

**HOUSEHOLD CHARACTERISTICS AND NUTRITIONAL STATUS
AMONG CURRENTLY PREGNANT WOMEN IN
NIGERIA**

BY

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CERTIFICATION

This is to certify that this research work – Household characteristics and nutritional status among pregnant woman in Nigeria – was carried out by AKINRINMADE MUTIU AKANNI with Matriculation Number DSS/13/1170 of the Department of Demography and Social Statistics, Faculty of Humanities and Social Sciences, Federal University Oye Ekiti, Ekiti State, Nigeria.

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DEDICATION

This research work is dedicated to Almighty Allah, the Lord of universe.

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All praises, adoration and gratitude goes to Almighty Allah (S.W.T.), most Gracious most Merciful, Master of the day of judgment, the Cherisher, Sustainer, Provider and the Knowledgeable, for his mercies and compassion on me, without him my sojourn in school so far would not have been a reality.

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Abstract

Nutrition is a fundamental pillar of human life and its requirement varies with respect to age, gender and more crucial during physiological changes such as pregnancy. The aim of this study was to examine the role of household characteristic and nutritional status among pregnant woman in Nigeria. The study employed Nigeria Demographic and Health Survey individuals recode dataset for 2013. Also, the population of interest was currently pregnant woman which are 4,493 in the reproductive age (15-49) years drawn from all 36 state and the FCT, according to 2013 Nigeria Demographic Health Survey (NDHS). In addition to this, Body Mass Index (BMI) was used to measure the nutritional status of pregnant women and their household characteristics. The study revealed that majority of respondents (65.86%) had good nutrition, while (34.14%) of respondents had poor nutrition in Nigeria. This study also revealed that family size, wealth index, educational level and place of residence of currently pregnant women in Nigeria have significant relationship with their nutritional status. The study concludes that monitoring the environmental differences in the mode of nutrition is very important especially for pregnant women, for whom normal body weight gain is key for both the course of pregnancy and the normal development of the foetus.

Keywords: NDHS, Household Characteristics, Nutritional Status, Pregnant women.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Pregnancy is a celebrated condition in many sub-saharan Africa cultures, because it heralds the coming of a new born into the world (Sholeye, Badejo, and Jeminusi, 2014). This is because household characteristics determine their (pregnant women) nutritional status and consequently their health status. Household characteristics are important factors which determine the nutritional status of people. Among these characteristics are household environment, household composition, education of the household and household income.

Pregnancy is often accompanied by a variety of nutritionally linked problems with symptoms that are sometimes very unpleasant and difficult to tolerate (Doerr, 2001). Cravings and aversions, which refer to a strong desire and strong dislike for certain food respectively, are common during pregnancy with complications such as nausea and vomiting Walker, and Verardi (1985), These complications do not only causes discomfort to pregnant women but would determine their dietary intake.

Maternal diets during pregnancy have gained a lot of attention over the years (Sholeye, Badejo, and Jeminusi, 2014). The dietary intake of pregnant women needs to provide energy and nutrients for the mother, as well as the foetus (King, 2000). The energy needed to develop these systems comes from the energy and nutrients in the mother's circulatory system and metabolism, hence adequate nutrient intake during pregnancy is particularly crucial. Undoubtedly, the foods a woman eats are the main sources of nutrients for the baby and as the baby grows the requirements for these nutrients increase (American college of obstetricians and Gynaecologists 2010), also the increased nutrient intake will not only improve the growth and development of the baby but will also help the woman to adapt to changes to promote healthy childbirth. Hence, it has been noted that women who eat well and avoid known risks tend to have fewer

complications during pregnancy and delivery, and are more likely to make larger, healthier babies (Isenberg MH, 1999).

Also, household characteristics play a significant role in determining the long-term health status of both the expectant mother and the growing fetus. Improper dietary practices of pregnant women have apparently led to increased rates of stillbirths, premature births, low birth weights, maternal and prenatal deaths (Ademuyiwa and Sanni, 2013). Nutritional status varies invariably among pregnant women residing in urban and rural areas.

Suliga (2015) conducted a study in Poland and found out that low level of education and lack of sufficient financial resources for the purchase of the necessary food products significantly limited the consumption by pregnant women of vitamins and/or mineral dietary supplements, and products such as: fruits, vegetables, milk and dairy products, sea fish, whole meal, cereal products, and products which are the source of animal proteins. Suliga concludes that pregnant women with access to financial resources would consume more vitamins and other mineral dietary supplements.

1.2 Statement of the Problem

For a healthy pregnancy outcome, studies have shown that it is important for the nutritional status of a woman before and during pregnancy to be good (Black, Allen, Bhutta and Mathers 2008). Lack of diversified diet has been noted to have negative consequences on individuals' health, well-being and development, mainly by reducing physical capacities and resistance to infection. Similarly, cognitive development, reproductive and even social capacities may also be impaired (Savy, Matin-Prevel, Sawadogo and Delpeuch 2005). Diets during pregnancy have been shown to have an effect on the overall nutritional status of the woman because of increased nutritional requirements.

Studies have shown that most of the women in parts of sub-Saharan Africa, including Nigeria, enter pregnancy with a poor nutrition status. It has been found that most of the time, the women may enter pregnancy with iron deficiency anemia and may have other micronutrient deficiencies which adversely affect her health and that of the foetus (National Food Security and Nutrition Policy, Nairobi 2008). The fifth Millennium Development Goal (MDG) is to improve maternal health and thus reduce maternal mortality by three-quarters (Kenya National Bureau of Statistics and ICF Macro 2010), and the fourth goal aims at reducing infant mortality by half by 2015. The latter goal may not be achieved considering that maternal nutritional status contributes a great deal to both. Also, low pre-pregnancy, as with short stature, is associated with poor outcomes and obstetrics complication. In addition, very few empirical studies have been conducted in the past on the impact of household characteristics and nutritional of among pregnant women in Nigeria. This study therefore aims at determining nutritional status among pregnant women in Nigeria so as to increase knowledge in the area.

1.3 Research Questions

1. What are the household characteristics of currently pregnant women in Nigeria?
2. What is the nutritional status of currently pregnant women in Nigeria?
3. Do household characteristics determine the nutritional status of currently pregnant women in Nigeria?

1.4 Objective of the Study

The general objective of this study is to determine the relationship between household characteristics and nutritional status among currently pregnant women in Nigeria.

1.4.1 Specific objective:

1. To examine household characteristics of currently pregnant women in Nigeria
2. To investigate nutritional status of currently pregnant women in Nigeria
3. To ascertain relationship between household characteristics of current pregnant women in Nigeria and their nutritional status

1.5 Significance of the study

This study explores how household characteristics such as household environment, education of the household and household income have impact on the nutritional status of pregnant women in Nigeria.

Thus, this study seeks to shed light on the nexus that exists between household characteristics and nutritional status of currently pregnant women. The relationship between household characteristics and nutritional status of currently pregnant women has received little attention in Nigeria. There is dearth of studies that investigated the relationship between household characteristics and nutritional status among pregnant women in Nigeria. In light of the submissions above, this study was carried out to generate information on the nutritional status and household characteristics of pregnant women in Nigeria and provide basic information that

would assist nutrition/health workers to help pregnant women make a better choice of food during pregnancy and other helpful intervention.

1.7 Definition of Terms

Body Mass Index (BMI): It is defined as a person's weight in kilogram divided by the square of his height in meter (kg/m^2).

Pregnancy: Also known as gestation is the time during which one or more offspring develops inside a woman.

Human Nutrition: Refers to the provision of essential nutrients necessary to support human life and health.

Household: Refers to group of people who live together under the same roof and share common household food.

Household Characteristics: Such as household environmental, household composition, education of the household and Household income.

WHO: World Health Organization

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

There is dearth of literature on issues of household characteristics and nutritional status among pregnant women in Nigeria. However, efforts were made to review related literatures as it concerns household characteristics and nutritional status among pregnant women in Nigeria. The concern in this chapter is to review both local and international literatures.

2.2 Concept of Pregnancy

Pregnancy is a state that exists when a mature female misses her monthly menstruation in a normal condition. The fertilized ovum becomes firmly implanted in the uterine wall. The ovaries stimulate pituitary hormones. When this happens; the griffin follicles degenerate. In preparation to receiving ovum as a result of conception the woman becomes pregnant and menstruation will stop till after birth (Ross and Wilson, 2002); Pregnancy is also referred to as a locus from conception to birth, which brings changes on effect of estrogen and progesterone. These changes enable the woman to nurture her foetus, prepare her body for labor, develop her breasts and lay down stores of fat to provide calories for the production of breast milk during puerperium (Thomson, 1990). Pregnancy is the state of having an implanted embryo in the uterus until such a time that it is terminated by spontaneous or elective abortion or delivery. It implies the presence of a developing offspring in the uterus (Bennett and Brown, 1990).

2.3 Concept of Nutritional status

Nutritional status is the balance between the intake of nutrients by an organism and the expenditure of these in the processes of growth, reproduction, and health maintenance (Latham, 1997), because this process is highly complex and quite individualized. These range from nutrient levels in the body, to the products of their metabolism and to the functional processes they regulate (Latham, 1997).

Nutritional status can be measured for individuals as well as for populations. They can be used to describe nutritional status of the group, to identify populations or population segments at risk for nutrition-related health consequences, and to evaluate interventions. Nutritional status is determined by two components which are micro nutrients and macro nutrients. (Sanusi and Oredipe 2002)

Micro nutrients are nutrients component such as vitamins and minerals, which are only required by the body in small amount, while macro nutrients are nutrients that provide calorie or energy such as carbohydrate, protein and fats.

2.3.1 Concept of Nutritional status of pregnant women

Good nutritional status during pregnancy is one of the best predictors of optimal pregnancy outcome. Nutritional status during pregnancy is determined by the nutrients intake and dietary planning during pregnancy, which include the macro and micro nutrients (Keen 2003). Nutrient requirement is influenced by genetic and environmental factors, food pattern, age, sex and growth rate (Sanusi and Akinyele 1999). Therefore, vulnerability to nutrient deficiencies differs among individuals (Foroozani, Djazayeri, Mohammed and Keygbobadi 1995). Pregnancy occupies a critical and unique place in the course of life, which has both health

and social importance for individuals, family and the whole of society (Panwar and Punia, 1998). Thus, in this course quantity and quality of nourishment is of particular importance. The incidence of dietary inadequacies is higher during pregnancy than at any other stage of life cycle (Doostan 1996). The expectant mothers appear to be more vulnerable to malnutrition owing to considerable stress during pregnancy because of physical, metabolic and hormonal changes (Panwar and Punia, 1998).

What a woman eats when she is pregnant can have profound and lasting effects on her child's health. The expression "you are what you eat" applies, but in this case, it is this: "You are what your mother eats" (Dava, Vijahlaksmi and Chandy 1980). During the prenatal period, the fetus has the enormous task of evolving in only 9 short months from a single-celled, fertilized egg to a human infant. In order to accomplish this, the fetus must have all of the necessary resources available in the proper quantities and at the exact times they are needed. Despite the daunting nature of the task, mothers have been producing healthy infants for thousands of years, demonstrating the amazing adaptability of both the mother and her child. The capacity of the mother's body to create the necessary conditions for fetal growth is one of the great miracles of life (Orin, and Costello 2000). There are limits, however, and the child may suffer in obvious and not-so-obvious ways if certain thresholds for nutrients are not met (William, Ganit and James 1998)

Although a pregnant body has an amazing ability to compensate for nutrient deficiencies excesses, a woman cannot provide essential nutrients for her child if she herself is deficient in them (James 1998). Many factors influence a mother's nutritional status during her pregnancy. The mother's own health before conception, her health during pregnancy, her life-style choices,

and environmental exposures can all change what and how much she eats and limit previous nutrients available for the growing fetus (Sanusi et, al 2002).

The major underlying determinants of nutritional status include dietary intake, health status /health care systems, food security, and socio-demographic characteristics. All these factors exist within a given environmental context. Feeding practices, dietary intake and health status, are the immediate determinants of nutritional status. Malnutrition increases vulnerability to infections, and infections aggravate malnutrition (Tomkins and Watson 1989).

2.3.2 Demographic Variables Associated With Household Characteristics

The variables associated with household characteristics in this study includes: household environment, household composition, education of the household and household income.

2.3.3 Household Environment

The physical characteristics of household are important determinants of the socioeconomic and health status of household members (Nigeria Demographic Health Survey, 2013). Increasing access to drinking water is part of Millennium Development Goal (MDG) 7 (ensuring environmental sustainability), adopted by Nigeria and other nations worldwide (United Nations General Assembly, 2002). The goal in Nigeria is for 77 percent of the country's residents to have access to an improved drinking water source by 2015. Environmental pressure from households is projected to significantly increase by 2030 (Organization for Economic Co-operation and Development OECD, 2008), which also comprise wealth index of the household as whole.

2.3.4 Household Composition

Information on household composition is critical for understanding family size, household headship and orphanage, and for implementing meaningful population-base policies and programs. Household composition is also a determinant of health status and well-being (NDHS, 2013). Household composition is determined by the people living together and their relationships with one another. It could be single family or extended family which comprises the father, mother and their children.

2.3.5 Education of the household

The education of household members is among the most important characteristics of a household because it is associated with many factors that have a significant impact on health-seeking behaviors, such as reproductive behaviors, use of contraception, and children's health status, (NDHS 2013). Education is an important factor in health promotion. Determination of training needs is essential to achieve this goal, (Shieh 2011). Knowledge is not behavior, but it can be a determining factor of dietary behavior, (Haslam 2000). Basically, the purpose of health education is to eliminate undesirable behavior and replace them by appropriate and productive behavior leading to healthy life (Perez-Escamilla et al., 2008).

2.3.6 Household income

The wealth index is a composite measure of a household's cumulative living standard. The wealth index is calculated using easy-to-collect data on a household's ownership of selected assets. Such as televisions and bicycles; materials used for housing construction; and type of water access and sanitation facilities (NDHS). The wealth index is used to indicate inequalities in

household characteristics, in the use of health and other services, and in health outcomes (Ruststien 2000). It serves as an indicator of wealth that is consistent with expenditure and income measures (Rutstein, 1990). Estimates of household income and expenditures in the Demographic and Health Surveys are desirable, but not practical. Collection of accurate income or expenditure data in health-related household surveys is hampered by factors such as seasonality, volatility, misreporting, and limited interview time. Women of low income level usually suffer from poor housing conditions, poor health care, poor sanitation, and poor diets. All of these factors contribute to the total health of this group of women. Due to the fact that they are unable to afford proper food and health care, these women will suffer from malnutrition and inadequate medical intervention, thus increasing their risk of bearing a low birth weight infant (London, Gabbe & Mullen, 1386; Lacht.g et al., 1975; Naeye, Diener & Dillinger, 1963).

If women of low income level are provided with food supplements, such as the Women, Infant and Children's food supplementation program (WIC), they experience a better nutritional status during their pregnancy.

2.4 Theoretical framework

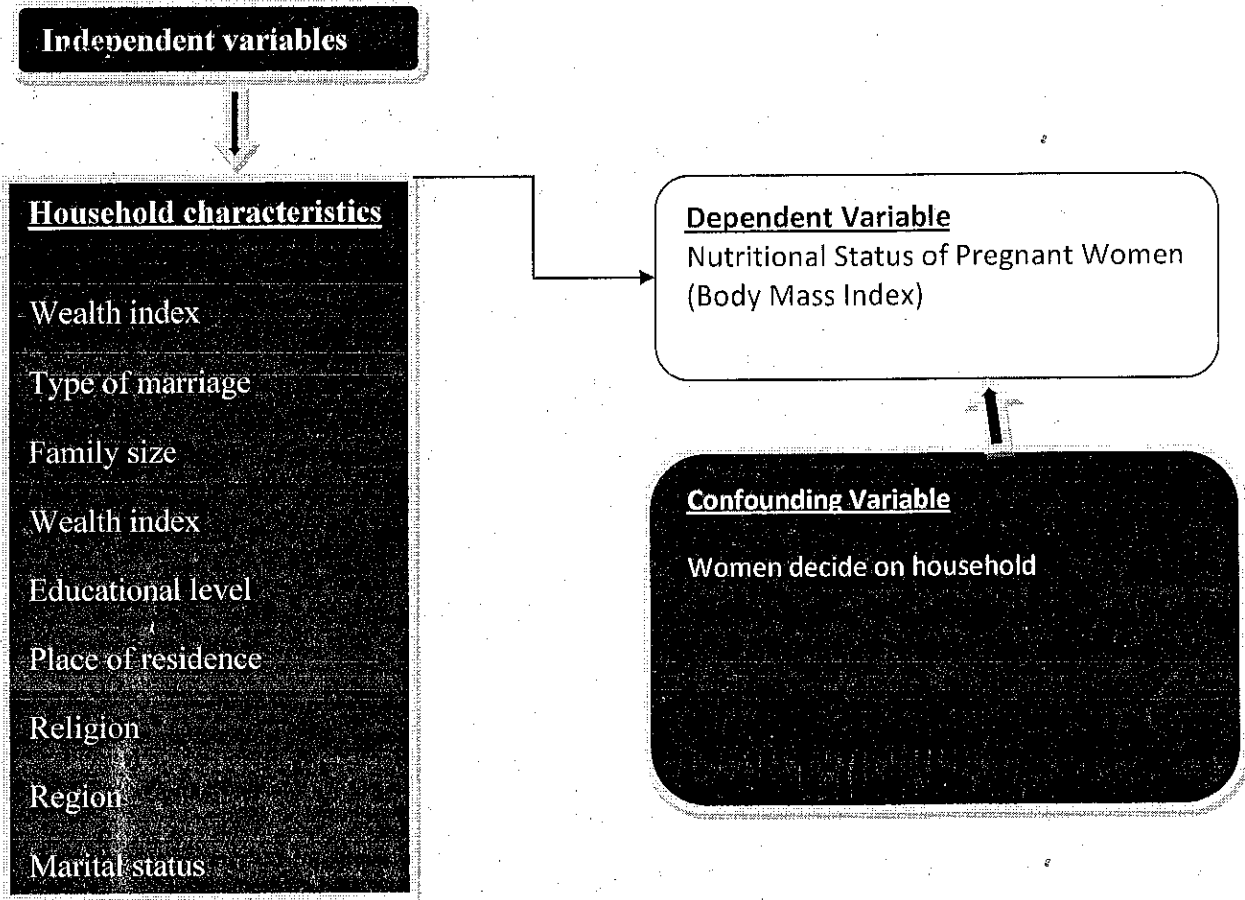
2.4.1 An ecological model

There are a multitude of factors that affect food preferences, dietary patterns and nutritional status of an individual. There are individual factors such as personal preference, taste, affordability followed up by the social and familial effect on diet such as effect on ethnicity, race, and social-perception on food choice. On a macro level, food pricing, advertisement, and government food programs could affect food choices. An ecological model representing the factors that could explain food choices which ultimately affects nutritional status (Dole, 1965)

The first level that immediately affects nutrition shows in the ecological model is food choice. Taste is an important factor that drives our nutritional behavior (Drewnowski and Graves 1997) our basic sensations of taste which is affected primarily by our genetics and physiology is modifiable by other external factors such as age, race, culture, and location (Abumrad and Mennella 2005). Another factor that could affect food consumption is the time required to prepare food and access. The amount of work and conditions surrounding it affects meal choices as long commute from home, evening shifts and associated time challenge is related with purchasing takeout meals (Devine 2009)

On the second level the interpersonal factors that consist our immediate surrounding are responsible in determining what food we eat. Some environmental factors have been identified by a study by Wansink that affect the amount of food eaten. It includes the surrounding (pleasantness); access and convenience; company (friends or family who encourage eating); and distractions such as television which can cause a person to lose track of how much he/she is eating (Wansink 2004)

Conceptual Framework



Source: Author's Construct, 2017

2.5 Empirical Review

Jerusa da Mota Santan (2015) examined the food consumption patterns during pregnancy. It was a longitudinal study in a region of the North East of Brazil. The study identified patterns of food consumption and dietary changes in the first and third trimester of pregnancy. It was a prospective cohort study involving 185 pregnant women in the State of Bahia, from 2012 to 2013. They used a food frequency to assess dietary intakes. To identify the dietary pattern, the principal components factor analysis was adopted. They used the Pearson correlation test to

identify the correlation between the patterns extracted in each trimester. They identified four patterns of food consumption during pregnancy. They observed changes in the eating patterns over the trimesters evaluated, especially for the food groups of fruit, coffee, fats, fried snacks, sugar and sweets. These dietary changes throughout the pregnancy accompany the physiological changes of each period of the pregnancy. In the first trimester, symptoms of nausea and vomiting are common, whereas in the same period cravings are reported, which may justify the consumption of a larger quantity of food deemed unhealthy. It was observed that there were changes in the adoption of dietary pattern throughout the evaluated trimesters of pregnancy, especially for the groups of fruit, coffee, fats, fried snacks and sugar and sweets (Jerusa et al., 2015)

Lieven Fernand Huybregts, and Dominique Albert Roberfroid (2008) conducted a study to examine the dietary behavior, food and nutrient intake of pregnant women in rural community in Burkina Faso. The aim was to assess potential changes in dietary habits during pregnancy in a rural community in Houndé district, Burkina Faso. In-depth interviews were performed on a random sample of 37 pregnant women in order to analyse specific perceptions and attitudes regarding food consumption during pregnancy. In addition to this, an interactive 24-h recall survey was used to compare the food intake of 218 pregnant and 176 non-pregnant women. The majority of Interviewees reported dietary restrictions during pregnancy but no consistent pattern of avoided food types were found. Most of the mentioned 'forbidden' foods were related to physical discomfort during gestation. Interviewees also admitted to ignoring culturally determined food prohibitions/prescriptions. No differences were observed in food intake, food choice and nutrient intake between the group of pregnant and non-pregnant women. During the third trimester of gestation women did not show any major differences in food and nutrient

intake compared with women from the first/second trimester. The mean nutrient intakes were found to be insufficient compared with the recommended daily allowances, especially for pregnant women. They concluded that pregnant women in this rural area of Burkina Faso do not seem to restrict their diet significantly during pregnancy. The additional nutritional requirements of pregnancy are not accounted for in their dietary practices.

Victoire Damienne Agueh and Madeleine Flore Tugoué (2015) investigated dietary calcium intake and associated factors among pregnant women in southern Benin in 2014. They found out that hypertensive and its complications during pregnancy are closely linked to maternal mortality and morbidity. However, adequate calcium intake during pregnancy reduces the risk of hypertensive disorders. They tried to determine dietary calcium intake and associated factors in pregnant women in southern Benin. They employed cross-sectional study and included 176 pregnant women selected by random cluster sampling and multivariate logistic regression model was used to identify factors associated with calcium intake controlling for energy intake. The mean daily calcium intake was 561.69 ± 183.02 mg and the median intake was 560.74 mg per day. Low calcium intake was widespread among pregnant women. Calcium supplements and interventions to promote optimal nutrition in pregnant women are needed to protect them from low calcium intake consequences.

Tizita Wondwossen Desta (2016) studied the consumption pattern that women adhere to during pregnancy period. This is because their consumption patterns have great potential to affect the future health condition of both the mother and the fetus. Despite maternal nutritional problems which continued to be public health concerns of the country, consumption pattern studies among pregnant women are limited. He also assesses food consumption pattern, nutrient

intake and association with different maternal characteristics among Ante Natal Care attending pregnant women in Bishoftu town, East Shoa, Ethiopia. He also suggested three of the patterns which lack variety which may have exposed participants to nutrient deficiency. Those who are young, single, divorced or educated at lower level and with low socioeconomic status were less likely to adhere to varied (healthier) consumption pattern and had decreased calorie intake. The findings underscore the need for nutrition counseling with more emphasis on the identified risk groups.

Suliga E. (2015) monitors the environmental differences in the mode of nutrition especially important in pregnant women, for whom normal body weight gain is especially important for both the course of pregnancy and the normal development of the fetus, and is inseparably associated with rational nutrition, and the diet of pregnant women from the rural environment compared to that of women from urban areas, was characterized by worse quality. It is necessary to carry out health education in the area of adequate nutrition among pregnant women, and those who plan pregnancy, directed primarily to all women from the rural environment.

Olofinjana (2010) investigated the nutritional status of women in Ona-Ara Local Government Oyo state using a well-structured questionnaire. A larger percentage (62.6%) of the women hormonal body mass index, a lower percentage (31.8%) were underweight and others are overweight (5.6%), the results shows that 87.8 % of the women fell within the age group 18-21 years, 3.7 % age group 21-40 years, 2.8% age group 41-60 years while ages above 80 2.8 %, also a larger percentage (60.7%) of the respondents had no formal education while others had primary education (39.3%), majority of the respondents are monogamous (71%) while 21% respondents

are polygamous, the result also shows that 80.3% of the women ate thrice a day, 15.9% ate more than thrice a day, 11.2 % ate twice a day and 2.8 % ate once a day, a larger proportion of respondents ate in between meals and 63% of the respondents skip meals, (56.1%) of the subjects consumed animal protein daily, 39.3% consumed tubers 1-6 times per week while 14% consumed fruits once daily, 59.8% of respondents do buy cooked food from vendors while others do not buy cooked food from vendors, also a larger proportion of the women do not drink alcohol (75.7%) while others drink alcohol (24.3%). The study showed that the nutritional statuses of women in Ona-Ara Local Government are normal.

Oluwole, Agboola, Onyibe and Adeyoju (2016) believed that severe consequences of poor nutrition on maternal health cannot be over emphasized and households that are poor are particularly at risk. Micronutrient supplementation during pregnancy and lactation has shown great results, however, there is need to employ a more robust and holistic approach to addressing malnutrition, through the introduction and sustenance of food-based strategies. Dietary diversification is necessary to increase the awareness and knowledge about right food combinations among women, who are also usually the primary care providers in the family. Nutrition education and promotion of small household gardens can contribute immensely to eating the right food combinations, and ultimately reducing malnutrition. Food fortification, through mass fortification or home fortification has also proved valuable in the fight against micronutrient deficiencies. He suggested that government policies and advocacy are needed to ensure producers provide adequately fortified food products to consumers and new advancements in technology, through the introduction of bio-fortified foods that would fight against malnutrition.

2.6 Statement of Hypothesis

H₀: There is no relationship between household characteristics and nutritional status of currently pregnant women in Nigeria

H₁: There is a relationship between household characteristics and nutritional status of currently pregnant women in Nigeria

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.0 Introduction

This chapter focuses on the various techniques and procedures used in carrying out this research work. It provides relevant information on the background information of the study area, study design, sample size, data processing and analysis and measurement of variables.

3.1 The study area:

Nigeria is located on the coast of West Africa, near the northeastern corner of the Gulf of Guinea. Nigeria shares land borders with four countries. Benin lies to the west, Niger to the north, Chad to the northeast, and Cameroon to the east and southeast. To the south lies the Gulf of Guinea, part of the South Atlantic Ocean. Encompassing over 923,000 sq km (356,000 sq mi) of total area, Nigeria is more than twice the size of California (CIA, 2009).

Nigeria had a population of one hundred and eight seven million (187, 000000) with total fertility rate 5.5 (Population Reference Bureau, 2016), the growth rate was 3.02 percent per annum.

Globally, Nigeria is among the ten top countries with the largest population, in fact, the seventh among the countries with the largest population in the world (United Nations, 2017). The nation's terrain ranges from coastal swamps and lowlands to rolling plains and occasional mountain ranges. The Niger River, the third-longest river in Africa, enters the country in the northwest and ultimately flows to the southern coast, where it empties into the gulf through a vast delta region. The climate ranges from equatorial to semi-arid as one moves from the coast in the south to the plains in the north (Nigeria Information 2011)

Nigeria marked its centenary anniversary in 2014, having begun its existence as a nation-state in 1914 through the amalgamation of the northern and southern protectorates. Before this time, there were various cultural, ethnic, and linguistic groups, such as the Oyo, Benin, Jukun, Kanem-Bornu, and Hausa-Fulani empires. These groups lived in kingdoms and emirates with sophisticated systems of government. There were also other strong ethnic groups such as the Igbos, Ibibios, Ijaws, and Tivis. The establishment and expansion of British influence in both

northern and southern Nigeria and the imposition of British rule resulted in the amalgamation of the protectorates of southern and northern Nigeria in 1914, (NDHS, 2013).

Also, Nigeria became a republic on October 1, 1963, with different administration structures. Within the boundaries of Nigeria are many social groups with distinct cultural traits; there are about 374 identifiable ethnic groups, with the Hausa, Yoruba, and Igbo as the major group (NDHS, 2013).

Presently, Nigeria is made up of 36 states and a Federal Capital Territory, grouped into six geopolitical zones: North Central, North East, North West, South East, South South, and South West. There are 774 constitutionally recognized local government areas (LGAs) in the country. (NDHS, 2013)

3.2 Population of the study:

The population of interest was current pregnant women which are 4,493 in the reproductive age (15-49) years drawn from all 36 state and the FCT, according to 2013 Nigeria Demographic Health Survey (NDHS).

3.3 Sample design:

The sample for the 2013 NDHS was nationally representative and covered the entire population residing in non-institutional units in the country. The sample design also allowed for specific indicators to be calculated for each of the six zones, 36 states, and the federal capital territory, Abuja. The primary sampling units (PSU), referred to as a cluster in the 2013 NDHS, is defined on the basis of EAs from the 2006 EAs census frame.

3.4 Sample size:

The sample size for this population is 4,493 women who were currently pregnant at the time of the survey.

3.5 Sources of data

3.5.1 Quantitative Data Source

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).

3.6 Measurement of variables

The variable to be used are classified into dependent and independent variables, they are briefly discussed below:

3.7 Variable identification

3.7.1 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 Poor health status and Good health status.

3.7.2 Independent variables

The Independent variables are measured as follows:

Place of Residence: It is divided into two categories; Rural and Urban.

Wealth Index: Is a categorical variable divided into three categories; Poor, Middle, Rich.

Marital Status: It is divided into three categories; Single, Married, and Separated.

Family Size: Living Children.

Educational level: It is divided into four categories; No education, Primary, Secondary and Higher education.

Occupational Status: It is divided into two categories; working and not working.

Confounding variables

Women decide on household

3.8 Data processing and analysis

The NDHS 2013 data was processed and analyzed using STATA application package (STATA 13.0).

Firstly, a univariate analysis which involved taking the percentage distribution and frequency count of the socio-demographic characteristics of the respondents would be carried out.

The Second analysis is a bivariate analysis; it involved cross tabulations of two or more variables. The Chi-Square table would be used to analyze some selected socio-demographic characteristics and the dependent variable, which is (BMI)

The Third analysis is a multivariate analysis; it involved using binary logistic regression to analyze the effect of each level of the independent variable on the dependent variable.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.0 INTRODUCTION

This chapter focuses on data presentation and statistical analysis on household characteristics and nutritional status among pregnant women in Nigeria. The univariate analysis shows the percentage distribution of household characteristics and the distribution of women nutritional status. The statistical techniques used were chi-square and logistics regression to examine the influence of household characteristics and nutritional status among pregnant women in Nigeria.

4.1 BACKGROUND CHARACTERISTICS AND DIFFERENTIALS OF WOMEN'S NUTRITIONAL STATUS

The Socio-demographic and Economic characteristics include; Age, Level of Education, Marital Status, Religion, Wealth Index, Place of Residence, Region, Ethnicity, Occupation Status etc.

Table 1: Percentage Distribution of respondent by socio-demographic characteristic by weighted

Women socio demographic characteristic	Percentage
Women Occupation	
Not Working	34.41
Working	65.59
Total	100.00

Age in 5 year group	
15-19	12.97
20-24	23.27
25-29	27.25
30-34	18.75
35-39	11.59
40-44	5.10
45-49	1.07
Total	100.00
Women education	
No Education	48.63
Primary	18.03
Secondary	27.26
Higher	6.08
Total	100.00
Religion	
Christians	34.90
Islam	63.88
Traditionalist	1.22
Total	100.00
Region	
North Central	14.03
North East	16.81
North West	40.62
South East	7.36
South South	8.94
South West	12.24
Total	100.00
Wealth Index	
Poor	48.03
Middle	18.58
Rich	33.39
Total	100.00
Ethnicity	
Hausa/Fulani	44.96
Igbo	9.67
Yoruba	10.13
Others	35.24
Total	100.00
Place of Residence	
Urban	33.17
Rural	66.83
Total	100.00

Marital Status	
Single	2.02
Married	96.92
Separated	1.07
Total	100.00
Family size	
No child	21.87
(1-4) living children	61.54
Above 5 children	16.59
Total	100.00
Number of other wives	
No other partner	69.71
Multiple partner	30.29
Total	100.00
When women decide on household	
Empowered	8.83
Not Empowered	91.17
Total	100.00
Women Nutritional Status	
Poor	34.14
Good	65.86

Source: NDHS, 2013

Table 1 shows the percentage distribution of respondents' nutritional status, it shows that majority of respondent had (65.86%) of good nutritional status while (34.14%) had poor nutritional status. Occupationally, the majority of respondents (65.59%) are working, while (34.41%) are not working, and this implies that majority of respondents involved in economic activities. It also revealed that majority of respondents were between age group 25-29 years (27.25%), while the lowest proportion of respondents falls within age group 45-49 year (1.07%). Educationally, most of the respondents were illiterate (48.63%), while only (6.08%) of respondents attended higher education. Also (63.90%), of the respondents were practice Islam, while (34.90%) of the respondents were practice Christianity and only (1.22%) of the respondents were practice Traditionalist religion. The result further revealed the proportion of respondents according to their region and majority of respondents were from North West (40.62%) while South East constitute lowest region (7.36%). Also, larger percent of the respondents (48.03%) were poor, while only (18.58%) of the respondents were in middle class. The table also shows that (44.96%) of the respondent were Hausa/Fulani, while the least ethnicity are Igbo (9.67%). On the other hand, majority of the respondents reside in rural area

(66.83%) while (33.17%) of the respondents reside in urban area. Larger percent of the respondents were married (96.92%), while only (1.06%) were separated. The result also shows that (61.54%) of the respondents had (1-4) living children, while (16.55%) of the respondents had 5 children above. Also, (69.8%) of the respondents had no other partner, while (30.29%) of respondents had multiple partner. Also, larger percent of respondents were not empowered to decide on household (91.17%), while only (8.83%) of respondents were empowered to decide on household. This means that women are not allowed to decide on household.

4.2 BIVARIATE ANALYSIS

The table below shows the relationship and the statistical extent to which women's socio-economic characteristics influence their nutritional status in Nigeria, which was measured in term of their Body Mass Index. It also showing the characteristics of currently pregnant women by wealth status, place of residence, marital status, occupational status, educational level and family size, it further explored other confounding variable which is Women who decide on household and the study revealed that only women's marital status has an inverse relationship with their body mass index, which means marital status of currently pregnant women do not statistically relate to their nutritional status in Nigeria.

Table 2: Bivariate Analysis of Household Characteristics on Women Nutritional Status.

Household Characteristics	Poor health status (low)<18.5	Good health status (High)>18.5	Chi-Square
Family size			
No child	30.39	69.61	X ² =11.5908 P-Value=0.029
(1-4) Living	32.7	63.3	
5 Above	38.08	61.92	
Wealth index			
Poor	22.8	77.2	X ² =273.2969 P-value=0.000
Middle class	30.92	69.08	
Rich	49.09	50.91	

Occupational status			
Not working	29.2	70.79	X ² =15.7154 P-value=0.000
Working	35.12	64.88	
Place of residence			
Urban	47.18	52.82	X ² =190.397 P-value=0.000
Rural	26.09	73.91	
Educational Level			
No Education	24.44	75.56	X ² =192.1468 P-value=0.000
Primary	36.1	63.9	
Secondary	40.72	59.28	
Higher	59.73	40.27	
Decide on Household			
Empowered	0.44	0.56	X ² =21.4229 P-Value=0.000
Not empowered	0.32	0.68	

Source: NDHS, 2013

Table 2 established a significant influence of family size of currently pregnant women on their nutritional status at $p < 0.05$. Furthermore, there is also a significant relationship between currently pregnant women and their wealth index at $p < 0.05$. Also, there is exit a relationship between women's employment and their nutritional status at $p < 0.05$. In addition, women who are not working (70.79%) were reported to have good health status and those that are working (64.88%) had good health status. It also established from the table that there is exit significant influence between women's education and their nutritional status at $p < 0.05$, and this might be as a result of education achievement which individual are embracing. This finding further revealed a significant relationship between place of residence and nutritional status of pregnant women, as it was found in the table (52.82%) of respondents who were living in urban area had good health status and this might be as a result of their exposure to nutrients diets, and (73.91%) who were reside in rural area had good health status and this also might be as a result of their access to fresh food. Also, the result shows that there is exit significant relationship when women decide on household and their nutritional status $p < 0.05$.

4.3 MUTIVARIATE ANALYSIS

Table 3: Women's Socio-economic/demographic Characteristics and their Nutritional Status

Women Nutritional Status	Odd Ratio	95% confidential interval lower limit	95% Confidential Interval Upper limit
Family Size			
No Child	1.0 (RC)		
1-4 children	1.15	0.93	1.42
5+	1.24	1.92	1.66
Wealth Index			
Poor	1.0(RC)		
Middle	0.76**	0.62	0.93
Rich	0.48***	0.39	0.60
Place of residence			
Urban	1.0(RC)		
Rural	1.30**	1.09	1.56
Educational level			
No education	1.0(RC)		
Primary	0.73**	0.60	0.91
Secondary	0.81	0.64	1.02
Higher	0.46***	0.33	0.66
Age in group			
15-19	1.0(RC)		
20-24	0.92	0.69	1.22
25-29	0.61**	0.46	0.83
30-34	0.49***	0.36	0.68
35-39	0.33***	0.23	0.47
40-44	0.29***	0.19	0.43
45-49	0.20***	0.10	1.40
Religion			
Christian	1.0(RC)		
Islam	0.91	0.74	1.13
Traditionalist	1.56	0.81	2.90
Women occupation			
Not working	1.0(RC)		
Working	1.07	0.92	1.25

Number of other wife			
No other partner	1.0(RC)		
Multiple partner	1.02	0.87	1.20
Ethnicity			
Hausa/Fulani	1.0(RC)		
Igbo	0.83	0.61	1.13
Yoruba	0.98	0.74	1.29
Others	0.75**	0.62	0.91
Decide on household			
Empowered	1.0(RC)		
Not empowered	1.07	0.85	1.35

Source: NDHS, 2013. *p<0.05, **P<0.01,***p<0.001

Table 3 presents the results of logistic regression analysis of the relationship between household characteristics and their nutritional status. The table shows that the odds ratio of their nutrition is less among women's who are in middle class about 24% less compared to those with poor class with $p < 0.05$. It also established from the table that the odds ratio of women who are rich is 52% less likely to have poor nutrition compared with those with poor class (Reference category).

It further revealed that the odd ratio of women who reside in rural area is 30% more likely to have poor nutritional status compared to those that reside in urban area ($p < 0.05$).

The table further indicates that the odds ratio of women with primary education is 27% less likely to have poor nutritional status compared to those with no formal education, it also established from the table that the odds of women with secondary education is 19% less as compared with no formal education. It also indicates that the odds ratio of women with higher education was about 55% less likely to have poor nutrition status compared to those with no formal education ($p < 0.05$).

The odd ratio of women aged 25-29 year is 39% less to have poor nutritional status compared to women age 15-19 year, also the odd ratio of women aged 30-34 year is 51% less likely to have poor nutritional status compared to those age 15-19 year. It further established that the odds ratio of women age 35-39 year is 67% less likely to have poor nutritional status compared to women age 15-19 year. Also, the odd ratio of women age 40-44 year is 71% less likely to have poor nutritional status compared to those women age 15-19 year and odds ratio of

women age 45-49 year is 8% less likely to have poor nutritional status compared with those women age 15-19 year ($p < 0.05$).

The odd ratio of women from other Ethnic group is 25% less likely to have poor nutritional status compared to those that are Hauss/Fulani (Reference Category).

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATION

5.0 DISCUSSION OF THE FINDING

The overall objective of this study is to explore the relationship between women household characteristics and their nutritional status in Nigeria. The study was based on the sample size of 4,493 currently pregnant women in Nigeria.

With respect to the socio demographic characteristics, this study revealed that majority of the respondents (48.03%) was poor, while majority of women (66.83%) reside in the rural part of the region. In addition most of the respondents (65.59%) were generally employed. Those who practice Islam among the respondents were (63.88%). Also, (27.25%) of the women were in the age group 25-29 years of which the mean age of respondent were reported to be 27 years. Furthermore, majority of the respondents (48.63%) have no education. While those who reside in North West region are more than those that are reside in other region (40.62%). Moreover, larger numbers of the respondent (96.92%) were married. It also revealed that majority of respondents ethnicity are Hausa/Fulani (44.96%). The finding also shows that majority of the respondents (61.54%) having 1-4 living children, while majority of the respondent (69.7%) have no other partner. Also, (91.17%) of the respondents were not empowered to decide on household.

According to this study, nutritionally, currently pregnant women in Nigeria are more affected by good nutrition status than poor nutrition status. Most of the pregnant women (65.86%) have a normal body mass index, while (34.14%) had poor body mass index in Nigeria.

Additionally, larger percent of the respondents who are single (37.47%) report low nutritional status, while, currently pregnant women with low nutritional status were reported to be rich (49.09%). Furthermore, the majority of women who have 5 children and above reported poor nutritional status (38.08%), while the larger percentage of respondent who are residing in urban area had poor nutritional status (47.18%).

Furthermore, the bivariate analysis shows that there exist a relationship between all the variables and nutritional status among currently pregnant women except wealth index which has inverse relationship. The logistic regression also explained the effect of each of these Socio-demographic Characteristics on women's nutritional status.

5.1 CONCLUSION

Monitoring the environmental differences in the mode of nutrition is very important especially for pregnant women, for whom normal body weight gain is key for both the course of pregnancy and the normal development of the foetus, and is inseparably associated with rational nutrition, and the diet of pregnant women derived from good household characteristics compare to that of women from poor which was characterized by worse quality (Suliga E. 2015). This study also shows that household characteristics are important predictors of women's nutritional status such as wealth index, place of residence, educational level, family size, decide on household, while marital status was found to be having no influence on nutritional status. But since nutritional status is multi-dimensional phenomenon, with pregnant 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.

5.2 RECOMMENDATION

Based on the findings of this study, the following recommendations are hereby presented.

There is the urgent need for interventions which could be in the form of a 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.

Furthermore, to curb malnutrition in Nigeria, several government and donor-supported programs have to be introduced, including nutrition counseling and gardening programs.

Empowering women through formal education to a secondary school level as well as passing information through nutrition education and enlightenment programs are very essential in reducing the number of malnutrition because knowledge about importance of food purchase, mode of preparation, and combination of food group, which are cost effective in providing adequate diet for the family.

Furthermore, families should add of local nutritious foods in their menu to ensure adequate intake of nutrients, as well as fruits and vegetables.

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