Malnutrition and Associated Factors among underfive in a Nigeria Local Government Area

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ABSTRACT

Introduction: Malnutrition remains a public health problem in developing countries like Nigeria. Understanding the factors associated with malnutrition is important in tackling the problem. Objective: The aim of this study was to determine the prevalence of malnutrition and associated factors among under- five children in Borgu Local government area of Niger state, Nigeria.

Material and Methods: A descriptive design was adopted. The study involved 250 children drawn using multi-stage sampling. Data was collected using questionnaire, weighing scale and a length board. Data was analyzed using chi-squared and descriptive statistics. Stunting, underweight and wasting were determine using the WHO child growth standards.

Result: Findings indicate that prevalence of stunting, wasting and underweight was 47.6%, 8.8% and 25.6% respectively. About 18% were diagnosed with various forms of protein energy malnutrition and is most common among male children (23.2%), younger children (31.8%) (Between 0-11 months) and children of mothers with no formal education (25.2%). Marasmus was the most common form of protein energy malnutrition (63.6%).

Conclusion: Malnutrition is a problem in this setting. Age of child, gender, and maternal educational status have influence on malnutrition.

Keywords: Prevalence, Malnutrition, Stunting, Wasting, Underweight, Protein energy malnutrition, Under-five, Borgu, Nigeria.

INTRODUCTION

Malnutrition in children is an important public health issue especially for developing countries like Nigeria. Weight-for-height, height-for-age and weight-for-age are three important parameters for assessing nutritional status in children.[1] Malnutrition is estimated to contribute directly or indirectly to more than 33% of all child deaths globally.[2] Wasting implies that children are too thin for height, stunting indicates that children are too short for age while underweight means children are too thin for age.[3]

Wasting is usually below 5% in poor countries and prevalence of stunting is between 5%-65% (WHO, 2016). According to the recent National Demographic and Health Survey (NDHS) in Nigeria, 37% of children under-five are stunted, 18% are wasted and 29% are underweight (NDHS, 2014). In south east Nigeria, marasmus is the most common form of protein energy malnutrition (PEM).[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] A study in India reported that prevalence of underweight, stunting, and wasting is 60.4%, 55.4% and 43% respectively[6] and is an indication of acute malnutrition in that population.

Several factors have been associated with malnutrition. Parental education, economic and nutritional characteristics, child feeding practices was important risk factors to severe underweight in children in developing countries.[7] In Nigeria, a 10 year retrospective study in south east revealed that male children are more likely to be malnourished than female. Similarly, Yalew[8] posited that sex of children is connected to malnutrition and prevalence of stunting was high among boys compared with girls. Similarly, a study in Uganda shows that male children are at increased risk of stunting.[9] Yalew[8] further shows that mothers with no formal education were 4 times more than mothers who had completed more than primary education to have stunted children. A study in Maiduguri, Nigeria asserted that 80% of malnourished children were from low socioeconomic status.[10] Lack of education especially among women is a strong determinant of malnutrition among children.[2] The current national demographic and health survey in Nigeria shows that stunting is most common among children of less educated mothers (50%) and those from the poorest households (54%).[3]

Age of child is associated with malnutrition.[6] Marasmus was more common in children between 6-12 months (57.7%) in south east Nigeria.[4] In Uganda, children aged between 3-24 months are at increase risks of suffering from acute malnutrition.[9]

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 Borgu Local Government. This study will not only guide future studies, it will also provide a base line data for the local government. This will assist in planning nutritional support programs in the future.

MATERIAL AND METHODS

This was a descriptive study involving 250 children from Borgu local government area of Niger state. Participants were selected using multi-stage sampling. A questionnaire was used in data collection. The weight of all children was measured using a weighing scale while length (for children below two) and height (for children between 2 and 5 years) was measured using a length board while lying down and standing up, respectively. Observation for oedema, emaciation, sunken eyes, dehydrated skin, tin grey hair and protruding abdomen was done.

Stunting, underweight and wasting were determine using

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the WHO child growth standards. PEM was classified using weight-for-age with or without edema. A child between 80-60% without oedema is considered underweight, 80-60% with oedema is kwashiorkor, and less than 60% with oedema is marasmic-kwashiorkor while less than 60% without edema is marasmus. Data was organized and analyzed using descriptive and inferential. Frequencies were calculated and presented in simple tables. Mean and standard deviation for age, height and weight was calculated.

Ethical clearance was obtained prior to the study. Informed consent was obtained from parents of children and was assured of anonymity and confidentiality of information obtained.

STATISTICAL ANALYSIS

Data were analyzed using Chi square statistical test. Microsoft excel 2007 was used to generate tables.

RESULTS

Table-1 indicates that 119 (47.6%) children were stunted, 64 (25.6%) underweight, while 22 (8.8%) were wasted.

Table-2 shows that the prevalence of protein energy malnutrition (PEM) in this population is 17.6%. Table-3 indicates that the frequencies of various protein energy malnutrition in the study population. Twenty-eight children representing 63.6% were marasmic, 6 (13.6%) had kwashiorkor, while 10 (22.7%) had marasmic-kwashiorkor.

Table-4 indicates that 26 (23.2%) of the 112 male children had PEM while 18 (13%) of the 138 female had PEM. The relationship between gender and PEM is statistically significant because the chi squared is greater than the critical value at significant level of 5%. The table further shows that 41 (19.7%) who were not exclusively breastfed had PEM while only 3 (7.1%) who were exclusively breastfed were diagnosed with PEM. The test statistic suggested that the relationship of breastfeeding practice with PEM is statistically not significant at 5% significant level.

The mean age, height and weight of children are 28±13.6 months, 81.35±17cm and 10.04±5.24 kg respectively.

Table-4 further shows that 14 (31.8%) of 44 children between the age of 0-11 months had some form of PEM. Nine (13.2%) 12-23 months had PEM. For 24-35, 36-47 and 48-59 months, number of children with PEM was 5(9.8%), 10(20.4%), and 6(15.8%) respectively. The relationship between child's age and PEM is statistically significant at 5% significant level. Twenty-seven (25.2%) of mothers who have no form of formal education had children with PEM. Six (7.8%) children to mother who had primary education had PEM. For mothers with secondary and tertiary education, 10 (21.7%) and 1 (5%) respectively had PEM.

The chi-squared analyses shows that the chi-squared values for relationships between malnutrition and age of baby, gender of baby and education of mother were higher than the critical values at significant level of 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.

Indices	No of children	
Stunting	119	47.6
Underweight	64	25.6
Wasting	22	8.8
Not malnourished	45	18

Table-1: Distribution of children according to wasting, underweight and stunting.

Malnutrition	No of children	
Protein energy malnutrition	44	17.6
No protein energy malnutrition	206	82.4
Total	250	100

Table-2: Prevalence of Protein Energy Malnutrition

Type of Protein Energy Malnutrition	No of children	
Marasmus	28	63.6
Kwashiorkor	6	13.6
Marasmic-kwashiorkor	10	22.7
Total	44	100

Table-3: Types of PEM

Variables	Children with PEM	Children without PEM	
Gender			
Male	26 (23.2%)	86 (76.8%)	112
Female	18 (13%)	120 (87%)	138
Total	44	206	250
Chi-square = 4.42, critical value = 3.84, significant level = 0.05, degree of freedom =1			
Breastfeeding practice			
Exclusive breastfeeding	3 (7.1%)	39 (92.9%)	42
Mixed feeding	41 (19.7%)	167 (80.3%)	208
Total	44	206	250
Chi-square = 3.82, critical value = 3.4, significant level = 0.05, degree of freedom =1			
Age in months			
0-11	14 (31.8%)	30 (68.2%)	44
12-23	9 (13.2%)	59 (86.8%)	68
24-35	5 (9.8%)	46 (90.2%)	51
36-47	10 (20.4%)	39 (79.6)	49
48-59	6 (15.8%)	32 (84.2%)	38
Total	44	206	250
Chi-square = 9.68, critical value = 9.49, significant level = 0.05, degree of freedom =4			
Education status of Mothers			
No formal education	27 (25.2%)	80 (74.8%)	107
Primary education	6 (7.8%)	71 (92.2%)	77
Secondary education	10 (21.7%)	36 (78.3%)	46
Tertiary education	1 (5%)	19 (95%)	20
Total	44	206	250
Chi-square = 12.22, critical value = 7.81, significant level = 0.05, degree of freedom =3			

Table-4: Cross tabulation of prevalence of PEM against gender, breastfeeding practices, child's age and educational status of mother.

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 47.6% 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 Manjunath et al.[6] It is also consistent with the estimate from the 2013 national demographic and health survey[3], 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 (8.8%). Government of Borgu should sustain and scale up existing interventions that will reduce malnutrition.

Prevalence of PEM is 17.6%. The commonest form of PEM is marasmus (63.6%). This is consistent with the assertion of Ubesie et al[4] and is an indication that acute malnutrition is a problem in this setting.

Several factors are associated with PEM and vary from place to place. 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 Ubesie et al[4], Olwedo et al[9] and Yalew.[8] This underlines the need to give special attention to mothers of male children when counseling women about the nutrition of their children.

Exclusive breastfeeding for six months is beneficial for both infant and mother. The prevalence of PEM among children who were exclusively breastfed was low when compared with those not exclusively breastfed. It is unfortunate that the relationship between exclusive breastfeeding and PEM is not statistically significant. Increase advocacy for exclusive breastfeeding could reduce the prevalence of PEM in this setting.

Age of the child can determine the prevalence of malnutrition. The prevalence of malnutrition was highest among children between the ages of 0 and 11 months (31.8%). This is consistent with the positions of Ubesie et al[4] and Olwedo et al.[9] Age is a significant determinant of malnutrition in the current study area. Parents of younger children will need additional support in preventing malnutrition.

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 (25.2%). This aligns with the opinion of (Hamidu et al[10], Brain et al[2], and Yalew.[8] 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. 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.

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 17.6%. Age, maternal education, and gender had influence on malnutrition. Current nutritional interventions should be sustained and improved upon. 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 expose to malnutrition is warranted.

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