

**MOTHERS' CONTROL OF HOUSEHOLD FINANCIAL
RESOURCES AND CHILD MALNUTRITION: EVIDENCE
FROM GHANA**

BY

JERRY EDEM AMETEFÉ

(10598967)

**THIS THESIS IS SUBMITTED TO THE UNIVERSITY OF
GHANA, LEGON IN PARTIAL FULFILMENT OF THE
REQUIREMENT FOR THE AWARD OF MASTER OF
PHILOSOPHY ECONOMICS DEGREE**

APRIL, 2019

DECLARATION

This is to certify that this thesis is the result of research undertaken by **JERRY EDEM AMETEFÉ** towards the award of Master of Philosophy degree in Economics in the Department of Economics, University of Ghana. I hereby declare that with exception of references made to works of other researchers, which have been duly acknowledged, this thesis is entirely my own work undertaken under the guidance of supervision of Dr. Louis Boakye-Yiadom and Dr. (Mrs) Monica Lambon-Quayefio.

No part of this study has been reproduced or has been accepted for the award of any degree of the university. I am therefore solely responsible for any short comings that may be found in this research work.

JERRY EDEM AMETEFÉ

.....

.....

(Index No: 10598967)

Signature

Date

Dr. L. BOAKYE-YIADOM

.....

.....

(Supervisor)

Signature

Date

Dr. (MRS) M. LAMBON-QUAYEFIO

.....

.....

(Supervisor)

Signature

Date

ABSTRACT

Over the years, there has been an improvement in child nutritional status around the world. Though this improvement in child nutritional status has also been evident in Ghana, it has been slow and unevenly distributed across the country. Ghana's child nutritional indicators are still below the average conditions that prevail globally. Wasting in Ghana is still higher than the average rate around the world, and a relatively higher percentage of children below age five in Ghana suffer from stunting, and underweight than their counterparts in other parts of the world. On average, a child in Ghana is more at risk of getting stunted, wasted or underweight than the average child worldwide.

Considering the immense significance of children to the survival of our society, the development of a strong labour force and future economic development, policies must be developed to remedy this situation. Nutrition is multidimensional in nature, ranging from biological, social, and psychological dimensions. Thus, a number of factors have been investigated to determine the effect of these nutritional dimensions on child malnutrition, where maternal control of household financial resources is a major factor that has often been mentioned. However, the influence of maternal intra-household bargaining power on child nutritional status in Ghana is largely unknown.

This study investigates the effect of maternal control of household financial resources on child nutritional indicators using logistic regression. The findings reveals that maternal participation in the control of household financial resources significantly reduces the occurrence of child stunting, and underweight, but failed to be significant for wasting among children below five years in Ghana.

These findings can be reconciled by the fact that in Ghana, mothers are majorly caregivers in the household beginning from when a child is born till he or she grows. This phenomenon positively influences their household bargaining power as it affects child's nutritional status.

DEDICATION

I dedicate this piece of work to the Almighty God for seeing me through this thesis writing. It is also dedicated to my siblings namely; George, Faith, Divine and Marvellous, my loving father Dr. G.T.D Ametefe, and my loving mother Mrs Margaret Doe Ametefe, as well as my lovely friend Purity Awele Ezenweichu. Furthermore, I will like to also dedicate this work to my friends whose tireless efforts and support have carried me through my graduate studies.

ACKNOWLEDGEMENT

I wish to express my profound gratitude to the Almighty God for His love, grace and protection throughout the course of my study in University of Ghana.

I also wish to express my deepest appreciation to my supervisors Dr. L. Boakye-Yiadom and Dr. (Mrs) M. Lambon-Quayefio for reading through the work and making the necessary contributions to the realization of the success of this research. I am indebted to all members at the Department of Economics (UG) for the immense knowledge impacted during the course work.

Finally am very grateful to my wonderful family for their prayers that gave me the peace of mind to be able to undertake this thesis work to a successful end. I cannot forget my father Dr. G.T.D Ametefe, my mom Mrs. Margaret Doe Ametefe, all my siblings; George, Faith, Divine and Marvellous, as well as my special friend Chinyere Awele Ezenweichu for their endless prayers, support and encouragement through-out the duration of my Programme. I cannot thank you all enough.

TABLE OF CONTENTS

Content	Page
DECLARATION	i
ABSTRACT	ii
DEDICATION	iii
ACKNOWLEDGEMENT.....	iv
LIST OF TABLES	ix
LIST OF FIGURES	x
LIST OF ABBREVIATIONS.....	xi
 CHAPTER ONE	 1
INTRODUCTION	1
1.1 Background	1
1.2 Statement of the Problem	7
1.3 Objective of the Study	10
1.4 Research Questions	11
1.5 The Scope of the Study	11
1.6 Justification of the Study	12
1.7 Organization of the Study	13

CHAPTER TWO	14
OVERVIEW OF CHILD MALNUTRITION AND MATERNAL CONTROL OF HOUSEHOLD FINANCIAL RESOURCES	14
2.1 Introduction	14
2.2 The Situation of Child Malnutrition and Maternal control of Household Financial Resources Globally	14
2.3 Child Malnutrition and Maternal Control of Household Financial Resources in Africa	23
2.4 Trend of Child Malnutrition and Maternal Control of Financial Resources in Ghana	26
2.5 Consequences of Malnutrition	32
2.6 Conclusion	33
 CHAPTER THREE	 35
LITERATURE REVIEW	35
3.1 Introduction	35
3.2 Theoretical Review	36
3.2.1 The Concept of Malnutrition and Causes of Malnutrition	36
3.2.2 Measuring Nutritional Status in Children less than 5years	38
3.2.3 Maternal Control of Household Financial Resources as a Determinant of Malnutrition ...	40
3.2.4 Theories of Intra-Household Gender Relationship	42
3.3 Review of Empirical Literature	45
3.3.1 Maternal Control of Household Resources	45

3.3.2 Maternal Control of Household Financial Resources and Child malnutrition	49
3.4 Conclusion	56
CHAPTER FOUR	58
METHODOLOGY	58
4.1 Introduction	58
4.2 Theoretical Framework	59
4.3 The Model	60
4.4 Empirical Estimation	62
4.5 Estimation Technique	64
4.6 Definition of Explanatory variables and their expected results	67
4.7 Source of Data	75
4.8 Conclusion	76
CHAPTER FIVE	78
ESTIMATION AND DISCUSSION OF RESULTS	78
5.1 Introduction	78
5.2 Descriptive Statistics for Regression variables	79
5.3 Empirical Estimation and Discussion of Results	85
5.3.1 How Stunting among Children under-five is influenced by Mother's Control of Household Financial Resources	86
5.3.2 How Underweight among Children under-five is influenced by Mother's Control of Household Financial Resources	95

5.3.3 How Wasting among Children under-five is influenced by Mother's Control of Household Financial Resources	102
5.4 Conclusion	107
CHAPTER SIX	109
SUMMARY AND POLICY RECOMMENDATION	109
6.1 Introduction	109
6.2 Summary	109
6.3 Policy Recommendation	113
6.4 Limitations of the study	114
6.5 Conclusion	115
REFERENCES	117
APPENDICES	131
APPENDIX A	131
APPENDIX B	133
APPENDIX C	135

LIST OF TABLES

Table	Page
Table 5.2.1 Distribution of Child Wasting	79
Table 5.2.2 Distribution of Child Stunting	80
Table 5.2.3 Distribution of Child Underweight	80
Table 5.2.4 Descriptive Statistics of Independent Variables (Regressors)	81
Table 5.3.1 Marginal Effect of Child Stunting	86
Table 5.3.2 Marginal Effect of Child Underweight.....	95
Table 5.3.3 Marginal Effect of Child Wasting	102

LIST OF FIGURES

Figure	Page
FIGURE 1: Children Stunted, Overweight, and Wasted in Selected Regions, and the World	16
FIGURE 2: Number (Millions) of Stunted Children Under-Five Years, by United Nations Regions for the year 2000 and 2016	17
FIGURE 3: Stunted and Underweight Children Worldwide From 1990-2015	18
FIGURE 4: Number of Stunted and Underweight Children in Developing Countries of the World from 1990-2015	19
FIGURE 5: Women's Status in Selected Regions across the World	20
FIGURE 6: Stunted, Overweight, and Wasted Children Under-Five Years in Africa and some Selected Regions in Africa	24
FIGURE 7: Percentage of Stunted, Wasted, Underweight, and Overweight Children Under Five Years from 1988-2014 in Ghana	27
FIGURE 8: Decisions on how Wife's Earnings are expended based on Regions	30
FIGURE 9: Decisions on how Husband's Earnings are expended based on Regions	31
FIGURE 10: Relationship between Women's Status, Intra-household Bargaining Power and Child Survival, Health and Nutrition	54

LIST OF ABBREVIATION

BMI	Body Mass Index
GDHS	Ghana Demographic and Health Survey
GHS	Ghana Health Service
HIRD	High Impact and Delivery Intervention
LPM	Linear Probability Model
MOH	Ministry of Health
NHIS	National Health Insurance Scheme
SSA	sub-Saharan Africa
UK	United Kingdom
UN	United Nations
UNFPA	United Nations Fund for Population Activities
UNICEF	United Nations Children's Fund
UNESCO	United Nations Educational, Scientific and Cultural Organization
US	United States
WHO	World Health Organization
IFPRI	International Food Policy Research Institute
UNDP	United Nations Development Programme
FAO	Food and Agriculture Organization
SDG	Sustainable Development Goals

WFP	World Food Programme
CARE	Cooperative for Assistance and Relief Everywhere
EEP	Extra-household Environmental Parameters

CHAPTER ONE

INTRODUCTION

1.1 Background

Malnutrition is the greatest threat to global health and survival which leads to increased morbidity and even instances of death. This phenomenon therefore makes malnutrition an issue of public health concern. Children are most vulnerable to malnutrition because they are still developing (de Onis et al, 2004). In 2016, about 22.9 percent (154.8 million) children less than 60 months were stunted, 6 percent (40.6 million) overweight, while 7.7 per cent (52 million) were wasted globally (Joint Child Malnutrition Estimates, 2017). Malnutrition in early stage of a child's life comes with lifelong consequences. This is because it affect their physical, psychological and mental development (European Commission, 2008; United Nations Children's Fund-World Health Organization- The World Bank, 2012). Malnutrition can lead to poor human capital development and a reduction in economic productivity in the future. Poor nutrition occurs in under developed countries, as well as advanced economies of the world (Nyarko, 2011). WHO Progress Report (2002) indicates that famine and under nutrition remain the most aggravating problems faced by the world's poor and needy. As high as 800 million individuals around the world are affected by malnutrition. Also, more than half of childhood mortality in under developed nations are closely related to cases of malnutrition (Benson, 2004). Nearly 30 percent of people battle from either stunting, wasting, or underweight (WHO, 2000).

In an article on “child survival” published in the lancet by Daelmeans & Saadeh, (2003), highlighted the relevance of tackling childhood malnutrition as a requirement for attaining internationally agreed targets of reduced child malnutrition and mortality. Children’s growth and advancement is internationally viewed as an important public health indicator considering their overall development and wellbeing. Malnutrition is a predicament that occurs from consuming an insufficiently balanced meal where a number of vital nutritional requirements are absent, in excess, or in the wrong proportion. A given child malnutritional status occur based on what set of nutrients are less or over abundant in a meal. In most cases around the world, malnutrition occurs due to under nutrition, where a diet lacks the right proportion and combination of the required nutrients the body need, such as protein, carbohydrate, vitamins, fat and oil amongst others. Malnutrition in an early stage of a child’s life leads to functional impairment in adulthood and a reduction in human resource capacity in work place, thereby affecting economic productivity.

Assessment of nutritional status is highly complex and depends on an individual or group of individuals in view, where it’s assessment can be viewed from a wide range of aspects that concerns nutrition (WHO, 2010). The evaluation of nutritional indicator is mostly abbreviated with the acronym “ABCD,” which stands for Anthropometric measurement, Biological tests, Clinical indicators, and Dietary assessment (WHO, 2010). Anthropometric measurement involves the use of weight, height, arm circumference and skin fold measurement as indicators for assessment of nutritional status (Abraham et al, 1977).

The endemic and persistent malnutrition among children in sub-Saharan Africa endowed with abundant natural resources calls to question the quality of resource management by political leaders in the sub-region. The United Nations Children's Fund Standing Committee on Nutrition (UNICEF, 2006) reported that 25 percent of children under 60 months from sub-Saharan Africa were underweight. They also estimated that 25 percent of underweight children are from sub-Saharan Africa, where one-third of them reside in Ethiopia and Nigeria. UNICEF (2004) earlier noted that sub-Saharan Africa was the only region in the world where childhood malnutrition is on a rise with resultant increase in child mortality, general impaired growth, which after a period of time reduces their mental capacity.

The International Food Policy Research Institute (IFPRI, 2011) affirmed UNICEF's conclusions and pessimistically observed that if the prevailing malnutrition in sub-Saharan Africa remained un-checked, childhood malnutrition in the sub-region as at 2015 was going to rise to 41.9 million. Similarly, the Transparency International (2010) noted that sub-Saharan Africa is the only region in the world where massive poverty has been persistent in the past two and half decades, and thirty-two of the world's thirty-eight highly indebted poor economies were from Africa. Malnourished children are vulnerable to disease and infection, while those who survive are susceptible to recurrent illnesses which seriously interferes with their quality of life even as adults (UNICEF, 2006). In Nigeria, for instance, over ten million children are physically and mentally stunted due to malnutrition which is the third highest in the world (Mitchell, 2010). Therefore, any meaningful sustainable development discourse that is Eurocentric should focus on the eradication of childhood malnutrition because the future of any nation depends largely on its ability to feed its population, especially children. Malnutrition inflicts irreversible damage on childhood early life which in turn

affects their productivity as adults (UNDP, 2012). Good governance is a fundamental prerequisite for sustainable development and equity control of financial resources at the household level, and hence aids to eradicate children malnutrition in Africa especially in sub-Saharan Africa (Economic Commission for Africa, 2005).

Ghana has experienced outstanding improvements in health since independence. Life expectancy has risen over the past decades, and the curtailing of different dimensions of ailments has enhanced the development and survival of children. However in the past decades, despite enhanced investment in health, the nation is yet to attain projected health targets. Ghana Health Services (GHS) and Teaching Hospitals acting in line with the policy framework of the Ministry of Health (MOH) have put in place a strategy referred to as “High Impact and Rapid Delivery” (HIRD) intervention. The interventions include ways of enhancing exclusive breast feeding, complementary feeding, de-worming, and several other interventions among children under 60 months old (GHS, 2007). This intervention which started in 2005 is targeted at curtailing mortality due to ailments occurring from infection and more particularly under nutrition among children under 60 months.

Malnutrition remains a major concern in developing countries in which Ghana is not an exception notwithstanding the fact that the country has achieved an outstanding record in economic growth and productivity. Over the years, Ghana has recorded some of the worse cases as compared to other developing countries with respect to the prevalence of wasting, underweight and stunting among children (UNICEF-Ghana, 2016). Most African countries including Ghana suffer from the consequences of malnutrition evident by the high malnutrition rates eminent in these nations. The Nutritional and Consumer Protection Division of Food and Agriculture Organization of the United

Nations (FAO) (2009), classifies Ghana as a country with medium severity of malnutrition. Child malnutrition and health is a major challenge and thus an issue of key importance to the nation (Ministry of Health, 2007).

Curtailing poor nutrition in children is one among the vital predicament Ghana encounters and the battle by government, NGOs and international bodies/agents to help remedy this problem continues unabated. Studies have shown that many children under age five are main target as far as malnutrition is concerned. Studies by (Deaton & Dreze, 2009; Focus, 2006) outlined that millions of children in under developed economies like India are underweight; with over 50 percent experiencing anemia, and about the same percentage lacking complete immunization.

The notion that poor nutrition deteriorates economic growth and stimulates an unending rate of poverty is well ascertained. “This occurs due to multiphasic loss, that is, direct loss to productivity because of weak physical status, indirect loss from fragile cognitive development, and loss incurred due to increased health care costs” (World Bank, 2006). Overall, there is a converse association between an increase in economic growth and hunger. Poor nutrition in childhood’s early life is closely aligned with an enormous functional disability in adulthood and reduces human resource development in work place thereby affecting economic productivity (Delpeuch et al, 2000). Children who are not properly nourished not only experience risen rates of morbidity and death but also more subsequently encounter delay in developing mentally, poor school performance, and declined human resource capacity (Pelletier, Frongillo & Habicht, 1993; Pelletier & Frongillo, 2002).

Economics is frequently viewed “as the study of the distribution of resources which are limited. Despite this rather verse definition, the distribution of scarce resources within establishments have been often omitted from most economic analysis; families (groups of people who live together) must make productive decisions about how their resources should be used. Indeed, others view the household as a ‘black box’ when it pertains decision making between members of the household where each individual has his or her own preferences (Pollak, 1985; Folbre, 1986).

Households serves as the foundation upon which vital non-market transactions between husband and wife occurs in all societies. Investment in children are frequently handled by most economists as household “public goods” valued by the father and mother, where other family products and services play a positive part in the health status of every member of the household (Folbre, 1994). The contribution that father and mother make to combined family enterprise ascertain to a wide dimension the nature of the welfare of both parents and their kids, and are the prime source that distinguishes gender responsibilities in household financial resource control as it influences the nutritional state of children.

The nature of the intra-household control of resources between father and mother distinctively aid in shaping the pattern of financial resource allocation that families undergo. A father and mother utilizes the extent of their bargaining power to set preferences in the allocation of household financial resources as it affects their wellbeing and that of their children. Previous studies (Hoddinott et al 1997; Von Braun 1988; Thomas 1990) indicated that relative maternal intra-household bargaining power serves as a tool in enhancing child’s nutrition. Hence, there is a need to enhance the share of household financial resource allocated to mothers, be it via their own

personal earnings, cash transfers, or change in the volume of expenditure so as to enhance child's health status (World Bank 2011).

1.2 Statement of the Problem

Given the prevalence of malnutrition among children less than five years in Ghana, this study seeks to examine the effect of mother's control of financial resources in the household as it influences child nutritional outcomes. Using the 2014 Ghana Demographic Health Survey report, maternal control of household financial will be evaluated in relation to her participation in the control over her own financial resources, as well as her participation in the control over her husband's financial resources. This research when executed will seek to contribute to knowledge on already existing literature in this area by discussing the role of maternal participation in the control of household financial resources as it affects child welfare outcomes in Ghana.

The relevance of this research cannot be over-emphasized given the fundamental role mother plays in the growth and development of children. The mother is the primary caregiver of a child once he or she is born, and thus it is essential to investigate the effect of maternal control of household financial resources on child's nutritional outcomes (stunting, wasting, and underweight) in Ghana. The influence of maternal intra-household bargaining power on child nutritional status in Ghana is largely unknown, this is a gap this research intends to fill.

Furthermore, the outcome of this study will serve as a benchmark as to whom in the household should essentially control household financial resources so as to attain better nutritional

outcomes in children, not forgetting the fact that the husband/father is traditionally seen as the “head” of the household.

Health and nutritional status have both economic and intrinsic pay back. Hence, several economies have undergone steps to enhance child’s nutritional and general wellbeing, with different amount of progress being recorded. Malnutrition includes under nutrition, certain nutrients lacking and hyperalimentation (form of malnutrition in which the intake of nutrients is over supplied) which greatly affects general health and development (Doak et al, 2005). Malnutrition continues to be a major problem among people especially among developing countries like Ghana. However, over the years, many studies have been conducted on malnutrition (Buhl, 2010; Imai, Annim, Kulkarni, & Gaiha, 2014; Ngongi, 2013), with each of these findings pointing out that malnutrition continues to be a major issue. Most of the findings clearly points out some of the causes and impacts of malnutrition on children.

Despite several studies conducted on malnutrition among children and government of various nations especially from developing countries, as well as the interventions by the United Nations to help alleviate hunger among children, malnutrition among children is still prevalent. From the perspective of Ghana, over the years, government has set aside measures to aid reduce malnutrition in children, which has reaped some benefits. Malnutrition in Ghana have dropped, however it still remains a challenge as 23 percent of children remain stunted with 57 percent anaemic (UNICEF-Ghana, 2016). Nutrition continues to remain poor particularly in the Northern region of Ghana, where two out of every five children are stunted with over 80 percent of these children suffering from anaemia (Ngongi, 2013).

The 2014 Ghana Demographic Health Survey (GDHS) measured child's nutritional status by taking a comparison between weight and height in line with specified international reference standard. Approximately one in five children less than 60 months in Ghana are stunted, implying a situation of chronic form of malnutrition. Stunting is highly prevalent in the Northern region where one-third of children are stunted, while it is least prevalent in Greater Accra region of the country where one in every ten children are too short for their height. Stunting prevails more among children whose mothers are less educated (26 percent). Wasting which reflects a situation of acute malnutrition, is least prevalent (5 percent). Furthermore, 11 percent of children in Ghana are underweight. Child malnutrition in Ghana entirely reduced since 2003 where less than one-third of children in Ghana were too short for their height compared to 19 percent recorded in 2014.

There have been many studies conducted in relation to child malnutrition and the control of household financial resources (Imai, Annim, Kulkarni, & Gaiha, 2014; Jayawardena, 2012; Mictchell, 2010; Olaniyan, 2002) with most of them focusing on mother's education, income and employment status, but none of these studies have adequately examined the household financial resource control between the husband and the wife based on the level of participation mothers have as it influences the state of their children's nutritional status. Therefore, this study hopes to aid in filling the research vacuum by focusing on the hypothesis of mother having control over the household financial resources and its effect on malnutrition in children.

Furthermore, despite this fact, there has been series of research carried out in this area, mostly from the perspective of other developing countries. While in terms of Ghana, just a few studies have been conducted with reference to the 2014 GDHS data set. Therefore, this study seeks to

bridge the gap by examining the level of maternal participation in the control of household financial resource as it affects child's nutritional status in Ghana, using the 2014 GDHS data set.

In light of the above challenges and gaps, this research intends to evaluate the impact mother have with regards to influencing nutritional status of children especially from the perspective of mother's participation over the control over own financial resources, and that of her husband within the household.

1.3 Objectives of the Study

The study examines the effect of maternal control of household financial resources on child's nutritional status in Ghana. The general objective of the research is to evaluate the effect of mother's participation in the control of household financial resources on child's nutritional status in Ghana.

In specific terms, this research intends to achieve the objectives outlined below;

- 1).To determine the trend of child malnutrition in Ghana.
- 2).To examine maternal socio-economic characteristics that influences their level of participation in the control of household financial resources.
- 3).To examine the trend in maternal control of household financial resources in Ghana.

1.4 Research Questions

This research aims to provide answers to the enquiries on how maternal control of household financial resources affects nutritional status of children in Ghana. In particular, it seeks to address the following questions outlined below;

- 1). What has been the trend of child malnutrition in Ghana?
- 2). What socio-economic characteristics of mothers determine their level of participation in the control of household financial resources?
- 3). What is the trend of maternal control of household financial resources in Ghana?

1.5 The Scope of the Study

The research attempts to evaluate the influence of mother's control of household financial resources on child's nutritional status. It is undisputable that mother's bargaining power in the allocation of household financial resources greatly influences child's health status. Most studies on maternal control of household financial resources focus on the cordial relationship between husband and wife, while other research examine the intergenerational bargaining power which may be in form of transfers meant to invest in child's health.

Over the years, a number of indicators of maternal control of household financial resources have been adopted to aid in examining household changes. Indicators that are mostly adopted as proxies for women's bargaining power include employment and income/earnings, asset ownership, and educational attainment. In addition, in other contexts, other measures are used such as bride price,

whether the woman has been able to give birth to a son or not, maternal responsibility in executing a series of decisions within the household, and choice to travel. The research therefore aims to examine the marginal effect of mother's control of household financial resources as it affects the incidence of child malnutrition in Ghana. The study only focuses on quantitative measures of the relationship between bargaining power of mothers and child's nutritional status within the household.

1.6 Justification of the Study

The study considers child malnutrition due to the inherent socio-economic benefits associated with an appropriate child nutritional status at a given period of time and place. At a time, when the measures of child malnutrition in Ghana is below the global average and there exist current efforts to proffer recommendations that enhance the predicament in the economy, a research of this sort is essential. The study examines child malnutrition in terms of wasting, stunting, and underweight. This study will be significant especially to stakeholders, and government agencies. The study will serve as a springboard in identifying the causes of malnutrition, factors that lead to malnutrition, as well as the effect of maternal control of household financial resources as it affects child's nutritional status in Ghana. Furthermore, outcomes of the research will serve as a framework from which policy makers may gain deeper understanding in this area to guide them in the process of effective policy making.

The study will be an addition to existing literature where lecturers and students in all discipline who may be interested in gaining knowledge on the causes and prevention of malnutrition in children, and the effect of mother's control of household financial resources as it affects child malnutrition. Findings will serve as a springboard as well as a guide in avoiding the limitations of this research so as to ensure the findings become accurate.

The results of this study will aid government policymakers in Ghana to identify various social interventions and appropriate health policies that will help reduce the prevalence of child malnutrition in the country. Finally, the study will be of immense benefit to future researchers in that it will serve as a reference material for future research.

1.7 Organization of the Study

The research is made up of six (6) chapters. The first chapter is the introduction, the second chapter presents an overview of child malnutrition and maternal control of household financial resource, whilst the reviews of empirical literature on the effect of maternal control of financial resources on child malnutrition is presented in chapter three. Chapter four lays emphasis on the theoretical framework, data and statistical methodology adopted for the research, and chapter five presents and discusses the main findings from the research. The sixth and final chapter is the conclusion and policy recommendations laying reference to the outcomes obtained from the study.

CHAPTER TWO

OVERVIEW OF CHILD MALNUTRITION AND MATERNAL CONTROL OF HOUSEHOLD FINANCIAL RESOURCES

2.1 Introduction

Nutrition and control of household financial resources are two key factors that affect human health and the wellbeing of individuals. An assessment of the history of human society reveals a remarkable improvement in the welfare of man when well-nourished. However, many economies mainly under-developed, for instance Ghana are confronted with the predicament of poor child nutrition as a result of the pattern in which household financial resources are controlled. There are a lot of discussions on how intra-household bargaining power of mothers affect the nutritional outcomes of children less than 60 months old. This chapter therefore presents an overview of child malnutrition and maternal control of household financial resources as witnessed in Ghana, Africa and the World as a whole as well as the consequences of malnutrition.

2.2 The Situation of Child Malnutrition and Maternal control of Household Financial

Resources Globally

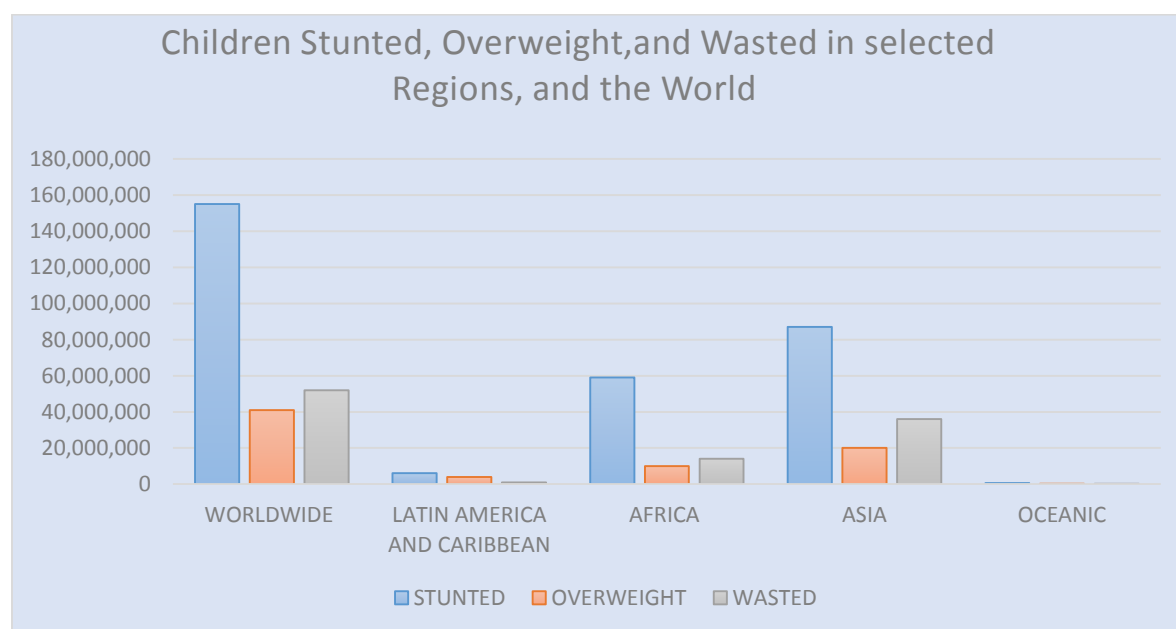
A well fed globe means a better and healthier world. Nonetheless, the enormous strategies global economy have pursued targeted at enhancing nutrition and its related health hazards over the years in relation to the 2017 Global Nutrition Report indicates that child nutritional imbalance is still a

large-scale and global problem. As the world is struggling with multiple problems of malnutrition, the 2017 Global Nutrition Report indicates that 88 percent of economies it surveyed encounter critical issues of two or more resultant effect of poor nutrition. The population of children below 60 months who are acutely wasted, and stunted may have declined in several nations, but the report indicates that worldwide effort to minimize these cases of poor nutrition is not speedy enough to attain globally accepted nutritional standards, including Sustainable Development Goals (SDG) target of bringing to an end all aspects of poor nutrition by 2030. Hunger statistics show that in 2017, about 815 million individuals go to bed hungry globally as compared to an estimated 777 million people in 2015. The actualization of eradicating famine in the world currently is far from being achieved as about 38 million individuals face massive food insecurity, for instance, Somalia, Nigeria, Yemen, and South Sudan while Kenya and Ethiopia are experiencing massive droughts. In 2016, worldwide, there were 155 million children who were stunted, 41 million overweight and 52 million wasted. Poor nutrition occurs from the interaction of poorly nourished diets, poor healthcare environments, and habits, which are structured partially by a major outlined factor. For instance, instability in politics, deficient/inefficient economic improvement, inequality, war, as well as certain subsidiaries of globalization.

The 2017 Global Nutrition Report presents recent data on the cost of poor nutrition in children to both individuals and society. In United States, for instance, when an individual in a family is overweight, the family encounters higher yearly health care expenditure equivalent to 8 percent of its yearly income. In China, a diagnosis of diabetes amounts to a yearly 16.3 percent loss of income for individuals having the ailment. These findings implies that the predicament of poor nutrition worldwide immensely falls on everyone especially children. Therefore, the progress in an attempt

to improve child nutritional status is further undermined and derailed by unequal health status experienced by children in several regions of the world. The rich economies experience greater and rapid improvement in child's health status than the struggling economies of developing (under-developed) countries.

FIGURE 1: Children Stunted, Overweight, and Wasted in Selected Regions, and the World.

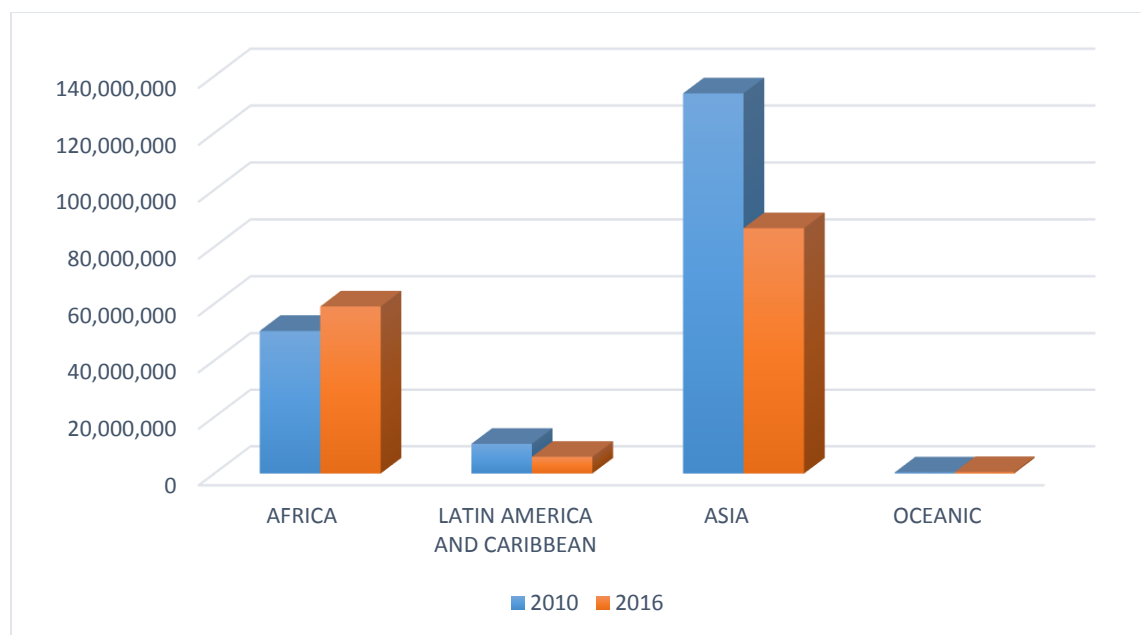


Source: UNICEF/WHO/WORLD BANK Group Children Malnutrition Estimates, 2017.

From Figure 1 above, stunting affects 22.9 percent or 154.8 million children in 2016. About 6 percent children or 40.6 million children below age five globally were overweight in 2016, which implies an increase of 11 million since the year 2000. Also, in 2016, wasting persistently threatened the lives of an estimated 7.7 percent or nearly 52million children under five years worldwide.

Furthermore, across all the selected regions of the world in figure 1 above, it can be observed that stunting is the most predominant form of poor nutrition.

FIGURE 2: Number (Millions) of Stunted Children Under-Five Years, by United Nations Regions for the year 2000 and 2016.

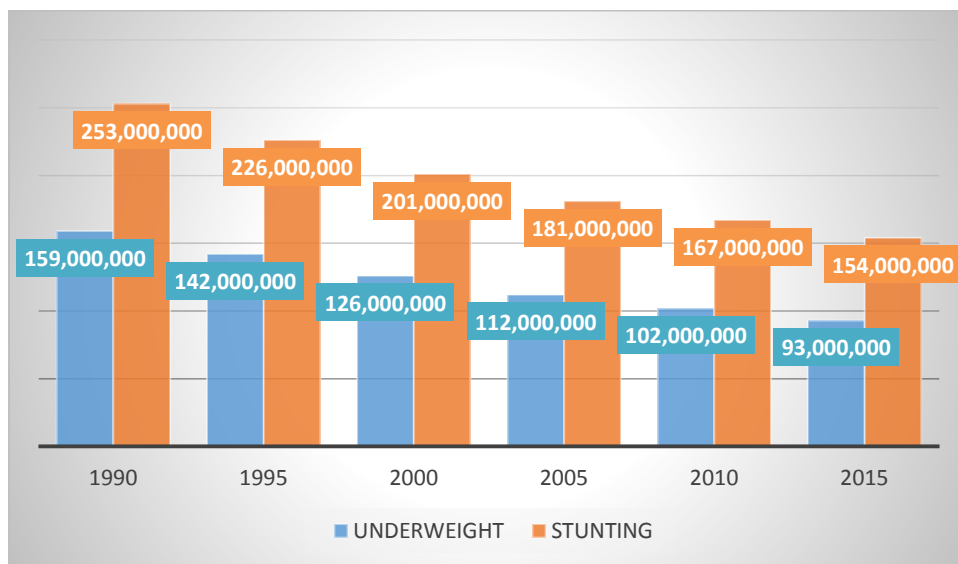


Source: UNICEF/WHO/WORLD BANK Joint Children Malnutrition Estimates, 2017.

From Figure 2 above, Africa happens to be the major region where the prevalence of stunting has increased making a comparison between the year 2010 and 2016 represented by an increase from 50.4million in 2010 to 59million stunted children in 2016 (that is a 17percent increase). It is worth noting that West African sub-region accounts for half of the rise in stunting in Africa.

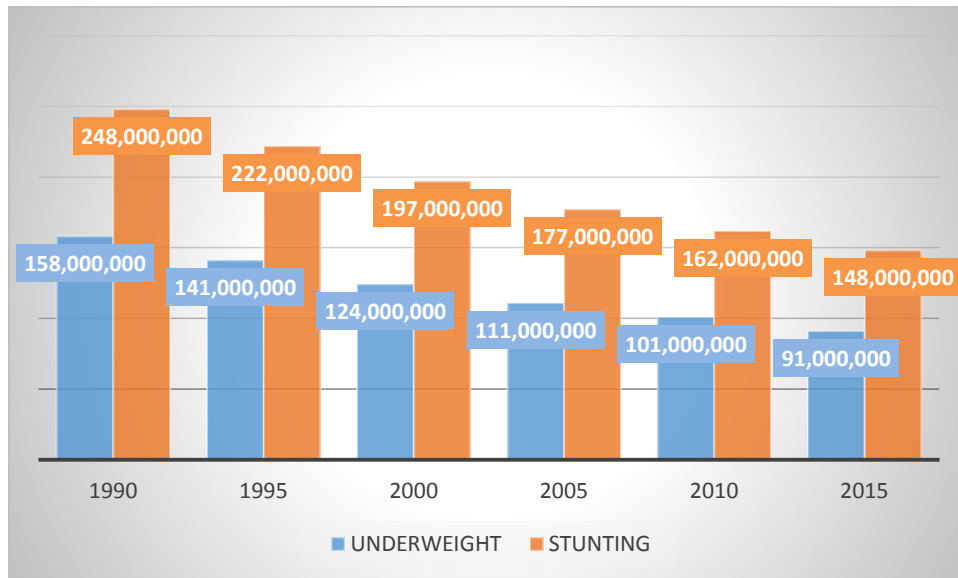
Latin America and Caribbean recorded a decline in stunting from 10.5million in 2010 to 5.9million children in 2016 representing a whopping 44percent decline in the existence of stunting in that region. Asia also recorded a reduction in stunting from 133.9million stunted children in 2010 to 86.5million in 2016 which represents a 35percent reduction in child stunting. Finally Oceanic region recorded a 25percent rise in the occurrence of stunted children from 400 thousand in 2010 to 500 thousand stunted children in 2016.

FIGURE 3: Stunted and Underweight Children Worldwide From 1990-2015.



SOURCE: UNICEF/WHO/WORLD BANK Joint Malnutrition Report, 2017

FIGURE 4: Number of Stunted and Underweight Children in Developing Countries of the World from 1990-2015.



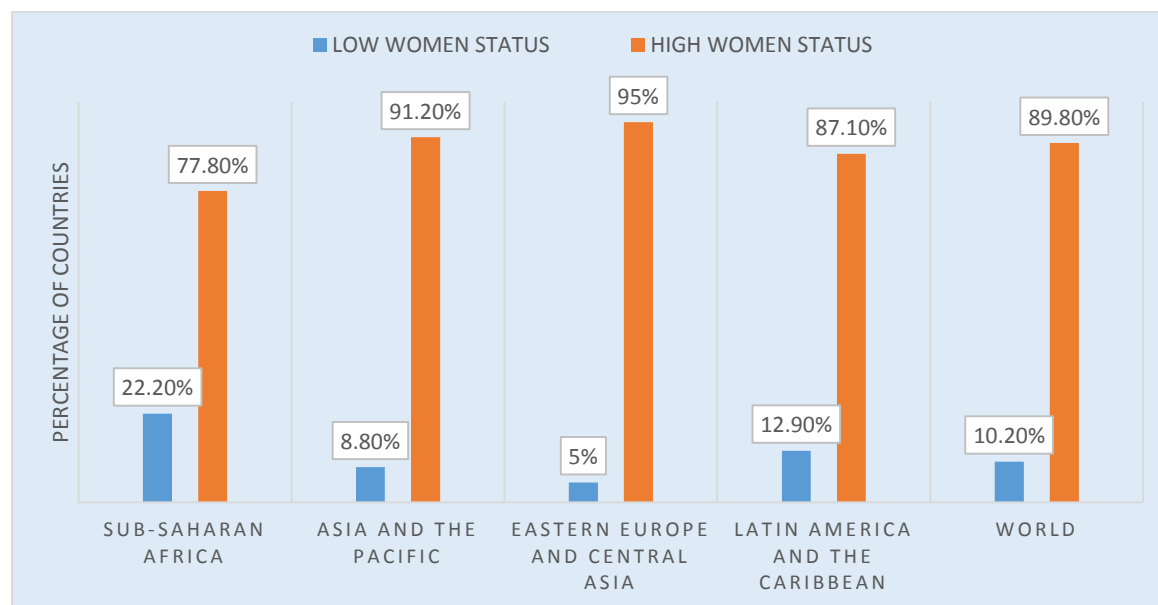
SOURCE: UNICEF/WHO/WORLD BANK Joint Malnutrition Report, 2017

From figure 3, the trend of children worldwide who are stunted and underweight declined from the year 1990-2015. Furthermore, the episode of child stunting and underweight is most prevalent in developing countries as seen in figure 4 but also declines between the year 1990-2015 which also represents a downward trend as well.

Women's control of household resources and its role in development has been entertained by a significant amount of concern worldwide over the past two decades. Mounting evidence indicates that mothers with higher control of resources in the household tend to invest greater in children's and own nutritional status (Lundberg et al. [1997], Duflo and Udry [2004], Bobonis [2009]). Such bargaining power dynamics have been identified across a variety of countries, at several points in

time using numerous instruments for maternal participation in the control of household financial resources alongside their husbands. The effect of maternal control of household financial resources have been identified in a variety of ways, across numerous countries and at various points in time as it affect health of the child. Studies have been performed in Brazil, C^ote d'Ivoire, China, India, Ghana, Kenya, Indonesia, Mexico, the United Kingdom, South Africa, and the United States amongst others in the past decades. The cumulative effect of these efforts is that the research community and the entire globe now acknowledges the importance of maternal intra-household bargaining power within the family coupled with the unique responsibility women can undertake in the growth and development of a child. This thus indicates to the fact that maternal control of financial resources within the household is accompanied with higher levels of child investment worldwide.

FIGURE 5: Women's Status in Selected Regions across the World.



SOURCE: UNFPA, 2014

Figure 5 represents women's status in selected regions across the world, as well as a worldwide view. Worldwide, 89.8 percent of women are of high status, while about 10.2 percent of them have low status. From the various regions in figure 5 above, Eastern Europe and Central Asia has the highest percentage of women with high status (95 percent), with only 5 percent of them having low status. While sub-Saharan Africa has the lowest percentage of women with high status (77.8 percent), where 22.2 percent of the women have low status. Implying that sub-Saharan Africa has the highest percentage of women with low status, and the lowest percentage of women with high status taking a comparison between sub-Saharan Africa with other regions on figure 5 (World, Asia and the Pacific, Eastern Europe and Central Asia, and Latin America and the Caribbean). This thus imply that sub-Saharan African women's high status is below the World's women's high status, while sub-Saharan African women's low status is above the World's women low status. Given mother's responsibility as main caretaker of children, especially in under developed communities and in under developed economies across the globe, it is reasonable to believe that their intra-household participation in the control of household financial resources would affect their children's health. Past research meant to evaluate the association between mother's household bargaining power on health status of children discovered that bargaining power of a mother influences the household control of financial resource allocation structure thereby enhancing child's growth and general wellbeing (Zereyesus et al., 2015; Imai et al., 2014).

There is an existence of an enormous developmental benefits in ensuring mother's equilateral access in the participation of the control of household financial resources, including in relation to nutrition, health, and entire welfare of households, communities, nations, and the world as a whole.

The absence of equality in the access to household financial resources reflects a worldwide predicament with its negative circumstances at personal, household, community and national level.

Most researchers, especially in the field of economics, believe autonomy in the utilization of essential resources in the family is critical in ascertaining intra-household power in making decisions. This may not be straightforward in every case, with social norms and values expected to play key role in intra-household dynamics in different societies. According to United Nations (2015), even though mothers contribute to the wellbeing of the family, be it via income earning job, or in form of transfer payment, they frequently have insufficient power to make choices on the utilization of financial resources in the family. For example, only two in every three married women aged 15-49 years participates in executing decisions on essential family expenditures in under developed economies. This is frequently the scenario in Asia and sub-Saharan Africa. In sub-Saharan Africa, for instance, only about half the population of married women (54 percent) participates in choices pertaining certain vital expenditures in the family.

The sources of bargaining power within the household worldwide hence reflects the economic and non-economic tenants and has a direct relationship with different individuals that make up a household (Doss 2003). For example, an individual who earns higher income in a family frequently has the highest say on decision making in the family related to financial expenditure. In the same vein, women with higher wealth, educational level and assets may have higher bargaining power as compared to their counterparts who are not rich and don't have lower level of education (Doss 2003; Doss et al. 2014). In under developed economies, maternal control of financial resources essentially depends on the income they gain or the assets they acquire while in marriage or came into the matrimonial home with (Sow 2010; Doss et al. 2014).

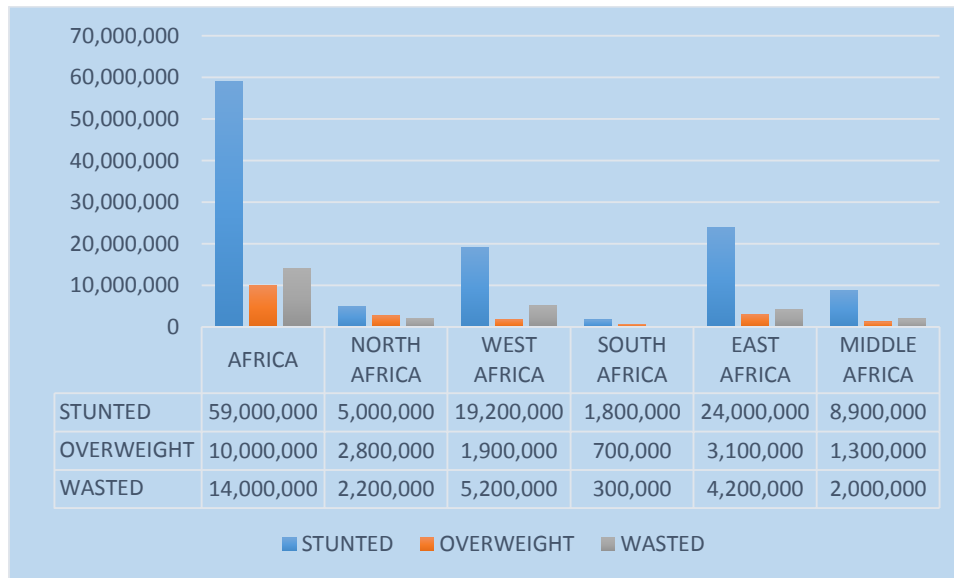
2.3 Child Malnutrition and Maternal Control of Household Financial Resources in

Africa

When one compares past to present times as far as child malnutrition is concerned, it's observed that nutritional conditions of children in Africa has improved over the years. Children born in Africa now have higher chances of attaining better nutritional status than those born few decades ago. Despite the fact that better nutritional conditions have been achieved among children in Africa, the progress made is the least in any continent of the world. Africa is lagging behind compared to other regions of the world, as it remains the only region with the highest cases of under-five malnutrition contributing to the worst growth and development of children in Africa.

The 2017 Joint Child Malnutrition Estimates indicates that in Africa, there is an estimated 59 million stunted children, 14 million wasted children of which 4.1 million of them are severely wasted, and 10 million overweight children. The estimates thus supersede evaluations and findings published by UNICEF, WHO, and the World Bank Group of 2016. The estimates records that West Africa has an estimated 31.4 million stunted children, East Africa has 36.7 million stunted children, North Africa has 17.6 stunted children, while South Africa records an estimated 28.1 million stunted children. Also, Africa is the only continent in the world where the prevalence of stunted children has risen over the past years. West Africa accounts for half of the rise in child stunting in Africa. This assertion is as a result of the fact that there were an estimated 4 million stunted children in West Africa in 2016 compared to the year 2000. Furthermore, the number of overweight children under five years has risen by nearly 50 percent since the year 2000.

FIGURE 6: Stunted, Overweight, and Wasted Children Under-Five Years in Africa and Some Selected Regions in Africa.



SOURCE: UNICEF/WHO/WORLD BANK Joint Malnutrition Report, 2017

From Figure 6 above, stunting is most prevalent in Africa with an estimated 59 million children, while overweight children is least prevalent recording 10 million children. While in the various regions of Africa, stunting is most prevalent in East Africa with an estimate of 24 million children, while wasting is least prevalent in South Africa recording 300,000 children less than 60 months. In all the regions of Africa, stunting in children under five years is most prevalent recording the highest figure compared to overweight, and wasted children.

Various research from Africa, particularly sub-Saharan Africa indicates that a rise in the maternal income which implies greater power to bargain in the household, the lower the husband's participation in household financial expenditures and also the power to bargain in the family. This implies a higher proportion of earnings that a husband spends on his personal expenditure than on household expenditure (Bruce and Dwyer, 1988; Odebode and Van Staveren, 2007).

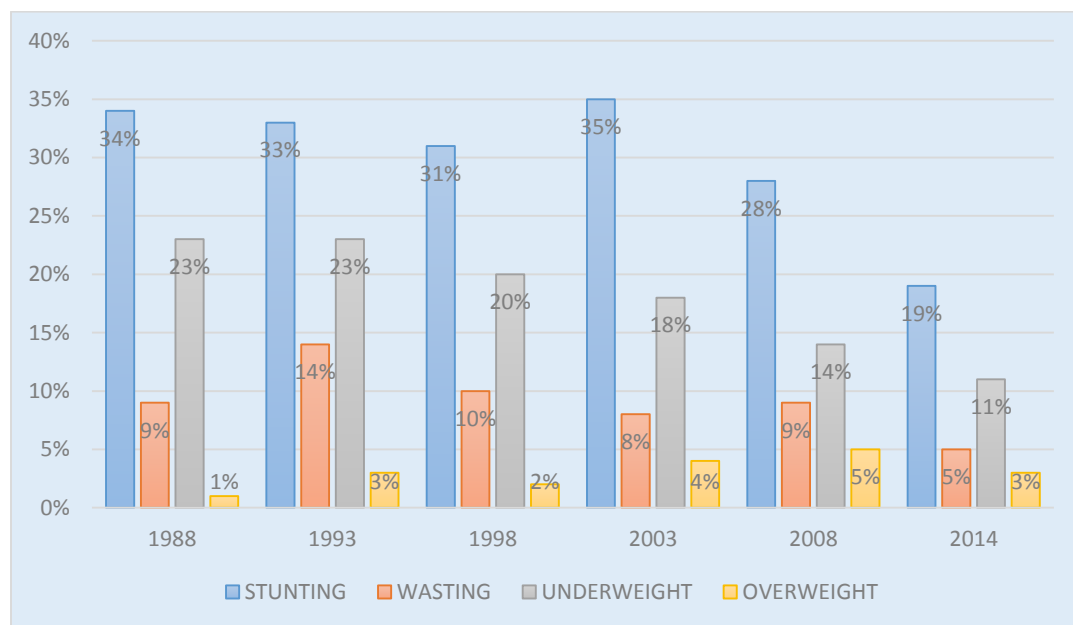
Predominantly in Africa, the notion of execution of decisions by the woman within the household does not only focus on how women participate in the process of decision making, but also focus on husbands' and other household members' perception about their wife's role in decision-making. Intra-household power dimension can be seen in traditional and modern household system. In the traditional family system, strong and traditional roles are performed by family members. In a strictly hierarchical household, husband and wife are considered as the head of the family. In this household structure, the husband is meant to participate more in the process of decision-making, while the woman's responsibility is to support his stands as it relates to the wellbeing of the entire household members. Previous studies supports the fact that maternal control of household financial resources may differ in traditional homes and also in modern family setting. In general, the traditional joint household setting involves the power to decide concerted in the hands of the oldest male member such as husband or senior male family member. In traditional family system, women (wives) are found to take part in making decisions at all levels pertaining control of financial resources in the household as compared to the men (husbands).

2.4 Trend of Child Malnutrition and Maternal Control of Financial Resources in Ghana

The nutritional conditions including child health have significantly improved in Ghana. Saleh (2012) opines this fact by asserting that Ghana's achievements in improving child health and nutritional status are admirable when compared to other sub-Saharan countries but lags behind compared to the global average conditions. The tendency of children dying or falling sick due to poor nutritional status in Ghana are to a large degree better now than they were in the past. With Human Development Index ranking of 135 out of 187, Ghana is among the economies with the most issues of poor nutrition worldwide. The 2008 Lancet series on mothers' and childhood malnutrition categorized Ghana among the 36 nations in the world with the most cases of severe childhood malnutrition.

Under-nutrition has continually prevailed as a critical predicament in Ghana as it is characterized by an enormous variation in underweight, wasting, and stunting across different household wealth, and regions of the country. It is also recognized in the nation's health policy as well as other important documentation. The regions in the north (Northern, Upper East, and Upper West) and Central Region have the most cases of wasting and stunting which is strongly connected to how insecure food is in these areas.

FIGURE 7: Percentage of Stunted, Wasted, Underweight, and Overweight Children Under Five Years from 1988-2014 in Ghana.



SOURCE: GDHS, 2008 & 2014

Figure 7 indicates the trends (in percentage) of children below five who are wasted, underweight, stunted, or overweight for the year 1988, 1993, 1998, 2003, 2008, and 2014 obtained from the GDHS 2014 data set. The data indicates an upward, and downward trend in three nutritional indicators (stunting, wasting, and overweight) with an exception of underweight (which exhibits only a downward trend) in Ghana since 1988. The percentage of stunted children reduced steadily from 34 percent in 1988 to 33 percent in 1993, which further declined to 31 percent in 1998. But in 2003, the percentage of stunted children increased to 35 percent, which declined to 28 percent in 2008, and further declined to 19 percent in 2014. In 1988, wasted children stood at 9 percent

but increased to 14 percent in 1993 which reduced to 10 percent in 1998. In 2003, wasted children further declined to 8 percent, then slightly rose to 9 percent in 2008. The percentage of wasted children further reduced to 5 percent in 2014. The proportion of underweight children remained unchanged from 1988 to 1993 (23 percent), but declined to 20 percent in 1998, down to 18 percent in 2003 which further reduced to 14 percent, and 11 percent for the year 2008 and 2014 respectively. The percentage of children who are overweight fluctuated between 1 percent, to 3 percent, then slightly dropped to 2 percent, which rose to 4 percent and even further to 5 percent, then dropped to 3 percent for the years 1988, 1993, 1998, 2003, 2008, and 2014 respectively.

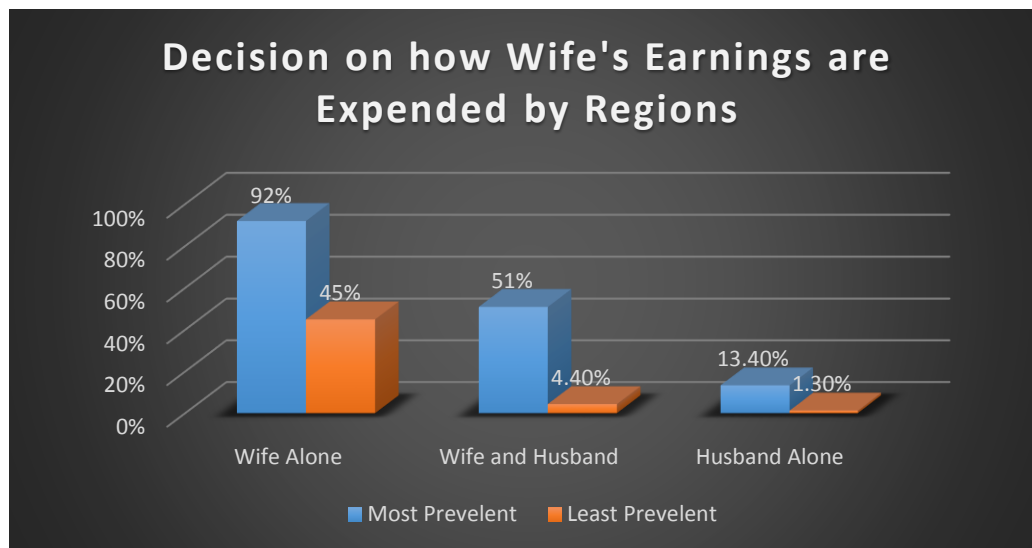
The 2014 Ghana Demographic Health Survey indicated that amongst the ten regions in Ghana, stunted and anaemic children are most prevalent in the Northern region with 33 percent and 82 percent respectively. While stunted and anaemic children are least prevalent in the Greater Accra region with 10 percent, and 60 percent respectively. This scenario could be due to the socio-economic and cultural variations that exists between these two regions.

It is of essence to state that in 2008, Ghana was among the ranked 36 economies in the world with the most predicament of severe poor child nutrition. Nonetheless, the decline of poor nutrition since the 2008 ranking has been enormous compared to several other economies in West Africa. In 2006, Ghana was the first African economy to attain the goal of minimizing the percentage by half of individuals living in severe poverty and by 2015 had halved the proportion of individuals living in hunger. This is assisted by the GHI score, which declined from 30 to 14 between the year 2000 and 2016. Ghana also achieved enormous progress in minimizing the rate of stunting, wasting, and underweight amongst children between 2000 and 2016.

The 2014 Ghana Demographic Health Survey interviewed presently married females about the level of their participation in three kinds of decisions within the household which include, personal health care, decisions concerning major purchases in the household, and visitation to relatives or family members. Women who are married in Ghana have greater likelihood to make personal or joint decision power with their spouse regarding visitation to relatives, or family members, which constitutes 87 percent. While 77 percent of married women have probability of executing decisions regarding personal health care. Furthermore, 74 percent of married women participate in major decisions concerning purchases within the household (74 percent). Generally, six in ten women who are married partake in all three decisions. While less than 10 percent of married women do not take part in any of the three decisions.

Decision making of women differs depending on the location. One-third of married women in Northern region take part in all three decisions in comparison to 84 percent of women in Upper East region. Women's contribution to household decision making rises with the level of educational attainment. Over half of married women with no educational attainment partake in all three decisions in comparison to 70 percent of married women with secondary school educational attainment.

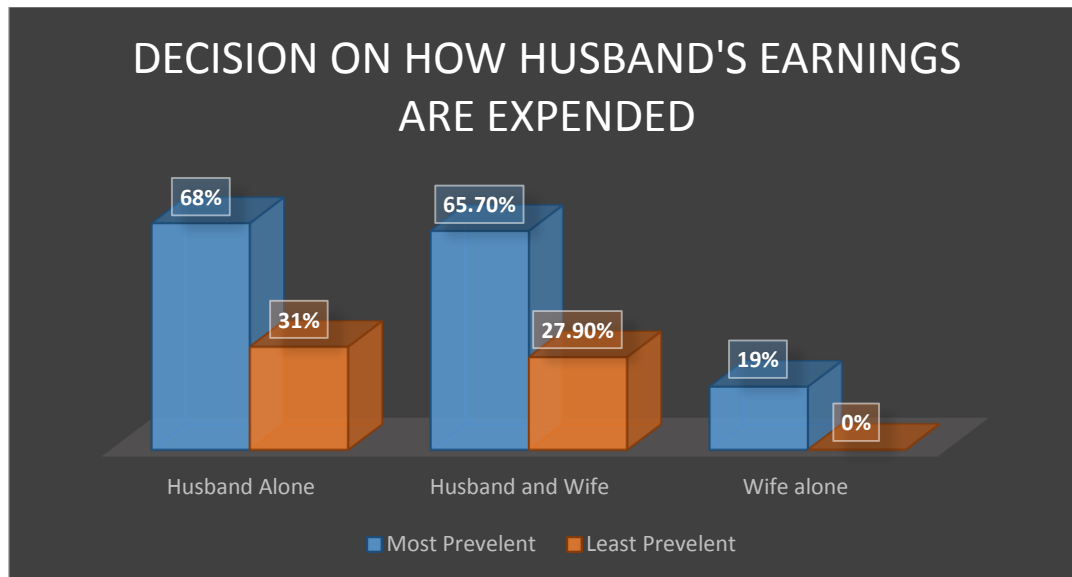
FIGURE 8: Decision on how Wife's Earnings are expended based on Regions



SOURCE: GDHS 2014

From figure 8, based on the 2014 Ghana Demographic Health Survey report, there is regional disparity about who makes decisions on how wife's earnings are expended. The proportion of employed wives who solely make decision on the usage of their earnings is most common in the Northern region constituting 92 percent, and least prevalent in the Western region constituting 45 percent. Husband and wife's combined decision-making on the expenditure of wife's earnings is most prevalent in the Western region with about 51 percent prevalence, and least common in the Northern region, constituting 4.4 percent. While the percentage of husbands who solely make decision on the usage of their wife's earnings is most prevalent in the Upper West region constituting 13.4 percent, and least common in the Upper East region with a proportion of about 1.3 percent.

FIGURE 9: Decision on how Husband's Earnings are expended based on Regions



SOURCE: GDHS 2014

From figure 9, based on the GDHS 2014 report also reveals that the main decision maker regarding the expenditure of husband's earnings differs enormously based on region. Sole decision-making by the husband alone is most prevalent in Volta region constituting 68 percent, and least prevalent in the Upper East and Western regions each recording 31 percent. Executing decisions pertaining husband's earnings solely by the wife is most prevalent in the Western region constituting 19 percent, and less prevalent in, Brong Ahafo, Ashanti, and Upper West region all having no wife's participation in decision making (0.00 percent). While, the joint decision by both spouses is most prevalent in the Upper East region constituting 65.7 percent and least prevalent in Volta region recording 27.9 percent.

In general, a comparison between women's response about the individual who takes the major decision pertaining the expenditure of their husbands' financial resources and men's response about the expenditure of their own financial resources indicates that men more often compared to women jointly make major decisions with their wives, while women reported that they are the major decision makers.

2.5 Consequences of Malnutrition

Child malnutrition can be inimical to the survival and development of children, leading to a rise in the probability of ill health as well as mortality. It is a catalyst that declines the level of cognitive development of a child. Indeed, malnutrition does not only lead to decline in health. The World Bank indicates that malnutrition greatly affects lifetime earning tendency and drops gross domestic product by about 3 percent yearly. If malnutrition is not curtailed during the vital stage of growth (from birth to 24 months old), the syndrome will continue to occur from generation to generation in a vicious cycle that predominantly raises economic and social costs, and the physical and cognitive damage resulting from severe malnutrition, especially in the vital stage which is largely irreversible.

Malnutrition undermines child's immune system thereby putting them at higher risk of ill health as well as instances of death. Several evidence indicates that malnutrition results in about 50 percent of entire mortality among children less than 60 months, indicating that the prevalence of child death can be prevented by tackling malnutrition (over-nutrition/under-nutrition) compared

to any other child survival policy intervention. Therefore, nutritional intervention directed towards children have to be made a major priority alongside other child survival interventions.

2.6 Conclusion

Global trend of child malnutrition has generally shown that it is still a universal problem as 88 percent of countries in the world still faces series of nutritional problems as it affects children under five years over time. Children born in today's world have higher risk of being malnourished particularly in Africa and Asia. These two regions (Asia and Africa) records one of the most prevalence of poorly nourished children in relation to other regions on earth. Malnourished children in the two regions are at higher risk of falling ill or dying due to malnutrition despite the improvement made on health status of children in the years that has passed. Improvement aimed at enhancing the health and nutritional conditions of children has been characterized by severe disparity of health among the diverse regions in the world. The richer (developed) countries have made rapid progress whilst developing countries are still lagging behind in the pursuit of good health, and nutritional status for their children. Also, women's control of household financial resources has received significant amount of attention worldwide over the past decades taking into consideration the vital role women play in the welfare of members of the household. Over the years in Africa, stunting, overweight, and wasting increased. Stunting in children is the most prevalent form of malnutrition recording about 59million children, which is the most prevalent in East Africa (24million), and least prevalent in South Africa (1.8million). Ghana is admirable as compared to other economies in its sub region as the existence of wasting, underweight, and

stunting has reduced in the past decades but still remain a major challenge as 33 percent of children in Northern region are stunted based on the Ghana Demographic Health Survey of 2014 report. Furthermore, women have higher control of household financial resources as compared to their husbands in Ghana. The consequences of child malnutrition is alarming as it affects the growth, cognitive, and development of children as it extends to their long-term welfare as a whole as they mature into adults.

CHAPTER THREE

LITERATURE REVIEW

3.1 Introduction

Within the traditional Ghanaian household, there is the existence of an unequal power relation between men and women with the husbands wielding more power than their wives. This unequal power relation also manifest in access to and control over financial resources. The man assumes a central position as the “head” and key decision maker mainly because of his economic advantage, and control over productive resources. The wife being the subordinate and submissive owing principally to her relatively lower economic status, participates very little in household decision making process. But in the 1950s, status of women started to improve in Ghana where certain formal women’s organizations and Non-governmental organizations were formed, aimed at boosting their status in the society. Since then, maternal participation in the control of household financial resources have increasingly improved due to changing economic realities, norms of decision making power and “ownership” of children, norms of responsibilities of payment, marital status, household living arrangements, and the quality of relationship between husband and wife.

With regards to the situation of child malnutrition in Ghana, evident progress has been made as revealed in the Ghana Demographic report (GDHS 2014) where child malnutritional outcomes (stunting, wasting, and underweight) has steadily declined over the past decades. However, gains have been uneven, with wide geographical disparities, and among the wealth quintiles. Ghana currently faces “double burden” of disease and malnutrition: child nutritional status improving

alongside increasing cases of obesity in adulthood. The Government of Ghana (GoG), in an attempt to tackle the issue of child malnutrition, instituted a number of policies that are either directly or indirectly related to child health. Among some of the policies and initiatives that have been embarked since 1988 are the Exclusive Breastfeeding Programme, the Safe Motherhood Initiative, National Health Insurance, Creating Wealth through Health, Free Delivery of Health Services in all Health Facilities, the Strategic Document for Child Health, and the establishment of a Nutrition Unit.

This chapter presents a broad review of literature on the effect maternal control of household financial resources as it affects nutritional level of children less than 60 months old. The study commences with a review of the concept of malnutrition and its causes. Importance is placed on the effects of mother's intra-household control of household financial resources as it affects the nutritional status of children later on. Several empirical research have been conducted to support either sides of the argument. This section will therefore look at the empirical studies conducted on the theme. But prior to this, the current study presents the theoretical perspective underpinning the research.

3.2 Theoretical Review

3.2.1 The concept of malnutrition and causes of malnutrition

The term malnutrition refers to “bad nutrition” which involves either a scenario of under-nutrition or over-nutrition. A study by Nyarko, (2011) outlines the existence of child malnourishment especially in developing countries like Ghana. A study by the World Health Organization (WHO)

defined malnutrition as “deficiencies, excesses or imbalances in a person's intake of energy and/or nutrients”.

Malnutrition in simple terms implies “bad nutrition” which entails both under-nutrition, and over nutrition. In terms of malnutritional trends in an economy, the former is more existent in under developed economies like Ghana (Lyv Nyarko, 2011). The World Food Programme (WFP) states malnutrition as “one which the physical functions of an individual is impaired to the point where he or she can no longer maintain adequate bodily performance process such as growth, pregnancy, lactation, physical work, and recovery from disease” (WFP, 2005). Malnutrition occur from deficiency of major nutritional requirements (carbohydrate, protein and fats), micronutrients (mineral, and vitamins), or a combination of the two. Macronutrient deficiency exists when the body system gets use to a reduction in the absorption of major nutrient by a corresponding decline in activity and a rise in the utilization of reserves calories of energy (fat, and muscles), or declined growth. Consequently, poorly nourished people can experience declined growth in the long run, compared to their adequately fed peers. “Hidden Hunger”, or “micronutrient malnourishment” is prevalent in under developed nations. It prevails when vital micronutrients such as minerals and vitamins are absent in the needed ratio in a meal. The most prevalent micronutrient inadequacies are iron (causing anaemia), vitamin A (loss of sight, and xerolpthalmia,), and iodine (causing cretinism, and goiter). Others are vitamin C (causing scurvy), niacin (leading to pellagra), and vitamin B1 (causing beriberi). It can also exist in an instance of a prolonged emergency when individuals depend on an inadequate unvaried source of food.

Based on Gillespie and Flores (2000), insufficient balanced food requirement in adolescent and youthful age leads to anaemia or individuals who are too short for their age thereby leading to complications during childbirth with babies who are underweight. A girl who is too short for her age has a probability of being stunted in her youthful age, and when old. Besides being a predicament on the level of her productivity and health status, malnutrition influences underweight and stunting when she is old, increasing the likelihood that her offspring will also be poorly nourished. Poor fetal development is a known risk factor that affects newly born babies, and thus the circular flow continues. Mothers who are poorly nourished give birth to children who are mostly premature, with low birth weight, and are susceptible to all forms of sickness with instances of premature death.

3.2.2 Measuring nutritional status in children less than 5years

The various anthropometric measures in determining child's nutritional status less than 60 months old are namely; height- for-age (stunting), weight-for-height (wasting), and weight-for-age (underweight).

a) Height-for-age

This index makes available an indication of linear growth reduction. A child with height-for-age less than negative two standard deviation (-2SD) from the median of the reference population, is termed stunted or short for their age. While a child whose height-for-age is below minus three standard deviation (-3SD) from the reference population median is termed severely stunted.

Stunting indicates inability to attain appropriate nutrition over an extended time frame, and is also influenced by recurrent and severe ill-health. Height-for-age hence implies a long-term effect of poor nutrition on a population and is not respondent to recent, short-term variation in food consumption (GSS, 2014). Horizontal length lying down or height in children in relation to age, aid as indices of chronic malnutrition in children. They are particularly valuable in children as indices of stunting in a child's entire growth ability.

Stunting is a decline in the skeletal growth of a child and the end product of a declined level of linear growth (Kuperminc et al, 2010). The condition occurs from long time span of insufficient consumption of food and risen morbidity, which is generally found in economies that encounter poor economic conditions. When height is combined with age, it provides a sensitive index of current nutritional status. For infants less than two years, horizontal length is measured, above two years height is also measured (Kuperminc et al, 2010).

b) Weight-for-height

Weight-for-height estimates weight of an individual in line with height of that person, and thus defines present nutritional status. A child with Z-scores less than negative two standard deviation (-2SD) is termed "wasted" and acutely malnourished. Wasting indicates the inability to attain sufficient dietary requirements in the time frame just after the survey and could be the outcome of insufficient consumption of food or latest instance of sickness resulting in weight loss. A child whose weight-for-height is less than negative three standard deviation (-3SD) is termed "severely wasted" (GSS, 2014).

c) Weight-for-age

Weight-for-age is a composite index of stunting and wasting. It involves a combination of chronic and acute malnutrition. A child whose weight-for-age is less than negative two standard deviation (-2SD) are termed underweight. A kid whose weight-for-age is below minus three standard deviation (-3SD) is termed severely underweight (GSS 2014).

The predominance of poor nutrition in a child can be evaluated when weight- for- age is used. To interpret a single measurement of weight in relation to reference data, the age of the child must be known (WHO and UNICEF, 2009). A pediatric scale with pan, a suspended spring balance and weighing sling or a beam balance is used for weight measurement in children (Kuperminc, Gurka, Bennis, Busby, Grossberg, Henderson, & Stevenson, 2010).

3.2.3 Maternal Control of Household Financial Resources as a Determinant of Malnutrition

Maternal control of household financial resources as a major determinant of child malnutritional status has an enormous range of significance on the state of the health and nutritional status of a child. Influence of maternal control of household financial resources on child's health and nutritional level is analyzed in the context of Grossman's (1972) health production model. From the main Grossman model, a person maximize his/her stock of health based on the level of investment on health.

To examine the influence of the level of maternal control of financial resources on child malnutrition, the basic theoretical framework that guides this study is derived from the theory of utility maximization and household production of health analyzed critically by Schultz and Rosenzweig (1982), and adopted by Annim (2012). This study will also depend on theorizing of children's anthropometric production function outlined by Strauss and Thomas (1992).

In this framework, we assume that family derives satisfaction from two types of goods namely: the health status of the child, (h); and non-health consumption, (x); which are health-neutral. Thus, the household utility function is specified thus as;

$$U = f(h, x) \dots\dots\dots (1)$$

Where:

H = Health status of the child

X = Non-health commodities

The income constraint of the family becomes:

$$Y = PhH + PxX \dots\dots\dots (2)$$

Where Ph and Px are the prices of health and non-health products respectively; therefore, the income (Y) of the household is determined by the financial resources owned by the household.

3.2.4 Theories of Intra-Household Gender Association

Theories of intra-household association explains that women's status is closely aligned with the level of the efficiency of the production, which has immense impact on social and economic wellbeing of household members. All the theories attempts to examine the interactions of sharing, cooperation, conflict, and competition amongst household members. Laying reference on the perspective of social conflict and harmony, the theories differ from one end to another.

The Neo-Classical economic approach, lies within the framework of New Home Economics, and examines intra-household associations as having one utility function regarded as a single entity. Proponents argue that entire household entities (father, mother, and kids) act with the mindset of maximizing one family utility based on their comparative advantage (Becker, 1981; Granou, 1973; Nerlove, 1974; Schultz, 1988).

The notion of cooperation in intra-household gender relationship is argued by feminists on the basis that social adherence is indeed a reflection of women's subordination (Eisenstein, 1984, cited in Kabeer, 1994). The perspective of gender role adopted by neo-marxist theorists and dependency theorists specifies its analysis based on structural scarcity and argue that wives in the household get badly treated by their husbands via economic misappropriation and marginalization from making economic decisions that concerns the household (Lindsay, 1980; Nazzani, 1986; Rogers, 1979; Savane, 1986; Sen, 1982). The gender role approach adopted by other feminist and development sociologist economists relies on socially ascertained gender separation of labour leading to subordination of wives. The nature of maternal unearned labour is closely related to the

level of their subordination (Akinbode & Akande, 1987; Tinker, 1985; Waring, 1989). Gender role socialization is viewed as the major attribute controlling women's capability, grooming and their characters, choices, and expectations (Kabeer, 1994).

New Home Economics proposes investment in female's educational attainment (human capital) and women's technological advancement to be the solution to Third World predicament. Those who adopted the gender role perspective perceive issues in the political and social structure of the relationship of production and suggest structural dynamics for the empowerment of women. The first approach assumes selflessness and altruism (Ellis, 1988), while the second approach focuses on power and domination (Baker & Nelson, 1985) in intra-household gender relationship. The theorists of gender role acknowledges that not only does altruism exists in the household, but that altruism is linked more with mother's preferences rather than father's preferences. This is of a view that, fore-going of individual's needs in favour of the wellbeing of other members in the household seems to be the prerogative of the less influential individuals, mostly, girls and women in a household (Kabeer, 1994).

Allowing the entrance of conflict and cooperation relationship illustrated by empirical findings, Sen (1990) views the home as a site of conflict and cooperation. Individuals in the family cooperate in combination to "total availabilities", implying the production of all commodities for usage. In a scenario that relates to sharing the entire availabilities between individuals, conflicts may occur. The advocates of cooperative conflict paradigm are of a view that uneven autonomy and bargaining authority of diverse individuals results in non-investment of human capital, specifically for women. Lack of human capital investment in addition to insufficient women's consumption results in inefficiency. Gender equity and efficiency in production have chances of being together

(Bardhan, 1996; Folbre, 1996; Haddad and Kanbur, 1991). Sen argue that accessing income and employment enhances women with higher control of resources within the households (Sen, 1990). Agarwal (1994) is of a view that efficient independent power in private land enhances rural women's authority over resources in the family in avenues that cannot be attained by only employment. In fact, rights to ownership of property enhances women with higher intra- household role to search and get higher paying jobs.

Those who regard households as a cooperative body suggest women's human capital investment, and the availability of technology for them. For individuals who see households as an avenue for disagreement, no intervention in development will exist until present legal, social, economic, and political structures are altered in favour of women. Individuals who perceive households as a place of cooperative conflict suggests that job opportunities aids in enhancing women with improved intra-household control. Individuals who perceive the household as a place of cooperative conflict are of a view that when the women have higher control of household resources compared to men, household financial resources will be shared evenly among members of the family with evidences in level of nutritional status, future efficiency, productivity, and the general health of members of the household. There are individuals who further suggest right to property by women will enhance their power to bargain, not only in the household but the market as well.

3.3 Review of Empirical Literature

This section examines a review of empirical works on the relationship between child malnutrition and maternal control of household financial resources, which is achieved under three specific groups. The review of the empirical work begins by considering maternal control of household financial resources. This discussion help to explore the general concept underlying mother's participation in the control of financial resources in households. The final categorization of the review of empirical research is the consideration of studies that sets basis on the link between maternal control of household financial resources and child malnutrition.

3.3.1 Maternal Control of Household Resources

Mother's control of financial resources in the household is analyzed across various areas and is often done with respect to status of ownership, and accessibility to financial resource (Mutakalin 2008). In several economies, traditional patriarchal norms are related to just a list of maternal household decision making examined in the sex division of labour of the household that specifies for instance, that women reside in the house looking after the house and children (Majstorovic and Lassen 2011). In Ethiopia, wife's and husband's family responsibilities traditionally work hand in hand, such that women assume the role of reproductive labour, unpaid house work, as well as care for the children. Women also contribute to family earnings, where a study reported that globally women spend about 90 percent of their earnings on their households, while men use only 30 to 40 percent of their earnings (FAO 2011).

Social science literature has outlined a number of attributes that influences maternal control of household resources. For instance, in economics, family income and expenditure as well as its control, individual savings (independent from household's joint savings), women's welfare, and labour income are major sources of measurement of the control of household financial resources. Essentially, several indicators that have been traditionally deemed as "proxies" for empowerment, for instance educational level and job status, could well be termed as "enabling factors" or "sources of empowerment" (Kishor 2000a). For example, some research in Ethiopia have related schooling to improved skills acquisition which increases the tendency of acquiring a job, aimed at enhancing women's participation in political, social, and economic sphere, and the prevention of some ill traditional doctrines (Teller and Assefa 2011; Gunasekaran 2010).

A recent impact evaluation of a project by CARE (Cooperative for Assistance and Relief Everywhere) in Bangladesh used a rights-targeted livelihoods perspective to analyze poor nutrition and discovered that maternal empowerment interventions had a "strong independent impact on stunting, and sanitation. Women's empowerment, and on poverty alleviation intervention were found to have synergistic impacts with direct nutrition interventions" (Smith et al. 2011). Maternal empowerment was estimated by a score for maternal engagement in essential decisions, proportion of children who attend school, proportion of educated adults, and proportion of mothers being paid cash earnings. In Latin America and the Caribbean, South Asia, sub-Saharan Africa (SSA), maternal status socially in the household and community were discovered to exhibit positive relationship with child's nutritional status (Smith et al. 2003a). Cross-country research have illustrated that enhancement in maternal educational pursuit resulted in 43 percent of the total drop in underweight children from 1970 to 1995 (Smith and Haddad 2000).

Empirical research shows that in a particular setting, certain varieties of empowerment could be nearly related compared to others. Kishor (2000a) estimated a factor analysis of certain indicators that could have influence on empowerment in Egypt. Between the ten empowerment varieties that amounted from the evaluation, some were comparatively more associated than others. Dimensions were not equal as to child's survival (estimated by child death and immunization); only "women's lifetime exposure to employment" and "household structure" (stays with in-laws, etc.) influenced both child survival outcomes. Jejeebhoy (2000) on the other hand discovered that, in India, executing decisions, movement, and right to household resources were extremely linked to one another compared to executing decision regarding child health care, independence from husband's physical threat, and power over household financial resources.

Amongst the limitation of estimating empowerment is that the attitudes and tenants that explains empowerment in one scenario usually have varying implication somewhere else. For instance, a drift in maternal power to visit a hospital without seeking permission from the man in the house may be an omen of empowerment in Germany, but not same in Ghana for instance. Context can also be important in ascertaining how well status at the individual or household level serves as a necessity of the resultant output of development. It can be perceived for instance that if investment in public health systems are strong, then maternal responsibility as the middle-man for the health of their children via higher educational attainment or power to take decisions in the family will be less vital than when the scenario is non-existent.

The sources of the control of household financial resources hence reflects economic and non-economic factors having direct association with different individuals in the family (Doss 2003). For example, an individual who receives the highest income in the family mostly has the greatest impact in financial decisions within the household. In the same vein, women with higher education, assets, and wealth have higher control of household financial resources compared to the poor (Doss 2003; Doss et al. 2014). In under developed economies, maternal control of household financial resources has laid basis majorly on their assets or earnings obtained when married or which was brought into the marriage (Sow 2010; Doss et al. 2014).

Beyond the indicators used above as it influences the level of maternal contribution in the control of household financial resources, measures that indicates social contexts are also utilized. This ranges from family and life course attributes such as the woman's age, religion, length of time of marriage and children, males, difference in age between husband and wife (Malhotra and Mather 1997, Gupta 1995, Morgan and Niraula 1996, and Schuler et al. 1996). These are usually adopted in qualitative research. For instance, a rise in maternal age is associated with a rise in a cumulative authority to bargain (Gupta 1995). Likewise, the wife's ability to give birth to a male child/children is also associated with an increase in her power to bargain and are vital in some particular welfare outputs, like a decline in home violence in the marriage (Schuler et al. 1996).

A rise in the control of household financial resources is vital in ensuring gender equality. Several research has recognized the fact that maternal control of household financial resources significantly impacts on health status of the household and the society at large, which is fundamental in reducing child malnutrition globally. As primary caregivers, mothers have significant control over factors necessary for child growth and survival, including meal preparation

and storage, feeding routine, hygiene, and new born care (Engle et al. 1999). Women's control over household financial resources has received increased attention because the rate of maternal participation in intra-household bargaining influences her power to make decisions that is in the best interest of her children. When mothers control financial resources in the household, they tend to channel higher proportion of household financial resources towards child's health and nutrition as compared to the father (Quisumbing & Maluccio 2000; Quisumbing & Maluccio 2003). Conversely, notwithstanding the fact that women may channel higher portion of the earnings to the health and nutritional status of the household, the gains of this for the health status of a child could be dropped by maternal access to relatively smaller earnings.

3.3.2 Maternal Control of Household Financial Resources and Child malnutrition.

A study by Fafchamps, Kebede et al. (2009) showed how bargaining variables affect different child health and welfare measured by school attendance and anthropometric variables. But looking specifically at child health status, they discovered that assets brought into marital home by the bride; the mother having a separate source of income; and divorce expectation by women, have positive effects on their bargaining power.

A study by Schmidt and Raykar (2012) sort to evaluate if higher bargaining power within the household by women in Bangladeshi is linked with a progress in nutritional and health status of their children. Data used was made available by the 2007 Bangladesh Demographic and Health Survey (BDHS), focusing on children less than 60 months old of which additional anthropometric data were available. OLS regression was used to estimate the model by including child, mother,

husband and household characteristics as control variables. The regression outcome is of a view that there exists a positive relationship between decision-making power of mothers on large household purchases and stunting ratio of their children. But the other two measures (unitary, and the non-cooperative model) of bargaining power were found to be statistically insignificant in determining child health outcomes.

Outcomes from various research that examines the correlation between intelligence on nutrition and nutritional status of children vary. Whereas other research (for instance, Rued et al, 1992; Glewwe, 1999; Webb & Block, 2003) discovered significant relationship between mothers' nutritional knowledge and nutritional status of children, social attributes of father and mother, essentially the mother, is considered by some scientist (Ojeifeitimi and others, 2003; Agnarsson, and others, 2005) as a link between child's nutritional status. A study on the social and cultural influence on decisions pertaining child feeding among women in Kwa-Zulu Natal indicated that age of mother constitute a greater influence on food practices and choices for children below 60 months old. Mothers of older age intended not to be dependent as to the decision of diet they gave to their children than those younger (Thairu et al, 2005). Mother's demographic, economic, and social characteristics, executes a vital responsibility in ascertaining child's nutritional level. Based on McKeever and Miller (2004), a child's level of nutrition is improved by the attributes of the mother's background, including status of employment, age, and level of educational attainment.

In a research of 300 women in rural Nigeria, Ojeifeitimi et al. 2003, in evaluating the determinants of nutritional status among children below 60 months old, is of a view that there is a strong relationship between maternal age, employment status, and the risk of under nutrition among

children. He elaborated that the extent of maternal independence from her husband has a resultant influence on child's nutrition status (Ojeifeitimi et al. 2003).

In a research conducted in Volta Region, Ghana, Appoh and Krekling, (2005), illustrated that mother's understanding on nutritional requirements, social, and economic status positively influences child's nutritional level because the mother is better empowered as to the nutritional impetus needed for proper growth and survival of children. Furthermore, mother's knowledge and practice on breast feeding is an important indicator for child's nutritional status (Appoh & Krekling, 2005). Particularly, educational attainment, socio-economic status, and marital status had a significant relationship with children's nutritional indicator under five years.

Smith et al, 2003 conducted a research on the association between maternal status and child anthropometric indices in 36 under developed economies from three regions; Sub-Saharan Africa, South Asia, and Latin America and the Caribbean, from the year 1990-1998 adopting the Demographic Health Survey data. They employed four varieties of indicators of women's authority to decide in relation to men; i) if the women earn income from work; ii) age of the women at first marriage; iii) the difference in proportion in the husband's and wife's age; and iv) the difference in educational attainment between the husband and the wife. Regression analysis indicates that there is a positive effect of maternal power on decision concerning health of the child, though the effect varies broadly across the three regions.

A typical illustration of a program which outlined the relevance of income controlled by women is the Mexican PROGRESA program. In the program, payments are made to mothers depending on whether their children were going to school, and their role in monitoring healthcare and diet

supplementation program. The program indicates significant effect on child's health, education, and nutrition (Behrman and Skoufias 2006). The outcomes from the research reflects that policies targeted at women influences direct result by either enhancing a maternal voice in the household, or contributes in improving human capital investments in children. There is strong proof that mothers tend to allocate more share of expenditure on commodities which enhances child's wellbeing if they control a larger proportion of resources in the household (Behrman and Skoufias 2006).

Quisumbing and Briere (2000) considers how the control of household financial resources by wife and husband influences the allocation of spending in Bangladesh. Findings further supports the hypothesis that "improved resources controlled by mothers are frequently allocated towards children's welfare. Another IFPRI project details the research on resource control by the father and mother. The study indicates that women who earn higher income, assets, or education have higher bargaining power in the household due to the fact that they have greater options outside of the family. The mechanism through which the control of household financial resources of mothers positively influences child nutrition ranges from her nutritional knowledge as well as her high socio-economic status, which aids them have a lot of say as to how financial resources are expended.

Related research using similar index for measuring maternal participation regarding decision making in the household discovered an association with outcomes of child's health. Gaiha and Kulkarni (2005) discovered that in locally sited families across India that a reduction in incidences of stunting was associated with a rise in mother's age and educational attainment, as well as where mother resides. A research executed in Egypt by Kishor (2000) made use of data obtained from

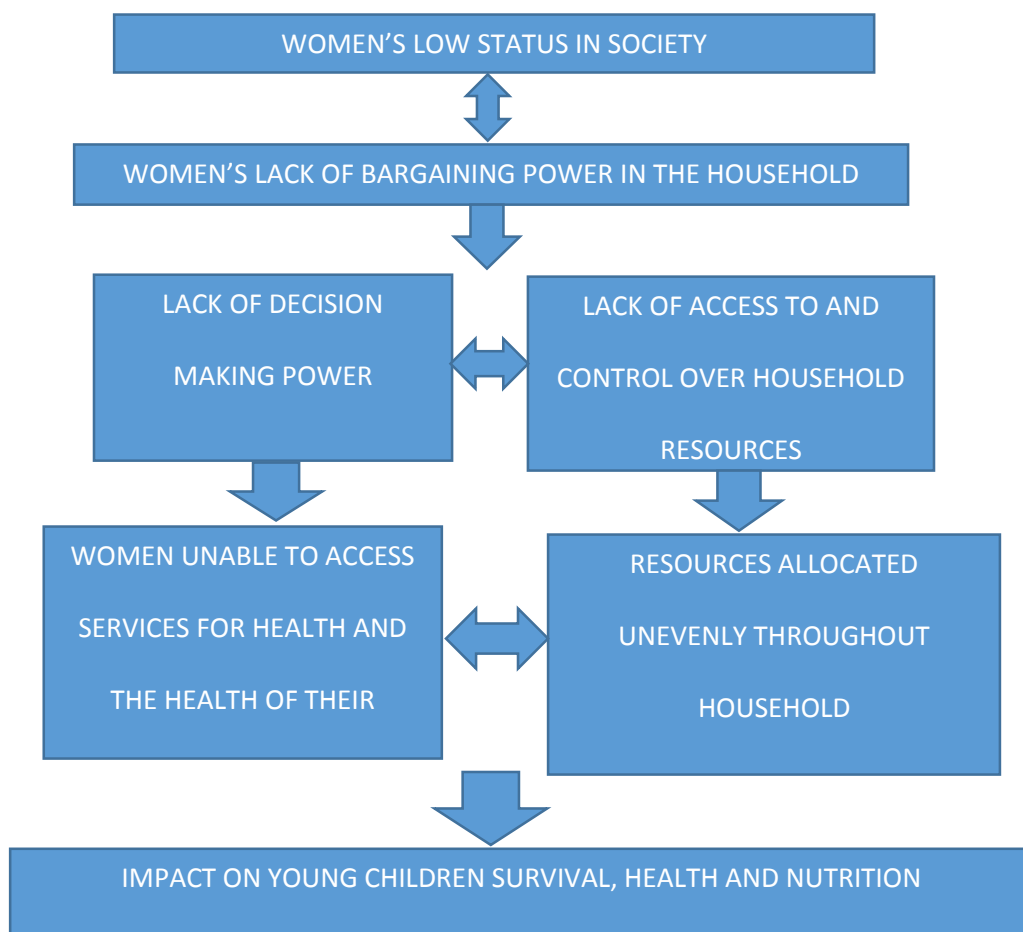
the nation's 1995 DHS to construct an index of women's empowerment with a combination of a number of indicators selected to stand in place of a single conceptualization of empowerment. Kishor's research make available multivariate analyses to evaluate the association between women's empowerment and child health and survival (as measured by whether a child had received eight recommended immunization). His result indicated that two dimensions of women's empowerment namely household structure amenable to empowerment, and lifetime exposure to job opportunity were significantly associated with children's survival and health status.

Several research examining the link between women's empowerment and children's nutritional level indicates the association to be positive. Smith et al. (2003) using cross-country data is of a view that women's empowerment has a positive relationship with child's nutritional status. Using several indicators of women's household bargaining power in rural Ethiopia, Fafchamps et al. (2009) suggests that women's power to bargain with in the household enhances nutritional level of children. The evidence in most cases erupts from the notion that a mother with high educational attainment vary from a mother with low educational attainment, as the level of education of a mother play a major role in ascertaining the quality of nutritional requirements a mother gives to her child (Duflo, 2012). Therefore, the positive relationship between women's empowerment and the level of child nutrition is robust and thus worth noting.

Research on mother's responsibility in curtailing the occurrence of poor nutrition are corroborated by the views of policy-makers. For example, sharing household bargaining power with women is an express route of reducing malnutrition and famine. Also, it is the singular most efficient step in actualizing right to food, and urged world governing powers to adopt transformative food security strategy that addresses cultural obstacles, and redistribute responsibilities between the father and

mother. In the context of health outcomes of children, knowing that mothers are the main caregivers of children, redistribution of responsibilities on who makes decisions in favour of women convey the ability to enhance the nutritional and health status of children (de Schutter, 2013).

FIGURE 10: Relationship between Women’s Status, Intra-household Bargaining Power and Child Survival, Health and Nutrition.



SOURCE: UNICEF, 2011.

Figure 8 explains one amongst the major ways in which maternal status is of effect on child's survival, health, and status of nutrition within the household via maternal power to bargain relative to other individuals of the household. The figure illustrates the two elements of the bargaining power of women, which are; power to take decisions, and access to and participation in the control of resources. These two elements (power to take decisions, and access to and participation in the control of resources) significantly influences the nutritional, health, and survival of young children.

From figure 8 above, low status of women in the society translates into lack of ability to adequately have authority to bargain in the family. The inability of maternal bargaining capability in the family leads to the lack of two vital elements which are; the absence of decision making power, and the lack of access to control household resources. These two indicators (absence of power to make decisions, and the unavailability of access to and control of resources) translates into an obstacle of women to obtain health services and that of their children, and the distribution of resources evenly in the family. The end result thus is influential on the nutritional status, health and survival of children.

Bargaining power was propounded by Sen's theory of 'intra-household bargaining' (Sen 1990) who demonstrated how absence of equality among individual members in a household affects the process of making decision and distribution of resources. Sen is of a view that, a person's 'rights' to execute decisions and utilize resources are ascertained by their status in the household, jointly based on their perceived contribution and level of empowerment. Where mothers have lesser chances to acquire income outside the household, and where child's care and household responsibilities are seen as 'lower status' contribution, bargaining power of women declines.

Therefore, the studies reviewed above reveals that bargaining power of women is affected in two main avenues. Firstly, the tendency to which the capability of women to partake in execution of decisions in the household affects how resources are made available to children for their health and nutritional inputs (i.e. feeding routine, treatment for child's ailment and the taking of immunization). Secondly, mother's capability to gain accessibility and control the utilization of resources on personal health and welfare enormously affects child's survival, nutritional and health status. Generally, these studies points out that the control of financial resources by women is a vital attribute in examining child's survival, nutritional and their entire health status, but the limit to what increases women's status are related to progresses made in the health and nutritional level of children which could depend on a wider contextual factors.

3.4 Conclusion

Some conceptual frameworks have been developed to examine the relationship between maternal participation in the control over household financial resources as it affects child nutritional status. The chapter also reviewed empirical studies on malnutrition and intra-household bargaining power, exploring how these studies validate or nullify the theories and proposed relationship between malnutrition and maternal control of household financial resources. Categorizing the reviewed literature under the themes; maternal control of household financial resources, maternal control of household financial resources and poor child nutrition, and the correlation between mother's empowerment and child malnutrition. Though, there are divergent opinions over the relationship between child malnutrition and intra-household bargaining power, many researchers

believe that there is a positive link between mother's participation in the control of household financial resources and child's nutritional status.

CHAPTER FOUR

METHODOLOGY

4.1 Introduction

According to Meekyaa (1992), the strategy adopted or developed for accomplishing the problem, the aims and objectives, and test of hypothesis of a research work constitute its methodology. To achieve the aims and objectives of this research, econometric techniques are employed to verify the effect of mothers' control of household financial resources on child malnutrition. This chapter details the methodology used for the research. The theoretical concepts underpinning the research, econometric estimation technique and the data set used for the study are also discussed in this chapter.

Binary models are relatively fundamental when the study in view is based on micro level data, and the dependent variable is dichotomous. In the same vein, this research seeks to evaluate the association between maternal control of household financial resources and child's nutritional status. Because this research seeks to examine the effect of maternal control of household financial resources on outlined child nutritional indicators in Ghana, logistic regression is an appropriate estimation technique targeted at achieving this objective since the dependent variable is dichotomous in nature.

4.2 Theoretical Framework

Many theoretical frameworks have been conducted to analyze the relationship between maternal control of household financial resources and child malnutrition. For instance, in the work of Lancaster (1971); Gorman (1980); Ladd and Suvannunt (1976), among others, which deals with food characteristics demand. In the framework, a child attains a given nutritional status depending on the set of nutrients available in the diet (such as carbohydrate, protein, vitamins, minerals) and not merely from the food itself. Thus, this section examines theoretical arguments of how mothers' control of household financial resources influences child's malnutritional status.

Thomas (1994) specifies a health production function where child's health is a function of a series of health inputs such as nutritional intake, the quantity and quality of child/health care, and the person's and household attributes given a standard utility function of members of the household depending on a budget constraint. This concept ordinarily can be carried out in the framework of unitary household models where the head of the household implements decisions on behalf of all household members, all the resources in the household are put together, where both father and mother have a single utility function (Becker, 1974). However, the unitary model has been empirically criticized by Lundberg et al. (1997) who discovered proof that the household expenditure on children's and women's clothing, in relation to clothing for men, rose after policy change in the United Kingdom that transferred allowance of children to mothers in the late 1970s.

4.3 The Model

To evaluate the influence of maternal role in expenditure decisions as it affects nutritional status of children, we depend on the theorizing of child's anthropometric production function outlined by Thomas and Strauss (1992). The theoretical model was based on a wider household production function, and household health production function investigated by Rosenzweig and Schultz (1982) which was adopted by Annim (2012) in his study of mother's role in spending decision as it affects child's nutritional status in India. Annim's study draws upon three rounds of NFHS data, NFHS-1 (year 1992-93), NFHS-2 (year 1998-99) and NFHS-3 (year 2005-06). Adopting the same theoretical model, my study on the effect of mother's participation in the control of household financial resources on child malnutrition in Ghana will rely on the 2014 GDHS data set.

The theoretical model will be based on the cooperative bargaining model in line with most empirical research on child's nutrition and health where outcomes of bargaining are more equally beneficial to all members of the household, and have been regarded as a more "natural" means of analyzing the household unit. . We assume that a household comprises of a mother m , a father, f , and a given number of children, k , regarded as 'public good' for both spouses. It is assumed that children do not make decisions. To simplify things, father and mother care about the quality of nutrition as well as the health of their children. Let x_j be the j^{th} individual's consumption (where $j = m, f$), while q is child's (average) quality of health. The j individual's utility is defined as $U_j(x_j, q | A_j)$. Here, we define A_j as extra-household environmental parameters (EEP), a vector consisting of exogenous factors that ascertain the preferences of the individual j . A_j may rely on

the factors ascertained outside the household, for instance, transfer payments for j , and his/her personal attributes.

Every person is considered to select x_j (personal consumption) to maximize q (quality of child's health). In this scenario, the family utility function is stated as $\alpha U_M(X_M, q; A_M) + (1 - \alpha)U_f(X_f, q; A_f)$ where α implies the “bargaining power” of the mother (wife) in a family ($0 < \alpha < 1$). The household's utility maximization problem is outlined thus as:

$$\text{Max } U_H = \alpha U_M(X_M, q; A_M) + (1 - \alpha)U_f(X_f, q; A_f) \dots\dots\dots (1)$$

Subject to

$$I = P_M X_M + P_f X_f + P_c q \dots\dots\dots (2)$$

Where ‘ I ’ is household's income, ‘ P_i ’ is the price of private goods for the father or the mother, and ‘ P_c ’ is the shadow price of public goods, implying children in this instance. In general, the optimal q^* (health quality of child) will rely on parameters such as α, P_c, I, P_i , and A_i stated as follows:

$$q^* = q^*(\alpha, I, P_M, P_f, P_c, A_M, A_f) \dots\dots\dots (3)$$

This model lays emphasis on household decision as it influences child's health. For instance, “bargaining power” α may indicate maternal empowerment represented by female education and female participation in the labour market. Based on the assumption that a mother has higher likelihood than a father to value q , the quality of child's health, stronger bargaining power of the woman reflected by higher α results in a more enhanced nutritional status. In the framework, higher educational attainment has the tendency of improving child's nutritional status via higher

α_i . A_i indicates each household member's attitude towards health care, which may vary in various classes or social groups. Economic growth improves a household's level of income ' I ' and enhances the health status of their children.

However, the above theoretical model has a shortcoming in the sense that "bargaining power" α is handled as an exogenous variable ascertained by for example, female education or female participation in the labour market, which in turn is an indication of cultural attributes amongst others. However, the bargaining coefficient, α , can be endogenous in real life, implying that household preference on the quality of health of a child influences α , as modelled by Basu (2006) who assumed the endogeneity of α in the collective-bargaining model.

4.4 Empirical Estimation

From the discussions so far, the health of a child depends on a series of social and economic factors and also on the level of father, and/or mother's participation in the control of household financial resources. The relationship between child's nutritional status and maternal control of household financial resources is estimated using three regression models shown below:

$$WWHH = \beta_0 + \beta_1 X_i + \beta_2 A_i + \beta_3 H_i + \beta_4 S_i + \beta_5 C_i + \beta_6 M_i + \beta_7 E_i + \beta_8 W_i \\ + \beta_9 I_i + \beta_{10} R_i + \beta_{11} Z_i + \beta_{12} K_i + \beta_{13} G_i + \beta_{14} U_i + \beta_{15} V_i + \varepsilon_i$$

$$HHAGE = \beta_0 + \beta_1 X_i + \beta_2 A_i + \beta_3 H_i + \beta_4 S_i + \beta_5 C_i + \beta_6 M_i + \beta_7 E_i + \beta_8 W_i + \beta_9 I_i \\ + \beta_{10} R_i + \beta_{11} Z_i + \beta_{12} K_i + \beta_{13} G_i + \beta_{14} U_i + \beta_{15} V_i + \varepsilon_i$$

$$WWAGE = \beta_0 + \beta_1 X_i + \beta_2 A_i + \beta_3 H_i + \beta_4 S_i + \beta_5 C_i + \beta_6 M_i + \beta_7 E_i + \beta_8 W_i \\ + \beta_9 I_i + \beta_{10} R_i + \beta_{11} Z_i + \beta_{12} K_i + \beta_{13} G_i + \beta_{14} U_i + \beta_{15} V_i + \varepsilon_i$$

Where the nutritional outcome of children is measured independently as Weight-for-height (*WWHH*), Height-for-age (*HHAGE*), and Weight-for-age (*WWAGE*). Each of these nutritional outcomes is estimated depending on mother's participation in the control of household financial resources, and other household socio-economic characteristics which are:

X_i : Region

A_i : Index of mother's control of household financial resources

H_i : Child's birth size

S_i : Mother's education

C_i : Ethnicity

M_i : Household size

E_i : Time spent to water source

W_i : Number of children under five in household

I_i : Postnatal check

R_i : Health insurance

Z_i : Children ever born

K_i : Bride wealth

G_i : Child's age

U_i : Child's sex

V_i : Residence

ε_i : Error term

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \beta_8, \beta_9, \beta_{10}, \beta_{11}, \beta_{12}, \beta_{13}, \beta_{14}, \beta_{15}$ are parameters which measures the relative effect of the independent variables on each of the individual nutritional outcomes of children.

4.5 Estimation Technique

Studies where the regressand is dichotomous, the Linear Probability Model (LPM), logit or probit estimation technique is adopted. The LPM which allows for the usage of Ordinary Least Square to evaluate parameters but is faced with a series of challenges. It is characterized by heteroscedasticity, non-normality of the disturbance term, low R^2 and non-fulfilment of $0 \leq (Y_i/X_i) \leq 1$ restriction of binary models. Though these issues can be subdued with a series of solutions, the LPM assumes that the marginal effect of the independent variables remain constant throughout (Gujarati, 2004). This makes the LPM an undesirable form of estimation though it is

the easiest. The logit or probit model is more appropriate considering the challenges of the Linear Probability Model.

To examine the relationship between the nutritional status of children and the extent of maternal control of household financial resources, the study, like several other health economics research that adopt micro level data, uses the logit model. The logistic regression predicts the likelihood of a scenario occurring (Green, 2003). This statistical model makes available an adequate evaluation of the association between the likelihood of a response which has two outcomes and the variable or variables that influence(s) this outcome.

The logit (natural logs) regression analyzes the odds of the unknown binomial variable as linearly dependent on the independent variable and this linear association is deduced from the logistic Cumulative Density Function (CDF). Given that the probability density function (ϕ), the logit function is given as; $\text{logit}(Y) = \log[O(Y)] = \log[y/(1 - y)]$. This is done so as to transform the dichotomous Y to a sort of continuous form. The density function associated with it is very close to a standard normal distribution. The cumulative logistic function for logit is based on the concept of an odds ratio.

Let the log odds that $y = 1$ be specified as shown below in the equation;

$$\ln(p/1 - p) = \beta_1 + \beta_2 X_{ai} + \dots + \beta_a X_{ai} = Z$$

Then solving for the probability that $y = 1$, we have:

$$P/1 - P = e^Z$$

$$P = (1 - P)e^Z = e^Z - Pe^Z$$

$$P + Pe^z = e^z$$

$$P(1 + e^z) = e^z$$

$$P = e^z / 1 + e^z$$

Therefore the Logit $(p_i) = \beta_0 + \beta_i x_i$

Where “ P_i ” is the chance of an outcome, “ β_0 ” is the intercept, “ β_i ” are the coefficient of the explanatory variables, while “ X_i ” are the independent variables.

The model is adopted to provide an appropriate description of the association between the occurrence of undesirable nutritional status among children who are 60 months old and below, and the level of mother’s control of household financial resources including other socio-economic attributes that ascertains the status of child’s nutrition. Applying the model to address the goals of the research, P_i represents the probability of an outcome, B_0 is the intercept, β_i are the coefficients of the explanatory variables whilst X_i are the independent variables.

The effect of mothers’ intra-household spending decision on child nutritional indicator is examined by the use of marginal effect. In the logit model, coefficients of independent variables evaluate the change in log-odds based on a unit change in the explanatory variable rather than the marginal effect. However, the effect of the independent variables can be evaluated in relative terms using the marginal effect of the logit relation: $h_i(x_i, \beta) = \Lambda(\beta'x) [1 - \Lambda(\beta'x)] \beta_i$. These estimates will ascertain the effect of maternal control of financial resources on child nutritional outcome.

4.6 Definition of Explanatory variables and their expected results

The independent variables in the research are categorical variables where each variable is captured as a dummy variable and one of its categories is assumed as the reference category.

Child's Sex: Health risk among children generally varies between males and females. In absence of gender-based discrimination in the care and treatment of young children, infant girls are biologically more robust and are expected to have better health stock than boys, while cultural norms tends to favour infant boys. According to Mat Lazim et al (2012) there is consistently a higher mortality rate among male across all age groups in Malaysia. Kaldewei (2010), Azad (2009) and Zewdie et al. (2013) found child's sex to be a major determinant of child survival. The responses on this variable have been denoted as male (1), female (0), with female as the reference category. The expected sign of the coefficient could either be positive/negative (+/-).

Child's Age: This has been identified by a series of research to affect the prevalence of child malnourishment significantly. Studies have established that child's age and the prevalence of child malnutrition are positively related. The implication is that as child's age increases, malnutrition prevalence rises as well. A research conducted in Ethiopia has also reflected rise in malnutrition with an increase in child's age (Yimer, 2000). The discoveries are alike in Nakaseke and Nakasongola districts where children of between 37-48 months old were five times more likely to be underweight than their counterparts who were 12 months old. (Nguyen and Kam, 2008) discovered that the risk of poor nutrition rises with age of a child. Children in the youngest age group 0-11 months had enormously lesser risk of being stunted, wasted, and underweight compared to children who are older (Nguyen and Kam, 2008). The low risk to malnourished

children aged between 0-11 could be as a result of the protective effect of breastfeeding in their earliest stage of livelihood. Higher prevalence of poor nutrition after a year is connected to insufficient diet supplementation during the period of weaning. The ages of children indicated in the GDHS data sets would not be categorized but rather the actual values would be used. The expected sign of the coefficient can either be positive/negative (+).

Child Birth Size: Child birth size is the first size of a child measured immediately after birth (WHO). Birth size is deemed important in this study because a number of researchers have found it as a significant factor that influences childhood nutritional outcome across the world. According to Butler and Alberman (1969), MacDorman et al. (1999), children with very small birth size have a higher tendency to become malnourished in the first days of life, or even likely to develop infections as well as learning disabilities in future. In Ghana, records on birth size in general have been difficult to obtain because a lot of babies are delivered outside health facilities. With respect to that, retrospective data like GDHS data capture birth size as indicated by facilities or as mothers are able to recall. Also, mother's personal evaluation of the size of their babies at birth is used. Records on birth size in the GDHS datasets increase from survey to survey. For example in 2003 GDHS dataset, only 28 percent of all births have their birth sizes captured and this increases to 43 percent in the 2008 survey, which consistently increased to 60 percent in the 2014 GDHS dataset. In this study, the perceived birth size would be categorized in the form; Very large (1), larger than average (2), average (3), smaller than average (4) and very small (5). Very large (1) will serve as the reference category in the study. The expected sign of the coefficient is negative (+).

Index of Mother's Control of Financial Resources:

Mother's control over household financial resources promotes household food security and nutrition because women show a tendency to spend resources on nutritional inputs such as food, and health care (Haddad, 1999). Improved control over financial resources gives mothers a better opportunity to provide better care which includes better food preparation and storage practices, hygienic practices, enhanced care for children in an episode of an ailment, and motivation for supporting child development amongst others. Women's labour force participation raises household income, with consequent advantage on all members of the household specifically, the mother's nutritional status. Employment can improve maternal power and status, and could enhance maternal preference to expend her income on health and nutrition. Though employed, women without control over their earnings and power to make decisions within the household are deprived of socio-economic power and the capability to execute actions that will enhance their personal welfare. Research in Africa states that, at identical levels of income, households where mothers have a higher autonomy over their earnings have a higher likelihood to be well secured in terms of food (Kennedy and Haddad, 1991).

The index of maternal control of household financial resources is an index constructed by the combination of two separate variables from the GDHS 2014 data set namely; who decides on how wife's earnings are expended, and who decides on how husband's earnings are expended within the household. From the two variables (who decides on how wife's earnings are expended, and who decides on how husband's earnings are expended), an index is formed which constitutes three categories; mother's participation in the control of her earnings and her husband's earnings, her

participation in the control of her husband's earnings or her earnings, and her lack of participation in the control of neither her financial resource nor financial resource of her husband.

Therefore, the deduced index of mother's participation in the control of household financial resources consists of the various categories; mother does not participate in the control of household financial resources (1), mother participate in the control of her earnings, or her husband's earnings (2), and mother participate in the control of her earnings and the earnings of her husband (3). The sign of the coefficient is expected to be positive (+).

Mother's Education: This evaluates the highest educational level attained by the mother. Maternal education is categorized into; no education, primary education, secondary education, higher education. The categories of mother's education was later modified into three (no education, primary education, and higher education). Secondary education was combined with Higher education and renamed as Higher education. Higher educational attainment raises the effectiveness of producing better health outcomes as mothers with greater educational attainment are assumed to be able to utilize medical input, nutrition and exercise in a more efficient pattern that aid enhance the health status of their children.

Teicher (2005) argues that women with low educational attainment have a greater likelihood to lose their children to illness or disease. In the same vein, Zakir and Wunnava (1997) and Currie and Moretti (2003) all posit a positive association between greater female educational level and more enhanced child health. Thus, it is assumed that children born by women with secondary education and higher have more efficient health outcomes compared to those born to mothers with lower educational attainment. The categories are no education (1), primary education (2), and

higher education (3). No education (1) is therefore selected as the reference category. The expected sign of the coefficient of Mother's education is positive (+).

Health Insurance: Health insurance has shown to be vital in evaluating the preference of a delivery facility by a pregnant mother. In Ghana, with regards to NHIS, mothers enrolled in the program have improved access to relevant maternal and child health services and ultimately enhanced health status. According to (Mensah, 2010), NHIS enrollees in the Upper East, and Brong Ahafo regions had higher likelihood to receive anti natal care, and to give birth in a hospital facility. The statistically significant relationship between facility-delivery and health insurance is the same with other research that link ownership of health insurance to the utilization of maternal health services as in the case of antenatal care services (Jewell 2009). Fundamentally, health insurance coverage reduces out-of-pocket payment and thus leads to improved health outcomes of both mothers and children. Nevertheless, other studies have asserted a weak relationship between women who are insured and the quantity and quality of prenatal care received (Kaestner 1999). The categories will be mother has health insurance (1), and mother does not have health insurance (0). Mother does not have health insurance will serve as the reference category (0). The expected sign of the coefficient of variable "Health Insurance is positive (+).

Residence of Child: The area in which a child is given birth to and grows is assumed to immensely affect his or her likelihood of survival and entire health conditions. As indicated by Yi et al (2011), probability of survival for children and adults are greater in urban areas than in rural areas. Cities in Ghana generally have more efficient health facilities and hygienic conditions than rural areas. Consequently, mothers in urban areas easily get access to medical care for their kids than their peers residing in rural areas. The categories are urban (1), and rural (0). The rural area (0) serves

as the reference category. The sign of the coefficient of “Residence of Child” is expected to be positive (+).

Region: Children born in each of the ten regions of Ghana do not face the same level of nutritional attainment. Some regions are endowed with economic and social factors that supports good health and nutritional attainment than others. Children who are born or live in regions with better economic and socio-cultural conditions that supports proper nutritional status are expected to be better nourished than their counterparts in regions with inadequate economic and socio-cultural conditions. Nutrition continues to remain poor particularly in the Northern region of Ghana, which has recorded two out of every five children are stunted, with over 80% of these children suffering from anaemia (Ngongi, 2013). The categories are Western region (1), Central region (2), Greater Accra region (3), Volta region (4), Eastern region (5), Ashanti region (6), Brong Ahafo region (7), Northern region (8), Upper east region (9), and Upper west region (10). The reference category will be the Western region (1). The expected sign of the coefficient is Region is positive (+/-).

Ethnicity: Ethnicity can be referred to as a social group of people characterized by a distinctive social and cultural tradition, maintained within the group from generation to generation, a common history and origin, and a sense of identification within the group. Members of a particular ethnicity have distinctive features in their way of life, shared experiences and often a common genetic heritage. These features may be reflected in their health and disease experienced. From the GDHS data set, ethnicity had the various categories; Akan (1), Ga/Dangme (2), Ewe (3), Guan (4), Mole-dagbani (5), Grusi (6), Gurma (7), Mande (8), and others (9). Akan (1) will serve as the reference category. The expected sign of the coefficient of ethnicity is positive/negative (+/-).

Household Size: Household size includes all the people who occupy a housing unit. Average household size is a measure obtained by dividing the number of individuals in households by the total number of households. It is expected that the higher the number of individuals living in a housing unit, the greater the pressure on facilities, and disposable income within the housing unit, also the lesser the number of individuals living in a housing unit, the less likely excess pressure would be exerted on amenities and one's disposable income. The various household sizes indicated in the GDHS dataset would not be categorized, rather the actual values would be used. The sign of household coefficient is expected to be negative (-).

Time spent to water source: This refers to the length of time spent to reach a particular source of water supply. The mean single trip time to collect water ranges from 10 to 65 minutes in urban areas with an average increase or decrease of 2 to 13 minutes in rural areas. The higher the length of time taken to get to water source, the less likely it is for those set of individuals to be water sufficient. Also, the lesser the length of time it will take residence in an area to get to water source, the more likely those set of individuals will be self-sufficient with regards to the proximity to a readily available source of water. This phenomenon thus translates to the state of health, and wellbeing of those group of persons. The various time periods spent to get to water source indicated in the GDHS dataset would not be categorized rather the actual values would be used. The expected sign of its coefficient is negative (-).

Total number of children ever born: The total number of children ever born by a particular woman is a measure of her lifetime fertility experience up to the moment at which the data are collected. The percentage of women with parity three or more by age group is the proportion of women in a particular age group who have had at least three live births. The various numbers of

children ever born by a woman indicated in the GDHS dataset would be adopted and not categorized. The higher the number of children ever born by a woman, the higher the magnitude of caregiver responsibility, while the lesser the number of children ever born by a woman, the lower the extent to which caregiver responsibility is required. The expected sign of its coefficient is negative (-).

Postnatal check: Postnatal check is a six-week check where a mother who has newly delivered of a child books appointment with a doctor (physician) to ensure the baby is healthy and growing properly. The check takes place between six and eight weeks after delivery. Effective postnatal check can significantly reduce maternal and neonatal mortality. Danger signs for the mother in the postnatal period include the uterus not well contracted active vaginal bleeding and shock. A mother who undergoes postnatal check after birth has higher tendency of having child who is healthy. While a woman who fails to undergo postnatal check after birth is liable to have a child who is unhealthy and susceptible to all forms of diseases. From the GDHS data set, postnatal check is captured as a dummy variable with responses as No (0), and Yes (1). Therefore the reference category is No (0). The expected sign of the coefficient of postnatal check is positive (+).

Bride wealth in current union: Anthropologist Roger Keesing defined bride wealth as “marriage payments from the husband and his kin to the bride’s kin”. Essentially this means that bride wealth marriages are those marriages in which the groom (often his family) remit a payment in some form to the bride’s family in order for the union to be termed official. From the GDHS dataset, bride wealth was captured as a dummy variable with the categories No (0), and Yes (1). The reference category is No (0). The expected sign of the coefficient of bride wealth is positive/negative (+/-).

Number of children under five in household: The number of children less than five years in a given household constitutes the total infants or newly born children whose ages ranges between 0 to 60 months. The higher the number of children less than five years in a household, the higher the dependency and caregiver responsibility required to ensure the children stays healthy. While the lower the number of children under five years in a household, the lesser the dependency and caregiver responsibility required. The number of children under five years indicated in the GDHS dataset would not be categorized rather the actual values would be used. The expected sign of its coefficient is (-).

4.7 Source of Data

An estimation of the effect of mothers' control of household financial resources on child malnutrition in Ghana requires nationwide data that cover economic, social and geographical variables. The 2014 GDHS which is the most recent nationwide health survey structured to make available data for examining the population and health condition of individuals in Ghana, provides a superior source of data for the estimation. The survey assembled facts on child and mother's health, women and child's nutritional status, attitudes to health, fertility choices and other national health indicators. It is an update on the other five Demographic and Health Surveys previously undertaken in 1988, 1993, 1998, 2003, and 2008.

The 2014 GDHS covered a nationally representative sample of about 11,835 families and it was jointly executed by the Ghana Statistical Service (GSS), and the Ghana Health Service (GHS) using three kinds of questionnaires, namely; women's questionnaire, men's questionnaire, and household questionnaire.

The 2014 Ghana Demographic and Health Survey (GDHS) is structured to make available data aimed to monitor health conditions in Ghana. The 2014 GDHS is the sixth Demographic and Health Survey conducted in Ghana since 1988. A nationally representative sample of 9,396 women age 15-49 years in all chosen households and 4,388 men age 15-59 years in half of the chosen households were interviewed. This represents a response rate of 97 percent for women and 95 percent for men. The sample design for the 2014 GDHS makes available estimates at the national and regional levels, and also for both rural and urban areas.

4.8 Conclusion

The chapter commenced by taking a brief look at estimation techniques employed from empirical studies on maternal control of household financial resources and child malnutrition. Considering the data set available and the scope of this study, the binary model, specifically the logistic regression model is selected for its relative advantages. The chapter subsequently discussed the theoretical model that anchors the research. The theoretical model is based on the broader household health production function examined in detail by Rosenzweig and Schultz (1982), and adopted by Annim (2012). It provides a detailed relationship between intra-household bargaining power and child malnutrition. The model is adopted and modified to suit the investigation into the

effect of maternal control of household financial resources on the nutritional indicator of children in Ghana. The independent variables that affect child nutritional status and how they are expected to affect child malnutrition are also discussed. The last part of the chapter describes the data that will be used for the empirical estimation. The next chapter discusses the results.

CHAPTER FIVE

ESTIMATION AND DISCUSSION OF RESULTS

5.1 Introduction

Studies that have centered on health outcome most often express the effect of the independent variables in relative terms. To investigate the influence of maternal control of household financial resources as it affects child malnutrition, this study determines the relative effect of household bargaining power of mothers on child wasting, stunting, and underweight. The binary variables for stunting, wasting, and underweight are obtained by creating a dummy. If each Z-score of the nutritional outcomes is less than or equal to negative 2 standard deviation, the child is term as either stunted, wasted, or underweight. While if the Z-score of the nutritional outcomes is greater than negative 2 standard deviation, then the child is neither stunted, wasted, nor underweight. The relationship between mothers' control of household financial resources and these child health outcomes (wasting, stunting, and underweight) are expressed using the logistic regression model. The coefficient of the marginal effects of maternal participation in the control of household financial resources in the model explains the relative effect of mother's control of household financial resources on the mentioned child nutritional indicators. This chapter commences by first considering the descriptive statistics of the regression variables whilst the other part of the chapter centers on the empirical estimations and discussions of the results.

5.2 Descriptive Statistics for Regression variables

The 2014 GDHS enquired from mothers who had given birth within the five years that preceded the survey questions pertaining to child and mother's health. The data obtained which are relevant to this study are summarized in Tables 5.2.1, 5.2.2, 5.2.3, and 5.2.4.

Table 5.2: Distribution of Child Nutritional Outcome

Table 5.2.1: Distribution of Child Wasting

Variable	Frequency	Percent	Cumulative Frequency
Not Wasted	20,545	92.06	92.06
Wasted	1,773	7.94	100

Source: Author's Computation from the 2014 GDHS

Table 5.2.1 shows the prevalence of children who are wasted, or not wasted in Ghana. The proportion of children who were wasted within five years before the survey accounted for about 7.94 percent, while 92.06 did not experience wasting. The percentage of children below 60 months old who did not experience wasting supersedes (92.06) the percentage of children less than 60 months who experienced wasting (7.94).

5.2.2 Distribution of Child Stunting

Variable	Frequency	Percent	Cumulative Frequency
Not Stunted	20,314	91.02	91.02
Stunted	2,004	8.98	100

Source: Author's Computation from the 2014 GDHS

Table 5.2.2 shows the distribution of stunting amongst children in Ghana. The percentage of children who experienced stunting within five years before the survey was 8.98 percent, while 91.02 of children less than five years did not experience stunting. The proportion of children below 60 months old who were not stunted is higher (91.02) compared to children less than 60 months who experienced stunting (8.98).

5.2.3: Distribution of Child Underweight

Variable	Frequency	Percent	Cumulative Frequency
Not Underweight	20,257	90.77	90.77
Underweight	2,061	9.23	100

Source: Author's Computation from the 2014 GDHS

From Table 5.2.3, children who were underweight within five years prior to the survey in Ghana was 9.23 percent, while 90.77 percent children below five years did not experience underweight.

The percentage of children below 60 months who did not experience underweight is higher (90.77) compared to children below 60 months who were underweight (9.23).

Table 5.2.4: Descriptive Statistics of Regressors (Independent Variables).

Variable	Freq	Percent	Cumm. Freq
Categorical Variables			
Index of Mothers' Control of Financial Resources			
Mother have no control	469	3.73	3.73
Mother controls her or husband's earnings	6,860	54.50	58.23
Mother controls her and husband's earnings	5,258	41.77	100.00
Child's Birth Size			
Very large	902	15.96	15.96
Larger than average	1,923	34.02	49.97
Average	1,869	33.06	83.04
Smaller than average	686	12.14	95.17
Very small	273	4.83	100.00
Mother's Education			
No education	9,559	42.83	42.83
Primary education	4,486	20.10	62.93
Higher education	8,273	37.07	100.00
Ethnicity			
Akan	8,516	38.16	38.16
Ga/dangme	1,110	4.97	43.13
Ewe	2,439	10.93	54.06

Guan	628	2.81	56.88
Mole-dagbani	5,945	26.64	83.51
Grusi	982	4.40	87.92
Gurma	2,053	9.20	97.11
Mande	270	1.21	98.32
Others	374	1.68	100.00
Region			
Western region	2,178	9.76	9.76
Central region	2,266	10.15	19.91
Greater Accra region	1,648	7.38	27.30
Volta region	1,912	8.57	35.86
Eastern region	2,123	9.51	45.38
Ashanti region	2,317	10.38	55.76
Brong Ahafo region	2,444	10.95	66.71
Northern region	3,227	14.46	81.17
Upper East region	2191	9.82	90.98
Upper West region	2,012	9.02	100.00
Continuous Variables			
Household size	1-33	100	100
Child's Age in months	0-59	100	100
Time spent to water source	0-240	100	100
Number of children under five in household	0-8	100	100
Total number of children ever born	1-13	100	100
Dummy Variables			

Child's Sex			
Female	10,854	48.63	48.63
Male	11,464	51.37	100.00
Residence			
Rural	13,478	60.39	60.39
Urban	8,840	39.61	100.00
Health insurance			
No	7,722	34.61	34.61
Yes	14,590	65.39	100.00
Postnatal check			
No	1,113	27.02	27.02
Yes	3,006	72.98	100.00
Bride wealth			
No	1,863	12.04	12.04
Yes	13,610	87.96	100.00

Source: Author's Computation from the 2014 GDHS

Table 5.2.4 indicates the descriptive statistics of the dimensions of the explanatory variables. First is the categorical variables (Index of the participation of Mothers' Control of Household Financial Decision, Childbirth Size, Mother's Education, Ethnicity, and Region). Index of Mothers' Control of Household Financial Decision, indicates households where mother do not participate in the control of household financial resources constituting about 3.73 percent, where mother control her earnings or her husband's earnings is about 54.50 percent, while when mother controls her and husband's earnings constitutes 41.77 percent. For Childbirth Size, very large constitutes 15.96

percent, 34.02 percent are larger than average, 33.06 percent are average in size, 12.14 percent are smaller than average, while 4.83 percent are very small in size. Next is Mother's education, where 42.83 percent of mothers have no education, 20.10 percent have primary education, while 37.07 percent have higher education. For Ethnicity, Akan constitutes 38.16 percent, Ga/dangme 4.97 percent, Ewe 10.93 percent, Guan 2.81 percent Mole-dagbani 26.64 percent, Grusi 4.40 percent, Gurma 9.20 percent, Mande 1.21 percent, while other ethnic groups constitute 1.68 percent. Finally, for Region, mothers interviewed who reside in Western region constitutes 9.76 percent, 10.15 percent reside in Central region, mothers in Greater Accra are about 7.38 percent, 8.57 percent are in Volta region, mothers in Eastern region are about 9.51 percent, 10.38 percent are in Ashanti region, 10.95 percent in Brong Ahafo region, 14.46 percent in Northern region, 9.82 percent in Upper East region, while 9.02 percent mothers are in the Upper West region.

Next will be for the Continuous Variables (Household size, Child's Age, Time spent to water source, Number of children under five in household, Total number of children ever born). Household size is a continuous variable which ranges from 1 to 33 individuals. Child's Age ranges from 0 months to 59 months (less than five years old). Time spent to water source ranges from 0 to 240 minutes, Number of children under five in household ranges 0 to 8 children, while the Total number of children ever born is from 1 to 13 children.

Finally will be the Dummy Variables (Child Sex, Residence, and Insurance, Postnatal check, and Bride wealth). For Child Sex, 48.63 percent are females while 51.37 percent are males. For Residence, it shows that a higher fraction of the mothers interviewed in the survey resided in rural areas. Approximately 60.39 percent lived in rural areas of Ghana whilst 39.61 percent of them lived in urban towns and cities. For Health Insurance, mothers who were covered under the NHIS

were 65.39 percent, while 34.61 percent were not insured under the scheme. Mothers who went for postnatal check constitute 72.98 percent, 27.02 percent of them did not carry out postnatal check. Finally for Bride wealth, women with bride wealth in current union are 87.96 percent, while those without bride wealth in current union constitutes 12.04 percent.

5.3 Empirical Estimation and Discussion of Results

Based on the study's objectives, three different estimations has been carried out and the marginal effects are presented in tables below. Again, the logistic estimation of maternal control of household financial resources as it affects child's nutritional status is reported in appendices. This is done together with the discussion of the results.

Using the 2014 GDHS data, logistic regression models are carried out to evaluate the effect of maternal control of household financial resources on child malnutrition among children under 60 months old. The effect of maternal control of household financial resources is estimated by running an independent logistic regression for each of the specified child nutritional indicators. The regression model controls for the effect of area of residence, gender of children, regional variation, child's age in months, health insurance, child's birth size, mother's education, variation in ethnicity, household size, time spent to get to water source, number of children under five in household, total number of children ever born by a mother, postnatal check, and bride wealth in current union. The estimation of each of the child nutritional outcome reports the coefficients, standard errors, the z-value as well as their significance.

5.3.1 How Stunting among Children Under-five is influenced by Mother's Control of

Household Financial Resources.

5.3.1: Marginal Effect of Child Stunting

VARIABLE	HEIGHT-FOR-AGE
INDEX OF MOTHER'S CONTROL	
Mother has no control (Reference category)	
Mother controls her or husband's earnings	-0.1493*** (0.0580)
Mother controls her and husband's earnings	-0.1818*** (0.0591)
CHILD'S BIRTH SIZE	
Very large (Reference category)	
Larger than average	0.0690 (0.0465)
Average	0.1626*** (0.0474)
Smaller than average	0.1691*** (0.0557)
Very small	0.1182 (0.0856)
MOTHER'S EDUCATION	
No education (Reference category)	
Primary education	-0.0136 (0.0499)
Higher education	0.0652 (0.0452)
ETHNICITY	
Akan (Reference category)	
Ga/dangme	-0.0524 (0.0996)
Ewe	0.0072 (0.0641)
Guan	0.0817 (0.0864)
Mole-dagbani	0.0063 (0.0576)
Grusi	0.0361 (0.0776)
Gurma	0.0810 (0.0715)
Mande	0.0497 (0.1459)
Others	0.2075* (0.1093)
Child's sex (Male)	0.0178 (0.0302)

Child's age	0.0038*** (0.0011)
Number of Children under five in household	-0.0027 (0.0215)
Total number of children ever born	0.0146* (0.0081)
Postnatal check (Yes)	0.0150 (0.0397)
Household size	-0.0010 (0.0015)
Bride wealth (Yes)	-0.0395 (0.0470)
Time spent to water source	0.0001 (0.0004)
Health insurance (Yes)	-0.0613* (0.0366)
Residence (Urban)	-0.0644* (0.0355)
REGION	
Western region (Reference category)	
Central region	-0.0529 (0.0721)
Greater Accra region	-0.2277** (0.0854)
Volta region	-0.0247 (0.0903)
Eastern region	0.0029 (0.0752)
Ashanti region	-0.0505 (0.0691)
Brong Ahafo region	0.0614 (0.0668)
Northern region	0.0194 (0.0762)
Upper east region	-0.0004 (0.0733)
Upper west region	-0.0319 (0.0880)
Observations	860

Source: Author's Construct from GDHS, 2014.

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The estimated logit model relating to child stunting and the independent variables are well-specified since the p-value of the chi-square is significant at less than 1 percent. This implies that at least one of the parameter estimates is significantly different from zero. The estimated result of the marginal effect of the model which expresses the likelihood of the occurrence of child stunting for each independent variable relative to the reference category is shown in table 5.3.1

From the estimated marginal effect result, when a mother participates in the control of her own financial resources or her husband's financial resources, children under five years are less likely to be stunted as compared to when a mother does not participate in the control of household financial resources within the household. The probability of the occurrence of stunting among children is 14.93 percent lesser than the possibility of children being stunted when a mother does not participate in the control of household financial resources. Similarly, when a mother participates in the control of her own financial resources and also participates in the control of her husband's financial resources, children less than five years are also less likely to be stunted compared to when a mother does not participate in the control of household financial resources. The probability of the occurrence of stunting among children is 18.18 percent lower than the possibility of children being stunted when a mother does not participate in the control of household financial resources at all.

A study by Schmidt and Raykar (2012) who sort to evaluate if higher bargaining power within the household by women in Bangladeshi is linked with a progress in nutritional and health status of their children. Data used was made available by the 2007 Bangladesh Demographic and Health Survey (BDHS), focusing on children less than 60 months old for which additional anthropometric data were available. OLS regression was used to estimate the model by also including child,

mother, husband and household characteristics as control variables. The regression outcome also revealed that there exist a positive relationship between mother's participation in the control of household financial resources and stunting ratio of their children. It is believed that with a rise in women's empowerment, child health improves. A study done by Smith et al. (2003) indicates that in South Asia, an improvement in mother's control of household financial resources has a strong positive effect on both the long- and short-term nutritional status of children, leading to reduction in stunting.

The findings from this study that mother's participation in the control of household financial resources has a higher likelihood of reducing the prevalence of stunting in Ghana can be corroborated by the opinions of policy makers. For instance, Olivier de Schutter in his presentation to the United Nations in March 2013 argued that "sharing power with women is a shortcut to reducing hunger and malnutrition in children, and is the single most effective step to realize right to food," where he urged world governments to adopt transformative food security strategies that address cultural constraints and redistribute roles between women and men. In the context of children's health outcomes, given that women are typically the primary care takers of children, redistribution of decision making roles in favour of women has the potential to improving children's health outcomes (de Schutter, 2013).

UNICEF in 2011 while analyzing Gender influences on child survival, health and nutrition observed that women's ability to influence decision making in the household determines how resources are allocated for caring practices such as feeding, prenatal and birthing care, curative and preventive health-seeking behaviour for children. Furthermore, women's ability to participate in the control of financial resources in the household has a positive effect on their own health and

well-being, which in turn impacts significantly on their children's survival, growth and development. Similarly, studies have documented a positive relationship between maternal participation in the control of household financial resources and the utilization of health services, which is critical for the health and well-being of the child. In 2007, Woldemicael in his quest to discover if women with higher autonomy seek more maternal and child health care found out that in Ethiopia and Eritrea DHS data that maternal autonomy is associated with an efficient utilization of maternal and child-care services (Woldemicael, 2007). In rural India, mothers who had higher financial autonomy were more likely to breastfeed their 3-5 months old infants than mother who did not have financial autonomy (Shroff et al, 2011). There is also an effect of maternal participation in the control of household financial resources on birth outcomes. For instance, in a study in Bangladesh on the effect of women's decision making autonomy on infant's birth weight observed that mothers with low decision making autonomy in the household were at higher risk of giving birth to children who are malnourished.

Relative to very large childbirth size, mothers who give birth to babies who are average, and smaller than average, significantly increases the probability of stunting among children less than five years. The marginal effect of child's birth size that are average, and smaller than average are 0.1626, and 0.1691 respectively. The estimated marginal effect of 0.1626 for average birth weight means that compared to children born who are very large, the probability of child stunting among children is about 16.26 percent points higher. Similarly, the probability of child stunting is approximately 16.91 percent points higher for children born with smaller than average birth size than children born with very large birth size. The result on child birth size suggests that children who are very large are less likely to be stunted as compared to their counterparts who are either

average or smaller than average. This implies that the larger a child's birth size, the less likely they will be stunted in Ghana.

In the case of ethnicity, a mother from other ethnic group aside Ga/dangme, Ewe, Guan, Mole-dagbani, Grusi, Gurma, and Mande ethnic groups have higher likelihood of having children who are stunted as compared to mothers from Akan ethnic group. Mothers who are from other ethnic groups have 20.75 percent higher possibility of having children less than five years who are stunted compared to mothers who are from Akan ethnicity. Furthermore, a substantial number of studies have documented a relationship between ethnicity, child health and nutritional status.

There are significant inequalities in child nutritional indicator among ethnic groups in sub-Saharan Africa. Studies on the influence of ethnicity on child care practices such as breastfeeding are scarce in developing countries. However, a prominent study in this area is a longitudinal case study of child development among the Gusii people of Kenya conducted by Levina and Dixon. In the study, the primary goal of care among the Gusii is child survival. They are able to realize this goal through prolonged breastfeeding, "an almost exclusive interdependence of the mother-infant pair in the first year of life, and constant availability of the mother to her infant to respond to signs of distress". Kounnavong et al in 2013 conducted a research on the "key determinants of optimal breastfeeding practices in Laos. They found that in Laos, the avoidance of prelacteal feeds in the first three days of life was associated with maternal ethnic background. Sub-optimal infant breastfeeding and feeding practices varies with ethnicity. In addition, a number of studies conducted in developed countries such as the USA and the UK on the "contribution of parental and community ethnicity to breastfeeding practices consistently show ethnicity as a strong predictor of maternal breastfeeding practices.

As ethnicity differ so does differences in the way a child is catered for with respect to his health and nutrition. From the result, mothers who are of other ethnicity are more likely to have children who are stunted compared to women who are Akan. This suggest that ethnic norms and beliefs of Akan women as it concerns child nutrition leads to better health outcomes of children less than five as compared to the ethnic norms of women who are from other ethnic groups in Ghana.

For child's age, as child's age increases from birth, the higher the likelihood of the child being stunted. An increase in a child's age from the point of birth to adulthood increases the chances of being stunted by about 0.38 percent. The age of the child is an important factor in evaluating level of risk of malnutrition. Older children are more prone to undernourishment than the younger children (Ponguo et al, 2005)). A rise in the probability of the occurrence of malnutrition in children as they grow older can be due to inappropriate child feeding practices and /or increased morbidity. A child's growth pattern is majorly dependent on the way he is fed. A child's nutritional status worsens as he or she continue to get older given the trend of poor nutrients the child must have consumed for a given period of time. A child who has been poorly fed for a period of 48 months is more likely to be stunted compared to a child who has been malnourished for 24 months.

A child born in the Greater Accra region has higher chances of not being stunted beyond age five than a child born in the Western region of Ghana. The probability of stunting among children less than five years in the Greater Accra region is 22.77 percent lower than the possibility of stunting among children less than five years old in the Western region. The variation in the occurrence of stunting among children is partly explained by the difference in the socioeconomic conditions that prevails amongst these regions. Greater Accra region has better socioeconomic conditions as well as a more improved living condition than Western region and thus can influence the likelihood of

children not being wasted. Also, mothers who are from Accra are expected to be more enlightened with regards to the best combination of diet meant to enhance nutritional status of their children compared to mothers from Western region. Furthermore, another factor that causes the disparity in the nutritional status of children in Accra and Western region is the differences in their living standard.

Studies in Nigeria, using the Demographic and Health Survey data, have shown the existence of regional (provincial) disparity in child health and survival (Adedini et al, 2014). The regional disparities in child state of health and well-being boil down to the inequitable distribution of maternal and child health care services. Regional disparity has a significant influence on child feeding practices. For instance, a study by Hinde, and Mturi in 1997 on the “social and economic factors connected to duration of breastfeeding practices” in Tanzania, found out that breastfeeding varies according to the geographic region of residence of the child and the mother. Additionally, among Bangladeshi mothers, geographic region of residence was negatively associated with duration of breastfeeding as researched by Akter while researching on the “duration of breastfeeding and its correlates (Akter, 2010). From the forgoing, it is clear that region of residence is closely associated with child feeding practices undertaken by the mother.

The total number of children ever born by a woman influences the nutritional status of her children. The higher the number of children ever born by a mother, the higher the likelihood of the children to be stunted. Conversely, the lower the number of children ever born by a mother, the lower the probability of her children to be stunted. This tendency can simply be attributed to the efforts needed to cater for higher numbers of children compared to having fewer number of children. From the marginal result obtained, the higher the number of children ever born by a woman, the

higher the tendency of having children who are stunted. There is a 1.46 percent higher possibility of a mother to have children who are stunted as the number of the children she gives birth to increases. This result relates to the fact that an addition in the number of children born by a woman, the higher is the childcare responsibility which can be limited by time, income as well as other contributing factors.

Mother who have health insurance have less likelihood of having children who are stunted compared to mothers who do not have health insurance cover. From the marginal result obtained, mothers who are registered under health insurance have 6.13 percent less likelihood of their children less than five years to be stunted compared to mothers who do not have health insurance. Fundamentally, health insurance coverage reduces out-of-pocket payment and thus leads to improved health outcomes of both mothers and children. An uninsured mother spends more trying to improve the stock of health of her child compared to an insured mother. This phenomenon translates into differences in the nutritional status of their respective children in Ghana. Over the years in Ghana, mothers who enrolled under the National Health Insurance Scheme, and who are majorly poor, pay little or nothing to seek for medical service for their children. This reduces the tendency of poor child health regardless of the financial capacity of the mother.

From the marginal result, mothers who reside in the urban area have higher likelihood of their children not to be stunted as compared to their counterparts who stay in the rural area. Mothers who stay in urban area have 6.44 percent lesser chances of having children who suffer from stunting as compared to mothers who live in rural areas. Several studies have demonstrated the influence of rural-urban place of residence on child health and nutritional status. Children in the rural areas are more likely than urban children to have unmet health care needs, possibly due to

barriers to care such as transportation difficulties and non-availability of health care facilities. In Nigeria, using the Demographic and Health Survey (DHS) data suggest that children in the rural settings are disadvantaged both in the proportion of receiving full immunization and individual vaccines (Antai, 2011). These inequalities were also found in India (Singh, 2013). Place of residence also has influence on breastfeeding. In 2012, Viet Nam, Thu and colleagues while researching on “breastfeeding practices in urban and rural Vietnam” found that early initiation of breastfeeding is more prevalent in the urban areas compared to rural areas. Sparks in 2010 while researching on “rural-urban differences in breastfeeding initiative in the US” also observed similar findings, but noted that rural-urban differences in breastfeeding initiation were dependent on mothers’ race/ethnicity and poverty status. A child’s residence (rural or urban) affects his or her growth pattern due to disparity in some fundamental factors that exist in urban and rural areas such as ideology, living standard, hygiene, sanitation, child care education amongst other factors.

5.3.2 How Underweight among Children Under-five is influenced by Mother’s Control of

Household Financial Resources.

Table 5.3.2: Marginal Effect of Child Underweight

VARIABLE	WEIGHT-FOR-AGE
INDEX OF MOTHER’S CONTROL	
Mother has no control (Reference category)	
Mother controls her or husband’s earnings	-0.0892* (0.0604)
Mother controls her and husband’s earnings	-0.1220** (0.0605)
CHILD’S BIRTH SIZE	
Very large (Reference category)	
Larger than average	0.0162

Average	(0.0455)
	0.1623***
Smaller than average	(0.0455)
	0.2054***
Very small	(0.0501)
	0.2054***
MOTHER'S EDUCATION	(0.0718)
No education (Reference category)	
Primary education	
	-0.0176
Higher education	(0.0470)
	0.0343
ETHNICITY	(0.0440)
Akan (Reference category)	
Ga/dangme	
	-0.0284
Ewe	(0.0833)
	0.0589
Guan	(0.0546)
	0.1106
Mole-dagbani	(0.0859)
	0.0301
Grusi	(0.0564)
	0.0489
Gurma	(0.0708)
	0.0183
Mande	(0.0819)
	-0.2282
Others	(0.1722)
	-0.0641
Child's sex (Male)	(0.1470)
	0.0113
Child's age	(0.0285)
	0.0029***
Number of Children under five in household	(0.0011)
	-0.0091
Total number of children ever born	(0.0207)
	0.0068
Postnatal check (Yes)	(0.0075)
	0.0532
Household size	(0.0368)
	-0.0019
Bride wealth (Yes)	(0.0014)
	-0.0334
Time spent to water source	(0.0452)
	-0.0003
Health insurance (Yes)	(0.0004)
	-0.0811**
Residence (Urban)	(0.0357)
	-0.0151
REGION	(0.0351)
Western region (Reference category)	
Central region	

	-0.0908 (0.0661)
Greater Accra region	-0.3171*** (0.0791)
Volta region	-0.1158 (0.0893)
Eastern region	-0.0346 (0.0667)
Ashanti region	-0.1077* (0.0625)
Brong Ahafo region	0.0147 (0.0583)
Northern region	0.0036 (0.06812)
Upper east region	-0.0798 (0.0671)
Upper west region	-0.1061 (0.0821)
Observations	860

Source: Author's Construct from GDHS, 2014.

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The estimated logit model relating to child underweight and the independent variables is well-specified since the p-value of the chi-square is significant at less than 1 percent. This implies that at least one of the parameter estimates is significantly different from zero. The estimated result of the marginal effect of the model which expresses the likelihood of the occurrence of child underweight for each independent variable relative to the reference category is shown in table 5.3.2

From the estimated marginal effect result, when a mother participates in the control of her own financial resources or her husband's financial resources, children under five years are less likely to suffer from underweight compared to when a mother does not participate in the control of

financial resources within the household. The probability of the occurrence of underweight among children is 8.92 percent lesser than the possibility of children being underweight when a mother does not participate in the control of household financial resources. Similarly, when a mother participates in the control of her own financial resources and also participates in the control of her husband's financial resources, children less than five years are also less likely to be underweight compared to when a mother does not participate in the control of household financial resources. The probability of the occurrence of underweight among children is 12.20 percent lower than the possibility of children to be underweight when a mother does not participate in the control of household financial resources at all.

A study by Dancer and Rammonhan (2009) on maternal autonomy and child nutrition in rural Nepal found out that maternal ability to control household financial resources significantly reduces the tendency of child being underweight. While mothers who do not participate in the control of household financial resources increases the likelihood of their children to be underweight. A similar study on whether women's empowerment reduces the prevalence of child underweight in rural India discovered that mother's participation in the control of household financial resources improves chronic cases of underweight in children less than five years old.

The findings from this study that mother's participation in the control of household financial resources has a higher likelihood of reducing the prevalence of underweight in Ghana can be corroborated by the opinions of policymakers. For instance, Olivier de Schutter in his presentation to the United Nations in March 2013 argued that "sharing power with women is a shortcut to reducing hunger and malnutrition in children, and is the single most effective step to realizing the right to food," where he urged world governments to adopt transformative food security strategies

that address cultural constraints and redistribute roles between women and men. In the context of children's health outcomes, given that women are typically the primary care takers of children, redistribution of decision making roles in favour of women has the potential to improving children's health outcomes (de Schutter, 2013).

Relative to very large childbirth size, mothers who give birth to babies who are average, smaller than average, and very small, significantly increases the probability of underweight among children less than five years. The marginal effect of child's birth size that are average, smaller than average, and very small are 0.1623, 0.2054, and 0.2054 respectively. The estimated marginal effect of 0.1623 for average birth weight means that compared to children born who are very large, the probability of child underweight occurring is about 16.23 percent points higher. Similarly, the probability of child underweight is approximately 20.54 percent points higher for children born with smaller than average birth size than children born with very large birth size. Also, children whose birth sizes are very small have a 20.54 percent higher probability of suffering from underweight compared to children whose birth sizes are very large. The result on child birth size suggests that children who are very large are less likely to be underweight as compared to their counterparts who are either average, smaller than average, or very small. This implies that the larger a child's birth size, the less likely they will be underweight in Ghana.

The total number of children under five years in a given household reflects in their living standard in terms of the attainment of the required nutritional needs as well as their general health status. The higher the number of children less than five years in a household, the greater the health and nutritional requirements needed. This phenomenon has great likelihood of negatively affecting their nutritional status. From the marginal result obtained, the higher the number of children less

than five years in a household, the more likely the children will be underweight. The result suggests that there is a 0.29 percent greater probability that higher number of children under five years within a household will be underweight as compared to when there are fewer children in the household.

Relative to mothers without health insurance, mothers who are covered by health insurance are less likely to give birth to children who are underweight. Mothers who are covered by health insurance are 8.11 percent less likely to have children who are underweight as compared to mothers who are not covered by health insurance. The enrolment of women under the NHIS scheme reduces the out-of-pocket payment they make in hospitals as they seek for health medications for themselves and their children. This phenomenon aids to enhance the nutritional status of both mother and child who are covered under the scheme. By implication, children less than five years whose mothers are covered by any form of health insurance are less likely to have children who suffer from underweight. One of the merits of health insurance is that it increases more disposable income in the hands of the mother which can be allocated to the provision of a more improved diet for the child.

From the estimated marginal effect result, a child who lives in the Greater Accra region is less likely to be underweight beyond age five than a child who resides in the Western region of Ghana. The probability of underweight among children below five years in the Greater Accra region is 31.71 percent lower than the possibility of underweight among children under five years old in the Western region. Similarly, a child who resides in the Ashanti region has 10.77 percent less likelihood to be underweight than a child who lives in the Western region. The variation in the occurrence of underweight among children amongst these regions can be partly explained by the

differences in socioeconomic conditions that prevail in these regions. For instance, in the Western region, the socioeconomic condition that prevail is below what is experienced in the Ashanti, and Greater Accra region. This implies that disparity in geographical region results in social, political, and economic variations, and thus results in differences in health and nutritional outcomes of children. Also, mothers who are from Accra are expected to be more enlightened with regards to the best combination of diet meant to aid a more enhanced nutritional status of their children compared to mothers from Western region.

5.3.3 How Wasting among Children Under-five is influenced by Mother's Control of

Household Financial Resources.

Table 5.3.3: Marginal Effect of Child Wasting

VARIABLE	WEIGHT-FOR-HEIGHT
INDEX OF MOTHER'S CONTROL	
Mother has no control (Reference category)	
Mother controls her or husband's earnings	0.0430 (0.0889)
Mother controls her and husband's earnings	0.0372 (0.0895)
CHILD'S BIRTH SIZE	
Very large (Reference category)	
Larger than average	0.0944* (0.0492)
Average	0.1581*** (0.0511)
Smaller than average	0.3598*** (0.0518)
Very small	0.2904*** (0.0790)
MOTHER'S EDUCATION	
No education (Reference category)	
Primary education	0.0050 (0.0480)
Higher education	0.0055 (0.0478)
ETHNICITY	
Akan (Reference category)	
Ga/dangme	-0.0419 (0.0922)
Ewe	0.0618 (0.0652)
Guan	-0.1141 (0.1052)
Mole-dagbani	0.0123 (0.0614)
Grusi	0.0489 (0.0807)
Gurma	-0.0524 (0.0827)
Mande	-0.3915*** (0.1465)
Others	-0.3463** (0.1422)
Child's sex (Male)	-0.0114 (0.0318)

Child's age	0.0017 (0.0012)
Number of Children under five in household	0.0135 (0.0215)
Total number of children ever born	-0.0138* (0.0081)
Postnatal check (Yes)	0.0431 (0.0412)
Household size	-0.0008 (0.0016)
Bride wealth (Yes)	0.0573 (0.0497)
Time spent to water source	-0.0002 (0.0004)
Health insurance (Yes)	-0.0740** (0.0375)
Residence (Urban)	0.0138 (0.0391)
REGION	
Western region (Reference category)	
Central region	-0.0775 (0.0751)
Greater Accra region	-0.1339 (0.0864)
Volta region	-0.0074 (0.0979)
Eastern region	-0.0106 (0.0830)
Ashanti region	-0.0299 (0.0728)
Brong Ahafo region	0.0170 (0.0742)
Northern region	0.0264 (0.0815)
Upper east region	-0.0529 (0.0837)
Upper west region	-0.0352 (0.0928)
Observations	860

Source: Author's Construct from GDHS, 2014.

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

From table 5.3.3, the result of the major independent variable (Index of Mother's control of household financial resources) that predicts wasting in the analysis is statistically insignificant and thus does not predict child stunting. Nonetheless, it is important to discuss the result of the control variables in the analysis that are statistically significant.

Relative to very large childbirth size, new born babies who are larger than average, average, smaller than average, as well as very small birth sizes significantly increase the probability of wasting among children. The marginal effect of child's birth size which are larger than average, average, smaller than average, and very small are 0.0944, 0.1581, 0.3598, and 0.2904 respectively. The estimated marginal effect of 0.0944 for larger than average birth size means that compared to children born who are very large, the probability of child wasting occurring among children is about 9.44 percent points higher. Similarly, the probability of child wasting is approximately 15.81 percent points higher for children born with average birth size than children born with very large birth size. For children born with smaller than average birth size, they are 35.98 percent more likely to be wasted than children born who are very large in size at birth. Also, children whose birth sizes are very small are 29.04 percent more likely to be wasted compared to children whose birth size is very large. The result on child birth size suggests that children who are very large are less likely to be wasted as compared to their counterparts who are either larger than average, average, smaller than average, or very small. This implies that the larger a child's birth size, the less likely they will be wasted in Ghana.

For ethnicity, a mother who is from the Mande ethnic group are 39.15 percent less likely to have children who suffer from wasting as compared to mothers who are from the Akan ethnicity in Ghana. Similarly, a mother from other ethnic group aside Ga/dangme, Ewe, Guan, Mole-dagbani, Grusi, Gurma, and Mande ethnic groups have lesser likelihood of having children who are wasted as compared to mothers from Akan ethnic group. Mothers who are from other ethnic groups have 34.63 percent lesser possibility of having children less than five years who are wasted as compared to mothers who are from Akan ethnic group. A number substantial studies have documented a relationship between ethnicity and child health and nutritional status.

There are significant inequalities in child nutritional indicator among ethnic groups in sub-Saharan Africa. Studies on the influence of ethnicity on child care practices such as breastfeeding are scarce in the developing countries. However, a prominent study in this area is a longitudinal case study of child development among the Gusii people of Kenya conducted by Levina and Dixon. In the study, the primary goal of care among the Gusii is child survival. They are able to realize this goal through prolonged breastfeeding, “an almost exclusive interdependence of the mother-infant pair in the first year of life, and constant availability of the mother to her infant to respond to signs of distress”. Kounnavong et al in 2013 conducted a research on the “key determinants of optimal breastfeeding practices in Laos. They found that in Laos, the avoidance of prelacteal feeds in the first three days of life was associated with maternal ethnic background. Sub-optimal infant breastfeeding and feeding practices varies with ethnicity. In addition, a number of studies conducted in developed countries such as the USA and the UK on the “contribution of parental and community ethnicity to breastfeeding practices consistently show ethnicity as a strong predictor of maternal breastfeeding practices.

As ethnicity differ so does differences in the way a child is catered for with respect to his health and nutrition. From the result, mothers who are of Mande, and other ethnic group are less likely to have children who are wasted compared to women who are Akan. This suggest that the ethnic norms and beliefs of Akan women as it concerns child nutrition leads to less beneficial nutritional outcomes in children less than five compared to the ethnic norms of women who are from Mande, and other ethnic groups in Ghana.

The total number of children ever born by a woman reflects in the nutritional status of her children. The higher the number of children ever born by a mother, the higher the likelihood of the children to be wasted. Conversely, the lower the number of children ever born by a mother, the lower the probability of her children to be wasted. This analogy can be attributed to the magnitude of effort needed to cater for higher number of children less than five years compared to having fewer number of children. The marginal result obtained reflects a divergent view away from the norm where the higher the number of children ever born by a woman, the lower the tendency of having children who are wasted. There is a 1.38 percent lower possibility of a mother to have children who are wasted as the number of the children she gives birth increases. This tendency is dependent on the wealth quintile of the respective households. A household which is financially stable can cater for large number of children without decreasing or minimizing the fundamental nutritional requirements needed for the proper nutritional status of a child. In this case, a child in household having large number of children born by a mother will never have to be wasted. It is important to state that the tendency of a woman giving birth to high number of children and they are all of good nutritional status is very rare compared to the prevailing reality in Ghana.

Relative to mothers without health insurance, mothers who are covered by health insurance scheme are less likely to give birth to children who are wasted. Mothers who are covered by health insurance are 7.4 percent less likely to have children who are wasted compared to mothers who are not covered by the scheme. The enrolment of women under the NHIS scheme reduces the out-of-pocket payment they make in hospitals as they seek for health medications for themselves and their children. This phenomenon aids to enhance the nutritional status of both mother and child who are covered under the scheme. By implication, children less than five years whose mothers are covered by any form of health insurance are less likely to have children who are wasted. This phenomenon is so because mothers who have more disposable income to channel into improving the nutritional status of their children.

5.4 Conclusion

This study analyzes the influence of maternal control of household financial resources on child malnutrition by focusing on how the level of mother's participation in household control of financial resources affects child wasting, stunting, and underweight of children below five years. Data from the 2014 GDHS was analyzed using logistic regression. The model controlled for ethnicity, household size, time spent to get to water source, number of children under five in the household, total number of children ever born by the mother, postnatal check, bride wealth in current marriage, area of residence, regional variation, child's sex, child's age, health insurance, child's birth size, and mother's education so as to increase the precision of the estimates.

It was found that, when a mother participates in the control of her own financial resources or participates in the control of her husband's financial resources in the household, it reduces the possibility of child stunting, and underweight as compared to when she does not participate in the control of household financial resources within the household in Ghana. Similarly, when a mother participates in the control of her own financial resources and also participates in the control of her husband's financial resources, it reduces the possibility of child stunting, and underweight compared to when the mother does not take part in the control of household financial resources in Ghana. These findings can be reconciled by the fact that in Ghana, mothers are mostly caregivers in the household beginning from when a child is born till he or she grows. When a mother participates in the control of household resources, dietary requirements of a child are met as it concerns good nutrition as compared to the father.

In the case of wasting, maternal control of household financial resources as it affects child malnutrition is statistically insignificant and hence fails to predict the influence mothers have on the control of household financial resources as it affects child's wasting compared to stunting, and underweight which were statistically significant. The next chapter provides the summary of the study and the policy recommendations.

CHAPTER SIX

SUMMARY AND POLICY RECOMMENDATIONS

6.1 Introduction

This chapter aims to provide the conclusions drawn on the results of mothers' control of household financial resources as it affects child malnutrition. Relevant recommendations also present specific solutions to be implemented by specific authorities. The chapter also presents the limitations and direction for further research.

6.2 Summary

Ghana encountered enormous benefits in health from the immediate post-independence era. Life expectancy rose over the years and the prevention of a number of communicable diseases enhanced child development and survival. Nonetheless, in the last decade, despite improved investments in health, Ghana has not attained targeted health outcomes. Ghana Health Services (GHS) and Teaching Hospitals operating within the policy framework of the Ministry of Health (MOH) have implemented a strategy called High Impact and Rapid Delivery (HIRD) intervention. The interventions include strategies of enhancing complementary feeding, exclusive breast-feeding, de-worming amongst children (GHS, 2007). This initiative which begun in 2005 is targeted at preventing avoidable deaths caused by ill-health resulting from infection and more specifically, child malnutrition. Malnutrition rate in Ghana among children under-two years recorded 2.7

percent in 2003, 5.4 percent in 2004, and 7.5 percent in 2005 (GHS, 2005). Again, from the GHS Annual Report, 2007, about eight percent (7.8 percent) of children aged 0-11 months were poorly nourished. The 2008 Ghana Demographic and Health Survey (GDHS) indicates that child malnutrition is prevalent in Ghana with 28 percent stunted, 9 percent wasted, and 14 percent underweight. Also, the 2014 GDHS reports that child malnutrition is also significant in Ghana, with 19 percent stunted, 11 percent underweight, and 5 percent wasted. The present study adopted the Logistic regression approach where the marginal effect of maternal control of household financial resources as it affects child's nutritional outcomes were estimated.

For child stunting, when a mother participates in the control of her own financial resources or participate in control of the financial resources of her husband, children less than five years are less likely to be stunted in Ghana. Similarly, when a mother participates in the control of her own financial resources and also participates in the control of her husband's financial resources, children less than five years are also less likely to be stunted in Ghana. These findings can be reconciled by the fact that in Ghana, mothers are mostly caregivers in the household beginning from when a child is born till he or she grows. When mothers participates in the control of household resources, dietary requirements of a child are met as it concerns good nutrition compared to the father.

Findings from this study that mother's participation in the control of household financial resources has a higher likelihood of reducing the prevalence of stunting in Ghana can be corroborated by the opinions of policymakers. For instance, Olivier de Schutter in his presentation to the United Nations in March 2013 who argued that "sharing power with women is a shortcut to reducing hunger and malnutrition in children, and is the single most effective step to realizing the right to

food,” where he urged world governments to adopt transformative food security strategies that address cultural constraints and redistribute roles between women and men. In the context of children’s health outcomes, given that women are typically the primary care takers of children, redistribution of decision making roles in favour of women has the potential to improving children’s health outcomes (de Schutter, 2013).

For the control variables on the marginal effect child stunting, a child born in the Greater Accra region has a higher likelihood of not being stunted beyond age five than a child born in the Western region of Ghana, as the variation in the occurrence of stunting among children is partly explained by the differences in the socioeconomic conditions that prevail in these regions. Relative to very large childbirth size, mothers who give birth to babies who are average, and smaller than average, significantly increase the probability of stunting among children. For child’s age, as child’s age increases from birth, the more the likelihood of the child being stunted. A mother who is other ethnic group increases the probability of child stunting compared to a woman who is from Akan ethnicity. Total number of children ever born by a woman increases the chances of a child being stunted as the number of children she gives birth to rises. For health insurance, mothers who are under health insurance have children who are less likely to be stunted compared to women who are not under the scheme. Finally, mothers who reside in urban areas less likely to have children who are stunted compared to mothers who reside in the rural area. Therefore, we conclude that children less than five years in Ghana are less likely to be stunted if the mother participates in the control of her own financial resources and/or participates in the control of her husband’s financial resources.

In the case of underweight, when a mother participates in the control of her own financial resources or participate in control of the financial resources of her husband, children less than five years are less likely to be underweight in Ghana. Similarly, when a mother participates in the control of her own financial resources and also participates in the control of her husband's financial resources, children less than five years are also less likely to be underweight in Ghana. These findings can be reconciled by the fact that in Ghana, mothers are mostly caregivers in the household starting from when a child is born till he or she grows. When mothers participates in the control of household resources, dietary requirements of a child are met as it concerns good nutrition as compared to the father.

For the control variables on the marginal effect child underweight, a child born in the Greater Accra region, and the Ashanti region are less likely to be underweight beyond age five than a child born in the Western region of Ghana, as the variation in the occurrence of underweight among children in these regions is partly explained by the differences in the socioeconomic conditions that prevail in these regions. Relative to very large childbirth size, mothers who give birth to babies who are average, smaller than average, and very small significantly increase the probability of child underweight. For child's age, as child's age increases from birth, the higher the tendency of the child to be underweight. For health insurance, mothers who are under health insurance are less likely to have children who are underweight compared to women who are not under the scheme. Therefore, we conclude that children less than five years in Ghana are less likely to be underweight if the mother participates in the control of her own financial resources and/or participates in the control of her husband's financial resources.

While for child wasting, the estimated marginal effect results was only significant for the control variables but was not significant for the major independent variable (mother's control of household financial resources). The result of the control variables are stated below; Relative to very large childbirth size, mothers who give birth to babies who are larger than average, average, smaller than average, and very small significantly increase the probability of wasting among children. A mother who is Mande, and other ethnic groups reduces the probability of child wasting compared to a woman who is from Akan ethnicity. Total number of children ever born by a woman decreases the chances of child wasting as the number of children she gives birth to rises. For health insurance, mothers who are under health insurance have children who are less likely to be wasted compared to women who are not under the scheme. Therefore, with regards to the marginal effect result of child wasting obtained, it can be concluded that mother's control of household financial resources on child wasting is insignificant.

6.3 Policy Recommendation

Given the immense economic and social benefits that a well-nourished child can bestow on Ghana, deliberate policies ought to be pursued to increase the pace of progress in improving child nutritional status and equitably distribute these gains across the nation. Based on the outcomes of the present research, the following recommendations are made.

Policy makers should institutionalize nutrition into socioeconomic framework considering the multiple causes and consequences of child malnutrition.

Policy makers should target financial resources to the disadvantaged populations (women), impoverished households and communities so as to complement their little earnings which will be channeled towards child's nutritional requirements.

Social policies and nutritional intervention should be designed carefully by scrutinizing the socioeconomic background of children aimed at achieving efficient financial resource allocation. Also there should be the need to ensure that nutritional intervention is more centered in early childhood when child's nutritional status worsens with age.

Greater scrutiny should be placed on decision making process in Ghanaian households so as to understand the variations of power dynamics between father and mother.

Further research is needed to understand the influence of gender on household division of labour, control over household financial resources, and the role of loans and savings in Ghana so as to enhance maternal bargaining power within the household.

6.4 Limitations of the study

The present research is constrained by a lot of missing data that made it difficult for other health behavioral characteristics such as alcohol consumption, vegetable intake, smoking and exercise by mothers to be included in the regression model. Though this setback did not affect the significance of the model, the accuracy of the model could be improved with the inclusion of these characteristics.

The 2014 GDHS did not include relevant data that allows for biological characteristics to be included in the model. Since the tendency of a child to malnourished or not to be malnourished is also influenced by the genetic characteristics, the precision of the estimates are affected. The researcher suggests that future studies should seek to effectively include biological characteristics that influence child nutritional outcome so as to accurately determine the effect of maternal control of household financial resources.

Another relevant constraint of the research has to do with the quality of the data set employed. Since the data is secondary, its accuracy cannot be guaranteed. This limitation is coupled with the complexities involved in assembling data in Ghana. According to Kholdy (1995), “data compiled in most developing countries is inaccurate and may therefore bias the empirical results”. Furthermore, the use of cross-sectional data and since the growth patterns in cross-sectional data are based on many persons, they do not adequately portray the observed growth pattern of any particular child (McMurray, 1996).

6.5 Conclusion

This study has examined how the participation of mothers in the control of household financial resources affects the probability of children being wasted, stunted, and underweight in Ghana. Estimation from the 2014 GDHS reveals that when the mother controls her own earnings or the earnings of her husband, children less than five years are less likely to be stunted, or underweight as compared to when she does not participates in the control of household financial resources. Similarly, when the mother controls her own earnings and also controls the earnings of her

husband, it reduces the likelihood of children less than five years to be either stunted, or underweight compared to when she does not participate in the control of household financial resources in Ghana. These findings can be reconciled by the fact that in Ghana, mothers are mostly caregivers in the household starting from when a child is born till he or she grows. When mothers participates in the control of household resources, dietary requirements of a child are met as it concerns good nutrition as compared to the father.

The findings from this study that mother's participation in the control of household financial resources has a higher likelihood of reducing the prevalence of child stunting and underweight in Ghana can be corroborated by the opinions of policymakers. For instance, Olivier de Schutter in his presentation to the United Nations in March 2013 argued that "sharing power with women is a shortcut to reducing hunger and malnutrition in children, and is the single most effective step to realizing the right to food," where he urged world governments to adopt transformative food security strategies that address cultural constraints and redistribute roles between women and men. In the context of children's health outcomes, given that women are typically the primary care takers of children, redistribution of decision making roles in favour of women has the potential to improving children's health outcomes (de Schutter, 2013).

REFERENCES

- Abor Patience Aseweh and Gordon Abekah-Nkrumah (2011), The Socio-economic Determinants of Maternal Health Care Utilisation in Ghana. AERC.
- Abuya, B.A., Ciera, J.M. and Kimani-Murage E, (2012), —Effect of mother's education on child's nutritional status in the slums of Nairobi| BioMedical Center Pediatrics 12(80).
- Ackerson, Leland K., & Subramanian, S. V. (2008). Domestic violence and chronic malnutrition among women and children in India. *American Journal of Epidemiology*, 167(10), 1188-1196.
- Agnarson I, Mpell, G. Gunnlaugsson, Y. Hofuander, T. Greider (2005), Infant feeding practices during the first months of life in a rural area. Tanzania, East Africa Medical Journal. 78(1)9-13.
- Annim K.S. (2012). Mother's Role in Spending Decision and Child Malnutrition: Evidence from Ghana. Paper submitted to the 2012 CSAE Conference on Economic Development in Africa 18-20 March 2012, St. Catherine's College, University of Oxford, UK.
- Appoh, L.Y. and Krekling, S. (2005): Maternal nutritional knowledge and child nutritional status in the Volta Region of Ghana. *Maternal and Child Nutrition* pp. 100-11.
- Aslam M. and Kingdon G. G. (2012), —Parental Education and Child Health— Understanding the Pathways of Impact in Pakistan| *World Development* 40(10): 2014–2032.
- Azad, K. M. (2009). Risk factors for acute respiratory infections (ARI) among Children-under five years in Bangladesh. *Journal of Scientific Research*, 1(1), 72-81.

- Basu, K. (2006). Gender and Say: a Model of Household Behaviour with Endogenously Determined Balance of Power. *The Economic Journal*, 116, 558–80.
- Behrman, Jere R. and Emmanuel Skoufias (2006) “Mitigating Myths about Policy Effectiveness: Evaluation of Mexico's Antipoverty and Human Resource Investment Program” *Annals of the American Academy of Political and Social Science*, 606: 244-275.
- Benson, T, and others, 2004. Crossing Boundaries to Reduce Malnutrition: An Institutional Study of Agriculture and Nutrition in Uganda, Mozambique, and Nigeria. Report submitted to ICRW under the Agriculture-Nutrition Advantage project. Washington, DC.
- Black, R. E., C. G. Victora, S. P. Walker, Z. A. Bhutta, P. Christian, M. de Onis, M. Ezzati, S. Grantham-McGregor, J. Katz, R. Martorell, and R. Uauy. 2013. “Maternal and Child Undernutrition and Overweight in Low-Income and Middle-Income Countries.” *Lancet* 382 (9890): 427–451.
- Burchi, F. 2010. “Child Nutrition in Mozambique in 2003: The Role of Mother’s Schooling and Nutrition Knowledge”, *Economics and Human Biology*, 8(2010):331-345.
- Currie, J and Moretti E. (2003) Mother’s education and the intergenerational transmission of human capital: evidence from college openings, *Quarterly Journal of Economics*, 118:1495-1592.
- Cutler, D.M. and Lleras-Muney A., (2010), —Understanding differences in health behaviour by education, *Journal of Health Economics* 29, 1-28.

- Daelmans B & Saadeh R (2003). Global initiative to improve complementary feeding. SCN News 27, 10-18.
- De Onis, M., Blössner, M., Borghi, E., Morris, R., & Frongillo, E. a. (2004). Methodology for estimating regional and global trends of child malnutrition. *International Journal of Epidemiology*, 33(6), 1260–70.
- de Schutter, O. (2013). Empowering women is shortcut to tackling hunger –UN expert on right to food. S. Accessed October 2013.
- De Walque, D. (2007) —Does education affects smoking behaviors? Evidence using the Vietnam draft as an instrument for college education, *Journal of Health Economics* 26: 877–895.
- Deaton, A & Deze, J (2009). Food and nutrition in India: Facts and interpretations. *Economic and Political Weekly*, XLIV (7), 42-65.
- Dito, B.B. (2011) ‘Essays on Women’s Bargaining Power and Intra-Household Resource Allocation in Rural Ethiopia, International Institute of Social Studies, the Netherlands’, PHD dissertation.
- Doak, CM, Adair, LS, Bentley, M, Monteiro, C, Popkin, BM. The dual burden household and nutrition transition paradox. *Int J Obes (Lond)* 2005; 29:129-36.
- Doss, C. (2003) ‘Conceptualizing and Measuring Bargaining Power within the Household,’ in K. Moe (ed.) *Women, Family, and Work: Writings on the Economics of Gender*, Oxford: Blackwell.

- Doss, C. (2011) Intra-household Bargaining and Resource Allocation in Developing Countries, World Development Report 2012: Gender Equality and Development, New Haven: Jackson Institute for Global Affairs, Yale University.
- Doss, C., S. Mi Kim, J. Njuki, E. Hillenbrand and M. Miruka (2014) Women's Individual and Joint Property Ownership: Effects on Household Decision-making, IFPRI Discussion Paper 01347, Washington, DC: International Food Policy Research Institute.
- Doss, C., S. Mi Kim, J. Njuki, E. Hillenbrand and M. Miruka (2014) Women's Individual and Joint Property Ownership: Effects on Household Decision-making, IFPRI Discussion Paper 01347, Washington, DC: International Food Policy Research Institute.
- Doss, C., S. Mi Kim, J. Njuki, E. Hillenbrand and M. Miruka (2014) Women's Individual and Joint Property Ownership: Effects on Household Decision-making, IFPRI Discussion Paper 01347, Washington, DC: International Food Policy Research Institute.
- Emina J. O., Kandala N. B., Inungu J. and Yazoume Y (2011) —Maternal education and child malnutrition in Democratic Republic of the Congo, Journal of Public Health and Epidemiology.
- European Commission. (2008). European Commission Programming Guide for Strategy Papers Programming Fiche Rights of Children.
- Fafchamps, M., et al. (2009). "Intrahousehold Welfare in Rural Ethiopia." Oxford Bulletin of Economics and Statistics 71(4): 567-599.

- Fafchamps, M., Kebede, B., & Quisumbing, A. (2009). Intra-household Welfare in Rural Ethiopia. *Oxford Bulletin of Economics and Statistics*, 71(4), 567-599.
- FAO (2011) State of Food and Agriculture 2010-11: Women in Agriculture Closing the Gender Gap for Development, Rome: FAO.
- Ferede, T.S. (2006) Impacts of Technological Change on Household Production and Food Security in Smallholders agriculture: The Case of Wheat-Tef based Farming Systems in the Central Highlands of Ethiopia, Berlin: Berlin University.
- Ferede, T.S. (2006) Impacts of Technological Change on Household Production and Food Security in Smallholders agriculture: The Case of Wheat-Tef based Farming Systems in the Central Highlands of Ethiopia, Berlin: Berlin University.
- Forouzanfar, M. H., L. Alexander, H. R. Anderson, V. F. Bachman, S. Biryukov, M. Brauer, R. Burnett, D. Casey, M. M. Coates, A. Cohen, and K. Delwiche. 2015. “Global, Regional, and National Comparative Risk Assessment of 79 Behavioural, Environmental and Occupational, and Metabolic Risks or Clusters of Risks in 188 Countries, 1990–2013: A Systematic Analysis for the Global Burden of Disease Study 2013.” *Lancet* 386 (10010): 2287–2323.
- G. Bobonis. Is the allocation of resources within the household efficient? New evidence from a randomized experiment. *Journal of Political Economy*, 117(3):453–503, 2009.
- Gaiha, R. & Kulkarni, V. (2005) ‘Anthropometric failure and persistence of poverty in rural India’, *International Review of Applied Economics*, Vol. 19, no.2, pp.179-197.

Gunasekaran, S. (2010) Women's Autonomy and Reproductive Behaviour. Delhi: Kalpaz Publications.

Higgins c., Lavin T. and Metcalfe O. (2008) —Health Impacts of Education: a review Institute of Public Health, Ireland.

Horton, S., and R. H. Steckel. 2013. "Malnutrition: Global Economic Losses Attributable to Malnutrition 1900–2000 and Projections to 2050." In How Much Have Global Problems Cost the World? A Scorecard from 1900 to 2050, edited by B. Lomborg, 247– 272. Cambridge, UK: Cambridge University Press.

IFPRI (International Food Policy Research Institute). 2014. Global Nutrition Report 2014: Actions and Accountability to Accelerate the World's Progress on Nutrition. Washington, DC.

Imai, K. S., Ananim, S. K., Kulkarni, V. S., & Gaiha, R. (2014). Women's empowerment and prevalence of stunted and underweight children in rural India. World Development, 62(June 2013), 888–10-

Imai, K. S., Ananim, S. K., Kulkarni, V. S., & Gaiha, R. (2014). Women's empowerment and prevalence of stunted and underweight children in rural India. World Development, 62(June 2013), 888–105

Imai, K. S., Ananim, S. K., Kulkarni, V. S., and Gaiha, R. (2014). Women's empowerment and prevalence of stunted and underweight children in rural india. World Development, 62:88–105.

- Jewell, R.T. (2009). Demand for prenatal health care in South America. *Applied Economics*, 41(4), 469–479.
- Kaldewei Cornelia (2010), *Determinants of Infant and Under-Five Mortality – The Case of Jordan*. United Nations.
- Kathewera-Banda, M., V. Kamanga-Njikho, G. Malera, G. Mauluka, M. Kamwano Mazinga, and S. Ndhlovu (2011) *Women’s access to land and household bargaining power: a comparative action-research project in Patrilineal and Matrilineal Societies in Malawi, Blantyre: The International Land Coalition, Women’s Legal Resources Centre (WOLREC)*.
- Kravdal, O. (2004). Child mortality in India: The community-level effect of education. *Population Studies*, 58, 177-192.
- Kuperminc, M. N., Gurka, M. J., Bennis, J. A., Busby, M. G., Grossberg, R. I., Henderson, R. C., & Stevenson, R. D. (2010). Anthropometric measures: poor predictors of body fat in children with moderate to severe cerebral palsy. *Developmental Medicine & Child Neurology*, 52(9), 824-830. Chicago
- Maitra, P. (2004). Parental bargaining, health inputs and child mortality in India. *Journal of Health Economics*, 23(2), 259-291.
- Majstorović, D. and A. Lassen (2011). *Living with Patriarchy: Discursive Constructions of Gendered subjects across Cultures*, Amsterdam: John Benjamins Publishing Company.

- Marinda, P.A. (2006) 'Child-mother nutrition and health status in rural Kenya: The role of intrahousehold resource allocation and education', *International Journal of Consumer Studies*, vol. 30, no. 4, pp. 327-336.
- Mat Lazim, S. S., Bujang, M. A., Abdul Hamid, A.M., Zolkepali, N.A., Hamedon, N. M., and Haniff J (2012) Mortality rates by specific age group and gender in Malaysia: Trend of 16 years, 1995 – 2010 *Journal of Health Informatics in Developing Countries*, 6: 1-9.
- McCrary, J. and Royer H. (2006) —The Effect of Female Education on Fertility and Infant Health: Evidence from School Entry Policies Using Exact Date of Birth.‖ *National Bureau of Economic Research Working Paper No. 12329*.
- McKeever P. & Miller K.L. (2004) Mothering children who have disabilities: a Bourdieusian interpretation of maternal practices. *Social Sciences and Medicine*, 59, 1177-1191.
- Medrano P., Rodríguez C., and Villa E. (2008) "Does Mother'S Education Matter In Child'S Health? Evidence From South Africa," *South African Journal of Economics*, 76(4): 612-627.
- Mitchell, A. (2010). A More Intelligent Approach Is Needed To Fight Against Global Malnutrition. Retrieved from
- Mutakalin, G. (2008) ‘The Effect of Women Workers’ Participation in Export Processing Zones on Women’s Bargaining Power in Households: Case Study of Thailand’s Northern Region Industrial Estate’. PhD thesis, Department of Economics, the University of Utah.

- Mutakalin, G. (2008) 'The Effect of Women Workers' Participation in Export Processing Zones on Women's Bargaining Power in Households: Case Study of Thailand's Northern Region Industrial Estate'. PhD thesis, Department of Economics, the University of Utah.
- Nayrko, (2011). The relationship between malnutrition status of children and social and economic characteristics of their parent and also with reference to access to health services interventions on malnutrition in Bosomtwe district.
- Ngongi, S. N. (2013). Unicef Advocating for Development That Leaves No Child Behind, 1–40.
- Nguyen, N.H., and Kam.S. (2008).Nutritional status and the characteristics related to malnutrition in children under-five years of age in Nghean, Vietnam. *Journal of preventive medicine and public health*, 41(4), 232-240.
- Njuki, J., I. Baltenweck, E. Mutua, L. Korir, and P. Muindi (2014) Women's Empowerment in Collective dairy value chains, ILRI Research Brief 38, Nairobi: ILRI.
- Njuki, J., I. Baltenweck, E. Mutua, L. Korir, and P. Muindi (2014) Women's Empowerment in Collective dairy value chains, ILRI Research Brief 38, Nairobi: ILRI.
- Nketiah-Amponsah Edward, Bernardin Senadza and Eric Arthur (2013) Determinants of utilization of antenatal care services in developing countries Recent evidence from Ghana. *African Journal of Economic and Management Studies* Vol. 4 No. 1, 2013 pp. 58-73.
- Nure, A. S., Nuruzzaman, H., Abdul, G. (2011). Mulnutrition of underfive children: Evidence from Bangladesh. *Asian Journal of medical sciences* 2,113-119.

- Nyarko. (2011), The relationship between malnutrition status of children and social and economic characteristics of their parent and also with reference to access to health services interventions on malnutrition in Basomtwe district.
- Odebode, Sunbo, and Irene van Staveren (2007) ‘Gender Norms as Asymmetric Institutions. A Case Study of Yoruba Women in Nigeria’, in *Journal of Economic Issues* 41 (4), pp. 903-925.
- Ojeifeitimi E.O.O.O. Owolabi, A., Aderonmu, A.O., and Esimai, S.o., (2003). A study on under nutritional status and its determinants in a semi-rural community of Ile-Ife, Osun state, Nigeria, *Nutri. Health*, (17)1, 21-27.
- Oyekale A. S., and Oyekale T. O. (2009). —Do Mother’s Educational levels matter in child malnutrition and health outcomes in Gambia and Niger? *The Social Sciences* 2009. 4 (1): 118-127.
- Park, C. (2007). Marriage Market, Parents’ Bargaining Powers and Child Nutritional and Education. *Oxford Bulletin of Economics and Statistics*, 69(6), 773-793.
- Pollak, R.A. (2005) Bargaining Power in Marriage: Earnings, Wage Rates and Household Production, Working Paper 11239, National Bureau of Economic Research (Estados Unidos), St. Louis:, Washington University in St. Louis.
- Rao, CH. H., B.B. Bhattacharya and N.S. Siddharthan (2005) *Indian Economy and Society in the Era of Globalisation and Liberalisation*, New Delhi: Academic Foundation.

- Rosenzweig, M. R. and Schultz, T. P. (1983). "Estimating a Household Production Function: Heterogeneity, the Demand for Health Inputs, and Their Effects on Birth Weight", *Journal of Political Economy* 91(5).
- Scantlan, J., Previdell, A, (2013). Women's Empowerment and Childhood Malnutrition in Timor-Leste: A Mixed-methods study. Portland, Oregon: Mercy corps.
- Schmidt, E. and Raykar (2012). "The Effect of Women's Intrahousehold Bargaining Power on Child Health Outcomes in Bangladesh." *Undergraduate Economic Review, Growth and Development* 9(1).
- Schmidt,E. (2012) 'The Effect of Women's Intra household Bargaining Power on Child Health Outcomes in Bangladesh', Colgate University,
<http://colgate.edu/portaldata/imagegallerywww/21c0d002-4098-4995-941f>
- Smith, L. C., and L. Haddad. 2000. Explaining Child Malnutrition in Developing Countries. A Cross-Country Analysis. Washington, DC: International Food Policy Research Institute. Retrieved from www.ifpri.org/publication/explaining-child-malnutrition-developing-countries
- Smith, L. C., F. Kahn, T. R. Frankenberger, and A. Wadud. 2011. Admissible Evidence in the Court of Development Evaluation? The Impact of CARE's SHOUHARDO Project on Child Stunting in Bangladesh. IDS Working Paper Number 376. Brighton, UK: Institute of Development Studies.
- Smith, L. C., U. Ramakrishnan, A. Ndiaye, L. Haddad, and R. Martorell. 2003a. The Importance of Women's Status for Child Nutrition in Developing Countries. Research Report 131.

- Washington, DC: International Food Policy Research Institute. Retrieved from www.ifpri.org/sites/default/files/publications/rr131.pdf ———. 2003b. “The Importance of Women’s Status for Child Nutrition in Developing Countries.” In *Household Decisions, Gender, and Development*, edited by A. Quisumbing, 41–50. Washington, DC: International Food Policy Research Institute.
- Sow, F.D. (2010) *Intra-household Resource Allocation and Well-being: The case of Rural Households in Senegal, African women leaders in agriculture and the environment*. Awlæ Series No. 10, Wageningen : Wageningen Academic Publishers.
- Su, W., J. Huang, F. Chen, W. Iacobucci, M. Mocarski, T. M. Dall, and L. Perreault. 2015. “Modeling the Clinical and Economic Implications of Obesity Using Microsimulation.” *Journal of Medical Economics* 18 (11): 886–897.
- Tagoe H. A. and Dake F. A (2011) —Healthy lifestyle behaviour among Ghanaian adults in the phase of a health policy changell, BioMed Centre, Globalization and Health.
- Teicher, S. A. (2005) —Gains for girls, but many still shut outll SAfAIDS 11(2):9-10.
- Teller, C. and A. Hailemariam (2011) *The Demographic Transition and Development in Africa: The Unique Case of Ethiopia*, Rotterdam: Springer Netherlands.
- Thairu, L.N.and others, (2005). Socio-cultural influences on infant feeding decisions among HIV-infected women in rural Kwa-Zulu Natal, South Africa. *Maternal and Child Nutrition* pp.2-67.

The World Bank (2011) “World Development Report 2012: Gender Equality and Development”

The International Bank for Reconstruction and Development: Washington, D.C., 2011.

UNICEF (2006) The State of the World’s Children 2007: Executive Summary, Women and Children, The Double Dividend of Gender Equality, New York: UNICEF.

United Nations (2015). The World's Women 2015: Trends and Statistics. New York, United Nations.

United Nations Children’s Fund-World Health Organization-The World Bank. (2012). Child Malnutrition. Geneva. Retrieved from http://www.who.int/nutgrowthdb/jme_unicef_who_wb.pdf

Wasantwisut, E. U., Rosado, J. L., & Gibson, R. S. (2007). Nutritional Assessment for Selected Micronutrients and Calcium. In V. R. Squires (Ed.), The role of food, agriculture, forestry and fisheries in human nutrition (IV, Vol. IV). Australia. Retrieved from Research Institute.

Webb P. & Block S. (2003) Nutrition knowledge and parental schooling as inputs to child nutrition in the long and short run. Food Policy and Applied Nutrition Program Working Paper 3.

Webb P., and Block, S. (2004). Nutritional information and formal schooling as inputs to child nutrition. Economic Development and Cultural Change, 55, 801-820.

WHO (2009) Global Data Bank on Infant and Young Child Feeding, 2009.

World Economics. 2016. Global Growth Tracker. Accessed March 2016.

www.worlddeconomics.com/papers/Global%20Growth%20Monitor_7c66ffca-ff86-4e4c-979d-7c5d7a22ef21.

Yi B, Wu L, Liu H, Fang W, Hu Y, Wang Y. (2011) —Rural-urban differences of neonatal mortality in a poorly developed province of China| BioMed Center Public Health 11: 477.

Zereyesus, Y. A., Amanor-Boadu, V., Ross, K. L., and Shanoyan, A. (2015). Does women's empowerment in agriculture matter for children's health status? Insights from northern Ghana. Social Indicators Research, pages 1–16.

Zewdie Tadiwos, Degnet Abebaw (2013), Determinants of Child Malnutrition: Empirical Evidence from Kombolcha District of Eastern Hararghe Zone, Ethiopia. Quarterly Journal of International Agriculture 52 (2013), No. 4: 357-372

APPENDICES

APPENDIX A

Logit Estimation of Child Stunting Results

Variables	Coefficient	Std. Err	Z-stats
INDEX OF MOTHER'S CONTROL			
Mother controls her or husband's earnings	-1.041**	0.529	-1.970
Mother controls her and husband's earnings	-1.214**	0.530	-2.290
CHILD'S BIRTH SIZE			
Larger than average	0.333	0.223	1.500
Average	0.854***	0.249	3.440
Smaller than average	0.895***	0.313	2.860
Very small	0.594	0.459	1.290
MOTHER'S EDUCATION			
Primary education	-0.070	0.256	-0.270
Higher education	0.359	0.249	1.440
ETHNICITY			
Ga/dangme	-0.261	0.481	-0.540
Ewe	0.038	0.336	0.110
Guan	0.463	0.526	0.880
Mole-dagbani	0.033	0.301	0.110
Grusi	0.194	0.425	0.460
Gurma	0.459	0.422	1.090
Mande	0.271	0.835	0.320
Others	1.521	1.296	1.170
Child's sex (Male)	0.096	0.163	0.590
Child's age		0.006	

	0.021***	0.116	3.450
Number of Children under five in household			
	-0.015	0.044	-0.130
Total number of children ever born			
	0.079*	0.215	1.800
Postnatal check (Yes)			
	0.081	0.008	0.380
Household size			
	-0.006	0.254	-0.680
Bride wealth (Yes)			
	-0.213	0.002	-0.840
Time spent to water source			
	0.007	0.199	0.330
Health insurance (Yes)			
	-0.332*	0.193	-1.660
Residence (Urban)			
	-0.348*	0.383	-1.800
REGION			
Central region			
	-0.280	0.419	-0.730
Greater Accra region			
	-1.080***	0.489	-2.580
Volta region			
	-0.134	0.422	-0.270
Eastern region			
	0.016	0.369	0.040
Ashanti region			
	-0.267	0.404	-0.720
Brong Ahafo region			
	0.374	0.436	0.930
Northern region			
	0.111	0.410	0.250
Upper east region			
	-0.002	0.472	-0.010
Upper west region			
	-0.172	0.792	-0.360
Constant			
	1.240	0.549	1.560
LR Chi2 (35)	75.36		
Prob>chi2	0.0001		
Pseudo R-square	0.0782		

Source: Author's Construct from GDHS, 2014.

*, **, *** imply significance of 10%, 5% and 1% respectively

APPENDIX B**Logit Estimation of Child Underweight Results**

Variables	Coefficient	Std. Err	Z-stats
INDEX OF MOTHER'S CONTROL			
Mother controls her or husband's earnings	-0.646	0.511	-1.260
Mother controls her and husband's earnings	-0.841*	0.507	-1.660
CHILD'S BIRTH SIZE			
Larger than average	0.081	0.226	0.360
Average	0.957***	0.267	3.590
Smaller than average	1.314***	0.362	3.640
Very small	1.314**	0.597	2.200
MOTHER'S EDUCATION			
Primary education	-0.101	0.270	-0.380
Higher education	0.210	0.268	0.780
ETHNICITY			
Ga/dangme	-0.158	0.454	-0.350
Ewe	0.365	0.350	1.040
Guan	0.749	0.684	1.100
Mole-dagbani	0.179	0.336	0.530
Grusi	0.298	0.447	0.670
Gurma	0.107	0.484	0.220
Mande	-1.124	0.798	-1.410
Others	-0.346	0.756	-0.460
Child's sex (Male)	0.068	0.172	0.400
Child's age	0.018***	0.007	2.560
Number of Children under five in household	-0.055	0.125	-0.440
Total number of children ever born	0.041	0.046	0.900
Postnatal check (Yes)	0.321	0.223	1.440

Household size	-0.011	0.009	-1.300
Bride wealth (Yes)	-0.202	0.273	-0.740
Time spent to water source	-0.002	0.002	-0.810
Health insurance (Yes)	-0.490**	0.219	-2.240
Residence (Urban)	-0.091	0.212	-0.430
REGION			
Central region	-0.585	0.433	-1.350
Greater Accra region	-1.680***	0.458	-3.670
Volta region	-0.723	0.542	-1.330
Eastern region	-0.243	0.469	-0.520
Ashanti region	-0.679*	0.409	-1.660
Brong Ahafo region	0.114	0.453	0.250
Northern region	0.028	0.518	0.050
Upper east region	0.522	0.447	-1.170
Upper west region	-0.670	0.509	-1.320
Constant	1.736	0.817	2.120
LR Chi2 (35)	74.37		
Prob>chi2	0.0001		
Pseudo R-square	0.0958		

Source: Author's Construct from GDHS, 2014.

*, **, *** imply significance of 10%, 5% and 1% respectively

APPENDIX C

Logit Estimation of Child Wasting Results

Variables	Coefficient	Std. Err	Z-stats
INDEX OF MOTHER'S CONTROL			
Mother controls her or husband's earnings	0.206	0.417	0.490
Mother controls her and husband's earnings	0.178	0.420	0.420
CHILD'S BIRTH SIZE			
Larger than average	0.404	0.210	1.930
Average	0.698	0.226	3.080
Smaller than average	2.030	0.368	5.520
Very small	1.449	0.499	2.900
MOTHER'S EDUCATION			
Primary education	0.024	0.234	0.100
Higher education	0.027	0.233	0.120
ETHNICITY			
Ga/dangme	-0.198	0.429	-0.460
Ewe	0.315	0.342	0.920
Guan	-0.523	0.472	-1.110
Mole-dagbani	0.060	0.300	0.200
Grusi	0.246	0.416	0.590
Gurma	-0.247	0.386	-0.640
Mande	-1.823	0.808	-2.260
Others	-1.585	0.723	-2.190
Child's sex (Male)	-0.056	0.155	-0.360
Child's age	0.008	0.006	1.390
Number of Children under five in household	0.066	0.105	0.630
Total number of children ever born	-0.067	0.040	-1.680
Postnatal check (Yes)	0.211	0.243	1.040

Household size	-0.004	0.202	-0.510
Bride wealth (Yes)	0.280	0.008	1.150
Time spent to water source	-0.001	0.243	-0.530
Health insurance (Yes)	-0.362	0.002	-1.960
Residence (Urban)	0.068	0.191	0.350
REGION			
Central region			
Greater Accra region	-0.375	0.368	-1.020
Volta region	-0.632	0.414	-1.530
Eastern region	-0.037	0.496	-0.080
Ashanti region	-0.054	0.419	-0.130
Brong Ahafo region	-0.149	0.364	-0.410
Northern region	0.088	0.383	0.230
Upper east region	0.138	0.425	0.320
Upper west region	-0.260	0.413	-0.630
Constant	-0.042	0.724	-0.060
LR Chi2 (29)	64.92		
Prob>chi2	0.0016		
Pseudo R-square	0.0704		

Source: Author's Construct from GDHS, 2014.

*, **, *** imply significance of 10%, 5% and 1% respectively