

## **Assessment of Nutritional Status as it relates to maternal health and mortality among women attending antenatal clinic of Murtala Muhammed specialist hospital, Kano State, Nigeria**

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### **ABSTRACT**

Nutrition is the fundamental human right and it plays a key role in health. Eradication of hunger ranks high among international goals because good nutrition is essential for the health and capacity needed to achieve so many of the other Millennium Development Goals. The aim of this study is to assess nutritional status as it relates to maternal health and mortality among pregnant women attending antenatal clinic of Murtala Muhammed specialist hospital Kano. Three hundred and eighty-four (384) pregnant women were selected from antenatal clinic of murtala Muhammad specialist hospital. The age range of the participants was between 18-45 years. Their BMI measurement, mid upper arm circumference and facial anthropometry was taken. Information was obtained about their dietary intake using the Dietary diversity score (DDS). All data are summarized as and expressed as Mean  $\pm$  standard deviation. Data analyze using IBM and statistical package for social science (SPSS). P value of  $<0.05$ . chi square result with p-values less than 0.05). A cross-sectional descriptive research was performed to evaluate the anthropometric and bio-chemical measurements of pregnant women who visited prenatal clinics. The result of the study shows that there is a relationship between the dietary diversity score affecting the nutritional status as it relates to maternal health and mortality among pregnant women, it also shows that there is no relationship between Mid upper arm circumference affecting nutritional status as it relates to maternal health and mortality, also shows no relationship between socio demographic factors and economic factors affecting nutritional status as it relates to maternal health and mortality among pregnant women attending antenatal clinic of murtala Muhammed specialist hospital, Kano state. In conclusion, this study it is determined that the study population's intake of fruits and vegetables is poor. Anthropometry of pregnant women reveals that the majority have a non-healthy dietary state. Anemic ladies made up around one-third of the pregnant women. The analysis revealed that scientific and medical progress played a significant role in the reduction of maternal mortality, beginning with the introduction of antiseptic techniques. The statistical analysis revealed a significant positive association between level of education and nutritional status as it relates to maternal health and mortality among women attending antenatal clinic of Murtala Muhammad Specialist Hospital Kano.

**Keywords:** *nutrition, maternal health, maternal mortality, malnutrition and maternal morbidity.*

### **INTRODUCTION**

Malnutrition is one of the major problems in which the physical function of an individual is impaired to the point that it can no longer maintain adequate body processes such as growth, physical work, and resistance to any

recovery from diseases. Malnutrition is associated with a low economic situation, and poor personal and environmental hygiene. The world health Organization defines ‘malnutrition’ as “the cellular imbalance between the supply of nutrients and energy and the body’s demand for them to ensure growth, maintenance and specific functions”. Contrary to the common use, the term malnutrition refers not only to deficiency states but also to excess and imbalance in the intake of calories, proteins and/or other nutrients [10].

A balanced amount of nutrients is necessary for the proper functioning of the body system. Nutrition is the fundamental pillar of human life, health and development throughout the entire life span [1]. Proper food and good nutrition are essential for survival, physical growth, mental development, performance and productivity, health and wellbeing. However, nutrition requirements vary with age, gender and during physiological changes such as pregnancy. Pregnancy is such a critical phase in woman’s life when the expecting mother needs optimal nutrients of superior quality to support the developing fetus [2]. Malnutrition manifest itself as a function of many and complex factors that affect the national child status [3]. It is directly linked to inadequacy in diet and diseases under living condition factors that include crisis in household food supply, inappropriate childcare and feeding practices, unhealthy place of residence and insufficient basic health services for those in poor socioeconomic situations, cultural beliefs and lack of parents’ education, especially that of mothers [3].

Poor nutrition in pregnancy, in combination with infections, is a common cause of maternal mortality, low birth weight and intrauterine growth retardation (IUGR). Malnutrition remains one of the world’s highest priority health issues, not only because its affects are so widespread and long lasting but also because it can be eradicated best at the preventive stage [4]. Maternal malnutrition is influenced not only by lack of adequate nutrition but also influenced by social and psychological factors, nutritional knowledge of mothers, and biological changes that influence perceptions of eating patterns during pregnancies [5]. Many women in Africa suffer from chronic energy deficiency, inadequate weight gain during pregnancy and poor micronutrient status. Insufficient food intake, high energy expenditure, micronutrient-deficient diets, infections, and the demands of pregnancy and lactation contribute to maternal malnutrition [6]. The study was done to assess nutritional status as it relates to maternal health and mortality among pregnant women attending antenatal clinic of Murtala Muhammad specialist hospital, Kano state.

## Materials and Methods

### Study area

The assessment was carried out in Murtala Muhammad Specialist Hospital (MMSH), Kano State.

### Study Design

This is a descriptive cross sectional study and analysis methods to investigate dietary patterns of individual women in the previous 24 hours before the survey. The study population comprised pregnant women.

### Study Population

Study population constitute 384 pregnant women attending antenatal clinic of Murtala Muhammed Specialist Hospital.

### Sample Size Determination

Sample size was determined using the formula developed by Cochran [7] as shown below;

Where n=desired sample size z= confidence level (how confident the actual mean falls within your confidence interval) 1.96 at 95% p= prevalence/ proportion of standard deviation (how much variance is expected in the response) =0.5 q= 1-p, d- degree of precision/ margin of error which is 5%,  $N = \frac{z^2 pq}{d^2} = \frac{(1.96)^2 \cdot 0.5(1-0.5)}{(0.05)^2} = 384$ .

The minimum sample size needed for the study was 384.

### Sampling Technique

Random selection technique was used to select the patients without unbiased, and the interview with the health practitioners, i.e., the doctors and nurses was carried on those who are on duty.

### Inclusion criteria

Pregnant women attending antenatal clinic of Murtala Muhammed Specialist hospital who are within their 2nd trimester i.e. from 3rd month. Doctors, nurses and midwives on duty.

### Exclusion criteria

Pregnant women who are within their 1st trimester. Non pregnant women. Doctors, nurses and midwives that are not on duty.

### Ethical Approval

Introductory letter was obtained from the head of Anatomy Department of Yusuf Maitama Sule University. Ethical approval was obtained from the ministry of health. Consent was obtained from the management of Murtala Muhammed Specialist Hospital Kano, as well as from the in charge of the antenatal clinic of the hospital before the commencement of the research work.

### Statistical Analysis

All data are summarized as and expressed as Mean  $\pm$  standard deviation. Data analyze using IBM and statistical package for social science (SPSS). P value of  $<0.05$ .

RESULTS

Table 1: Socio-demographic factors and economic characteristics of respondents

Items	Frequency	Percentage (%)
<b>Educational Qualification:</b>		
Primary	201	56.0
Secondary	90	25.0
Tertiary	69	19.0
<b>Husband Educational Qualification:</b>		
Primary	72	20.0
Secondary	191	53.0
Tertiary	59	16.5
Above tertiary	38	10.5
<b>Age:</b>		
18-23 yrs.	281	78.0
24-29 yrs.	43	12.0
30-35 yrs.	22	6.0
36 & above yrs.	14	4.0
<b>Height:</b>		
less than 1.4m	50	14.5
equal to 1.4m	50	14.5
greater than 1.4m	260	71.0
<b>Weight:</b>		
less than 50kg	14	4.0
equal to 50kg	317	88.0
higher than 50kg	29	8.0
<b>BMI:</b>		
Normal weight	209	58.0
Neutral	50	14.5
Underweight	50	14.5
<b>Ethnicity:</b>		
Hausa	325	90.3
Igbo	15	4.2
Yoruba	20	5.5
<b>Occupation:</b>		
Civil servants	7	2.0
Business woman	72	20.0
Housewife	281	78.0
<b>Income:</b>		
Less than 35,000	43	12.0
35,001-50,000	237	65.8
50,001 & above	80	22.2
<b>Family type:</b>		
Polygamy	263	73.0
Monogamy	97	27.0

Table 1 shows the Socio-demographic factors and economic characteristics of respondents, in terms of required educational qualification. The vast majority of responders (19%) had at least some tertiary experience, while only 55% had only completed elementary school. The husbands of 53% of respondents had at least a bachelor's degree, while only 2% had only elementary school certificate. The vast majority of responders (78%) fell into the 18-23-year-old bracket, while only 4% were 36 and older. (71%) were taller than 1.4 meters, (88%) weighed less than fifty kilograms, and (71%) had a body mass index (BMI) of twenty-five or less. Roughly the same percentage (85.6%) were Hausa, (10.2%) were Igbo, and 4.2% were Yoruba. Almost 1 in 8 (12.0%) of respondents had monthly incomes of less than N35,000, (65.8%) had monthly incomes of N35,001-N50,000 while (22.2%) had a monthly income of N50,001-above. (30.6%) were in monogamous couples, whereas only (69.4%) were polygamous.

**Table 2: Descriptive Statistics of the Variables**

Variables	Mean	Std. Dev.	Minimum	Maximum	Obs.
Educational Qualification	2.8417	0.4600	1	3	360
Husband Educational Cert.	2.7722	0.6908	1	4	360
Age of the Respondents	1.3583	0.7662	1	4	360
Height of the Respondents	2.5833	0.7227	1	3	360
Weight of the Respondents	2.0417	0.3436	1	3	360
Body Mass Index (BMI)	1.4167	0.7227	1	3	360
Ethnicity of the Respondents	1.2000	0.5214	1	3	360
Occupation of the Respondents	1.1389	0.3987	1	3	360
Income of the Respondents	2.8806	0.3248	2	3	360
Family Type of the Respondents	1.9806	0.1383	1	2	360

Source: Computed using SPSS

**Table 3: Recall of Dietary Practice of the respondents within 24 Hours**

Items	Frequency	Percentage (%)
<b>Do You Skip Meal:</b>		
Yes	131	36.3
No	229	63.7
<b>If Yes, What is the Reason for Skipping Meal:</b>		
Loss of appetite	45	12.3
Unavailable food	7	2
Not the type of food I like	79	22
Don't have reason to skip food	229	63.7
<b>Types or Collection of Food Consumed:</b>		
Beans, nuts and seeds	72	20.0
Starchy foods	86	24
green leafy vegetables	68	19
Meat and fish	59	16.5
Other vitamin and rich fruits	40	11
Milk and milk products	13	3.5
Fat and oil	22	6.0

Table 3 shows the Recall of Dietary Practice of the respondents within 24 Hours. One third or more of the group skip their meal (36.3%). Fewer people cited food inaccessibility as a reason for skipping meals (2%), while the vast majority didn't provide a reason (since they didn't skip meals). Starchy food (24%), including rice and maize, were the most often eaten food group, milk and milk products (3.5%) was the least.

**Table 4: Descriptive Statistics of the Variables**

	Mean	Std. Dev.	Minimum	Maximum	Obs.
Do You Skip Meal	1.636111	0.4818	1	2	360
Reason for Skipping Meal	2.730556	0.6694	1	3	360
Types of Food Consumed	4.169444	1.6256	1	7	360

**Table 5: Frequency of Malnutrition and Anaemia**

Items	Frequency	Percentage (%)
<b>Mid Upper Arm Circumference of Respondents:</b>		
Normal ( $\geq 23$ cm)	272	75.6
Malnourished ( $< 23$ cm)	88	24.4
<b>Anemic Status of the Respondents:</b>		
Not anemic	245	68
Anemic	115	32
<b>Severity of Anaemia Among Respondents:</b>		
Severe	68	19
Modest	47	13
Slight	245	68

Source: Field Survey, 2023

Table 5 shows the frequency of malnutrition and anaemia of the respondents. About a quarter of the pregnant women (24.4%; MUAC  $< 23$  cm) were undernourished, whereas the remaining majority (75.6%; MUAC  $\geq 23$  cm; mean = 1.2444 cm) were healthy. Also, 32% of the pregnant women were anaemia, whereas 68% were not. They ranged from mild anaemia (68%), to moderate anemia (13%), to severe anemia (19%). Overall, the hemoglobin level was 1.3194  $\pm$  2.4917 g/dl.

**Table 6: Descriptive Statistics of the Variables**

	Mean	Std. Dev.	Minimum	Maximum	Obs.
MUAC	1.2444	0.4304	1	2	360
Anemic Status	1.3194	0.4670	1	2	360
Severity of Anaemia	2.4917	0.7934	1	3	360

### DISCUSSION

The principal concern of this study is to assess the nutritional status of pregnant women as it relates to maternal health and mortality among women attending antenatal clinic of Murtala Muhammad specialist hospital, Kano state. There is no relationship between Socio-demographic factors and economic characteristics affecting maternal health and mortality among pregnant women attending antenatal clinic of Murtala Muhammad Specialist Hospital Kano. It shows that these factors have no impact on the mortality among the pregnant women [8-9]. There is a relationship between Dietary Diversity Score (DDS) affecting maternal health and mortality among women attending antenatal clinic of Murtala Muhammad Specialist Hospital Kano. There is no relationship between facial anthropometry and mid arm circumference affecting nutritional status as it relates to maternal health and mortality among women attending antenatal clinic of Murtala Muhammad Specialist Hospital Kano. The analysis revealed that scientific and medical progress played a significant role in the reduction of maternal mortality, beginning with the introduction of antiseptic techniques.

### CONCLUSION

Anthropometry of pregnant women reveals that the majority have a non-healthy dietary state. Anemic ladies made up around one-third of the pregnant women. The analysis revealed that scientific and medical progress played a significant role in the reduction of maternal mortality, beginning with the introduction of antiseptic techniques. The statistical analysis revealed a significant positive association between level of education and nutritional status as it relates to maternal health and mortality among women attending antenatal clinic of Murtala Muhammad Specialist Hospital Kano.

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