
Never Drank	2064	41.4
Current Drinker	1588	31.8
Previous Drinker	1336	26.8
Diet		
Healthy Diet	1533	30.7
Unhealthy Diet	3455	69.3
Physical Activity		
None	2660	53.3
1-6 days	1750	35.1
All 7 Days	578	11.6
Obesity		
Obese	502	10.1
Not Obese	4486	89.9
Chronic Diseases		
Stroke	96	1.9
Diabetes	171	3.4
Hypertension	592	11.9
Arthritis	567	11.4
Injury		
Road Accidents	86	1.7

Source: Computed from SAGE Ghana 2007/2008 Data

4.13 Summary of Results

In all, out of the 4988 respondents, 33.6 percent had no disability while 33.7 percent had mild disability with the remaining 32.7 percent having severe disability.

Of the 4988 respondents, 11.4 percent had arthritis, 11.9 percent were hypertensive, 3.4 percent were diabetic and 1.9 percent had stroke. About 73 percent of the respondents were between the ages of 45 to 74 years. A large proportion of the respondents had no education with more than half being currently married. Respondents were mostly Christians, and 72.3 percent were currently working. Also, more than half lived in rural areas while almost half were Akans. In relation to wealth quintile, less than half belonged to the rich category, 9.2 percent used tobacco daily , 41 percent were current drinkers of alcohol, more than half had servings of fruits and vegetables less than the recommended, 53 percent had engaged in no vigorous physical activity in the past week while one-tenth of the respondents were obese.

CHAPTER FIVE

ASSOCIATIONS BETWEEN SOCIO-DEMOGRAPHIC CHARACTERISTICS, ROAD ACCIDENTS, CHRONIC DISEASES AND DISABILITY

5.0 Introduction

This chapter seeks to examine the associations between factors such as chronic diseases, road accidents, socio-demographic characteristics, lifestyle behavior, obesity and disability in Ghana by assessing the gross effect of the individual independent variables on the dependent variable.

5.1 Percentage distribution of Respondents' Age by their Level of Disability

Table 5.1 shows that there is a significant relationship between age and disability at 0.05 significance level (p=0.000). A high proportion of young persons, 72 percent, had no disability while a high proportion of persons aged 75 years and above, 66 percent, had severe disability. Again, the results show that with increasing age, proportion of persons with no disability reduced as proportion of persons with severe disability increased. This finding is in accordance with studies carried out on disability which reported that with increasing age, level of disability also increases (Kelemen et al. 2013; Ayernor, 2012; Liu et al. 2009; Gureje et al. 2006). The results again show that a high proportion of the respondents reported having mild disabilities.

5.2 Sex and Disability

The results from Table 5.1 shows a significant relationship between a respondents' sex and disability at 0.05 significance level (p=0.000). On the whole, females were more likely to be disabled than males as a higher proportion of females (42 percent) reported having severe disabilities than males while a higher proportion of males reported having no disability (39.8

percent). This is confirmed by studies by Almazán-Isla et al. (2014), WHO (2011), Mitra et al. (2011), Chakrabarty et al. (2010), Gureje et al. (2006).

5.3 Marital Status and Disability

Marital status has been found to influence health and mortality in many studies. This study confirms this as the data show that there is a significant relationship between marital status and disability at the 0.05 significance level (p=0.000). On the whole, as indicated in Table 5.1, with a change in marital status, level of disability increased from mild to severe. 56.5 percent of the never married respondents reported no disability while a high proportion of widowed, 53 percent reported severe disability. First, widowed persons were more likely to have mild or severe disability followed by the divorced, separated and never married persons. This is explained in a study by Verbrugge (1979) who attributed this to two distinct processes that is, the process of marital protection where couples protect each other and marital selection where in marrying and remarrying, persons select physically and psychologically healthy partners, as well as persons of higher socio-economic status, leaving among the single and formerly married groups a large proportion of persons with serious health problems. Unlike this study however, Verbrugge reported a higher proportion of separated or divorced persons being disabled or having a worse health state followed by widowed and single persons.

5.4 Education and Disability

Studies have shown that when educated, persons with disability are given more economic options which would further reduce poverty and improve their standard of living. As indicated by Table 5.1, a high proportion of persons with primary education (25.3 percent) have severe disability while a higher proportion, that is 49.2 percent of persons with secondary or higher

education have no disability. This means that level of disability is lower for persons with higher education than persons with no education. This result is confirmed in a study by Almazán-Isla et al. (2014) and explained by Mitra et al. (2011) to be as a result of two reasons. First, the fact that in developing countries, because parents, especially with low socio-economic status, do not expect much returns from investment in their disabled children's education, they might not invest in their disabled children's education. Also the fact that disability might prevent children from attending school due to inaccessible school buildings, stigma among others, drop-out rates increases, accounting for their lower levels of education.

5.5 Employment and Disability

According to Table 5.1, a high proportion of persons working, that is 17.1 percent, reported no disability while 56 percent of persons not working reported severe disability. Education makes it more possible for persons to be employed and from the previous table, the higher the education, the higher the proportion of persons with no disability. Table 4.1 however showed that 47 percent of the respondents had no education as such they were more likely to have severe disability. In this vein it follows that there would therefore be a high proportion of respondents unemployed as they have no education and as well as severe disability. Consequently, persons with severe disability are likely to be unemployed because employers avoid employing or maintaining persons with disability because they consider them as a cost as they expect much lower returns from their labour (Mitra et al. 2011).

5.6 Ethnicity and Disability

Ethnicity has been identified as exhibiting a significant relationship with disability (Cabieses et al., 2012), as ethnic minorities are likely to have higher levels of disability. In comparison, the

results in Table 5.1 shows that at 5 percent alpha level, there is a significant relationship between ethnicity and disability (p=0.000). Again, Ewes were likely to have severe disability while persons who belong to the other ethnic groups were likely to have no disability.

5.7 Religion and Disability

Table 5.1 shows that the relationship between religion and disability was statistically significant (p=0.027) at 95 percent confidence level. Again, the data show that persons belonging to other religions were likely to have no disability while 38.6 percent of persons belonging to the Traditional religion had severe disability. An almost equal proportion, 28 percent of respondents having no religion and Traditionalists had no disability.

5.8 Type of Place of Residence and Disability

In relation to type of place of residence as depicted by Table 5.1, about 37.7 percent of persons in the urban areas had no disability while 30.2 percent had severe disability. Similarly, Mitra et al., (2011) in their study also found a higher prevalence rate of no disability for urban areas than for rural areas and an almost equal prevalence of severe disability in both rural and urban areas in Ghana.

5.9 Wealth Quintile and Disability

In relation to wealth quintile, a higher proportion of poor persons, 37.1 percent had severe disability while a lower percentage, 29 percent of rich persons reported severe disability. Contrastingly, a lower proportion of poor persons, 28 percent reported no disability while a higher proportion of rich persons, 39.5 reported no disability. This relationship was statistically significant at 5 percent confidence level (p=0.000).

5.10 Lifestyle Behaviour and Disability

5.10.1 Tobacco use

From the results there is a significant association between the respondents' tobacco use and disability. Table 5.1 shows that 37 percent and 35 percent of persons who report daily usage of tobacco have mild and severe disability whereas about 33 percent and 34 percent persons who have never used tobacco are mildly and severely disabled.

5.10.2 Alcohol use

According to Table 5.1, a high proportion, that is 36 percent of respondents who have never drank alcohol have severe disability while an almost equal proportion who were previous drinkers had severe disability. This relationship is significant at 5 percent confidence level (p=0.000)

5.10.3 Diet

From Table 5.1, about 37 percent of respondents who report eating at least 5 servings of fruits and vegetables constituting healthy diet have severe disability with 35 percent having no disability. Contrastingly, a lower proportion, 31 percent of respondent who report not having the recommended servings of fruit and vegetables have severe disability whiles a much lower proportion, 33 percent had no disability. This relationship is significant at 5 percent confidence level (p=0.000).

5.10.4 Physical Activity

Table 5.1 shows a significant association between physical activity and disability. The data shows that 27, 32 and 41 percent of respondents reporting not having done any vigorous

physical activity in the past week have none, mild and severe disability respectively. For those engaging in vigorous physical activity in the past 6 days, 41, 38 and 21 percent report none mild and severe disability respectively. For all seven days of vigorous physical activity, 41, 29 and 30 percent of respondents report none, mild and severe disability in that order. Therefore persons who engaged in physical activity daily had no disability.

5.11 Obesity and Disability

According to Table 5.1 a high proportion of respondents, 35 percent who were obese have severe disability whereas 33 percent have no disability. A lower proportion, 32 percent who were not obese have severe disability whereas 34 percent had no disability. This association was not statistically significant.

5.12 Chronic Diseases and Disability

5.12.1 Stroke

Stroke as a chronic disease has been identified as representing the greatest of burden of the entire group of chronic diseases in many low and middle income countries (Abegunde et al., 2007). It is among the top 10 leading causes of disability worldwide (Mudzi et al., 2012).Stroke is very significant in predicting disability as Table 5.1 shows that (p=.000) at 95 percent confidence level. Additionally, the results show that a higher proportion of persons with stroke, that is 59.4 percent, have severe disabilities than persons without stroke. The reverse is true for persons without stroke as a large proportion have no disability. This finding supports studies by Jagger et al. (2007a) ; Andrade (2009) and McGuire et al. (2006) as cited in Chappell & Cooke (2010) which found out that particular chronic conditions such as stroke are particularly related to disability thus accounting for the largest proportions with severe disabilities.

5.12.2 Diabetes

From the results, there is a significant association between a respondent's diabetes status and disability at 0.05 significance level (p=0.000). Table 5.1 reports in all, a higher proportion of persons with and persons without diabetes have mild disabilities in almost equal proportions. Also, a higher proportion of persons who have diabetes have severe disability while a higher proportion of persons without diabetes, that is 19.7 have no disability. This means that with diabetes, persons are likely to experience decreased functioning of their bodies which prevents them from carrying out their usual daily activities.

5.12.3 Hypertension

The World Health Organization **(**WHO, 2011) states that increasing rates of disability are associated with increases in chronic health conditions such as hypertension. From Table 5.1, a high proportion, that is 50 percent of persons living with hypertension have severe disabilities while a lower proportion, 19.6 percent have no disability. Also, a higher proportion of non-hypertensive respondents have no disability.

5.12.4 Arthritis

Baruth et al., (2013) state that arthritis is the most common cause of disability leading to limitation in work, social activities and activities of daily living. Table 5.1 shows that 80.4 percent, constituting a majority of the respondents who have arthritis, reported mild or severe disabilities compared to 64.6 percent of persons without arthritis. The prevalence of disability due to arthritis has been largely attributed to obesity, less physical activity and lack of knowledge of how to manage it (CDC, 2010). About 35.4 percent of persons without arthritis reported no disability.

5.13 Injury from Road Accidents and Disability

Olaogun et al., (2009) state that vehicular accidents account for the increasing number of disabilities in developing countries. From Table 5.1, 44.2 percent of persons who sustained injuries from road accidents had severe disability while 30 percent had no disability. Again, the relationship between injury from road accidents and disability was not statistically significant (p=.0.061) at 95 percent confidence level.

Table 5.2: Distribution of Respondents by Level of Disability

	Percentage Level of Disability				
Variables	**No Disability**	**Mild Disability**	**Severe Disability**	**Total**	**P Value**
Age (Years)					
>45	71.9	21.1	7.0	588	0.000
45-54	48.2	36.9	14.9	1083	
55-64	33.6	39.4	27.0	1395	
65-74	16.9	35.9	47.3	1168	
75+	8.8	25.2	66.0	754	
Sex					
Male	39.8	35.6	24.6	2672	0.000
Female	26.5	31.5	42.0	2316	
Place of Residence					
Rural	30.8	34.8	34.4	2946	0.000
Urban	37.7	32.2	30.2	2042	
Marital Status					
Never Married	56.5	28.0	15.5	232	0.000
Currently Married	39.8	35.2	25.0	2917	
Separated/Divorced	28.3	35.6	36.1	654	
Widowed	16.9	30.0	53.1	1185	
Education					
None	21.0	34.8	44.2	2426	0.000
Primary	41.3	33.4	25.3	1191	
Secondary/Higher	49.2	32.1	18.7	1371	
Employment					
Not Working	17.1	27.0	56.0	1383	0.000
Working	40.0	36.3	23.7	3605	
Ethnicity					
Akan	35.7	33.8	30.6	2419	0.000
Ga-Dangme	33.8	28.8	37.4	601	
Ewe	26.8	35.4	37.8	328	
Gurma	37.4	33.3	29.3	249	
Mole-Dagbani	31.5	44.4	24.2	1267	
Others	30.9	34.6	34.5	1267	
Religion					
None	28.3	36.1	35.7	244	0.027
Christianity	34.8	33.1	32.1	3461	
Islam	33.6	35.8	30.6	784	
Traditional	28.9	32.6	38.6	454	
Others	24.4	42.2	33.3	45	

Source: Computed from SAGE Ghana 2007/2008 Data

Wealth Quintile					
Poor	28.2	34.7	37.1	1952	0.000
Middle	32.0	36.9	31.2	982	
Rich	39.5	31.3	29.2	2054	
Tobacco Use					
Never	33.4	33.1	33.5	3771	0.000
Yes Daily	28.0	37.1	35.0	461	
Yes, Not Daily	38.2	35.0	26.9	756	
Alcohol Use					
Never Drank	32.0	32.2	35.9	2064	0.000
Current Drinker	36.0	37.8	26.2	1588	
Previous Drinker	33.3	31.3	35.4	1336	
Diet					
Healthy Diet	35.0	28.3	36.7	1533	0.000
Unhealthy Diet	33.0	36.1	30.9	3455	
Physical Activity					
None	27.2	31.6	41.2	2660	0.000
1-6 days	41.0	38.3	20.6	1750	
All 7 Days	40.7	29.4	30.0	578	
Obesity					
Obese	32.7	32.1	35.3	502	0.416
Not Obese	33.7	33.9	32.4	4486	
Chronic Diseases					
Stroke					
Yes	9.40	31.3	59.4	96	0.000
No	34.1	33.8	32.1	4892	
Diabetes					
Yes	22.8	34.5	42.7	171	0.003
No	19.7	74.8	5.50	4595	
Hypertension					
Yes	19.6	30.4	50.0	592	0.000
No	35.5	34.2	30.3	4396	
Arthritis					
Yes	19.6	22.93	57.5	567	0.000
No	35.42	35.11	29.47	4421	
Injury (Road Accidents)					
Yes	30.2	25.6	44.19	86	0.061
No	33.7	33.9	32.5	4902	

Source: Computed from SAGE Ghana 2007/2008 Data

5.14 Summary

For socio-demographic characteristics, age, sex, marital status, educational level, employment status and type of place of residence, ethnicity, religion and wealth quintile were found to be significantly related to disability. For lifestyle behavior, tobacco and alcohol use, diet and physical activity was found to be significant. Obesity and chronic diseases were significantly related to disability while injury from road accidents was not significant at the bivariate level.

The results again showed that with increasing age, level of disability increased from mild to severe. Females were found to experience severe disability compared to males. Again with change in marital status, level of disability increased from mild to severe. More persons with no education reported severe disability than none or mild. With increase in education level, a lower proportion of respondents reported severe disability. More persons currently not working reported severe disability than persons working. With ethnicity, more Ewes reported severe disability than persons in other ethnic groups. More persons belonging to the Traditional religion reported severe disability than persons belonging to the Islamic religion. More persons in the poor category, persons who used tobacco daily, never drank alcohol, persons who had healthy diet, persons who had no physical activity had severe disability than persons in the other categories.

Stroke, hypertension, diabetes and arthritis as chronic diseases were all found to be significantly related to disability at 99 percent confidence level while injury from road accidents was not significant at 95 percent confidence level. At the bivariate level, 59 percent of respondents with stroke were the highest proportions with severe disability, followed by arthritis, 58 percent, hypertension, 50 percent and diabetes 43 percent. Therefore among the chronic diseases, more

persons with stroke were found to be severely disabled in this study. In relation to injury from road accidents 44 percent who reported injuries from road accidents had severe disability.

CHAPTER SIX

FACTORS ASSOCIATED WITH DISABILITY AMONG RESPONDENTS

6.0 Introduction

This chapter focuses on factors associated with disability among respondents at the multivariate level. It examines the net effect of each independent variable on disability. For this study, the data met the four assumptions for valid results from the multinomial logistic regression. That is there was no multicollinearity, the outcome variable had three categories (none, mild and severe disability) treated as nominal, independence of errors and the overall goodness of fit after running the model was not significant. This validated the running of the multinomial logistic regression for multivariate analysis. Consequently, five models with two bivariate regressions were ran to determine the effects of each independent variable on disability.

With the bivariate regressions, the first model had age as the only predictor. This was to assess the gross effect of age on disability without all the other factors. Model two had chronic diseases as the only predictor. The rationale was to see the sole influence of chronic diseases on disability. For the net effect, model one had socio-demographic characteristics as the only predictor, model two comprised of lifestyle behavior, model three had obesity, model four had chronic diseases and model five had all the factors, that is, sociodemographic characteristics, lifestyle behavior, obesity, chronic diseases and injury from road accidents. For the dependent variable, no disability was selected as reference. Hence the effect of each of the independent variables on mild and severe disability was explained with reference to no disability as well as reference categories of the various independent variables.

6.1 Age and Disability

Table 6.1 shows that age significantly predicted whether a respondent would have mild or severe disability. The Nagelkerke R^2 value of 0.245 for model 1 shows that approximately 25 percent of variation in disability level is explained by age. From Table 6.1, persons less than 45 years were 10.2 percent less likely to have mild disability than persons aged 75 years and above. Respondents between the ages of 65 to 74 were 74 percent less likely to have mild disability than those who were 75 years and above. In relation to severe disability, respondents less than 45 years were 99.7 percent less likely to have severe disability than persons 75 years and above while respondents between the ages of 65 to 74 years were 86 percent less likely to have severe disability than persons 75 years and above. This suggests that the likelihood of mild disability is higher and severe disability lower, among those in the lower age groups.

Again in Table 6.1, the bivariate regression results showed age as being significantly related to disability. To explain, as persons age, they lose functioning of their bodies and thus move from a state of no disability to mild and then severe disability. This finding parallels with studies by Almazán-Isla et al., (2014) and Gureje et al., (2006) which reported that disability increased with age.

Table 6.1: Relationship between Age and Disability

Independent Variable	**B**	**Std. Error**	**Sig.**	**Exp(B)**	**B**	**Std. Error**	**Sig.**	**Exp(B)**
Age Group	**Mild**				**Severe**			
Less than 45 years	-2.284	0.176	0.000	0.102	-4.355	0.131	0.000	0.013
45-54	-1.324	0.158	0.000	0.266	-3.197	0.21	0.000	0.041
55-64	-0.900	0.156	0.000	0.407	-2.239	0.159	0.000	0.107
65-74	-0.303	0.167	0.070	0.739	-0.991	0.148	0.008	0.371
75+ (RC)	0.000	.	.	1.000	0.000	.	.	1.000
Nagelkerke=0.245		***p=0.05**		**** p=0.001**				

(RC) =Reference Category **s.e**=Standard error; Reference category for the dependent variable is 'none' (no disability)

Source: Computed from SAGE Ghana 2007/2008 Data

6.2 Chronic Diseases and Disability

Table 6.2 indicates that persons living with hypertension and arthritis are significantly different from persons who do not have hypertension or arthritis in relation to severe disability. However, there was no significant difference in mild disability for those living with stroke and diabetes and their respective counterparts. The Nagelkerke R^2 value in model two shows that only 5.5 percent of the variation in disability is explained by chronic diseases. It also indicates that persons with hypertension were 1.5 times more likely to have mild disability versus no disability than persons without hypertension. Also, those living with arthritis were 86 percent more likely to have mild disability versus no disability than their counterparts with no disability.

Further, with regards to severe disability, Table 6.2 shows that those living with hypertension were 2.5 times more likely to have severe disability than persons without hypertension. While those living with stroke were 4.8 times more likely to have severe disability than their counterparts. Those living with diabetes were 1.4 times more likely to have severe disability than those without diabetes. Those living with arthritis were 3.3 times more likely to have severe disability than persons without arthritis.

On the whole, model two reveals that among the chronic diseases, persons with stroke had the highest probability of having severe disability followed by arthritis, and hypertension. This confirms studies by Jagger et al. (2007a), Andrade (2009), and McGuire et al. (2006) as cited in Chappell & Cooke, (2010) and Abegunde et al., (2007) that certain chronic conditions are particularly related to disability including stroke, diabetes, arthritis, cognitive impairment, and visual impairment. Also it has been explained that persons with stroke most often have a

difficulty in walking, lose speech or lose functioning of one part of the body hence most often have severe disability (Mudzi et. al., 2012).

Table 6.2: Relationship between Chronic Diseases and Disability

Independent Variable	B	Std. Error	Sig.	Exp(B)	B	Std. Error	Sig.	Exp(B)
Chronic Disease	**Mild**				**Severe**			
Hypertension- Yes	0.413	0.157	0.001	1.512	0.915	0.219	0.000	2.497
Hypertension-No (RC)	0.000	.	.	1.000	0.000	.	.	1.000
Stroke-Yes	1.083	0.434	0.005	2.953	1.575	0.459	0.000	4.829
Stroke-No (RC)	0.000	.	.	1.000	0.000	.	.	1.000
Diabetes-Yes	0.274	0.267	0.198	1.315	0.321	0.336	0.000	1.378
Diabetes-No (RC)	0.000	.	.	1.000	0.000	.	.	1.000
Arthritis-Yes	0.138	0.147	0.306	1.148	1.187	0.202	0.000	3.277
Arthritis-No (RC)	0.000	.	.	1.000	0.000	.	.	1.000
Nagelkerke R^2=0.055		***p= 0.05**		**** p=0.001**				

(RC) =Reference Category; s.e=Standard error; Reference category for the dependent variable is 'none' (No disability)
Source: Computed from SAGE Ghana 2007/2008 Data

6.3 Socio-demographic Characteristics and Disability

The results from model three show the relationship between socio-demographic characteristics and disability. After controlling for the other factors in the regression, the factors that remained significantly associated with mild and severe disability in this model are: age, sex, and place of residence, level of education, employment status and ethnicity. Adding other socio-demographic factors to age, the Nagelkerke R^2 value in model three improved from 25 percent to 33 percent. Thus 33 percent of the variation in disability levels is explained by socio-demographic characteristics of respondents. Age remaining statistically significant after the other variables were added, shows that the likelihood of severe disability increases with age which is consistent with some study findings in Europe, Asia, Sub-Saharan Africa and even in Ghana which showed that with increasing age disability increases (Kelemen et al., 2013;

Ayernor, 2012; Cabieses et al., 2012 ;Valdes & Melo, 2011; Mitra et al., 2011; WHO, 2011; Garin et al., 2010; Chappell & Cooke, 2010; Liu et al., 2009; Amusat, 2009 ; Filmer, 2008; Mont, 2007; Theresa, 2007).

The relative odds for having mild disability rather than no disability is 29.2 percent higher for females than males. Again, the relative odds for having severe rather than no disability is 21.5 percent higher for females than their male counterparts**.** This means that there was a higher likelihood of females experiencing severe disability and mild disability compared to males. This result parallels studies by Almazán-Isla et al., (2014) Mitra et al. (2011), Chakrabarty et al., (2010) and Gureje et al., (2006) which established that females were likely to be disabled than men. This has been attributed to a longer life expectancy for women than men. In this sense since women have a longer life expectancy, more women will be alive than men in the older ages. Hence as aging sets in, functioning of the body reduces.

The marital status of a respondent significantly predicted the likelihood of disability. The relative odds of having mild disability versus no disability for the widowed, separated or divorced, and those never married was 1.00 times as likely, 1.05 times more likely and 0.8 times less likely in that order than for currently married persons. There was however no significant difference between the likelihood of never married, separated or divorced respondents having mild disability compared to currently married respondents. Additionally, never married were less likely, widowed and those separated or divorced were more likely to have severe disability than no disability compared to those who were currently married (0.6 times, 1.2 times and 1.2 times respectively). This is in consonance with findings by Verbrugge (1979) and Waldron et al., (1997) that married persons were more likely to be in a better health state than single,

divorced and widowed persons due to marital protection where couples protect each other and marital selection where physically and psychologically healthy persons were more likely to be selected as marriage partner leaving persons with health problems. This however conflicts with Goldman et al., (1995)'s finding that single women are more likely to be in a better health state than their married counterparts. They explain that there is more frequent participation of single women in social events compared to their married counterparts which contributes to good health. Furthermore, as persons are selected into their first marriage on the basis of good health they would be in a better health state as singles. Lastly, since single persons have not experienced stress in the social and economic environment associated with both divorce and widowhood they are more likely to be in better health.

With religion, at 0.05 alpha level, there was a statistically significant relationship between only Traditional religion and mild and severe disability. Persons in the Traditional religion were 61 percent less likely to experience mild disability relative to no disability and 57 percent less likely than Christians to have severe disability relative to no disability.

There was also a significant relationship between rural place of residence and mild disability at 5 percent confidence level. The relative odds of having mild rather than no disability was 25 percent higher for persons in the rural areas than for persons in the urban areas. Furthermore the relative odds for having severe rather than no disability was 62 percent higher for persons in the rural areas than urban areas. With employment status, relative to no disability, respondents not working were more likely to experience mild or severe disability than persons working (1.5 times and 3.8 times respectively) and this relationship was statistically different at both 99 and 95 percent confidence level.

The relative odds for having mild disability rather than no disability is 70.6 percent lower for respondents with primary education than for persons with no education. Additionally, the relative odds of having severe rather than no disability is 64 percent lower for persons with no education than for persons with no education. Respondents with secondary or higher education are 57.5 percent and 44.5 percent less likely than persons with no education to have mild or severe disability. Thus the higher the education, the less likely persons would have severe disability and this confirms the studies by Gribble & Bremner (2012) and Pascual & Cantarero (2007) which found out that education was a major socioeconomic determinant of health and mortality. The results also showed that persons of other ethnic groups, Ewes and Ga-Dangmes were statistically significant or different from the reference category. Also, poor persons were 1.2 percent more likely have mild disability versus no disability than rich persons and this was statistically significant at 5 percent confidence level.

6.4 Sociodemographic Characteristics, Lifestyle Behaviour and Disability

Model two had lifestyle behavior added. The Nagelkerke R^2 value improved to 35 percent. This means that 35 percent of variation in disability is explained by sociodemographic characteristics and lifestyle behavior. The results in Table 6.3 shows that the relative odds of respondents having mild disability or severe disability versus no disability increased with age. Respondents 74 years and below were less likely to have mild or severe versus no disability than respondents 75 years and above. This was statistically significant at 99 percent with the exception of persons between the ages of 65 to 74 which was not statistically significant for mild disability.

Again, females were 1.3 times and 1.9 times more likely than males to have mild or severe disability versus no disability and this was statistically significant at 95 and 99 percent respectively.

The relative odds of having mild or severe disability versus no disability for persons in the rural areas was 61 percent and 32 percent higher than persons in the urban areas. For marital status persons never married were 64 percent less likely to have severe disability than no disability and this was statistically significant in model 2. Level of education remained statistically significant in model 2, with the relative odds of having mild or severe disability versus no disability decreasing with progress in level of education. Employment status, ethnicity, religion and wealth quintile remained statistically significant in Model 2 as in Model 1.

Respondents reported to have taken the recommended 5 or more servings of fruits and vegetables were 0.9 times less likely to be mildly disabled compared to having no disability. They were 1.6 times more likely to have severe disability versus no disability than persons who had not taken the recommended 5 or more servings of fruits and vegetables constituting unhealthy diet.

6.5 Sociodemographic Characteristics, Lifestyle Behaviour, Obesity and Disability

Model three consisted of sociodemographic characteristics, lifestyle behavior and obesity. The Nagelkerke R^2 value remained at 35 percent in this model. This means that obesity did not really add to the explanation of variability in disability in this study. Variables that remained statistically significant for severe disability included age, sex, place of residence, marital status, level of education, employment status, ethnicity, religion, wealth quintile and healthy diet. The

results in Table 6.3 shows that for Model three, in relation to tobacco use, the relative odds of having mild or severe disability versus no disability for persons who used tobacco daily was 1.1 and 1.2 times more likely in that order than persons who have never used it. In relation to alcohol use, the relative odds of having mild or severe disability versus no disability for persons who were current drinkers was 1.3 times more likely and as likely in that order compared to persons who had never drank alcohol. The relative odds for having mild or severe disability was the same for persons who were previous drinkers, that is 1.03 times more likely than persons who had never drank. The odds of being mildly or severely disabled reduced with an increase in number of days of physical activity. Again, persons who were obese were 25 percent and 60 percent more likely to have mild or severe disability than persons who were not obese. Physical activity and obesity status was statistically significant.

6.6 Socio-demographic Characteristics, Lifestyle Behaviour, Obesity and Chronic Diseases

Model four included socio-demographic characteristics, lifestyle behaviour, obesity and chronic diseases. The Nagelkerke R^2 value improved to 37 percent. Variables significant in this model were the same as those in model three. In relation to chronic diseases, the relative odds of having severe disability versus no disability for persons living with stroke, hypertension, arthritis and diabetes was 4.6 times, 2.4 times, 2.1 times and 1.4 times more likely than their counterparts. Chronic diseases was found to be statistically significant.

6.7 Socio-demographic Characteristics, Lifestyle Behaviour, Obesity, Chronic Diseases, Injury from Accidents and Disability

Model five consists of all the factors, that is, socio-demographic characteristics, lifestyle behaviour, obesity, chronic diseases and injury from road accidents. This was done to reveal the

factors that remained related to disability. Results from model five show that the factors which were significantly associated with severe disability were age, sex, marital status, level of education religion, place of residence, employment, ethnicity, wealth quintile, physical activity, obesity, chronic diseases and injury from road accidents. The Nagelkerke R^2 value in this model remained at 37 percent. This means that road accidents did not add to the explanation of variation in disability.

Table 6.3 which is on the relationship between socio-demographic characteristics, chronic diseases, injury from accidents and disability shows that age still bears a statistically significant relationship with mild and severe disability at both 99 and 95 percent significance with the exception of the age group 65 to 74 which does not have a significant relationship with mild disability. Respondents 74 years and below remained less likely to have mild or severe disability than those who were 75 years and above. This indicates that disability increases with age. Studies have attributed this to tobacco use, physical inactivity, excessive alcohol, and unhealthy diets leading to raised blood pressure, raised blood glucose and obesity (WHO, 2011; Habib & Saha, 2010).

In relation to the sex of a respondent, being female still bore some significant relationship with mild disability. For severe disability in females, the relationship was statistically significant. In model four, females were 25 and 80 percent more likely to have mild and severe disability than men. In model five, females were 26 and 80 percent more likely to have mild and severe disability than men. This result first suggests that the odds of having mild disability versus no disability had increased by 1 percent whereas the odds of having severe disability relative to no disability in females remained the same adding chronic diseases and injury from road accidents

to the model. Secondly females were more likely to be mildly or severely disabled, confirming a study by Laan et al., (2013) which equally reported a high likelihood of women than men having severe disability.

Table 6.3 again shows that marital status remained significantly predicted severe disability. First, widowed persons were as likely as currently married persons to have mild disability than no disability. Separated or divorced persons were more likely (6 percent) to have mild disability compared to their currently married counterparts whereas never married persons were less likely. Also, widowed and divorced or separated persons in that order were more likely to have severe disability (15 percent and 11 percent) compared to currently married respondents.

Type of place of residence significantly predicted mild and severe disability. Contrary to findings by Chiu et. al., 2005, this study found out that the relative odds of having mild or severe disability than no disability was 36.5 and 94 percent higher for respondents in the rural areas compared to their urban counterparts. This confirmed findings of Munsaka & Charnley (2013) that disability prevalence in Sub-Saharan Africa is higher in the rural areas than urban areas attributable to resource poverty and a strong adherence to traditional beliefs about disability in the rural areas. This could be as a result of a large proportion of the aged in the rural areas. With lack of access to rehabilitation centres severe disability increases.

Education significantly predicted mild or severe disability at 5 percent confidence level. On the one hand, those with primary education were 0.7 and 0.6 times less likely to have mild or severe disability relative to no disability. The relative odds of having mild disability versus no disability is 55 percent lower for persons with secondary or higher education than for persons

with no education. The relative odds of having severe rather than no disability is 38.3 percent lower for secondary or higher education than the corresponding relative probability for no education after controlling for other factors in the regression. In short, a unit increase in education was significantly associated with a decrease in the odds of being mildly or severely disabled.

This study reported a significant relationship between employment status and disability. Respondents not working were 1.4 and 3 times more likely to have mild or severe disability than those working. This suggests that severe disability is high among persons not working. This could be attributed to the fact that employers avoid employing or maintaining persons with disability because they deem them as a cost as they expect much lower returns from their labour (Mitra et al. 2011) . Their continuous state of being unemployed results in them having lower standards of living thus have their health deteriorating.

It is to be noted that in model two, when lifestyle behavior was added to the model, the relationship between ethnicity and severe disability was significant for ethnic groups such as Ewes, Ga-Dangme, Mole Dagbani and others. However in Models three and five, when obesity and injury from road accidents was added to the model, the relationship remained significant for only persons belonging to the Ewe and Ga-Dangme ethnic groups. In relation to the Ewes, the relative odds of having mild versus no disability decreased from 54 percent to 38 percent with each variable added in each of the five models.

With religion, at 0.05 alpha level, there was a significant relationship only between Traditional religion and severe disability. The relative odds of having mild or severe disability versus no

disability was lower for respondents who belonged to the Traditional religion than Christian religion. To explain this, from the data, 90 percent of the respondents who belonged to the Traditional religion lived in the rural areas. Scott et. al., (2012) report that rural dwellers were more active than urban dwellers as there is more walking to schools, markets, the farm or work, fetching water and fuel thus were less likely to be obese. Food calories are not plentiful as they mostly consume traditional staple foods made up of mostly leaves/herbs, vegetables, wheat, maize just to mention a few. This therefore does not translate into excess storage of food energy as fat which increases the risk of chronic diseases and disability. This results in persons in the Traditional religion having lower odds of being mildly or severely disabled than Christians.

From model five, with the exception of diabetes and arthritis, there was a significant relationship between the other chronic diseases and mild disability. The relative odds of having mild disability versus no disability for persons living with arthritis, stroke, diabetes and hypertension was high (88 percent, 83 percent, 51 percent, and 46 percent respectively). Further, with regards to severe disability, Table 6.3 shows that those living with hypertension were 2.1 times more likely to have severe disability versus no disability than persons without hypertension. While those living with stroke were 4.6 times more likely to have severe disability than their counterparts. Those living with diabetes were 1.5 times more likely to have severe disability versus no disability than those without diabetes. Those living with arthritis were 2.3 times more likely to have severe disability versus no disability than persons without arthritis.

A statistically significant relationship was reported between injury from accidents and severe disability. Respondents with injuries from road accidents were 0.8 times and 1.9 times more likely to have mild and severe disability relative to no disability.

Table 6.3: Results of Multinomial Logistic Regression of Factors associated with Disability in Ghana

	Model 1 (Sociodemographic Characteristics & Disability)		Model 2 (Lifestyle Behaviour & Disability)		Model 3 (Obesity & Disability)		Model 4 (Chronic Diseases & Disability)		Model 5 (Sociodemographic Characteristics, Lifestyle, Chronic Diseases, Road Accidents & Disability)	
	Likelihood of being Mildly or Severely Disabled (OR)									
Variables	Mild	Severe	Mild	Severe	Mild	Severe	Mild	Severe	Mild	Severe
Age										
>45 years	0.138**	0.027**	0.144**	0.031**	0.142**	0.028**	0.146**	0.034**	0.146**	0.034**
45-54	0.358**	0.087**	0.366**	0.095**	0.369**	0.093**	0.368**	0.103**	0.368**	0.101**
55-64	0.519**	0.194**	0.527**	0.208**	0.532**	0.204**	0.525**	0.210**	0.526**	0.208**
65-74	0.820	0.486**	0.828	0.505**	0.850	0.518**	0.838	0.509**	0.839	0.505**
75+ (RC)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Sex										
Female	1.292*	2.174**	1.299*	1.935**	1.263*	1.906**	1.259*	1.803**	1.260*	1.799**
Male (RC)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Residence										
Rural	1.254*	1.615**	1.321*	1.808**	1.329*	1.856**	1.365**	1.951**	1.365**	1.948**
Urban (RC)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Marital Status										
Never married	0.807	0.683	0.771	0.637*	0.784	0.617*	0.783	0.622*	0.784	0.618*
Separated/Divorced	1.055	1.155	1.043	1.145	1.059	1.148	1.066	1.115	1.066	1.112
Widowed	0.996	1.190	0.982	1.159	0.997	1.167	0.993	1.145	0.992	1.149
Currently Married (RC)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Education										
Primary	0.706*	0.639**	0.688**	0.599**	0.701**	0.606**	0.691**	0.583**	0.691**	0.583**
Secondary/higher	0.575**	0.445**	0.563**	0.418**	0.569**	0.415**	0.549**	0.381**	0.548**	0.383**
No Education (RC)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

*RC, Reference Category = No Disability, *P<0.05, **P<0.001*
Source: Computed from SAGE Ghana 2007/2008 Data

Table 6.3 Continued

	Model 1 (Sociodemographic Characteristics & Disability		Model 2 (Lifestyle Behaviour & Disability)		Model 3 (Obesity & Disability)		Model 4 (Chronic Diseases & Disability)		Model 5 (Sociodemographic Characteristics, Lifestyle, Chronic Diseases, Road Accidents & Disability)	
	Likelihood of being Mildly or Severely Disabled (OR)									
Variables	**Mild**	**Severe**	**Mild**	**Severe**	**Mild**	**Severe**	**Mild**	**Severe**	**Mild**	**Severe**
Employment										
Not Working	1.527**	3.767**	1.519**	3.410**	1.523**	3.289**	1.467**	2.996**	1.465**	3.007**
Working (RC)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Ethnicity										
Ewe	1.540*	1.779*	1.460*	1.735**	1.394*	1.732*	1.376*	1.803*	1.376*	1.802*
Ga-Dangme	1.009	1.581**	0.964	1.461*	0.929	1.429*	0.919	1.446*	0.919	1.450*
Gurma	0.979	1.047	0.936	0.906	0.912	0.865	1.349	0.863	0.900	0.871
Mole Dagbani	1.347	0.822	1.372	0.881*	1.367	0.863	1.349	0.832	1.350	0.830
Others	1.098	1.351*	1.068	1.395*	1.038	1.374	1.029	1.460*	1.030	1.456
Akan (RC)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Religion										
None	1.136	1.146	1.134	1.162	1.153	1.175	1.165	1.186	1.165	1.178
Islam	0.849	0.765	0.969	0.814	0.964	0.817	0.975	0.823	0.975	0.825
Traditional	0.611*	0.573*	0.581*	0.657*	0.620*	0.677*	0.626*	0.704*	0.626*	0.708*
Others	1.630	1.716	1.806	1.725	1.848	1.715	1.849	1.698	1.844	1.718
Christianity (RC)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Wealth Quintile										
Poor	1.208*	1.123	1.234*	1.242*	1.271*	1.282*	1.304*	1.414*	1.301*	1.1427*
Middle	1.182	0.934	1.186	1.009	1.211	1.021	1.229	1.093	1.228	1.102
Rich (RC)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Diet										
Healthy	--	--	0.903	1.579**	0.895	1.560**	0.894	1.594**	0.895	1.596**
Unhealthy (RC)	--	--	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

*RC, Reference Category = No Disability, *P<0.05, **P<0.001*
Source: Computed from SAGE Ghana 2007/2008 Data

Table 6.3 Continued

	Model 1 (Sociodemographic Characteristics & Disability)		Model 2 (Lifestyle Behaviour & Disability)		Model 3 (Obesity & Disability)		Model 4 (Chronic Diseases & Disability)		Model 5 (Sociodemographic Characteristics, Lifestyle, Chronic Diseases, Road Accidents & Disability)	
	Likelihood of being Mildly or Severely Disabled (OR)									
Variables	**Mild**	**Severe**	**Mild**	**Severe**	**Mild**	**Severe**	**Mild**	**Severe**	**Mild**	**Severe**
Tobacco Use	--	--	--	--						
Yes, Daily	--	--	--	--	1.070	1.197	1.076	1.199	1.076	1.197
Yes, Not daily	--	--	--	--	0.846	0.862	0.845	0.820	0.846	0.819
Never (RC)	--	--	--	--	1.000	1.000	1.000	1.000	1.000	1.000
Alcohol Use										
Current Drinker	--	--	--	--	1.255*	0.969	1.265*	0.985	1.264*	0.986
Previous Drinker	--	--	--	--	1.034	1.036	1.017	0.997	1.016	1.000
Never (RC)					1.000	1.000	1.000	1.000	1.000	1.000
Physical Activity										
1-6 days	--	--	--	--	0.821*	0.494**	0.845	0.464**	0.844	0.466**
All 7 Days	--	--	--	--	0.592**	0.399**	0.602**	0.397**	0.600**	0.402**
None (RC)	--	--	--	--	1.000	1.000	1.000	1.000	1.000	1.000
Obesity										
Obese	--	--	--	--	1.255	1.598*	1.221	1.403*	1.221	1.394*
Not Obese (RC)	--	--	--	--	1.000	1.000	1.000	1.000	1.000	1.000
Chronic Diseases										
Stroke										
Yes	--	--	--	--	--	--	2.829*	4.628**	2.831*	4.610**
No (RC)	--	--	--	--	--	--	1.000	1.000	1.000	1.000
Diabetes										
Yes	--	--	--	--	--	--	1.515	1.474	1.515	1.463
No (RC)	--	--	--	--	--	--	1.000	1.000	1.000	1.000
Hypertension										
Yes	--	--	--	--	--	--	1.458*	2.050**	1.460*	2.058**
No (RC)	--	--	--	--	--	--	1.000	1.000	1.000	1.000
Arthritis										
Yes	--	--	--	--	--	--	0.878	2.364**	0.878	2.383**
No (RC)	--	--	--	--	--	--	1.000	1.000	1.000	1.000
Injury (Road Accidents)										
Yes	--	--	--	--	--	--	--	--	0.841	1.938*
No (RC)	--	--	--	--	--	--	--	--	1.000	1.000

*RC, Reference Category = No Disability, *P<0.05, **P<0.001*

Source: Computed from SAGE Ghana 2007/2008 Data

6.8 Summary of Results

This section shows that in all the five models, Age, sex (female), place of residence (rural), employment status (not working), ethnicity (Ewe and Ga-Dangme) religion (Traditional) and wealth (poor) were significant predictors of mild and severe disability even after lifestyle behavior, obesity, chronic diseases and injury from accidents were added to the model. For lifestyle behaviour, healthy diet and physical activity predicted severe disability at 99% confidence level. Alcohol and physical activity predicted mild disability at 95% confidence level. Obesity predicted only severe disability in all the five models. The major chronic diseases significantly associated with mild and severe disability were stroke and hypertension. Injury from road accidents also predicted severe disability.

CHAPTER SEVEN

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

7.1 Summary of Findings

The main objective of this study was to examine the factors associated with disability in Ghana. Specifically it aimed at which set of factors, sociodemographic factors versus chronic diseases, predicted mild or severe disability over others and the contribution of other factors to mild or severe disability in Ghana. Factors considered included sociodemographic factors, lifestyle behavior, obesity, chronic diseases and injury from road accidents. Based on these findings, recommendations for policy and planning are made.

At the univariate level, the distribution of respondents according to their sociodemographic characteristics, lifestyle behaviour, obesity status, chronic disease status and road accidents injury status were summarized using frequency tables. At the bivariate level Chi-Square tests were used to determine the individual associations of the respondents' characteristics with disability. At the multivariate level, multinomial logistic regression technique of analysis was used to determine the net effect of all the factors on disability. For the dependent variable, the first step involved constructing an index of disability by principal component analysis using 22 questions from activities of daily living (ADL) schedule. Based on this index, the outcome variable was then categorized into none, mild and severe disability.

At the univariate level, out of the 4988 respondents, 33.6 percent reported no disability, 33.7 percent reported mild disability while the remaining 32.7 percent had severe disability. Eighty five percent of the respondents were between the ages of 45 to 74 years. On the whole, this study revealed that a high proportion of respondents had mild disability. About 49 percent of the

respondents had no education and more than half were currently married. Respondents were mostly Christian, and more than 70 percent were currently working. Also, more than half lived in rural areas, almost half were Akan while 41 percent of the respondents were poor. Again, almost one-tenth used tobacco daily, 32 percent were current drinkers and 69 percent reported not having a healthy diet and 53 percent reported not engaging in any work that involved vigorous physical activity. One-tenth of the respondents were obese, 1.7 percent had suffered an injury from road accidents. Lastly, 12 percent, 11 percent, 3.4 percent and 1.9 percent of the respondents were living with hypertension, arthritis, diabetes and stroke in that order.

At the bivariate level, chi-square tests were performed and associations were determined at 95 percent confidence level. For socio-demographic characteristics, age, sex, marital status, educational level, employment status, ethnicity, type of place of residence, religion and wealth quintile were found to be significantly associated with disability. The cross-tabulations depicted a high proportion of the aged having severe disability. Similarly, a high proportion of widowed respondents had severe disability, followed by those who were single. With regard to education, severe and mild disability was lowest among those with higher levels of education. There were high proportions of poor persons who had severe disability.

In relation to lifestyle behaviour, for tobacco use there was just a difference of 7 percent between persons who used tobacco daily who were severely disabled and persons who used alcohol daily who were not disabled. Also the highest proportion, 36 percent of respondents who had severe disability had never drank alcohol. The highest proportion, 37 percent who had healthy diet had severe disability. Also persons who had no physical activity in the seven days preceding the survey reported having severe disability. The chi-square tests further showed that with the exception of

diabetes, majority of the respondents who were living with chronic diseases reported severe disability.

For the multivariate analysis, seven models were ran based on the conceptual framework using multinomial logistic regression analysis. Two were ran to fulfil the objectives of finding out the extent to which chronic diseases and age explain disability in Ghana, the first and second bivariate regression models assessed the relationship between age and disability and chronic diseases on disability. Model one showed that in the absence of the other factors, age was a significant predictor of disability at 99 significance level. Those in the older age categories were more likely to experience mild or severe disability. This finding confirms the hypothesis that persons in the older age groups were more likely to experience higher or severe disability than persons in the younger age groups. In model two, in the absence of the other factors, chronic diseases were found to be significant predictors of disability, with the likelihood of severe disability being highest for persons with stroke, followed by arthritis hypertension and diabetes respectively. The Nagelkerke R^2 value in model one for age was 25 percent and in model two it was only 5.5 percent for chronic diseases. This indicated that only 5.5 percent variation in disability was explained by chronic diseases compared to age which explained 25 percent of variation in disability meaning that age significantly explained the burden of mild and severe disability in Ghana.

To fulfil the objective of finding out the predictors of disability, the first, second, third, fourth and fifth models analyzed the effect of socio-demographic characteristics, lifestyle behaviour, obesity, chronic diseases and injury from road accidents in that order on disability. In Model one, having only socio-demographic factors age remained a significant predictor of disability. Other socio-demographic characteristics that emerged as significant predictors of disability were respondents'

sex, marital status, religion, type of place of residence and level of education, wealth quintile and ethnicity. In relation to lifestyle behaviour, healthy diet and physical activity predicted mild and severe disability. Obesity predicted only severe disability in all the five models. With the exception of diabetes, stroke, hypertension and arthritis was significantly associated with severe disability. Injury from accidents was also a found to be statistically significant predictor of disability. The

7.2 Conclusion

In conclusion, first the study sought to test the hypothesis that persons in the older age groups were more likely to experience severe disability than persons in the younger age groups. This was confirmed as the study found out that the likelihood of having severe disability was higher among older age groups. Secondly the study sought to test the hypothesis that chronic diseases were more likely to account for high levels of disability than socio-demographic characteristics of respondents. This was not confirmed by the study as it found out instead that only 5.5 percent variation in disability was explained by chronic diseases compared to 33 percent variation in disability explained by socio-demographic factors. This could be attributed to the fact that unlike in the western societies where chronic diseases have been identified as a major cause of mortality and disability, Ghana is still in the process of undergoing an epidemiological transition (Agyei-Mensah & de-Graft Aikins, 2010; de-Graft Aikins, 2007) thus there is a double burden of both chronic diseases and infectious diseases as causes of disability. As a result, chronic diseases might not be a significant predictor of disability in Ghana now but might be in the near future.

The socio-demographic correlates of disability in this study were age, sex, religion, type of place of residence, level of education, ethnicity and employment status. Chronic diseases found to be statistically significant predictors of disability in Ghana were stroke, arthritis, diabetes and

hypertension, in that order. Injury from accidents was also found to be significant. The proportion of variation in disability in Ghana explained was 33 percent for sociodemographic characteristics. It improved to 35 percent when lifestyle behaviour was added to the model however remained 35 percent when obesity was added to it. This means that obesity did not contribute to explaining disability in Ghana. Again, the model improved to 37 percent when chronic diseases was added to the model.

7.3 Recommendations

This study examined factors associated with disability in Ghana, which has implications for policy and planning by identifying risk factors which make persons susceptible to disability in order to prevent or postpone disability. Based on the above findings recommendations are made for policy and planning. The study found out that mild and severe disability was significantly higher among the older age groups. According to Kelemen et al., (2013), in developing countries, persons who receive rehabilitation are less than 2 percent. It is imperative for policy makers to provide rehabilitation centres and improve access for persons with disability which would provide public health services in order to manage and to delay disability progressing to severe conditions. Aging makes disability universal. As such it is important to organize programmes that aim at encouraging increased physical activity among both the aged and the young in order to reduce overweight and obesity which are risk factors for chronic diseases. Also health insurance must be extended to cover rehabilitation services as physiotherapy care services have been mentioned to be costly. Social security services by government should be strengthened to improve the welfare of the aged and enable them afford medical services not covered by health insurance.

Again the study found out that lifestyle behaviour and chronic diseases also contributed to disability. It is important that policy makers, non-governmental organizations or non-state providers, provide educational programmes that educate persons on their health and encourage the adoption of healthy lifestyles in terms of reduced alcohol intake, healthy diets, increased physical activity among others in order to prevent chronic diseases thereby postponing disability. Disability resulting from injuries from road accidents could be reduced by enforcing road safety laws to reduce road traffic accidents in Ghana.

The Nagelkerke R^2 value in model two shows that only 5.5 percent of the variation in disability is explained by chronic diseases compared to 33 percent variation in disability explained by sociodemographic characteristics. From this, the findings show that sociodemographic variables contribute more to the disability burden compared to chronic diseases. Emphasis should be laid on demographic indicators. First, with education and employment being important determinants of disability in this study, it is imperative to expand education by providing more schools and making them "disability friendly" in order to improve access as well as improve quality of education. In employment both the public and private sectors should create equal opportunities for persons with disability to encourage full participation, independent living, and economic self-sufficiency. Also, as powerful tools for poverty reduction, education and employment will provide persons with disability with economic options to improve their standard of living. In relation to type of place of residence, since persons in rural areas are more likely to be disabled it is vital to set up rehabilitation centres as well as train more physiotherapists in the rural areas to help meet their health needs and reduce disability. Concurrently, there is the need to address stigma faced by

disabled persons due to non-biologic cultural conceptions of disability especially in the rural areas to improve integration of persons with disability in the society as well as standards of living.

The study findings have implications for further studies. First, further studies could consider the other factors mentioned in the framework such as congenital diseases, infectious diseases, injury from occupational accidents, violence, HIV/AIDS. This would provide a larger sample size which would be conclusive for causal factors of disability. A study on predictors of childhood disability could be considered since disability in childhood determines the life course of an individual. Lastly, further studies could consider co-morbidities and their impact on disability in Ghana.

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