

**WOMEN AUTONOMY AND NUTRITIONAL STATUS IN  
NORTH WEST NIGERIA**

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**A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF  
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## CERTIFICATION

This is to certify that (AKINWUNMI TEMITOPE REBECCA) of the Department of Demography and Social Statistics, Faculty of Social Sciences, carried out a Research on the topic


Women Autonomy And Nutritional Status In North West Nigeria in partial fulfillment of the award of the requirements for the award of Bachelor of Science (B.Sc) in Federal University Oye-Ekiti, Nigeria under my Supervision



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## **DEDICATION**

The project is dedicated to God almighty, the creator of heaven and earth who mae all things possible and also to my parents, Mr and Mrs Akinwumi who sponsored my academic career. I say thank you.

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## ABSTRACT

Malnutrition is a major public health and human development problem especially in developing countries. Worldwide, FAO estimates that, mainly as a result of high food prices, the number of chronically hungry people in the world rose by 75 million in 2007 to reach 923 million. This study attempts to explain the women autonomy and nutritional status in North West Nigeria. Individual women's data from the Nigeria Demographic and Health Survey 2013 were used for the study. Data were analyzed using Chi-Square and Binary Logistic Regression. The results showed that women decision making power have a significant impact on contraceptive use in Nigeria ( $P < 0.05$ ). Women's education is found to be strongly associated with their nutritional status, the women's wealth status is also statistically significant to their health status. This study therefore suggests that women should be empowered to enable quality nutrition and better health.

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# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the study

Autonomy is the ability to make decision without being influenced by anyone else. Furthermore, it facilitates access to material resources such as food, land, income and other forms of wealth, and social resources such as knowledge, power, prestige within the family and community. In addition, autonomy has a multi-dimensional aspect such as civil, political, social, economic, cultural participation and rights (WHO, 2013). So to measure the degree of autonomy, its associated various factors have to be measured. Family is the smallest area where women can share or control over the resources. However, gender inequality in the family level is manifested by a weaker role of women in decision-making and less control over resources and restrictions in physical movements by women (Caldwell, 2002).

Women's empowerment has been defined to encompass women having a sense of self-worth, access to opportunity and resources, choices and the ability to exercise them, control over their own lives, and influence over the direction of social change (United Nations Population Information Network, 1995). The process of empowerment should start from our own home. Women's position in the household determines women's autonomy in the family. It is worth to examine whether women can decide about household matters like buying jewelries, having access to money, having mobility to go to market or relatives' house or getting health care facilities. It is also argued that where



to market or relatives' house or getting health care facilities. It is also argued that where women are empowered through education, work participation, freedom of movement, inter-spouse communication and property right etc. fertility and child mortality levels are lower than in society where strict limits are placed on personal movement and contact with others by women of child bearing ages.

In Nigeria, the study of women's autonomy in household decision making is scanty. Although the terms women's status, women's autonomy and women's empowerment are interchangeable used in recent literature, we have first to clarify the conceptual aspects of these problems and then to identify the priority areas of the probable causal factors affecting. While defining status, Dixon (1978) states "women's power can be distinguished from women's status, in that status refers to women's overall position in the society, while power refers to women's ability to influence and control at the interpersonal level. The study on its zonal variation especially in the North West is also very rare.

Malnutrition is a major public health and human development problem especially in developing countries. Worldwide, FAO estimates that, mainly as a result of high food prices, the number of chronically hungry people in the world rose by 75 million in 2007 to reach 923 million (FAO, 2008). In 2004, 92% of all worldwide hunger related deaths were associated with chronic hunger and malnutrition (WFP, 2005). A women's nutritional status has important implication for her health as well as for the health of her children. Among women, malnutrition results in reduced productivity, increased

susceptibility to infections, slow recovery from illness, and a heightened risk of adverse pregnancy outcomes (NDHS, 2013). From the comparison between two developing countries – one from South Asia and the other from Sub-Saharan Africa, it is seen that child malnutrition in South Asia (49.3%) is much higher than that of Sub-Saharan Africa (31.1%), but in terms of poverty index, condition of Sub-Saharan Africa (39.1%) is worse than that of South Asia (43.1%). It is because of the existence of higher proportion of low status of women in South Asia. Increase in the status of women has a strong influence on both the long and short- term nutritional status of children leading to reduction in both stunting and wasting. This phenomenon is however observed in developed countries.

Education may help a woman gain a better understanding of her rights and responsibilities, and make her more confident about her possibilities, including the possibility of a divorce, should the relationship with her husband and his relatives deteriorate as a result of her stance in family decisions. In this regard, the intra-household decision-making process can be viewed in terms of game theory, where one party makes decisions based on the possible responses by the other party. Gender-based power inequalities can restrict open communication between partners about reproductive health decisions as well as women's access to reproductive health services. This in turn can contribute to poor health outcomes. Evidence from other developing countries showed that women's age and family structure are the strongest determinants of women's authority in decision making. Older women and women in nuclear households are more likely than other women to participate in family decisions.

An African study highlights that ethnicity plays a very important role in shaping a wife's decision-making authority and is even more important than other individual-level characteristics as a determinant of authority. Another study emphasizes that compared to their husbands' report; wives tend to under-report their household decision-making power. However, educated and employed partners are more likely to participate in the final decisions. The level of women's autonomy also depends on whether wives or husbands are the respondents since it appears that the response categories do not have the same cognitive or semantic meanings for men and women. Limitations to women's physical, sexual, economic, social and political autonomy also affect women's decision-making processes and later had an influence on their nutritional status. Population and development programmes are most effective when steps have simultaneously been taken to improve the status of women in the decision making process.

The status of women in a society is also one important determinant of the nutritional status of women, although not widely documented except the application of the concept in many demographic studies. Women's lower social status challenges their decision-making autonomy on the desired family size, health care-seeking behavior and the amounts and types of food fed to children and themselves and amount of time to spend on child-rearing (Haddad, 1999; Heaton and Forste, 2007). In Nigeria, male dominance remains more pronounced in the society, public and private spheres. Women traditionally enjoy little independent decision-making on most individual and family or household issues, including the option to choose whether to get modern health services

during illness, birth, reproductive women's health services and others (Bogalech andMengstu, 2007). Beside the fact that improving women's status is a likely key factor in women's health status in general and their nutritional status specifically, its relative importance is not explicit as many researcher fail to make distinction between the direct measures of women's autonomy in household decision making and proxy indicators such as education, employment or household wealth status.(Bogalech andMengstu, 2007), argued that, most of the attention was directed to the impact of proxy variables on nutritional status of women through the proximate determinant of mal-nutrition such as disease and inadequate dietary intake.

With reference to a recent cross-country study result, the prevalence of under nutrition is widespread in Niger, Burkina- Faso, Nigeria and Senegal, where approximately 20 per cent of women are underweight (Bradley & Mishra, 2008). The proportions of women who are overweight in north-west Nigeria for which a DHS was recently conducted ranges from 13.0% (Jigawa), 23.0% (Kaduna), 17.0% (Kano), 7.3% (Kastina), 14.3% (Kebbi), 11.2% (Sokoto) and 9.4% (Zamfara). Compared with that of other zones south-south (22.4%), 22.1% (South-west), 20.8% (south-east), 17.7% (north central), 13.4% (north east) and 12.0% (North -west). Of which malnourished has a low prevalence in North-west, Nigeria (NDHS, 2013).

Malnourished mothers are more likely to give birth to low birth-weight babies who face a greatly increased risk of dying in infancy. They are also more likely to suffer from stunting during childhood which will greatly increase their own risk of dying during

childbirth or giving birth to another generation of low birth-weight babies (FAO, 2005). Underweight or chronic energy deficiency is common among women in developing countries. Evidence for maternal malnutrition indicates that between 5 and 20 per cent of African women has a low Body Mass Index as a result of chronic hunger. In these countries, there is some evidence that individual with a Body Mass Index below  $18.5\text{kg/m}^2$  shows a progressive increase mortality rates as well as increased risk of illness. Some are severely underweight, with BMI below  $16.99\text{kg/m}^2$ . In Africa, all level of underweight such as mild, moderate and severe underweight, are highly prevalent (Uthman&Aremu, 2001).

The prevalence of under nutrition in Nigeria is one of the highest in Sub-Sahara Africa (Bradley & Mishra, 2008). The 2008 NDHS report shows that over 3% of women were found to be chronically undernourished (BMI < 18.5). In 2003 NDHS, the prevalence of malnutrition among women rises by 4% in 2008 and in 2013. This shows that underweight appears to be more serious concern than overweight or obesity among Nigeria women (CSA & ORC Macro, 2001, 2006; Macro International Inc., 2008). Moreover, household economic status, employment status of women and decision-making autonomy on their income age and marital status are important predictors of women's nutritional status (Girma&Timotiows, 2002).

## 1.2 Statement of the problem

The issue of women empowerment has been a problematic one over the years, beginning from women's emancipation and liberation, before transforming to what it is today. Now women empowerment has been recognized as a global phenomenon especially among scholars, political leaders, non-governmental organization and the overall society at large. In traditional setting, and in recent times, women are known for their crucial role in the family setting. Nutrition has been used in the past to describe both an input (consumption of nutrients) as well as a set of outcome. Some of the confusion about the scope of actions to improve nutrition may be cleared up by distinguishing causality and effect.

Growth, measured by anthropometry, is the outcome most commonly assessed. This is consistent with the often-stated view (WHO, 1983, 1986; FAO, 1987) that anthropometry is the most useful tool for assessing nutritional status of women. Although, women have tended to be producers for the family in many agricultural settings, their lack of access to the income from this labor leaves them resource-poor (Abbas, 1997). There has been some evidence to suggest that women who have lower levels of autonomy and status within in the household are more likely to experience under-nutrition (Hindin, 2000) or have a lower BMI (Bindon and Vitzthum, 2002; Baqui et al., 1994), suggest that women's health can be adversely affected if they are unable to negotiate for themselves, particularly in resource constraint setting.

Therefore, the relationship between women's autonomy in household decision making and their nutritional status is a crucial issue, expressed when women can freely decide what to purchase with their income, visit other family relatives without prior knowledge of the husband because of their empowerment. Such experience will lead to fewer child deaths and better health of women who are not denied these choices. Therefore, such women will be able to take full advantage of the broader life opportunities available to them as they move beyond roles as wives which might also be evident in their changed status on decision making role within the household. As a result of this, empowerment of women plays a vital role in assuring informed choice, and to seek what is best for their own health and to exercise their right to good quality health care. However, today's decisions that affect all people were still made mostly by men. Women are facing flagrant as well as subtle discrimination and they were unable to share equally in the fruits of the own hand. On this stand, women autonomy in household decision -making and their nutritional status has not being thoroughly looked to in North-West, Nigeria. The nutritional status of women has been established on socio-economic and demographic disparities of women, but limited studies have explored the role of women's autonomy as a determinant of mother's nutritional status particularly in Nigeria. Hence, this study needed to ask some important questions such as;

### **1.3 Research Questions**

1. What are the patterns of nutritional status of women in North-West, Nigeria?
2. Is there any relationship between women's autonomy and nutritional status of women in North-West, Nigeria?
3. What are the socio-economic factors affecting women's nutritional status and their autonomy in the study area?

### **1.4 Research Objectives**

The main Objectives of this research is to explore the relationship entwined between women's autonomy in household decision making and their nutritional status in North-west, Nigeria.

#### **Specific Objectives**

1. To examine the patterns of women's nutritional status in the study area.
2. To access the relationship between women's autonomy and their nutritional status in North-West, Nigeria.
3. To examine socio-economic factors affecting women's nutritional status in North-West, Nigeria.

### **1.5 Justification of the study**

In spite of several world conferences, debates and summit on the impact of discrimination against women on their health, education and autonomy are yet to be



achieved. Men still play powerful even dominant roles in domestic decision (Caldwell, 2002). Without considering their partners' wishes or health consequences for themselves or their partners, however, their actions can have unhealthy and even dangerous results. A research effort channel towards the autonomy of women in household decision making and their nutritional status cannot be effort in futility. Besides, the study will contribute immensely to the existing knowledge on women autonomy in household decision- making and empowerment both at household and society at large.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 The concept of women's status

Sen and Batliwala (2000) define empowerment as “the process by which the powerless gain greater control over the circumstances of their lives,” including both physical (resources) and psychological (beliefs, values, and attitudes) control. Women's status refers to individual power available to women in order to control the circumstances that affect them. In several literature, “autonomy” is often used as a term that refers to women's ability to determine events in their lives and enable to make decisions on their health or their families' health. In many developing countries such as Nigeria, the fact that women have to face social and cultural disadvantages in a much broader sense than that experienced by women in developed countries is clearly reflected in their largely inferior health, nutrition, education and economic status compared to women in Wealthy countries. Hundreds of million women mainly in developing countries experience extreme stress resulting from their children's dead, disabilities and various diseases. (UNESCO, 2002).

Even though the concept of women's status is widely used in demographic studies, notably in reproductive preferences and health studies, there is no single accepted definition that represents it or that captures the multiple dimensions of women's position (Mason, 2001). Alternative terms such as women's empowerment, female autonomy,

women's position, gender inequality, access to and control over resources and prestige are all frequently used interchangeably in the literature to define women's status (Mason, 2001). For example, women's status has been examined by comparing women's versus men's position across a variety of socioeconomic and demographic factors (Kishor and Neitzel 2003). Other studies referred specifically to women's relative prestige (Mason, 2001), and still others used proxy indicators such as women's education (e.g., Weinberger et al. 2005) and income or employment (e.g. Safilios-Rothschild 1990; Jejeebhoy 2006) to define the status of women. Dyson and Moore (2004) defined autonomy or status as the ability to manipulate ones' personal environment as a basis for decision-making about personal concerns.

However, more recent studies (e.g., Balk 2009; Morgan and Niraula 2009) have divided autonomy into different dimensions such as women's participation in decision-making, their physical freedom of movement, their ability to visit their relatives or friends, and their access to resources. This type of definition regards women's status as a multiple or combination of different components which vary from one society to another and it has recently been used in studies of fertility and reproductive health (e.g., Tfaily 2004; Basu and Koolwal 2005; Desai and Johnson 2005). The measures of women's autonomy we consider here represent various domains that have been identified in the literature as important for women's reproductive preferences. They include the extent to which women are autonomous in decision making regarding large and daily household purchases, the degree to which they can go to visit relatives or friends without their

husbands or seniors permission, the extent of women's interactions/communications with their husbands regarding family planning, and the extent of women's refusal to wife beating.

Several other studies have also shown that the poor tend to be sicker and they utilize care facilities less frequently than their better-off counter-parts (Mason, 2001). An African study highlights that ethnicity plays a very important role in shaping a wife's decision-making authority and is even more important than other individual-level characteristics as a determinant of authority. Another study emphasizes that compared to their husbands' report; wives tend to under-report their household decision-making power. However, educated and employed partners are more likely to participate in the final decisions. The level of women's autonomy also depends on whether wives or husbands are the respondents since it appears that the response categories do not have the same cognitive or semantic meanings for men and women. Limitations to women's physical, sexual, economic, social and political autonomy also affect women's decision-making processes. Population and development programmes are most effective when steps have simultaneously been taken to improve the status of women in the decision making process.

In Nepal, as in most parts of South Asia, women commonly have less power and autonomy than men in making decisions about their own health care. Moreover, women often have unequal access to food, education, and health care, limited opportunities to earn incomes, restricted access to, and control over, productive resources, and very few

effective legal rights. Women's autonomy in decision making is associated with her ethnicity, deprivation level, urban/rural classification, education, and number of living children. Nepalese women are further disadvantaged by a lack of awareness of opportunities and their legal rights. Their low social status has been identified as a barrier towards national health and population policy progress in Nepal. Gender equity gives women both increased decision-making authority and more modern reproductive outcomes such as to reduce the desire for more children, increase contraceptive use and lower the level of 'unmet need' for contraception. The status of women in a society is also one important determinant of the nutritional status of women, although not widely documented except the application of the concept in many demographic studies. Women's lower social status challenges their decision-making autonomy on the desired family size, health care-seeking behavior and the amounts and types of food fed to children and themselves and amount of time to spend on child-rearing (Haddad, 1999; Heaton and Forste, 2007). In Ethiopia, male dominance remains more pronounced in the society, public and private spheres. Women traditionally enjoy little independent decision-making on most individual and family or household issues, including the option to choose whether to get modern health services during illness, birth, reproductive health services and others (Bogalech and Mengstu, 2007).

Besides the fact that improving women's status is a key factor in women's health status in general and their nutritional status specifically, its relative importance is not explicit as many researchers fail to make distinction between the direct measures of

women's decision-making autonomy and proxy indicators such as education, employment or household wealth status. In earlier studies, most of the attention was directed to the impact of proxy variables on nutritional status of women through the proximate determinants of malnutrition such as disease and inadequate dietary intake. The various aspects of women's decision-making autonomy, including their access to and control over resources have often been overlooked. Malnutrition and hunger have been found to increase the incidence and fatality rate of conditions that cause up to 80% of maternal death (Hall & Rosenthal, 2005). Women who are underweight prior to pregnancy and who gain little weight during pregnancy are at increased risk of complications and death (FAO, 2005). Malnourished mothers are more likely to give birth to low birth-weight babies who face a greatly increased of dying in infancy. They are also more likely to suffer from stunting during which greatly increase their own risk of dying during childbirth or giving birth to another generation of low birth-weight babies. Hence, this study tries to investigate the influence of women's empowerment on their nutritional status.

Underweight or chronic energy deficiency is common among women in developing countries. Evidence for maternal malnutrition indicates that between 5 and 20 per cent of African women has a low Body Mass Index as a result of chronic hunger. In these countries, there is some evidence that individuals with a Body Mass Index below  $18.5 \text{ kg/m}^2$  show a progressive increase mortality rates as well as increased risk of illness. Some are severely underweight, with a BMI below  $16.99 \text{ kg/m}^2$ . In Africa, all levels of

underweight such as mild, moderate and severe under-weight are highly prevalent (Uthman&Aremu, 2001).

With reference to a recent cross-country study result, the prevalence of under nutrition is widespread in Niger, Burkina Faso, Nigeria and Senegal, where approximately 20 per cent of women are underweight (Bradley & Mishra, 2008). The proportions of women who are malnourished in selected sub-Saharan Africa countries for which a DHS was recently conducted range from 7% (Cameroon) to 37% Eriteria, Nigeria. Nigeria, one of the countries with the highest proportions of malnourished women, the percentage age of women who are overweight or obese ranges from a low of 3% in Nigeria to a high of 295 in Cameroon (ICF Macro, 2008; National Population Commission [Nigeria] and ICF Macro, 2014).

Women's role in food production, preparation and child are critical foundations to the socio-economic development of a community. However, efforts in this direction are hampered by malnutrition (Oniang'o&Mukudi, 2002). Nutrition is one of the essential determinants of maternal health, the right to adequate food being one of the fundamental human rights preserved in many international documents (<http://www.pdlre.org/rights/food.html>). Perhaps the greatest challenge in that Nigeria has faced today is that of food insecurity. This is mainly due to poor agricultural technology, limited rural infrastructure; shrink in land size, non-availability of off-farm employment and other factors. Food insecurity incorporates low food intake, viable access to food, and vulnerability (Devereux, 2001).

The prevalence of under nutrition in Nigeria is one of the highest in sub-Saharan Africa (Bradley & Mishra, 2008). The 2008 NDHS report shows that over 3% of women were found to be chronically undernourished (BMI <18.5). In 2003 NDHS, the prevalence of malnutrition among women rises by 2% in 2008 and in 2013. This shows that underweight appears to be a more serious concern than overweight or obesity among Nigerian women. (CSA & ORC Macro, 2001, 2006; Macro International Inc., 2008). The highest level of women's malnutrition /under nutrition was in the Somali Region (44%) while the lowest in Addis Ababa (16%). According to two DHS reports, rural women very young women (15-19) and women with no or little education are much more affected by chronic energy deficiency compared to their counterparts. Moreover household economic status, employment status of women and decision-making autonomy on their income, age and marital status are important predictors of women's nutritional status (Girma&Timotiows, 2002).

## **2.2 THE CONCEPT OF WOMEN'S AUTONOMY**

Although women's autonomy is widely referred to in many studies notably on reproductive status and health, the concept remains ill-defined and its relationship to demographic processes has not been well articulated, either theoretically (pressor and sen, 2000). There is no single accepted definition that represents it or that captures the multiple dimension of women's position (Mason, 2001). Alternatively, terms such as women's status, female position or role, closer ties to natal kin, control over resources,



involvement in decision making and prestige are all frequently used in several literature interchangeably to define women's status (Mason, 2001; Bloom et al 2001). Balk (2006) argue that women's status or autonomy cannot be represented by one direct measure nor by one indirect proxy alone, and that different aspect of women's autonomy influence fertility in term of magnitude and direction. In most studies autonomy has been define as the capacity to manipulate one's personal environment through control over resources and information in order to make decision about one's own concern or about close family members (Basu 2003, Dyson and Moore 2004). This involves an individual capacity and freedom to act independently of the authority of others, for instance the ability to leave house without asking anyone's permission, make personal decision regarding contraceptive use or obtaining health care. Thus, women's autonomy can be conceptualized as the ability to make and execute independent decisions pertaining to personal matter of importance to their lives, or family, even though men and other people may be opposed their wishes (Masson, 2003).

### **2.3 NUTRITION EDUCATION**

Nutrition education offers a great opportunity to individual to learn the essentials of nutrition for health and to take steps to improve the quality of their diet and thus their well-being. Nutrition education must continue throughout the individual life in order to accommodate for development in nutrition science and for changing economic circumstances, health requirement and the new food products being developed for the nations market. (Andrews, 2007).

Poverty is the major cause of malnutrition in the third world, 167 million children under five years old, almost one – third of developing country children were malnourished (Smith and Hedges, 2008). Population of rural dwellers with limited economic self -sufficiency and housing are those most likely to be malnourished and within these, disadvantaged population children of less than three years are more likely to suffer sickness, developmental retardation. Low intelligent quotients or death never they organization such as UNICEF considered that some cheap and simple technology together with educational effort can reduce child malnourish diet and associated problems. Nutrition education must – clearly emphasize that malnutrition is the result of misdistribution and by inequality in control over the access to food, community programmes in nutrition seek to improve through research, education improvement of the food supply and feeding (Goldberg 2009). The concept of nutrition education must therefore include in these factors:-

### **2.3.1 INFORMATION DISSEMINATION**

This approach parallel to the knowledge dissemination model presented by Achleberg (2008) at the inter country nutrition education workshop. According to this model, if people receive the knowledge they need to change them, change will automatically follow. However, knowledge here is extended it “information” in general, since not all of what is transmitted can be considered knowledge, at least in terms of how the receiver interprets it. Nonetheless, this approach is centered on belief that providing people with information is enough to get them to change their behaviours the mechanism

for providing information range from posters to slick radio and television spots to non-participation group counseling where a “teacher” knowledge to a target group members. Topic for nutrition education should concentrate on local health and nutrition problems. The message convey must be simple, clear and relevance to the needs of the community. Examples

### **2.3.2 CONTENT**

The objective of nutrition education is to encourage people to modify existing negative food related attitudes and practices to make intelligent food choices so that they and their children can be better nourished, improving the nutritional status of children and other vulnerable groups in the community. Specific nutrition education programmes are usually linked to move general programmes amend at improving living standard in communities through raising family income, increasing food availability and environmental sanitation. That objective may include such activities as combating protein energy Mal-nutrition (PEM) in infants and young children through reducing the incidence of diarrhea diseases or related disease. Improving nutritional status of family members by the introduction of subsistent farming or backyard gardens.

### **2.3.3 EFFECT OF NUTRITION EDUCATION ON NUTRITION STATUS**

Educating the women on the special needs of the under- five children and utilizing them for child’s growth surveillance have been effective in preventing malnutrition Gopaldas and theos (2009). The more targeted pre-school programme in

developing countries select children on the bases of second or third degree malnutrition. Other programmes use improvement in growth (weight, height) above what is observed in a control as a means of assessing impact.

Nutrition information and education are needed so that people can make informed choice about the foods they grow, purchase and eat the success of food-based strategies to eliminate micro-nutrients deficiencies will rest on the willingness of individuals to change their dietary behavior.

## **2.4 WOMEN EDUCATION AND NUTRITION**

Numerous studies show that women literacy and schooling are associated with improved child nutrition after controlling for the effect of education on income and fertility. Women are often exhausted by the combination of reproductive demands, work load and inadequate diet. (UNESCO, 2002). Data from small infrequent studies of women's anthropometry, iron status and dietary intake suggest that they are at high nutrition risk but better surveillance of Women's nutrition is needed. (ACC/SCN 2000). The giant strides made in preventing deaths and diseases have not been accompanied by commensurate improvement in nutrition. Even women who habitually use health services may not necessary made lasting changes in their daily health they and their children are malnourished without the right type of education to properly informed them, they may not critically understand how their eating habit their health and nutrition status.

Oftentimes, interest has focused largely on women's health and nutrition because of their rearing and child bearing role. No question that improved women health and

nutrition directly without directly improves fetal and neonatal health. Poor material health and nutrition reduces women's strength and efficiency in child care spheres, household and market and adversely affect reproductive outcomes. And when the education standard of women is improved, there are benefactors of increasing her productivity.

Numerous studies show that women literacy and schooling are associated with improved child nutrition after controlling for the effect of education on income and fertility. Women were often exhausted by the combination of reproductive demands, workload and inadequate diet. (UNESCO, 2002). Data from small infrequent studies of women's anthropometry, iron status and dietary intake suggest that they are at high nutrition risk but better surveillance of Women's nutrition is needed. (ACC/SCN, 2000). The giant strides made in preventing deaths and diseases have not been accompanied by commensurate improvement in nutrition. Even women who habitually use health services may not necessary made lasting changes in their daily health they and their children are malnourished without the right type of education to properly informed them, they may not critically understand how their eating habit their health and nutrition status Oftentimes, interest has focused largely on women's health and nutrition because of their rearing and child bearing role. No question that improved women health and nutrition directly without directly improves fetal and neonatal health. Poor material health and nutrition reduces women's strength and efficiency in child care spheres, household and market and adversely affect reproductive outcomes. And when the education standard of women is improved, there is benefactors of increasing her productivity.

## **2.5 WOMEN'S WORKLOAD AND ITS' INFLUENCE NUTRITION**

A heavy workload for women may lead to a poorer diet not only for their children and member of families but for women themselves. Heavy workload may be a constraint to higher productivity in food chain; constraints to adequate child-care and nutrition and health risk to women themselves and a constraint for fulfilling their other basic needs. Excessive workload on the other hand brings about poor nutrition stains of women in relation to low birth weight: small-for date or pre-term babies which suffered growth retardation before birth and are said to be malnourished (Perera, 1986). When the women heavily engaged in farming, those did not look the morning meal might go for her days and almost never see their children; at time they left early in the morning and return after sunset (Schofield 2009). It is reasonable to assume that this work pattern will not only affect child nutrition, but also have detrimental effect on women's own health. (Caldwell, 2009 ).

## **2.6 WOMEN'S INCOME AND CONTROL OF INCOME**

In most of developing countries, inadequate productive resources and basic consumption of good food are major determinant of under nutrition. At any given level of poverty, however, the nutritional efficiency of resources within the household depends on income control time allocation, intra household food distribution, abilities, and skills of those who provide nutrition enhancing services (cooking, breast feeding, health care, hygienic and childcare). One way of increasing women's economic influence within the poor household is through increasing their participation in income producing activities.

However, economic activities can compete with production of goods and services for home use. The net effect of income and control of expenditure and reduce home production time will depend on the returns women's labour and the quality and affordability of available women substitutes. (Chem, 2010).

## **2.7 WOMEN'S EMPOWERMENT AND CHILD HEALTH**

Constraints on women's physical mobility in many parts of the world further restrict their ability to make independent decisions. Women in countries such as India, Egypt, and Bangladesh are governed by social norms that restrict their physical mobility, referred to in the literature as female seclusion. This seclusion involves the veiling of head and face in some instances, as well as restrictions on unaccompanied travel to such places as shops, pharmacies, or hospitals, and limits on direct contact with unrelated males (Bruce, Lloyd, and Leonard, 1995). Thus, even in instances where women wish to make decisions regarding household consumption, expenditures, or health care, they may need help and agreement from other family members, particularly the husband or mother-in-law, in actually conducting these transactions.

It has often been argued that child health and investments in children are determined by intra-household resource allocation decisions, which are related to gender inequalities in the household. In families in which women play an important role in decision making, the proportion of family resources devoted to children is greater than in families in which women play a less decisive role (Thomas, 1990; Duraisamy and Malathy, 1991; Bruce, Lloyd, and Leonard, 1995; Blumberg, 1991). This notion of

“maternal altruism” assumes that power in the hands of women will lead to better child outcomes (Mason, 2001).

There are a number of ways by which women’s decision making power might come to be associated with improved child health outcomes.

1. **Day-to-day health enhancing behavior:** Many actions that lead to better health outcomes emerge from day-to-day health enhancing behaviors, such as better personal hygiene, regular access to preventive treatments such as timely vaccination, and devotion of time to slowly spoon-feeding toddlers instead of leaving them chewing on a biscuit or bread. Many of these actions occur unconsciously and are often related to fundamental rules that households live by, rather than conscious decisions regarding allocation of time and money. While many factors besides gender empowerment affect these behaviors—most notably household wealth and women’s participation in the labor market—in situations where women have control over time and money they may be able to make more efficient decisions leading to better health outcomes for children than when decisions are controlled by men who then delegate these tasks to women.

2. **Intra-household resource allocation:** At any given income level, households must choose where their resources will be spent. Even for poor households, some implicit tradeoffs occur between quality of housing, food expenditure, health and education expenditure, purchase of large consumer durables, and personal consumption items such as tobacco and alcohol. Small scale qualitative studies document that households in which women have more power devote a greater proportion of resources to child-



centered expenditures (Caldwell, 2009) although there is little quantitative validation of differential spending patterns.

**3. Access to emergency care:** When children are seriously ill, all family members—men or women—may recognize the need to obtain medical care and will do so if they can afford it and if care is available. However, if the primary caregiver—frequently the mother—needs to consult with husbands and family elders, it is possible that the child will not receive immediate care.

## **2.6 Education and Employment**

Factors such as education, employment, and involvement in domestic decision-making affect women's status. Kishor (2000) divided factors related to women's empowerment into three categories: sources of empowerment (education, employment), settings of empowerment (literacy of parent, extended family), and evidence of women's empowerment (control over finances, freedom of mobility). Among these factors, education and women's employment are regarded as traditional indicators of women's status and are the most significant strategies for improving women's status. Access to education appears to be one of the important indicators of women's status in society, especially where patriarchal structure is common. However, these factors are not sufficient to capture gender power relations and the ways in which women's reproductive behavior are governed. One problem in using this theory is that sometimes formal education alone may not be sufficient to affect women's empowerment in Africa unless it

translates into improving of women's autonomy which gives them opportunities of income-generating activities. Similarly, because it is often disregarded in the informal sectors, women's employment may not contribute to their empowerment. Therefore, both education and cash employment are only distant indicators for women's status.

Myriad studies explored women's domestic decision-making power in different areas including control over finances, decision-making in health care, and extent of freedom of movement. Women's involvement in domestic decision-making is considered a strong indicator of their familial status. This, in turn, is an indicator of reproductive decision-making power that, with other factors, may affect their health behavior. The literature on returns to education in developing countries can be broadly divided into two strands. The first strand looks at the returns in terms of labor market earnings. This strand traces back to Mincer (1974), who assessed returns to education by fitting a regression of the natural logarithm of earnings on the years of schooling; potential years of labor market experience and its square term; and the natural logarithm of hours worked. Following Mincer's work, many education economists, the most prominent of whom is George Psacharopoulos, a former World Bank economist, have estimated returns to education for virtually all countries in the world.

In the second strand, scholars look at social indicators such as health conditions, civic participation, technological know-how, and decision-making power of women. For example, Behrman and Wolfe (1989) use data for adults in Nicaragua and find that additional years of schooling are positively and significantly associated with a woman's

nutritional status, and negatively and significantly correlated with the probability that she suffers from treatable, medically preventable, or parasitic diseases. The results are not surprising since education increases people's understanding of sanitation and hygiene; improves their ability to read labels; and encourages their use of health care systems, as Case (2001) has established from several controlled experiments in India and South Africa. Similarly, Rosenzweig (1995) uses data from rural India to calculate the effect of literacy on the use of improved variety of seeds among farmers. He finds that those farmers who had been to school are more skillful in adopting new higher-yielding variety seeds.

Studying the relationship between women's education and their bargaining power within the household—the 'empowerment related' returns to education—quantitatively is a relatively new concept, partly because until recently even the Demographic and Health Surveys did not include any questions on who made decisions within and outside the household. Consequently, there was no direct measure of women's autonomy within the household at the national level. Not surprisingly, studies on women empowerment in relation to education were largely confined to the public sphere, such as participation in politics and economic activities. Heaton, Huntsman and Flake (2005), using data from Bolivia, Peru and Nicaragua, confirmed this multidimensionality of decisions within the household and the differences in the determinants of women's autonomy across these dimensions. They concluded that policies designed to change educational, economic, and

familial characteristics of women would only have a modest impact on women's overall sense of autonomy.

## **2.8 THEORIES OF HOUSEHOLD DECISION-MAKING**

The literature in sociology is both empirically and theoretically rich with studies on household decision-making; literature in economics until the last two decades has treated the household as monolithic, homogeneous and undifferentiated units, synonymous with a single consumer. This approach views the household as a black box where a single utility function describing the household's or the household heads preferences is maximized. Modelers either assume that individual preferences within the household were identical (and hence could be aggregated), or that one powerful member of the household, the household head, usually the husband, could impose his preferences on the other family members, resulting in a single utility function.

The basic reason why economists have treated the household as a black box is that standard utility theory is based upon the assumption of "independent utility functions" of individuals as opposed to dependent utility functions. Independent utility functions are not affected by the consumption levels of other individuals in the household. A single representative utility function is often used to model household preferences assuming that individual preferences of household members are identical. However, household utility functions are interdependent not only due to the consumption of common (public) household goods but also due to the concern of the family members with each other's

welfare. Therefore it becomes impossible to aggregate individual preferences which are neither identical nor independent. To circumvent this problem of interdependence, households are either treated as altruistic, where a single economically powerful but altruistic household member's preferences represents the entire household's preferences represented by a single utility function, called the joint utility function or they are treated as a dictatorial household, where a single economically powerful but exploitative household member's preferences represents the entire household's preferences. Several economists have challenged this conceptualization of the household and attention has been focused on intra-household dynamics and allocation of resources (Lundberg and Pollak 2009; Phipps and Burton 2009; Seiz 2007; Sen 2010). There are essentially three theories of household behavior in the literature: exploitation, altruism and bargaining.

**(a) Exploitation Theory**

This type of household behavior based on the Marxian school of thought treats the household problem as one where unmitigated self-interest prevails or dominates. A single individual, typically the head of the family, the husband, dictates his preferences to the other members of the household. This leads to exploitation of the family members by the husband. Here the family members do not have any independent control over any resources (Folbre 2002 and Roemer 2008). The husband makes all decisions regarding resource allocation by the socio-cultural authority and the traditional power hierarchy in the society. In such households women are dependent on their husbands and are expected to perform certain labor and household obligations. In return their basic needs are met. A rebellion on the part of

the women creates conflicts within the family. Social pressures on women are such that it curbs rebellion.

The household heads also face certain forms of social pressures. They are responsible for the basic needs of the household members and any evidence on the abuse of their authority may result in a loss of social status in society and consequently could result in a separation and eventually a divorce. The extent and effectiveness of these social pressures on the two groups (the husband and wife) depends upon the ethnic and religious groups. Thus generalizations are difficult, but it is evident that social pressures apply to both. The magnitudes of these pressures are uncertain, but in general these pressures are higher on women than men.

#### **(b) Neoclassical Theory**

As mentioned earlier preferences of household members as represented by a utility function are neither identical nor independent. The neoclassical school solves these problems by assuming that the household head is not only interested in maximizing his own utility but is also interested in the welfare of the family members. This approach based on altruism obscures any conflicts and separate interests that may exist within the household (Sen, 2000). Becker (2006) argues that the presence of one altruistic household member, the husband, who controls significant economic resources and makes compensatory transfers to other members, is sufficient to explain the existence of a joint household utility function. According to Becker, (2006) the husband's utility is a function of his personal consumption and the consumption of his household members. He transfers resources to family members up to

the point where the marginal utility that he receives from his personal consumption, equals the marginal utility that he derives from his family member's consumption. His behavior is not constrained by his personal income but rather by the family income. In this joint utility maximizing case the household members have no incentive to reduce the household head's personal consumption or income as this would reduce their own consumption level.

Becker, 2006's approach assumes a high degree of interdependence in the utility function with the husband making positive transfers to the other family members. He notes that: "If the household head is effectively altruistic and spends some of his income on his wife rather than on his own consumption...." (Becker, 2006). However, he does not mention the magnitude or the degree of this interdependence. Altruistic equilibrium in this model is the point where the marginal utility received from the husband's own personal consumption equals the marginal utility that he derives from his family members consumption. This leads to the question: what if this interdependence is limited and equilibrium occurs at a point where the husband consumes approximately 90 percent of the goods, while the family members consume only 10 percent. While in Becker, sense it would still qualify as altruism, others may consider this skewed distribution of consumption as exploitation.

The degree of interdependence of the utility function is expected to depend upon social norms prevalent in the society, personal characteristic of the household such as level of education and wealth and personal characteristic of the husband and members of the household. Becker, assumptions regarding altruism could be applied to explain

household behavior in certain households but it cannot be used to represent the norm as far as general household behavior is concerned. Studies reveal documented that resources within the household are distributed more evenly when families are relatively highly educated, comparatively better off, and social laws for both sexes more egalitarian. However, it has been argued that this outcome is more likely due to factors other than altruistic motive on the part of the husband such as increased bargaining power of women and changing social norms and customs (Altonji, Hayashi and Kotlikoff 2011). In households that are characterized by lower education and income, low female labor force participation, depending on the family structure and existing norms in society, resource allocation within the family may not be equitable. Hence, there are limits to using the altruistic model. Given the evidence of discrimination against women in terms of access to food, education, land and other inputs (Behrman 2003; Gladwin and McMillan 2005) and long working hours (Buvinic and Mehra 2009) it is hard to justify the joint utility maximizing approach to household decision-making.

Lastly, even though the altruistic approach appears to be diametrically opposed to the exploitation approach, there is a conspicuous similarity between the two. Both the altruist and the Marxian economists solve the problem of aggregation of individual family members' utility functions into a single joint utility function representing the household by fiat. The neo-classical school uses altruism (perfect democracy), where the husband shares his income with the household members and the exploitation school uses dictatorship (exploitation), of the head to allocate consumption goods to other members.



Hence, even though the outcome of both these schools of thought appear to be at the two opposite ends of the spectrum, both concentrate family decision-making on the household head. In fact, Becker, notion of altruism is not totally a polar case of exploitation, since it only implies consistent internalization of the welfare of the other family members. 'Pure exploitation' is simply a limiting case of altruism. It seems inconsistent to assume that households operate at the two extremes, i.e. they either behave altruistically or exploitatively (Folbre 2006).

### **(c) Bargaining Theory**

Social scientists have long asserted that significant differences between the economic position of household members based on gender and age exist within patriarchal households (Blumberg and Coleman, 2004) These differences become even more pronounced in polygamous households, where there are several competing wives and children. They criticize the homogenous and singular approach to household decision-making and contend that households cannot be treated as a homogeneous unit. Recent developments in game theory, increasing inter-disciplinary studies and focus on gender issues have resulted in the development of a school of thought that assumes that preferences vary among family members and views bargaining between family members as a process that reconciles these differences in preferences. Here two parties have several possible options available to them. Each has an interest in reaching a settlement but their preferences are not identical. Therefore the bargaining question can be posed as follows: What will be the agreed settlement between the two parties assuming that both the parties behave rationally?

The bargaining approach views the decision-making problem in an analogous manner to the problem faced by the firms. However unlike labor contracts which are often explicit, household contracts are often implicit. In a patriarchal society, the husband is akin to the owner of the firm and the household members are similar to the workers employed by the firm. Both husband and family members are aware that cooperation is necessary in the production of the final product, which generates utility/revenue. They are in conflict over the distribution of this utility/revenue. The outcome in the bargaining model depends on the threat point (utility associated with a separation, divorce or a standoff between the partners) of each individual spouse/partner and on other exogenous variables that may influence the bargaining power of these individuals outside of their threat points.

When the household is struggling to achieve subsistence goals and there are relatively few other income alternatives available to the family members outside of the family, all household members' work together to attain these subsistence goals. There are compelling pressures for survival and hence very few conflicts between the husband and household members arise. Hence in a subsistence-oriented economy it is possible that the husband dominates most family decisions with little opposition from family members. It may be equally possible that in this case interdependence between family members is high as all of them work together for survival, thus household behavior is more egalitarian. The question of altruism, exploitation or bargaining is rather trivial in these

circumstances, as survival is the primary goal. How households behave will primarily be dictated by social and institutional norms.

As the households move away from a subsistence economy with the introduction of new economic opportunities, new income streams are generated and demands upon household members change creating a need for institutional reorganization within the household and demanding a change in household behavior. In this environment the benevolence of the husband and his economic and social power verses the economic and social power of individual family members determines who makes decisions in the family. Thus the changing environment surrounding the household instigates household decision-making to evolve and advance.

The evolution of household decision-making and its pace are determined by existing social norms and the economic position of women. Social norms and customs often dictate attitudes towards gender issues, the educational attainment and labor force participation rates of women (Agarwal, 2002&Folbre, 2008), which in turn influences the economic and social position of women in society and their decision-making power. One case in point is the United States after the agricultural and during industrial revolution. During this period, women predominantly found themselves at home, dependent primarily on their fathers and husbands for their economic survival. As men were the principal and most often the sole income earners in the family, their preferences dominated household preferences and the corresponding expenditures. However, household preferences began to change when women started to enter the work force in

large numbers in the 1940s. The purchasing power of women was the catalyst in changing household preferences. Precooked meals available on the shelves of today's grocery stores are further examples of the change in preferences within the household reflecting the need for more time saving devices.

Bargaining captures the changing preferences of the household with changing opportunity costs that accompany technological change and economic opportunities. It can consistently explain the evolution of household decision-making. Evidence from both developed (Ott, 2006) and developing countries indicate bargaining as the predominant type of household behavior.

## **2.8 Measures of Decision-Making Power**

It is important to observe different areas of domestic decision-making power in order to make a comparison of women's relative power. Domestic decision-making power is measured in non-reproductive health-related areas such as economics, mobility, children's schooling and health, relative weight of women's opinion in couples, and perceived risk and frequency of domestic violence. The variables are measured by questions like "Who has the final say on....," with four possible answers: primarily the husband, husband and wife, primarily the wife, or someone else. In previous studies, these measurements were also summed and used as a decision making score. Kritz et al measured the wife's domestic decision-making power using an index based on responses from one to twelve items. These items include decision-making power in: household purchases, whether the wife works, how to spend the household income, the

best number of children to have, whether to buy and sell land, whether to use family planning, whether to send children to school, how much education children should receive, when sons should marry, when daughters should marry, whether to take a sick child to the doctor, and how to rear children. The responses were scored as “I do”=3, “both of us do”=2, and “my husband does”=1. Khan (1997) used a female independence score, 0 to 9, created from a series of questions on women’s involvement in household decisions, work participation, decision on contraceptive use and childbearing, and leisure activities.

## **2.9 CONCEPTUAL FRAMEWORK**

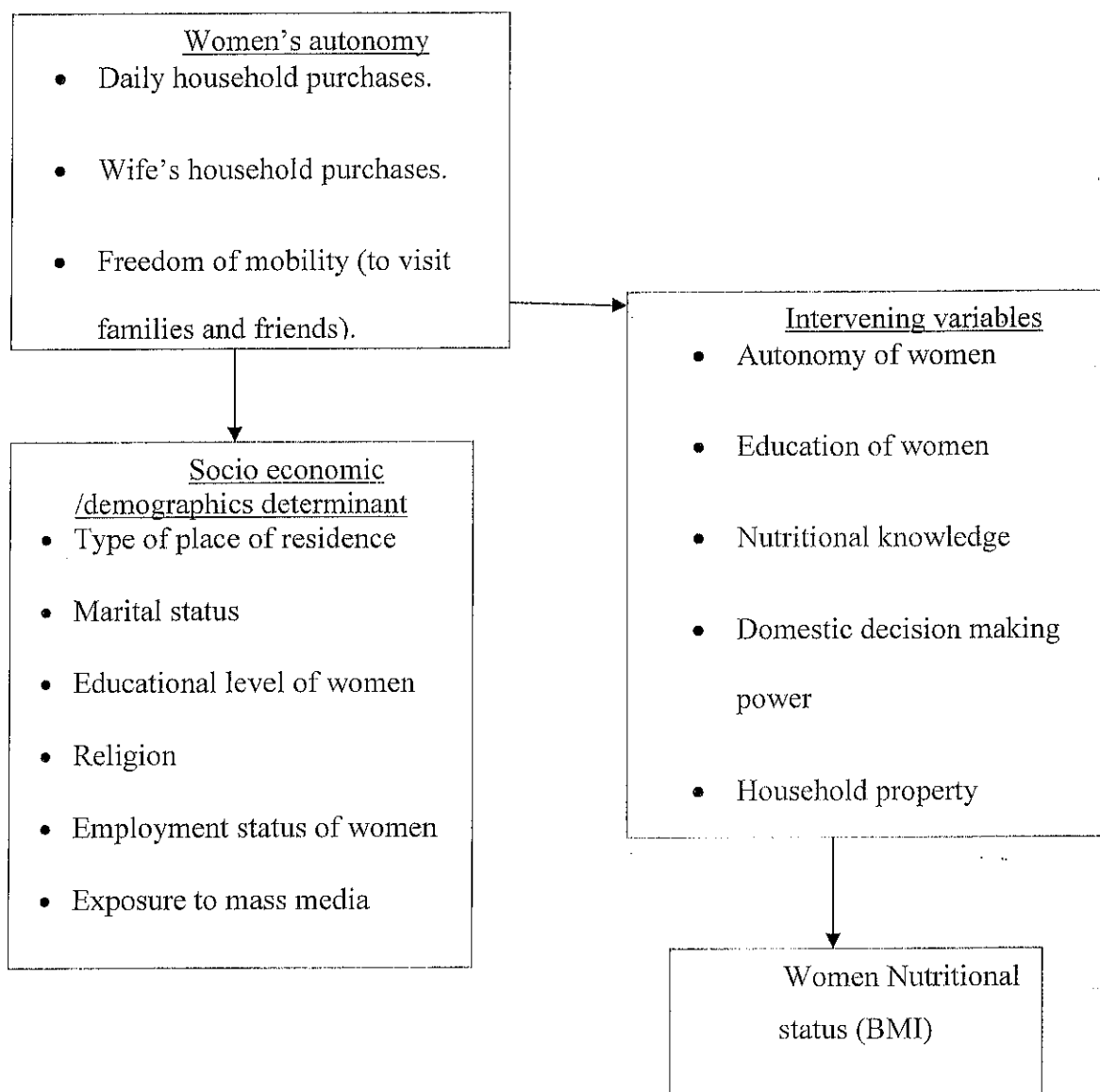
This study is conceptualized using the framework below (Figure 1). The conceptual framework shows the connections between two categories of variables namely the dependent and independent variables. The independent variables are women’s autonomy in household decision- making. They are subdivided into 3 sets. The first two sets are the underlying determinants that are indexed by some important socio-economic and demographic variables, while the third set of independent variables is the proximate determinants which are indexed by some factors responsible for decision making in the study area.

The dependent variable of this study is the nutritional status of women, which was measure in Body Mass Index (BMI). The demographic and socio- economic determinants are expected to influence the dependent variable through the assumed proximate

determinants such as autonomy, education, nutritional knowledge and decision-making power.

### 2.9.1: Figure 1: Conceptual framework of the study

#### Independent Variables



## **2.10 HYPOTHESIS OF THE STUDY**

- Women's education has a negative impact on their nutrition status.
- Women's domestic decision- making do not significantly influence their nutritional status.
- Socio demographic and economic factors do not have a significant influence on their nutritional status.
- Age of mother is negatively associated with the likelihood of nutritional status.
- High status of women in the family significantly increases their nutritional status.

## CHAPTER THREE

### RESEARCH METHODOLOGY

This chapter seeks to explain the plan and approach for executing the research work. It covers the description of the study area, target population, source of data, sampling design and sample size, method of data collection, measurement of variables, method of data analysis and limitations of the study.

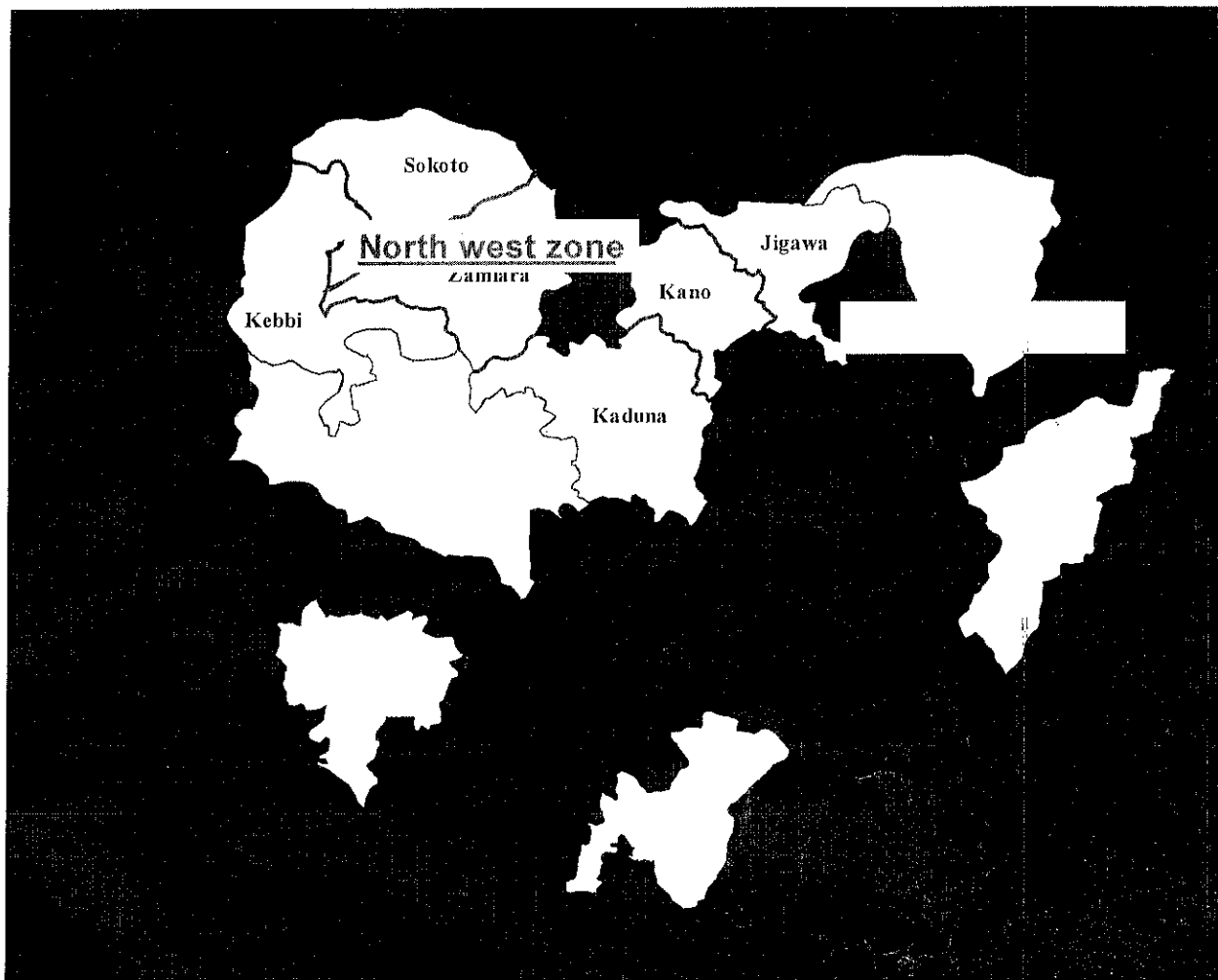
#### 3.1 Description of the study area

The North-Western Nigeria is one of the six geo-political zones in Nigeria. It comprises of Jigawa, Kaduna, Katsina, Kano, Kebbi, Sokoto and Zamfara state. Northern Nigeria was granted independence on March 15, 1957 with Sir Ahmadu Bello as its first premier. The region was an ethnically and religious diverse state. The Hausa, Fulani and Birom peoples dominate much of the North Western and Central part of the country. While the Hausa and fulani are chiefly Muslims, they have a very rich Christian history, the Ancient Hausa Kings of Gobir' MasuSakandami' - the cross bearers were Christians long before the coming of European evangelist and a large Christian Hausa and Fulani minority thrives in many of North Western provinces. A substantial part of the Hausa population also adheres to ancient religion of Hausa Animism.

The mean body mass index (BMI) of Nigerian women is 22.3, which falls well within the internationally accepted normal range (between 18.5 and 24.9). Almost two-



third of women (64 percent) has BMIs falling in the normal range; 15 percent are thin, including 2 percent who were severely thin. The youngest women are the most likely of all population subgroups to be thin; one-quarter of women age 15-19 have a BMI of less than 18.5. One-fifth of Nigeria women weigh more than they should; 15 percent are overweight and 6 percent are obese. (NpopC, 2011). There are only small differences among women living in the different zones, although women in the North West have the lowest mean BMI (21.9 kg/m<sup>2</sup>) (NDHS, 2013)



*Source: www.biomedcentral.com*

### **3.2 Target population**

The category of people considered as eligible respondents in this study are currently married women in the Northwestern region of Nigeria, which was qualify and were used as a criterion for the study. The sample size of 18,028 of women who had birth in the last five years was considered in the study.

### **3.3 Sources of data**

This study analyses data from the women's recode data of the 2013 NDHS. The sample for the 2013 NDHS was designed to provide population and Health indicators at the National, zonal, state and places of residence (rural /urban) population and Housing census of the Federal republic of Nigeria conducted in 2006, provided by the National Population commission (NPC).

### **3.4 Sampling design**

The Primary Sampling Unit (PSU), referred to as a cluster for the 2013 NDHS, is defined based on enumeration Areas (EAs) from the 2006 EA census frame. Sample was selected using a stratified two-stage cluster design consisting of 886 clusters, 286 in the urban and 602 in the rural areas. A representative sample of 86,800 households was selected with a minimum target of 950 completed interviews per state. A total of 33,385 women age 15-19 years were successfully interviewed in the survey, of which 18,028 were selected as the accurate sample size. Given that this study is focused on the nutritional status of women in the North- Western region of the country, the analysis is restricted to only the women who had at least a birth in the last five years (preceding the survey). The size of the then currently married, non-pregnant and non-lactating women totals 4,888 were used for data analysis in the study area.

### **3.5 Measurement of variables**

The analysis examined nutritional status of women considering the women who had anthropometric measurements in the 2013 NDHS (height for age). Body mass index

was calculated with these indicators ( $\frac{w}{h^2}$ ) i.e. weight divided by height squared. The dependent variable, nutritional status, based on Body Mass Index coded as one for 18.0 and above and zero for below 18.0. The independent variables considered are the direct proxies for women's status: decision on large household purchase, decision on daily needs, decision of health seeking care, who takes decision on what family eats and freedom to visit family.

The general binary logistic regression model used for the multivariate analysis is

$$\log\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1x_1 + \beta_2x_2 + \dots + \beta_nx_n$$

Where  $p$  = probability of exposure to malnutrition or chronic energy deficiency

$x_1-x_n$  = predictor variables

$\beta_0, \beta_1 - \beta_n$  = regression coefficients

### **Variable identification**

#### **Dependent variable**

The dependent variable in this study is women's nutritional status which was measured in terms of Body Mass Index (BMI). In this study the dependent variable (BMI) was dichotomized with 0 being less than 18.5 and 1 being 18.5 or above. Besides, only non-pregnant and non-lactating women were included in the study.

#### **Independent variables**

The principal independent variables of interest are those reflecting women's involvement (final says) in decisions regarding four domains of household life: making

large household purchases, making day-to-day household purchases, deciding on respondent's own health care and visits to family/relatives. In addition, another indirect measure of women's empowerment (autonomy), besides, a few proxy measures were included in the analyses and type of residence was taken as a control variable to capture differences in women's life styles and living standards.

The 2013 NDHS collected information on direct measures of women's autonomy. In particular, questions were asked on women's participation in specific household decisions. For each question in the survey, five options were presented as replies: (1) respondent alone, (2) respondent and husband/partner jointly, (3) respondent and other person in the household, (4) husband alone, (5) someone else. For statistical purposes, the response "respondent alone" has been renamed as "female autonomy" to show her exclusive autonomy; the responses "respondent and husband" and "respondent and other person" were categorized as "joint decision" and the responses husband alone and someone else are categorized as "husband's decision". Furthermore, an index was developed on women's decision-making autonomy. In doing so, women who have full/independent autonomy in at least two of the above four specified decision-making areas were assumed to have "high" decision-making power; women having the full autonomy in having their final say in only one of the four or those who make joint decision-making in all of the four decision-making areas were assumed to have "medium" decision-making power; and the remaining were assumed to have "low" decision-making power.

Women's educational attainment, employment, and household property possession were included as the proxy measures of women's autonomy. Household property possession was based on information related to household ownership of a number of consumer items (radio, television, refrigerator, bicycle, motor cycle and car). Based on the ownership of these six items, an index was developed to ease the statistical analysis and interpretation of results. For possession of one of these household items, a respondent received one point, otherwise zero points. The index took values between zero and five. Hence, those women who reported that they have none of these items were assumed to have "very low" household property possession; those who have only one of these items were assumed to have "low status" and those women who reported that they have at least two of the above items were considered to have "medium or high" household property possession.

### **3.6 Data processing and analysis**

The NDHS 2013 data was processed and analyzed using STATA application package (STATA 12.0). The data processing was necessary before the proper analysis in order to measure the variables in this study accurately as well as to make the analysis well presentable and easily interpretable. The tools for data manipulation were employed on the STATA application package to achieve this task.

Uni-variate analysis in this study was carried out using tables of frequency distribution to describe the background characteristics of the respondents and pie chart to display the nutritional status of women. Bi-variate analysis will done using the chi-square

( $\chi^2$ ) test to show the association between nutritional status and the various socio economic and demographic background characteristics. Furthermore, binary logistic regression will be used in the multivariate analysis to determine the strength of association and identify predictors of nutritional status of women in the study area. The reason for employing binary logistic regression in this study is that the dependent variable (BMI) was coded as one and zero respectively.

A series of two different models were fitted to investigate factors predicting the occurrence of women's under nutrition among the then currently married non-lactating and non-pregnant women of reproductive age groups. The first model was fitted to see the effects of women's characteristics and decision-making autonomy on women's malnutrition without partner factors. The second model was fitted to see the effects of socio-demographic variables on women's malnutrition.

### **3.7 Limitations of the study**

The target population chosen in this study restricts the possibility of nutritional status only to women. This implies that analysis in this study will include married women but not men in the study area.

Some of the independents variables that are ought to be analyzed in this study are difficult to measure. For instance, ethnic group and spouses' occupation were measured in the NDHS though series of string variables, which are difficult to combine, and thus, it entailed proper manipulation in other to achieve the desired result in the analysis.

## CHAPTER FOUR

### DATA ANALYSIS, PRESENTATION AND INTERPRETATION

#### 4.0 Background characteristics and differentials of women's nutritional status

A total of 4888 currently married non-pregnant and non-breastfeeding women of age groups 15-49 were considered in this study. About 30.67 % of the respondents are found within the age group of 15-24, majority (42.61%) were found within 25-34 and 26.72% within the age group of 35-49. The mean and median ages were 29 and 28 years respectively with a standard deviation of 7.8 years.

Most of the respondents were illiterate (80.56%), 11.62% attended their primary education and 7.81% attended secondary and higher educations. More than 84% of the respondents reside in the rural part of Nigeria. Occupationally, the majority of the respondents (50.15%) were employed during the time of data collection. The study population was predominantly Islam (93.63%) followed by Christian (4.76%). Respondents from other religions represent 1.60% of the study population.

Nigerian women are more affected by over-nutrition than under-nutrition. In this study, which included only currently married non-lactating and non-pregnant women, less than 2% of them were undernourished and about 11% were overweight (Overweight=10.95% (BMI=25.00-29.99 kg/m<sup>2</sup>) and obesity=6.73% (BMI>=30 kg/m<sup>2</sup>)). Among the undernourished ones, 1.86% were severely undernourished (BMI<16.00kg/m<sup>2</sup>), 3.58% moderately undernourished (BMI=16.00-16.99 kg/m<sup>2</sup>) and



the remaining 11.40% (BMI=17.00-18.49 kg/m<sup>2</sup>) were mild undernourished while larger percent of Nigerian women 65.49% were Normal with respect to their Body Mass Index in the study location.

Marital status of women has an inverse relationship with their nutritional status. The proportion of women who were married (83.19%) has a Body Mass Index of greater than 18.5; women who never married have a Body Mass Index of less than 18.5 to be 87.50% while women who were formally married were 81.52%. Consequently, study revealed that there is a strong relationship between women's Ethnicity and their nutritional status measured in term of their Body Mass Index.

**Table 1: Mean BMI of Respondents by Socio-demographic Characteristics**

<i>Characteristics</i>	<i>Body mass index</i>			<i>Total</i>
	<i>Mean</i>	<i>&lt;18.5&gt;</i>	<i>=18.5</i>	
<b>Age groups</b>				
15-19	24.74	10.88	8.51	477
20-24	25.02	21.60	22.17	1186
25-29	23.56	25.02	23.17	1260
30-34	24.60	19.79	18.64	1011
35-39	25.04	11.11	14.04	728
40-44	24.55	7.69	8.31	441
45-49	25.07	3.91	5.16	266
<b>Religion</b>				
Christianity	26.30	1.29	5.99	279
Islam	24.42	97.77	92.66	4986
Others	25.02	0.94	1.35	68
<b>Educational Attainment</b>				
No education	24.55	85.99	76.93	4211
Primary	23.90	10.28	13.26	686
Secondary	24.96	3.63	7.91	387
Higher	26.92	0.09	1.90	86
<b>Marital Status</b>				
Never married	23.55	0.15	0.19	10

Married	24.51	97.88	97.71	5251
Formally married	26.13	1.97	2.10	112
<b>Ethnicity</b>				
Yoruba	24.40	0.00	0.33	15
Hausa/Fulani	24.50	95.37	90.01	4849
Igbo	25.92	0.00	0.15	7
Others	24.81	4.63	9.50	465

*Source: NDHS, 2013*

Table 2 revealed women's socio-economic characteristics and the nutritional status in the region. From the table, larger percent of the respondents 75.65% with low nutritional status were poor, 13.87% were in the middle class while few of the remaining respondents 10.48% who has low nutritional status were rich. However, unemployed women with low nutritional status were reported to be 51.20% of about 2% larger than the employed women. Furthermore, 98.61% of the respondents who had low BMI were not exposed to mass media, whereas 96.01% of women's who has high Body Mass Index were not exposed. Few of the respondents 3.99% who had high Body Mass Index where exposed to Mass Media.

Also, women with medium autonomy 98.42% were reported to have a Body Mass Index greater than 18.5 which indicates high nutritional status. Conclusively, women with low household possession were reported to have a very low nutritional status in the region.

**Table 2: Mean BMI of Respondents by Socio-Economic Characteristics**

<i>Characteristics</i>		<i>Body mass index</i>		<i>Total</i>
<i>Mean</i>	<i>(Low) &lt;18.5&gt;=18.5 (High)</i>			
<b>Wealth status</b>				
Poor	24.42	75.65	63.97	3537
Middle	25.09	13.87	18.09	936
Rich	24.47	10.48	17.93	899
<b>Women's Employment status</b>				
Not employed	25.27	51.20	50.48	2710
Employed	23.80	48.80	49.52	2646
<b>Women's level of Exposure to mass media</b>				
Not exposed to mass media	24.51	98.61	96.01	5180
Exposed to mass media	25.23	1.39	3.99	192
<b>Decision making Autonomy</b>				
High	24.57	0.61	1.30	62
Medium	24.48	98.61	98.42	5151
Low	30.07	0.77	0.28	19
<b>Household possession</b>				
Low possession	24.51	99.76	99.09	5329
High possession	27.53	0.24	0.91	43

*Source: NDHS, 2013*

#### 4.1 Bi-variate analysis for women's autonomy

Table 4.1 below shows the relationship and the statistical extent to which women's socio-economic characteristics influences their nutritional status in the region, which was measured in term of their Body Mass Index. Showing the characteristics of women by highest level of education, women's wealth status, women's employment status, women's exposure level, autonomy and women's household property. Study revealed that only women's employment has an inverse relationship with their BMI.

### 4.3: Tables of Relationships

<i>Characteristics</i>	<i>Body mass index</i>		<i>Total</i>	<i>Chisquare</i>
	(Low)<18.5	>=18.5(High)		
<b>Highest level of Education</b>				
No education	17.6	82.4	4211	41.56*
Primary education	12.9	87.1	687	
Secondary education	8.1	91.9	388	
Higher	0.9	99.1	87	
<b>Wealth status</b>				
Poor	18.4	81.6	3537	42.23*
Middle	12.8	87.2	936	
Rich	10.5	89.9	899	
<b>Women's Employment status</b>				
Not employed	16.2	83.8	2710	0.14*
Employed	15.8	84.2	2646	
<b>Exposure</b>				
Not exposed	16.4	83.6	5180	12.89*
Exposed	6.3	93.7	192	
<b>Women's autonomy</b>				
High	8.3	91.7	62	6.9*
Medium	16.1	83.8	5151	
Low	34.4	65.6	19	
<b>Household Property</b>				
Low	16.1	83.9	5329	3.7*
High	4.7	95.3	43	

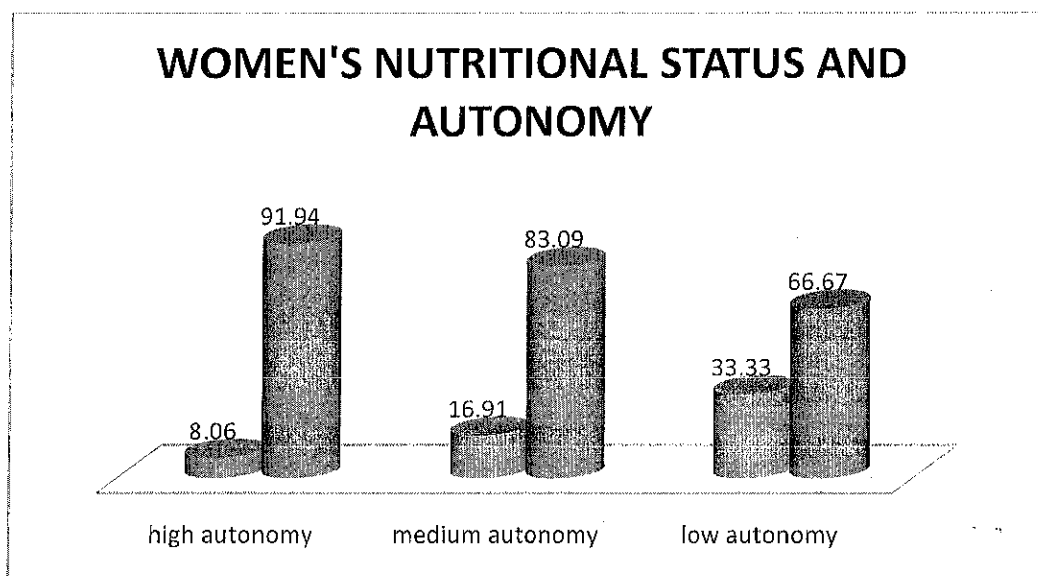
Source: NDHS, 2013 \*p-value<0.01 and \*\*p-value<0.05; No symbol refers to no significant association

Table 4.1 revealed that there exist a strong relationship between women's education and their nutritional status ( $P<0.05$ ). Low nutrition was mostly common with women with no formal education (87.73%) while women with higher education (0.12%) were reported to have low nutritional status. In addition, there exist a strong indication that women's wealth status were linearly related to their nutritional status. The wealthy women were reported to be 8 times (89.61%) better than the poor women (10.39%).

Employment status of women do not statistically related to their nutritional status ( $p>0.05$ ), women who are not employed (50.06%) were reported to have low Body Mass Index as compared to those with employment status (49.94%).

Table 4.1 was designed to further explore the relationship between decision-making autonomy and nutritional status of women. When women report that they have their final say in none of the decisions, they are more likely to have low BMI as compared to when they have final say in one or more of the specified decisions. The highest proportion (91.94%) of women with BMI is observed when women reported that their partners have final say in all of the decisions but lowest proportion of women with BMI (8.06%) is observed when women reported that the decisions. The results suggest that women who have the highest level of autonomy are better in their nutritional status compared with women who have joint decisions and those who have no final say in any of the decisions. Decision-makings i.e., surprisingly, the proportion of undernourished women shows a progressive increment with an increase in the number of joint decisions up to a certain extent.

Then it shows a rapid decline when women make joint decisions in most of the cases. This can be a good evidence to show the importance of decision making autonomy in Nigerian women's nutritional status in North-West, Nigeria.



#### 4.2 Multivariate Analysis

In the bivariate analysis, the chi-square test was carried out to examine whether there was a significant association between women's autonomy in household decision making and their nutritional status. However, the chi-square test does not tell us how strong such association might be. Therefore, the binary logistic regression analysis is performed to determine the strength of such association as well as to identify predictors of nutritional status of women.

Christianity	--	-	--	1.0000(RC)	--	--
Islam	--	--	--	0.278277	0.122328	0.6330325
Others	--	-	-	0.3781212	0.169381	0.8441027
<b>Age group</b>						
15-19	--	--	--	1.0000 (RC)	--	--
20-24	--	-	--	1.140924	0.806836	1.613348
25-29	--	--	--	1.040873	0.740687	1.462718
30-34	--	--	--	1.073265	0.767519	1.500805
35-39	--	--	--	1.437282	1.010832	2.043642
40-44	--	--	--	1.266157	0.841621	1.90484
45-49	--	--	--	1.6213	0.980669	2.680529
<b>Marital Status</b>	--	--	--			
Never married	--	--	--	----	--	--
Married	--	--	--	--	--	--
Formally married	--	--	--	--	--	--
<b>Ethnicity</b>						
Yoruba	--	--	--	1.0000 (RC)		
Hausa/Fulani	--	--	--	4.30e-06	2.25e-06	0.0000128
Igbo	--	--	--	-	--	--
others	--	--	--	5.35e-06	1089686	2.09e+07

*Source: NDHS, 2013*

The Table 4.2.1(Model 1) above presents the results of logistic regression analysis of the relationship between women's autonomy and their nutritional status. Women's education is found to be strongly associated with their nutritional status. The table indicates that the odds of their nutrition is greater among women with higher education of about 13% higher compared to those with no formal education with the probability value ( $P < 0.05$ ). It is also established from the table that the odds of women with secondary

#### 4.2.1 Women's socio-economic/demographic characteristics and their

##### Nutritional Status.

Characteristics	Model 1			Model 2		
	Odd ratio	95% CI		Odd ratio	95% CI	
		Lower	upper		Lower	upper
<b>Women's level of education</b>						
No formal education	1.0000 (RC)	--	--	1.0000 (RC)	-	--
Primary	1.274031	0.9600	1.6906	1.159008	0.869553	1.54462
Secondary	1.76384	1.0621	2.92806	1.157904	0.722780	1.854978
Higher	13.43713	1.8224	99.0743	7.811731	1.043089	58.50233
<b>Wealth status of women</b>						
Poor	1.0000 (RC)	--	--	--	-	--
Middle	1.421961	1.0920	1.85149	--	--	--
Rich	1.534871	1.1267	2.09084	--	-	--
<b>Women's employment status</b>						
Not employed	1.0000 (RC)	--	--	--	--	--
Employed	1.020283	0.8609	1.2091	--	-	--
<b>Exposure to Mass Media</b>						
Not exposed	1.0000 (RC)	--	--	--	--	--
Exposed	1.246347	0.5683	2.7334	--	-	--
<b>Autonomy</b>						
High	1.0000 (RC)	--	--	--	--	--
Medium	0.5525513	0.2038	1.4981	--	-	--
Low	0.2104347	0.0462	0.9578	--	--	--
<b>Household possession</b>						
Low	1.0000 (RC)	-	--	--	-	--
High	2.013078	0.4319	9.38273	--	--	--
<b>Religion</b>						



education is 1% higher as compared with no formal education. This illustrates that women's education is a good predictor to measure women's autonomy which influences and enhances their nutritional status. In other words, as women's educational status increases, which indicates their autonomy, their nutritional status also increases which is measured in terms of their Body Mass Index.

The women's wealth status is another predictor of nutritional status. It can be observed from the table that the odds of their nutrition are greater among women who are rich, about 2% higher as compared to the poor women in the region with ( $p < 0.05$ ). It can also be established from the table that the odds of women with medium status are 1% higher as compared with those that are poor. This also indicates that women's wealth status predicts adequately women's autonomy which influences positively their nutritional status.

The table also depicts that the odds and likelihood of women's nutrition, which is found to be greater among employed women, is about 1% higher with ( $p < 0.05$ ) as compared to their unemployed counterparts. This means that employment status, as shown in the bivariate analysis, does not influence significantly women's autonomy and it influences little their nutritional status.

The table also shows that the odds of women's nutrition, which explain to be about 1% greater among the exposed women, i.e. women that listen to either radio, television, read magazine or newspaper as compared to women that were unexposed to all these media. However, women with low autonomy are 79% lower compared to the odds of

women with high autonomy ( $p < 0.05$ ). Also, the table explains that a woman with medium autonomy is 45% lower and 10% higher as compared with women with high autonomy and low autonomy respectively. This means that as women's autonomy increases the odds of increase in their nutritional status also increases.

Conclusively, table 4.2.1 revealed that the odds of women with high household possession is greater by 2% with the ( $p < 0.05$ ) as compared with women with low possession. This indicates that as women possess some household property, there is an increase in their autonomy which also has a multiple effect on their nutritional status which is measured in term of Body Mass Index.

From the second model (Model 2), The table above presents the results of logistic regression analysis of the relationship between each of the socio-demographic characteristics and women's nutritional status.

The odd ratio of women with other religion is 63% lower compared to those who were Christian which is the reference category. This shows that Christian women are more likely to be better in nutritional status than women with other religion. Meanwhile, the odds of women who practices Islam is 73% lower compared to those who were Christian which is the reference category.

The odd ratio of women aged 40-49 is about 2% higher compared to women in the aged bracket of 15-19 years. This means that aged women are more likely to be better off in nutritional status than women in the lower age group.

The odd ratio of women who have only primary education is 1% lower compared to those who have No Education (Reference Category), 1% lower among women with Secondary Education and 8% greater among men with Higher Education. This shows that women with higher level of Education are more likely to be more nutritious than those with No education, Primary or Secondary Education respectively.

The odd ratio of women from other Ethnic groups is greater compared to those that are Yoruba's (Reference Category). This shows that women from other Ethnic groups are more likely to be more nutritious than those that are Yoruba's.

## CHAPTER FIVE

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

The overall objective of this study is to explore the relationship between women's autonomy in household decision making and their nutritional status in North –West, Nigeria. The study was based on the sample size of 4888 currently married non-pregnant and non-breastfeeding women of reproductive ages in the study area.

With respect to socio-demographic characteristics, majority of the respondents (80.56%) were illiterate, majority of women (84.0%) reside in the rural part of the region. Occupationally, half (50.15%) were employed during the time of data collection. Those who practice Islam among the respondents are more than those who practice any other kinds of religion (93.63%). Also, 42.61% of the women were in the age group 25-34years of which the mean and the median ages were reported to be 29 and 28 years respectively with the standard deviation of 7.8

Nutritionally, women in this region are more affected by over nutrition than under nutrition of which less than 2% were undernourished while about 11% were overweight. Predominant of the married women 97.88% has a normal body mass index. In conclusion, study revealed that there is a strong relationship between women's ethnicity and their nutritional status measured in term of BMI.

Additionally, larger percent of the respondents 75.65% with low nutritional status were poor. Also, unemployed women with low nutritional status were reported to be 51.20%. Furthermore, women with medium autonomy 98.42% were reported to have a

BMI greater than 18.5 which significantly indicates high nutritional status. Conclusively, women with low household property were reported to have a very low nutritional status.

### **5.1: Conclusion and Recommendations**

Understanding the relative importance of the various determinants of malnutrition among Nigerian women is the key to designing evidence-based effective programs to address women's malnutrition. The proportion of malnourished women vary by place of region, type of place of residence, household size, partner's educational attainment and employment status, exposure to mass media with statistically significant chi-square values in the bivariate analysis. Rural women, women with high household property, women whose partners were relatively less educated or with no education and those whose partners are unemployed and engaged in agricultural activities were at high risk of being undernourished than the other counterparts.

The multivariate analysis adds to our knowledge on issues related to disparities of women's empowerment and autonomy in malnutrition among women in North West Nigeria. The magnitude of the gap described in this study gives baseline information that will help programmers, researchers and policymakers in the management of malnutrition among underpowered women. On average, the nutritional status of women with very low household economic status, with relatively lower educational attainment and with lower decision-making autonomy is poorer than those with better economic status, educational attainment and empowerment. The present study is important in that it documented

women's empowerment as an important determinant of women's under nutrition, a major research question that was theoretically stated prior to these findings. In line with this the research has identified that women's educational attainment, employment status, and household economic status are the most important proxy measures of women's under nutrition. In other words, these are the major pathways through which the decision-making autonomy of women affects their nutritional status or BMI levels.

Unless the obstacles that prevent women from practicing their potential are removed including through development and empowerments, it will be difficult if not impossible to avoid malnutrition and achieve intended national development goals. Improvements in women's nutritional status can only be seen when the needy are not exposed to the risks of poor nutritions. On the basis of the findings, the following recommendations are forwarded.

Ensuring women's decision-making role at household levels should be an important part of the national nutrition strategy. The findings also showed that individual characteristics are important predictors of women's empowerment. But since empowerment is a multi-dimensional phenomenon, with women relatively empowered in some spheres but not in others, further research might play a major role in identifying whether community or individual characteristics are better predicators of women's empowerment in their surroundings. Design and implement programs addressing the nutritional needs of women especially those in the most affected regions and those with lower household economic status. The interventions could be continuous nutritional

health promotion and education as part of maternal health care programs. Education on nutrition and health can stimulate demand for more or different foodstuffs, health services, or disease-prevention measures. Not to limit the effect of education or to see outcomes, there should be the means and opportunities to act on that knowledge as well. To curb the negative effect of large household size on women's nutritional status, one of the critical priorities should be the continuation of the intensive national family planning program.

Finally, further research is suggested to investigate the effects of agro-ecological variations or climatic variations, domestic violence against women and other socio-cultural factors on women's malnutrition or generally, overall effects of climatic, domestic violence and other socio-cultural factors on nutritional status of women.

## References

- ACC/SCN.(2000). *Fourth Report on the World Nutrition Situation*. Geneva: ACC/SCN incollaboration with IFPRI.
- Acharya M, Bennett L: Women and the subsistence sector: economic participation and household decision making in Nepal, a working paper (526) for the World Bank, Washington DC. 1983.
- Basu, A.M. 1992. *Culture, the Status of Women and Demographic Behaviour*.Oxford:Clarendon.
- Basu A.M. and Koolwal G.B. 2005. Two concepts of female employment: Some leads from DHS data on women's status and reproductive health, In Kishor, S. (ed.)2005. *A Focus on Gender: Collected Papers on Gender Using DHS Data*.
- Batliwala S: The meaning of women's empowerment: new concepts from action. In *Population Policies Reconsidered: Health, Empowerment, and Rights* Edited by: Sen G, Germain A, Chen LC. Cambridge, MA: Harvard Centre for Population and Development Studies; 1994.
- Batliwala, S; and Dhanraj, D. (2004). "Gender myths that instrumentalise women: A view from the Indian frontline." In *Repositioning feminisms in development*. IDS Bulletin. Vol. 35(4); pp
- Blumberg, R.L., ed. 1991. *Gender, family and economy: The triple overlap*. Newbury Park, California:Sage Publications.
- Bruce, J., C. Lloyd, and A. Leonard, 1995.*Families in focus: New perspectives on mothers, fathers and children*. New York: The Population Council.
- Bryk, A.S. and S.W. Raudenbush. 1992. *Hierarchical models: Applications and data analysis methods*.Newbury Park, California: Sage Publications.
- BogalechAlemu and MengstuAsnake. (2007). *Women's Empowerment in Ethiopia: New Solutions to Ancient Problems*.Pathfinder International/ Ethiopia.
- Bradley, Sarah E.K., and Mishra, Vinod. (2008). *HIV and Nutrition among Women in Sub-Saharan Africa*. DHS Analytical Studies No. 16. Calverton, Maryland, USA: MacroInternational Inc.



Britannica Student Encyclopedia. (2005). *Malnutrition*, Encyclopedia: Britannica Premium Service, <http://www.britannica.com/ebi/article?tocId=9275642> (Accessed Sept. 4, 2008). Calverton, Maryland, USA: ORC Macro.

Caldwell J.C. 1986. Routes to low mortality in poor countries. *Population and Development Review*, 12: 171-220.

Caldwell J.C. and Caldwell P. 1985. The cultural forces tending to sustain high fertility in tropical Africa. Washington DC: World Bank, Population, Health and Nutrition Department, PNH Technical Note, 66pp.

Caldwell JC, Caldwell P: What have we learnt about the cultural social and behavioural determinants of health? From selected readings to the first health transition workshop. *Health Transition Centre* 1991, 1:3-17.

Dixon RB: *Rural Women at Work: Strategies for Development in South Asia*. Baltimore: Johns Hopkins University Press; 1978.

Dixon-Mueller, R.B. 1978. *Rural women at work: Strategies for development in South Asia*. Baltimore, Maryland: Johns Hopkins University Press.

Duraisamy, P. and R. Malathy. 1991. Impact of public programs on fertility and gender specific investment in human capital of children in India: Cross-sectional and time series analysis. In *Research in population economics*, Vol. 7, ed. T.P. Schultz. Greenwich, Connecticut: Jai Press.

Dwyer, D. and J. Bruce, eds. 1988. *A home divided: Women and income in the third world*. Stanford, California: Stanford University Press.

Dyson T, Moore M: On kinship structure, female autonomy, and demographic behaviour in India. *Population and Development Review* 1983, 9:35-60.

Fonchingong, C. (2005). "Negotiating livelihoods beyond Beijing: The burden of women food vendors in the informal economy of Limbe, Cameroon" *International Social Science Journal* Vol. 57(184); pp 243-253.

- Fonchingong, C. (1999). "Structural adjustment, women and agriculture in Cameroon". *Gender and Development*. Vol. 7(3); pp 73-79.
- Fonjong, L. (2001). "Fostering women's participation in development through non-governmental efforts in Cameroon". *The Geographical Journal*. Vol. 167 (3); pp 223-234.
- Food and Agriculture Organization of the United Nations. (2005). *The state of insecurity in the world 2005*. Rome: Food and Agriculture Organization of the United Nations, 2005. <ftp://ftp.fao.org/docrep/fao/008/a0200e/a0200e.pdf>
- Food and Agriculture Organization of the United Nations. (2008). *The State of Food Insecurity in the World 2008: High Food Prices and Food Security-Threats and Opportunities*. Rome, Italy, Food and Agriculture Organization of the United Nations.
- Forje, L.C. (1998). "Are women's micro-enterprises profitable? A case study of Cameroon women". *Small Enterprise Development*. Vol. 9(3); pp 50-56.
- Heaton, T. B., Huntsman, T. J. & Flake, D. F. (2005). The effects of status on women's autonomy in Bolivia, Peru, and Nicaragua. *Population Research and Policy Review*, 24(3), 283-300.
- Hindin, M.J. (2003). *Understanding Women's Attitudes Towards Wife Beating in Zimbabwe*. Bulletin of the World Health Organization 2003. International Food Policy Research Institute. (2004). *The Changing Face of Malnutrition*. IFPRI Forum. Ed. Uday Mohan. Published by IFPRI and its 2020 Vision Initiative. Washington DC, USA.
- Jejeebhoy, S.J. 2000. Women's autonomy in rural India: Its dimensions, determinants, and the influence of context. In *Women's empowerment and demographic processes: Moving beyond Cairo*, ed. H. Presser and G. Sen. New York: Oxford University Press.

- Jejeebhoy, S.J. and Z.A. Sathar. 2001. Women's autonomy in India and Pakistan: The influence of religion and region. *Population and Development Review* 27(4): 687-712.
- Macro International Inc. (2008). *Nutrition of Young Children and Women, Ethiopia 2005*. Calverton, MD: Macro International Inc.
- Mincer, J. (1974). *Schooling, Experience and Earnings*. New York: Columbia University Press.
- Oniang'o, R. and Mukudi, E. (2002). *Nutrition and Gender. In Nutrition: A Foundation For Development*. Geneva, ACC/SCN.
- Psacharopoulos, G., & Patrinos, H. (2004). Returns to investment in education: A further update. *Education Economics*, 12(2), 111-134.
- Rahman, M.M. and Nasrin, S.O. (2009). Mothers Nutritional Status in an Impoverished Nation: Evidence from Rural Bangladesh. *The Internet Journal of Nutrition and Wellness* 7, 1.
- Teller, C. and Gugsayimer. (2000). Levels and Determinants of Malnutrition in Adolescent and Adult Women in Southern Ethiopia. *Ethiopian Journal of Health Development* 14(1): 57-66.
- TsegayeDemissie, YaredMekonen, and JemalHaider, (2003). Agroecological Comparison of Levels and Correlates of Nutritional Status of Women. *Ethiopian Journal of Health Development* 17(3): 189-196, <http://ejhd.uib.no/ejhdv17-no3/6Tsegaye%20Demissie.pdf>.
- Uthman, O.A. and Aremu, O. (2007). *Malnutrition Among Women in Sub-Saharan Africa: Rural-Urban Disparity*. *Rural and Remote Health* 8:931. (Online source <http://www.rrh.org.au>)

WoldemariamGirma and TimotiowsGenebo. (2002).*Determinants of Nutritional Status of Women and Children in Ethiopia*. Calverton, MD, ORC Macro. World Food Program.(2005). *Emergency Food Security Assessment Handbook*. Rome, WFP.

\*\*\*\*\*APPENDIX: STATA DO FILE USED TO RUN ANALYSIS\*\*\*\*\*

\*\*\*\*\*women household decision making autonomy and their

nutritional status in North West, Nigeria\*\*\*\*\*

log using atlast.log

tab v024

keep if v024==3

set more off

ta v208

drop if v208==0

genwt=v005/1000000

\*\*\*\*\*generate strata to be used for sampling weighting\*\*\*\*\*

gen strata=v022

svyset v021 [pw=wt], strata(strata)

\*\*\*\*\*generate body mass index for the study\*\*\*\*\*

genbmi=.

replacebmi=v445/100

submi

recodebmi (min/18.49=0 "<18.5") (18.5/max=1 ">18.5"), gen(new\_bmi)

tanew\_bmi

\*\*\*\*\*generate of women's religion\*\*\*\*\*

recode v130 (1/2=1 Christianity) (3=2 Islam) (4=3 Traditionalist) (96=4 Others) (99=.),

gen(rel)

tarel

\*\*\*\*\*generate of women's education\*\*\*\*\*

rename v106 education

genwoedu=0

replacewoedu=1 if education==0

replacewoedu=2 if education==1

replacewoedu=3 if education==2 | education==3

lavarwoedu "education status"

la defwoedu 1"no education" 2"primary education" 3"secondary and postsecondary"

lavalwoeduwoedu

tabwoedu

\*\*\*\*\*generate of women's marital status\*\*\*\*\*

genmarriage=1

replacemariage=1 if v501==0

replacemariage=2 if v501>=1 & v501<=2

replacemariage=3 if v501>=3 & v501<=5

lavarmariage "Marital status"

la defmariage 1 "Never Married" 2 "Married" 3 "Formally Married"

lavalmarriage

tabmariage

\*\*\*\*\*generate of women's wealth status\*\*\*\*\*

ta v190

recode v190 (1 2=1 poor) (3=2 middle) (4 5=3 rich), gen(wealth)

ta wealth

\*\*\*\*\*generate of women's employment status\*\*\*\*\*

genemployment\_status=.

replaceemployment\_status=1 if v731==0 | v731==1

replaceemployment\_status=2 if v731==2 | v731==3

labvareemployment\_status "Women's Employment Status"

ladefemployment\_status 1 "Not Employ" 2 "Employ"

lavalemployment\_statusemployment\_status

tabemployment\_status

\*\*\*\*\*generate of women's exposure of mass media\*\*\*\*\*

tab1 v156 v157 v158 v159

replace v157=, if v157==9

replace v158=, if v158==9

replace v159=, if v159==9

tab1 v156 v157 v158 v159

gen exposure=.

replace exposure=0 if v157==0 | v158==0 | v159==0

replace exposure=1 if v157!=0 & v158!=0 & v159!=0

lodef exposure 0 "not exposed to mass media" 1 "exposed to mass media"

laval exposure exposure

ta exposure

\*\*\*\*\*generate of women's autonomy\*\*\*\*\*

tab1 v743a v743b v743c v743d

replace v743a=, if v743a==9

replace v743b=, if v743b==9

replace v743c=, if v743c==9

replace v743d=, if v743d==9

gen auto=.

replace auto=1 if v743a==1 | v743b==1 | v743c==1 | v743d==1

replace auto=3 if v743a==2 | v743a==4 | v743a==6 & v743b==2 | v743b==4 |

v743b==6 & v743c==2 | v743c==4 | v743c==6 & v743d==2 | v743d==4 | v743d==6

replace auto=4 if v743a==5 | v743b==5 | v743c==5 | v743d==5

lodef auto 1 "high autonomy" 3 "medium autonomy" 4 "low autonomy"

laval auto auto

ta auto



\*\*\*\*\*generate of women's household property\*\*\*\*\*

replace v120=. if v120==7 | v120==9

replace v121=. if v121==7 | v121==9

replace v122=. if v122==7 | v122==9

replace v123=. if v123==7 | v123==9

replace v124=. if v124==7 | v124==9

replace v125=. if v125==7 | v125==9

genhhold=.

replacehhold=0 if v120==0 | v121==0 | v122==0 | v123==0 | v124==0 | v125==0

replacehhold=1 if v120!=0 & v121!=0 & v122!=0 & v123!=0 & v124!=0 & v125!=0

ladelhhold 0 "low household possession" 1 "high household possession"

lavalhholdhhold .

tahhold

\*\*\*\*\*generate of women's ethnicity\*\*\*\*\*

gen eth=.

replace eth=1 if v131==10

replace eth=2 if v131>=2 & v131<=3

replace eth=3 if v131==6

replace eth=4 if v131==1 | v131==11 | v131==4 | v131==7 | v131==8 | v131==8 |

v131==9

labvar eth "Ethnicity"

```

la def eth 1"Yoruba" 2"Hausa/Fulani" 3"Igbo" 4"Other"

laval eth eth

tab eth

*****generate of women's age*****

gen age=0

replace age=1 if v012<=24

replace age=2 if v012>=25 & v012<=34

replace age=3 if v012>=35

labvar age "current age of the respondent"

lodef age 1"14-24" 2"25-34" 3"35+"

laval age age

tabage

su v012

*****Univariate Analysis*****

tabrelnew_bmi [iw=wt], col

tab v013 new_bmi [iw=wt], col

tab education new_bmi [iw=wt], col

tab mariagenew_bmi [iw=wt], col

tab wealth new_bmi [iw=wt], col

tab employment_statusnew_bmi [iw=wt], col

tab exposure new_bmi [iw=wt], col

```

```
tab auto new_bmi [iw=wt], col
```

```
tab hhold new_bmi [iw=wt], col
```

```
tab eth new_bmi [iw=wt], col
```

```
tab age new_bmi [iw=wt], col
```

```
*****mean BMI and selected socio demographic variables*****
```

```
tabstatbmi, statistics( mean ) by(rel) columns(variables)
```

```
tabstatbmi, statistics( mean ) by(v013) columns(variables)
```

```
tabstatbmi, statistics( mean ) by(education) columns(variables)
```

```
tabstatbmi, statistics( mean ) by(marriage) columns(variables)
```

```
tabstatbmi, statistics( mean ) by(wealth) columns(variables)
```

```
tabstatbmi, statistics( mean ) by(employment_status) columns(variables)
```

```
tabstatbmi, statistics( mean ) by(exposure) columns(variables)
```

```
tabstatbmi, statistics( mean ) by(auto) columns(variables)
```

```
tabstatbmi, statistics( mean ) by(hhold) columns(variables)
```

```
tabstatbmi, statistics( mean ) by(eth) columns(variables)
```

```
tabstatbmi, statistics( mean ) by(age) columns(variables)
```

```
*****Bivariate analysis for women's autonomy*****
```

```
svy: tab education new_bmi, row count pearson
```

```
svy: tab wealth new_bmi, row count pearson
```

```
svy: tab employment_status new_bmi, row count pearson
```

```
svy: tab exposure new_bmi, row count pearson
```

svy: tab auto new\_bmi, row count pearson

svy: tab hholdnew\_bmi, row count pearson

\*\*\*\*\*Logistic Regression for women's autonomy and nutritional

status\*\*\*\*\*

xi: svy:logisticnew\_bmii.educationi.wealthi.employment\_statusi.exposurei.autoi.hhold

xi: svy: logistic new\_bmii.rel i.v013

i.educationi.mariagei.wealthi.employment\_statusi.exposurei.autoi.hholdi.ethi.age

\*\*\*\*\*graphical analysis for women's autonomy\*\*\*\*\*

graph pie, over(new\_bmi) plabel(\_all percent) title(RESPONDENTS BODY MASS

INDEX) note(source: NDHS 2013).