



ANALYSIS OF MALNUTRITION AND ASSOCIATED FACTORS AMONG UNDER FIVE YEARS IN KAURA LOCAL GOVERNMENT, KADUNA STATE, NIGERIA



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ABSTRACT

Article History

Received: 2 May 2017

Revised: 25 May 2017

Accepted: 29 May 2017

Published: 30 May 2017

Keywords

Malnutrition

Stunting

Wasting

Underweight

Protein energy malnutrition

Kaduna.

This study was intended to apply statistical analysis to determine malnutrition and associated factors among under- five years in Kaura Local Government Area of southern Kaduna State, Nigeria. Malnutrition remains a public health problem in developing countries like Nigeria. The study involved 150 children drawn using multi-stage sampling was adopted. Observation for edema, emaciation, sunken eyes, dehydrated skin, tin grey hair and protruding abdomen was done. Stunting, Underweight and wasting were determined using the WHO child growth standards. The classification of Protein Energy Malnutrition (PEM) was done using weight-for-age with or without edema. Children between 80-60% without edema were considered underweight, 80-60% with edema is Kwashiorkor and less than 60% with edema is Marasmic-Kwashiorkor while less than 60% without edema is Marasmus. Questionnaire, Weighing scale and a length board was used in the collection of data. Data was analyzed using Chi-squared and descriptive statistics. Findings indicate that prevalence of stunting, wasting and underweight was 47.33%, 8.67% and 25.33% respectively. About 18.67% were diagnosed with various forms of protein energy malnutrition and is most common among male children (27.4%), younger children (31%) between (0-11 months) and children having mothers with no formal education (20%). Marasmus was the most common form of protein energy malnutrition (65.38%). Age of Child, Gender and maternal Educational status have influence on Malnutrition. At ($p=0.05$) the relationship between malnutrition and age of baby, gender with mothers education was statistically significant.

Contribution/ Originality: This study is one of very few studies which have investigated that protein energy malnutrition such as Marasmus and Marasmic-Kwashiorkor was the most common form of protein energy malnutrition in Kaura, Kaduna State Nigeria. Age of Child, Gender and maternal Educational status have great influence on child nutrition.

1. INTRODUCTION

Child Malnutrition is an important public health issue especially for developing countries like Nigeria. Weight-for-age, Weight-for-height and height-for-age are three important parameters for assessing nutritional status in children [1]. According to National Population Commission [2] Stunting means that children are too short for age; Underweight indicates that children are too thin for age while wasting means that children are too thin for height. More than 33% of all child death globally is estimated to be attributed directly or indirectly to the contribution of malnutrition [3]. In poor countries, wasting is usually below 5% and Stunting is between 5-65% [1]. Marasmus is the most common form of Protein energy Malnutrition (PEM) in south east Nigeria [4]. The prevalence of stunting, wasting and underweight among under-five in Anambra State (South-eastern Nigeria) were 15.1%, 18.1% and 10.4% respectively [5]. An India study reported the prevalence of Underweight, Stunting and Wasting as 60.4%, 55.4% and 43% respectively [6]. One of the important risk factor to severe underweight of children in developing countries is the child feeding practices [7]. Sex of children is connected to malnutrition and stunting is high among boys than girls. A study undertaken in Uganda indicates that boys are at increased risk of stunting compared to girls [8].

Malnutrition is also associated to the ages of children [6]. Marasmus was more common in children between 6-12 Month (57.7%) in South east Nigeria [4]. In Uganda, Children ages between 3-24 months are at increased risk of suffering from acute Malnutrition [6]. Regional estimates of nutritional indices are usually not a reflection of the local estimate, hence this study determine nutritional status of a selected population of under-five children in Kaura Local Government located in southern part of Kaduna state, Nigeria. The study provides both guide for future study and a base line data for the Local Government which shall assist in planning nutritional support programs.

2. MATERIALS AND METHODS

2.1. Sampling and Sampling Techniques

This was a descriptive study involving 150 children from Kaura Local Government located in southern part of Kaduna state, Nigeria. Multi-Stage Sampling was used in the selection of participants. The classification of PEM was done using weight-for-age with or without edema. Children between 80-60% without edema were considered underweight, 80-60% with edema is Kwashiorkor and less than 60% with edema is Marasmic-Kwashiorkor while less than 60% without edema is Marasmus.

2.2. Instrument for Data Collection

This study uses new modified estimation methodology involving a semi structured questionnaire was designed and pre-tested for seven days before administration. Errors found were amended and made appropriate in order to elicit information on Malnutrition and associated factors among under-five years. Weighing scale and Length board were also part of the instrument for data collection. Observation for edema, emaciation, sunken eyes, dehydrated skin, tin grey hair and protruding abdomen was done. Stunting, Underweight and wasting were determined using the WHO child growth standards.

2.3. Data analysis

Descriptive and inferential statistics were used to organize data. Tables were used to display calculated frequencies. Mean and standard deviation for age, height and weight was calculated. All analysis was done using the statistical package SPSS v20 with Chi-Square as the statistical test and the significant level ($P = 0.05$). Ethical clearance and consent was obtained to ensure anonymity and confidentiality of obtained information.

3. RESULTS AND DISCUSSION

Table-1. Distribution of children according to Stunting, Underweight and Wasting

INDICES	NUMBER OF CHILREN	PERCENTAGES
Stunting	71	47.33%
Underweight	38	25.33%
Wasting	13	8.67%
Not malnourished	28	18.67%
TOTAL	150	100%

Source: Field Survey March, 2017

The Distribution of children according to Stunting, Underweight and Wasting indicates that 71 (47.33%) children were stunted, 38 (25.33%) underweight, while 13 (8.67%) were wasted.

Table-2 shows that the prevalence of protein energy malnutrition (PEM) in this population is 17.33%. Table-2 indicates that the frequencies of the various types of protein energy malnutrition in the study population. 17 children representing 65.38% were marasmic, 2(7.69%) had kwashiorkor, while 7 (26.92%) had marasmic-kwashiorkor.

Table-2. Prevalence and type of Protein Energy Malnutrition in the study area

MALNUTRITION	NUMBER OF CHILREN	PERCENTAGES
Malnutrition from Protein and Energy		
PEM	26	17.33%
No PEM	124	82.67%
Total	150	100%
Type of Protein Energy Malnutrition		
Marasmus	17	65.38%
Kwashiorkor	02	7.69%
Marasmik-Kwoshiorkor	07	26.92%
Total	26	100%

Source: Field Survey March, 2017

This study is one of very few studies which have investigated the Prevalence of PEM against Gender in Kaura Local Government area of Kaduna State Nigeria, indicates that 17(27.4%) of the 62 male children had PEM while 9 (10.2%) of the 88 female had PEM. The relationship between gender and PEM is statistically significant because the chi squared is greater than the critical value at 0.05 level of significant. On the other hand the Prevalence of PEM against Breastfeeding Practices in Table 4 shows that 25 (20%) who were not exclusively breastfed had PEM while only 4% who were exclusively breastfed were diagnosed with Protein Energy Malnutrition. The test statistic suggested that the relationship of breastfeeding practice with PEM is statistically not significant at 5% significant level.

Age of children with PEM shows that 31% of the children age between 0-11 months had some forms of PEM. 5 (14.7%) 12-23 months had PEM. For 24-35, 36-47 and 48-59 months, number of children with PEM was 2(6.8%), 7(21.2%), and 3(12%) respectively. The relationship between child's age and PEM is statistically significant at 5% significant level. Prevalence of Protein energy Malnutrition against Educational status of mothers, 20(20%) of the mothers had no form of formal education whose children had PEM. 13.04% children to mother who had primary education had PEM. For mothers with secondary and tertiary education, 20% and (12.5%) respectively had PEM.

Table-3. Prevalence of PEM against Gender

VARIABLE	CHILD WITH PEM F (%)	CHILD WITHOUT PEM F (%)	Chi-Square/ Critical value
Prevalence of PEM against Gender			
MALE	17 (27.4%)	45 (72.6%)	4.42/3.84
FEMALE	09 (10.2%)	79 (89.8%)	
PEM against Breastfeeding Practices			
EXCLUSIVE	1 (4%)	24 (96%)	3.82/3.84
MIX FEEDING	25 (20%)	100 (80%)	
PEM against Childs age			
0-11	9(31%)	20(68.9%)	9.68/9.49
12-23	5(14.7%)	29(85.3%)	
24-35	2(6.8%)	27(93.1%)	
36-47	7(21.2%)	26(78.9%)	
48-59	3(12%)	22(88%)	
PEM against Educational status of mothers			
No formal education	20(20%)	80 (80%)	12.22/7.81
Primary education	3(13.04%)	20(86.95%)	
Secondary education	2(10.5%)	17(89.47%)	
Tertiary education	1(12.5%)	7(87.5%)	

Significant Level (P=0.05)

The chi-squared analyses shows that the values for relationships between malnutrition and age, gender of baby and of mothers' education were higher than the critical values at significant level of $p=0.05$. These suggest that the relationships are statistically significant. However, the relationship between malnutrition and infant feeding practices was not statistically significant at significant level of 0.05.

4. DISCUSSION

Childhood malnutrition persists as a public health problem in developing countries. It is estimated that less than 5% of children in developing nations are wasted [1]. The prevalence of wasting in the current study is a little above this estimate. The current study indicates that 47.33% of the study population was stunted and this falls within the WHO estimate for developing countries [1]. The prevalence of underweight, stunting, and wasting from this study is lower than what was reported by Manjunnath, et al. [6]. It is also consistent with the estimate from the 2013 national demographic and health survey except for stunting. Stunting in this population is higher than the national estimate. Stunting and underweight in the current study is also higher than the prevalence in south eastern Nigeria. However, the prevalence of wasting reported by Ezeama, et al. [5] (18.1%) from south eastern Nigeria is higher than prevalence in the study population (8.67%). Government of Kaura should sustain and scale up existing interventions that will reduce malnutrition. Prevalence of PEM is 17.33%. The commonest form of PEM is marasmus (65.38%). This is consistent with the assertion of Ubesie et al and is an indication that acute malnutrition is a problem in this setting.

The prevalence of PEM among male children is higher than in female children and the relationship between PEM and gender is statistically significant. This finding is similar to the position of [4, 8, 9]. This underlines the need to give special attention to mothers of male children. Exclusive breastfeeding for six months is beneficial for both the infant and Mother, whereas exclusively breastfed was low when compared with those not exclusively breastfed. Age of the child can determine the prevalence of malnutrition. The prevalence of malnutrition was highest among children between the ages of 0-11 months (31%). This is consistent with the positions of Ubesie, et al. [4] and Olwedo, et al. [8] Age is a significant determinant of malnutrition in the current study area.

Maternal education is also a strong determinant of malnutrition. The chi square test suggested a significant relationship ($P=0.05$). The prevalence of PEM was highest among mothers who had no formal education (20%). This aligns with the opinion of [3, 9, 10]. A study in Maiduguri, Nigeria shows that 80% of malnourished children

were from low socioeconomic status [10]. It is also consistent with the report of the 2013 national demographic and health survey in which 50% of stunting was reported among children whose mothers were less educated.

5. CONCLUSION

The prevalence of stunting and wasting from the current study is lower than the national estimate. However, prevalence of stunting is higher than the national estimate. The prevalence of PEM was 17.33%. Age, maternal education, and gender had influence on malnutrition. Current nutritional interventions should be sustained and improved upon.

6. RECOMMENDATION

Parents with children less than one year and male children may require additional support to prevent malnutrition in this setting. A study to understand why male children are more exposed to malnutrition is warranted. Formulating policies that will encourage education of women could reduce child malnutrition in this setting and in developing countries in general. Government can achieve this by making basic education free for women. Parents of younger children will need additional support in preventing malnutrition. Special attention should be given to mothers of male children when counseling women about the nutrition of their children.

Funding: This study received no specific financial support.

Competing Interests: The authors declare that they have no competing interests.

Contributors/Acknowledgement: All authors contributed equally to the conception and design of the study.

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