Journal of Food Security, 2018, Vol. 6, No. 2, 74-78
Available online at http://pubs.sciepub.com/jfs/6/2/4

DOI:10.12691/jfs-6-2-4

Effect of Malnutrition on Health Status of Child-bearing Women in Nigeria

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Abstract In this study, symptoms of food crisis, knowledge of nutritional constituents and values together with good health practices were investigated among child-bearing women attending Federal Teaching Hospital, Ido-Ekiti, Ekiti-state. A structured questionnaire was used as a measuring instrument which consists of four sections, namely, personal characteristics, nutritional knowledge, basic health and effects of food crisis on their health. The distribution of respondents based on their demographic characteristics and the proportion of women in different arbitrary categorized state of health (Excellent, Very Good, Good, Fair, Very poor) were determined. Test of association between some demographic variables (age, marital status, educational qualification and income level) and derived variable (Body Mass Index (BMI)) with health status were also explored.

Keywords: *nutrition, variables, proportion, body mass index, demographic characteristics*

Cite This Article: Faweya O., Adeniran A. T., and Balogun K. O., "Effect of Malnutrition on Health Status of Child-bearing Women in Nigeria." *Journal of Food Security*, vol. 6, no. 2 (2018): 74-78. doi: 10.12691/jfs-6-2-4.

1. Introduction

Few decades ago, human health has been continually threatened by food crisis, with young children, women and elderly ones in the developing world being most affected [1]. People virtually eat what they can afford and not what they actually need. In the past, malnutrition used to occur only in communities under prolonged war or severe draughts and natural disasters. Today, hunger and famine are the worst enemies of human race regardless of whether they have been exposed to natural disasters or not. Not that the food is absolutely unavailable, but the financial resources to acquire and demand for it is another predicament [2]. According to International Food Policy Research Institute [3], food availability, accessibility and sufficiency by low income earning families are increasingly becoming difficult to achieve. Food and Agriculture Organization [4] revealed that an increasing number of about 108million people from 48 countries, 20 of which are Africa facing severe food crisis. The characteristics of the country's most vulnerable to this crisis includes high poverty rates, inflation, high food expenditure, share of household income, large net food, food imports, large stagnant or low agricultural productivity and vast urban populations.

Importance of food cannot be over-emphasized, foods supply the body with energy, amino acids, vitamins and minerals which are needed for growth, efficiency, immunity and maintenance of cells and tissues in the body [5,6]. The process of supplying and receiving nourishments from food by the body is called **Nutrition [7]**. Conversely, malnutrition worldwide includes a spectrum of nutrient related disorders, deficiencies and condition such as growth retardation, protein-energy malnutrition, iodine deficiency, anemia, overweight (obesity) and other diet related non-communicable disease [8].

The nutritional status of an adult woman is progressively the culmination of nutrients intake, metabolism and utilization over the course of a lifetime from her nutritional status at birth. Nutritional problem among childbearing women are reflected in high rates of overweight and obesity as well as eating disorders which can lead to underweight and compromised nutritional status [9]. In order to set a strong basis for good maternal and infant health, it is necessary for women in childbearing age to engage in or be guided along healthy living which include the consumption of healthy diets, drinking adequate clean water, moderate and regular exercise and having appropriate rest [9]. Women in childbearing age may also be able to promote their wellbeing and live healthier and long life through regular screening for common illnesses. The healthy habit in childbearing years can improve birth outcomes, support healthy long-life, their well-being and may prevent premature death for women [10]. Preventive health activities are not negotiable for reducing illness and detecting disease in early and treatable stage.

The nutritional issues of women of childbearing age have rarely been investigated, since the female is responsible for ensuring that a full term healthy viable infant is born and adequately nursed, maternal nutrition should be properly focused at all phases of reproductive

life, to break the cycle of poor health and malnutrition that passes on from generation to generation. The limited available data and few experiences with programs that exist come mostly from the small-scale efforts to improve nutrition during pregnancy alone rather than prioritizing nutritional knowledge acquired by child-bearing mother during antenatal This lack of emphasis on women's nutrition has led to lopsided policies given the importance of proper nutrition and women's health, pregnancy outcomes and survival of the child [11,12].

The rate of abnormal Body Mass Index (BMI) is steadily increasing among childbearing women [8]. Hence, countries in transition today face new public health challenge, while they are yet to completely end the nutritional deficiencies. For normal growth and development, childbearing women require energy, protein and other nutrients in adequate amount. Rising rate of maternal mortality, stagnant rate of infant mortality, high proportion of pre-term and low birth weight, and continuing disparities in pregnancy outcomes in Nigeria has prompted to increase focus on the health risk faced by women of childbearing age in Nigeria [1]. The risk includes diabetes, hypertension, obesity, smoking, heavy alcohol use and depression. In the current health care system, millions of women do not receive routine screening and services related to reproductive and childbearing risks because they lack health coverage outside the pregnancy and/or have limited access to high quality preventive and primary care. Decrease in crop production as a result of Book-Haram insurgency in the north-eastern part of Nigeria and herdsmen attack, which has drastically affected agricultural activities in Nigeria, malnutrition among women may rise which has implications on health of women of child-bearing age [13]. Achieving and sustaining good nutritional status are important to ensuring good overall health and therefore good nutrition and healthy eating are important goals for women particularly throughout the childbearing years [4]. In addition, childbearing women should have the knowledge of their health status so as to identify risk and prior adverse on birth outcomes and also for the betterment of their households. In the current study, symptoms of food crisis and the knowledge of nutritional constituents and values together with good health practices were investigated among child-bearing women attending Federal Teaching Hospital, Ido-Ekiti, Ekiti-state.

2. Methodology

Design: This study was a cross-sectional research of nutritional effect and health status of child-bearing women attending Ido-Ekiti Federal Hospital between May and August, 2017.

Study Population: The participants in this study included all consented women of reproductive age (15-49 years) that attended the Federal Teaching Hospital, Ido-Ekiti for any health activities like antenatal care, immunization, family planning or HIV/AIDS counseling and testing or anti-retroviral therapy.

Ethical Considerations: A written permission to conduct the study was obtained from the Nutrition and Dietetic Department, Federal Teaching Hospital Ido-Ekiti, Ekiti state. Clients were briefed the details of the study and patients gave their consent before they participated in the study. They were assured of the confidentiality of their responses.

Sample and Sampling Techniques: A purposive sampling was adopted for this study by approaching only women whose conditions were not critical and that were ready to fill the questionnaires without external support. Out of 110 women approached for the interview, 10 declined for unknown reasons: this represent an attrition rate of 9%.

Research Instrument: A structured questionnaire was used to gather data for the study, and the questionnaire was titled "Knowledge of nutrition and health status of child bearing women". The questionnaire consists of four sections, namely, personal characteristics, nutritional knowledge, basic health and effects of food crisis on their health. In all, the questionnaire consisted of 26 questions. A written guidelines and instructions were given on how to complete the questionnaire.

Reliability of the Instrument: The reliability of the test was determined through test-retest method. The instrument was administered twice within the interval of six days. The two sets of responses were compared statistically using Pearson's product moment correlation. This yielded a reliability coefficient of 0.8 which was considered high enough for reliability.

Data Collection: 110 questionnaires were administered to the selected respondents at the hospital between January and April 2017. With regards to the permission taken, adequate help from researchers and nurses was rendered for the data to be collected at appropriate time.

3. Results and Discussion

The data was extracted, entered into excel saved in csv format and imported into R-console version 3.4.4. It was analyzed and reported as frequency and percentage for descriptive statistics while Chi-square statistic was also used to examine the association between some demographic variables and the health outcomes. The likert scale items were graded and the mean scores were computed as appropriate. However, the calculation of BMI was done using the formula: BMI= $\frac{weight(kg)}{height\left(m^2\right)}$.

Out of 110 child-bearing women approached to participate in the study, 100 consented and were interviewed. Majority (59%) of the respondents aged between 26 and 36 and 72 (72%) were still living with their husbands as at the time they were interviewed. From Table 1, the participants are predominantly Yoruba by tribe, educated with moderate BMI. Among them were 11 unemployed, 5 students while others were either government workers or self-employed. The distribution of the respondents' monthly income revealed 43% average, 37% low and 20% high.

Figure 1 showed that 37% of the respondents had an excellent health status, 20% to be very good, 14% to be good, 24% to be fair, and 5% to be poor.

Table 1. Socio-demographic characteristics of the respondents

Variables	Frequency	Percentage (%)
Age		
21-25	8	8
26-36	59	59
≥37	33	33
Marital status		
Single mother	3	3
Married	72	72
Divorced	6	6
Widow	8	8
Separated	11	11
Educational qualification		
No formal education	1	1
Primary	10	10
Secondary	41	41
Tertiary Education	48	48
Occupation		
Unemployed	11	11
Student	5	5
Self-employed	28	28
Public servant	21	21
Civil servant	35	35
Ethnicity		
Yoruba	75	75
Igbo	13	13
Hausa	12	12
Monthly Income category		
Low	37	37
Average	43	43
High	20	20
BMI		
Underweight	16	16
Normal	63	63
Overweight	15	15
Obesity	6	6

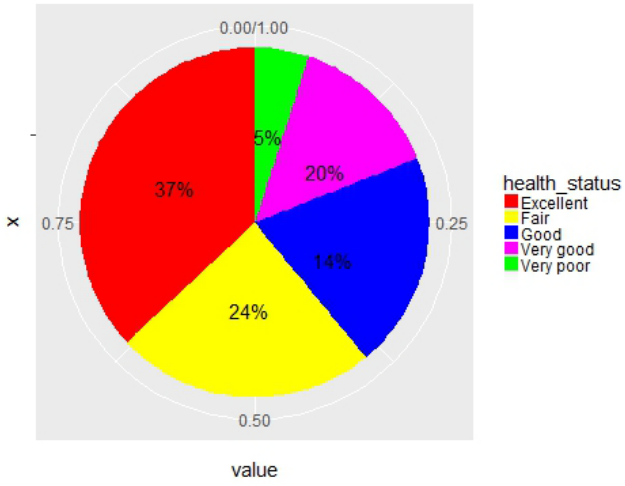

Figure 1. Health status of the respondents

Table 2, section (a) shows the nutritional knowledge of the respondents while section (b) shows their level of awareness about health-related basic needs. The likert items were scored and computed for each item with achievable scores ranging between 0 and 1. This result revealed that the respondents had a good knowledge food items and their nutritional classes. Highest score was recorded on the sources of carbohydrate and honey curative ability, while least knowledge score was reported on major sources of iron. Unfortunately, inadequate awareness about basic health best practices was identified among the study population as their awareness score fell below average in all categories except on the impact of quality of health care on health status where there was 93% agreement.

Table 2. Respondents' nutritional knowledge and health awareness scores

(a) Items	Knowledge score	(b) Healthy practices	Awareness
Constituent of adequate feeding	0.79	Sugar level in the body	0.31
Classes of food	0.73	Weight checked often	0.39
Major nutrients in egg	0.77	Overweight leads to obesity	0.28
Vitamin A prevents night	0.74	Regular exercise enhances body system	0.48
Major sources of fats and oil	0.71	Water helps in the removal of waste products and balancing of the body system	0.49
Major sources of iron	0.68	Routine screening and services relating to health	0.45
Sources of carbohydrates	0.80	Quality of health care rendered having impact on health	0.93
Health benefits of locust beans	0.75		
Health benefits of eating onions	0.78		
Honey curing cough	0.80		

Table 3. Do you enroll for routine screening and services related to your health?

Variables	N (%)		χ^2	p-value
Educational qualification	Yes	No		
Primary	5(35.7)	9(64.3)	1.603	.002
Secondary Education	23(60.5)	15(39.5)		
Post-secondary education	48(69.6)	21(30.4)		
Health status				
Fair	15(34.9)	28(65.1)	3.119	.005
Good	30(52.6)	27(47.4)		
Income level				
High	7(35.0)	13(65.5)	1.423	.491
Moderate	19(44.2)	24(55.8)		
Low	19(70.4)	8(29.6)		

Above statistics reveals that the proportion of people who used to enroll for routine screening and services increase with their level of education. There is association between the habit of enrolling for health screening exercise and educational qualification (df=2, p-value=0.002, at significance level α =0.01). Similarly, larger (52.6%) number of people with good health status believed in routine screening compared with those (30) that said "no" but the reverse was observe for those with fair health status. Also, there is a significant association (df = 1, p-value=0.005, at significance level α =0.01) between health status and health routine screening. However, income category shows no association with screening enrollment.

Table 4. Health Awareness of the respondents

Variable	Yes	No	χ^2	P-value
Health status				
Good	35(61.4)	22(39.6)	8.884	.030
Fair	14(32.6)	29(67.4)		
Educational qualification				
Primary	9(64.3)	5(35.7)	6.485	.006
Secondary	14(36.8)	24(63(2)		
Post-secondary	16(33.3)	32(66.7)		
Age				
21-25	19((34.5)	36(65.5)	1.019	0.313
≥37	20(44.4)	25(53.6)		

Results in Table 4 shows that more than sixty percent (61.4%) of those with good health were also aware about health basic need. Basic health awareness has a significant relationship with educational level (p-value=0.030, at significance level α =0.01, df=1, χ^2 = 8.884) and health status (p-value=0.006, at significance level α =0.01, df=2, χ^2 = 6.485) while age disparity shows no significant association.

Table 5. Health status of the respondents

Age	Good	Fair	χ^2	P-value
21-36	39(70.9)	16(29.1)	9.647	.002
≥37	27(60.0)	18(40.0)		
Marital status				
Married& living together	45(60.0)	30(40.0)	1.102	.294
Married but Separated	12(48.0)	13(52.0)		
BMI				
Underweight	6(37.5)	10(62.5)	8.800	.012
Normal	43(68.3)	20(31.7)		
Over weight	8(38.1)	13(61.9)		

As shown in Table 5 above, more (70.9%) child-bearing women below 37years old had good health compared with older ones and the test for association between age and health status is significant (p-value=0.002, at significance level α =0.01, df=1, χ^2 = 9.647). Moreover, the women were categorized based on their BMI as displayed in the table. Higher proportion of the participants with abnormal BMI fall into the fair-health category unlike those with normal BMI where majority 43 (68.3%) were in good health status. This result shows that there is a significant association between BMI and health status (p-value=0.012, at significance level α =0.05, df =2, χ^2 = 8.800).

4. Conclusion and Recommendations

The study revealed that socio demographic factors such as education level and maternal age influence the health status of the child bearing women in Ekiti State. External factors such as awareness of food insecurity, non-utilization of maternal health care services, inadequate nutritional knowledge, and the BMI are important influencing factors of the health status of child bearing women in the State. Although most child bearing women had normal BMI.

Observation of the health indices of the respondents showed that physical observation conducted on the respondents indicated few clinical features of ailments relating to mal-nutrition. These findings are in line with Ali *et al*., [14], International Fund for Agriculture Development [15], FAO [16] who stated that food crisis does have considerable impacts on the physical, social and psychological status of individuals suffering from food insecurity in Oman. Few respondents suffered from pale, fever and malaria and they needed to be further investigated, while many respondents had no symptoms.

The nutritional knowledge of the respondents reflected an adequate understanding of the subject matter during antenatal and postnatal periods because most respondents had fair knowledge of what adequate feeding composition, sources and uses of each nutrient actually meant. However, there was dearth awareness about healthy practices like: checking body weight regularly; knowing importance of water in the body; participating in routine screening etc., among the respondents as revealed in the study. This should necessitate action by nutritionists and other community health workers to renew awareness creation and sensitization in the community.

Recommendations: It is suggested within the scope of this research that the following recommendations should be implemented

- Federal government should make inclusions on nationwide food campaigns, working in partnership schools, health centers, local governments and community based organizations so as to help the children and adults.
- The establishment of long term programs to encourage and support the practice of home and community based food growing, working in partnership with schools, local governments and community based groups.
- Improvement of education opportunity for women which may have a large impact on improving utilization of such health care services. This is however, a long-term investment. As an alternative, in the short term, health programs need to focus on attracting women with little or no education, it is recommended that the Local Government should review the maternal and reproductive health policy for better implementation so as to improve the services.
- Furthermore, the utilization of proper and modern maternal health care services is more likely to succeed if there is an effort by health workers to provide enough information to women. The dissemination of adequate information is needed to

increase mothers' awareness of the services that are available in the health centre, benefits of using up-to-date health care facilities and trained professional health personnel for delivery purpose, and risks involved in malnutrition.

Bye and large, more studies with a larger representative sample size across many states are needed to determine the prevalence and risk factors of food insecurity among the Nigerian women as a whole.

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