Socio-Demographic Determinants of Malnutrition among Under-Fives in Mil-Goma: A Rural Community in Kaduna State, North Western Nigeria.

[1]NO Usman, [2]NC Kene-Ibeagha, [1]AG Nmadu, [1]VN Omole, [1]F Adiri

1.Department of Community Medicine, College of Medicine, Kaduna State University, Kaduna, Nigeria.
2.Department of Community Medicine, Nile University of Nigeria, FCT, Nigeria.

Abstract

Malnutrition remains a major public health problem in the developing world. It is a major underlying factor in many childhood diseases; and it is still one of the leading causes of under-five mortality in Sub-Saharan Africa. It is particularly prevalent in rural areas where it affects one out every three preschool age children. This study was carried out to investigate the prevalence of malnutrition and associated socio-demographic factors that affect malnutrition among under-fives in Mil-Goma community, Kaduna State, North Western Nigeria.

This cross-sectional descriptive survey was carried out using structured questionnaires and anthropometric measurements of height and weight of 288 children selected by multi-staged sampling method. Data was analyzed based on descriptive statistics, chi-square and logistic regression analysis using SPSS version 20. The SPSS results were presented in tables.

The prevalence of stunting, underweight and wasting in the children under-five years were 59.72%, 36.81% and 13.54% respectively. Malnutrition was found to be higher in children in their second year of life as compared to children in other age groups. There was a statistically significant association between maternal education, family income, mother's occupation and stunting. Mothers who had only Quranic education were 11 times more likely to have stunted children than those with secondary education. There was also a statistically significant relationship between family income, maternal occupation and the prevalence of underweight among under-fives.

There was a high prevalence of stunting observed among the children. Maternal education, maternal occupation and economic status of the family were important associations of poor nutritional status among under-five children. There is an urgent need for mounting nutritional intervention programmes to improve the nutritional status of the children.

Correspondence to:

Dr. N.O. Usman
Department of Community Medicine,
College of Medicine, Kaduna State University,
Kaduna, Nigeria.
Phone number- +2348035905729
E-mail address- nenezego@gmail.com

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Introduction

Malnutrition poses a significant public health problem in Sub Saharan Africa especially resource poor countries like Nigeria. Over one third of all child deaths is estimated to be directly or indirectly caused by malnutrition and diseases related to it. The term under-nutrition is commonly used interchangeably with the term malnutrition, however, is not the only form of malnutrition. Other forms include over-nutrition and micronutrient related malnutrition. However, the main types of malnutrition that have been identified in Nigerian children are protein-energy malnutrition (a form of under nutrition) and micronutrient malnutrition. Protein-energy malnutrition among preschool children is a major public health problem across the country. Stunting is the most prevalent form of malnutrition globally in children and has longer-term impacts on physical, neurodevelopmental and economic capacities. Children who are under nourished have a greater risk of dying from common infections, increased frequency and severity of such infections and ?have longer recovery periods.

Malnutrition in childhood has an impact on intellectual achievement. Cognitive impairments are worse in children with severe stunting and iron deficiency anaemia. Studies show that stunted children in the first two years of life have lower cognitive test scores, delayed enrolment, higher absenteeism and more class repetition compared with children who are not stunted. Vitamin A deficiency reduces immunity and increases the incidence and gravity of infectious diseases resulting in increased school absenteeism. Childhood malnutrition also has an effect on economic productivity. The mental impairment caused by iodine deficiency is permanent and directly linked to productivity loss.

In Kaduna state, malnutrition rates among children who are less than 5 years show that 56.6%, 41.7% and 57.6% of them are stunted, wasted and underweight respectively. There are significant disparities in children from different geo-political zones. Those from the North-West and North-East have higher prevalence of malnutrition. The underlying causes of malnutrition in Nigeria are poverty, poor food production, insufficient food intake, ignorance, poor food preservation techniques, improper preparation of foods, poor distribution of food within the households,

food restrictions and taboos, and poor sanitation. The nutritional status of children is a reflection of the social status of the family and the social wellbeing of the community. The socio-demographic characteristics of families which can affect the nutritional status of a child include parents' education, occupation, and family composition. It is important, therefore, to address the various persisting social determinants of malnutrition in Nigeria, such as poverty, illiteracy, unemployment, corruption, inequalities, and inequities. There is paucity of information about prevalence of malnutrition among children under five years in Mil-Goma, Kaduna state. This study was carried out to determine the prevalence of and associated socio-demographic determinants of malnutrition among children under five years in Mil-Goma, Kaduna state.

Methodology

This study was carried out in Mil Goma, a rural settlement in Sabon-Gari LGA of Kaduna State, Nigeria. It was a descriptive cross sectional study carried out among 288 under-five children. The minimum sample size was determined using the statistical formula for sample size determination for cross sectional surveys and the prevalence of wasting of 15.3% from a previous survey. The multistage sampling technique was used to select the children. In the first stage, the village was divided into four settlements of which three were selected. Households were listed and numbered to form secondary sampling units. In the third stage, in each household, a mother and child pair was randomly selected. Children with chronic illnesses and skeletal deformities were excluded from the study.

Data was collected from the mothers of selected children using interviewer administered structured and pre-tested questionnaires. Anthropometric measurements of the children were also taken. The parameters assessed were height and weight. The information obtained was analysed using SPSS version 20. Stunting (height-for-age), wasting (weight-for-height), underweight (weight-for-age) was analysed based on WHO reference standard. Computed Z scores for weight for age, weight-for-height and height for age were then used to assess underweight, wasting and stunting using the WHO reference standards. Normal height was defined as height for age which is between -2 and +2 Z score while normal weight was defined as weight for age between -2 and +2 Z score. Stunting and underweight were defined as height and weight for age less than -2 Z score respectively. Wasting was defined as BMI for age less than -2 Z score. Permission was obtained from the village head and informed consent was from the respondents before commencement of data collection while confidentiality of responses was maintained.

Table 1: Distribution of the Age group and Educational status of mothers of the children (n=288)

Socio-demographic characteristic	Frequency	Percentage
Age Group (Years)		
10-19	37	12.8
20-29	159	55.2
30-39	61	21.2
40-49	29	10.1
50-59	2	0.7
Educational Status		
None	23	8.0
Quranic	114	39.6
Primary	111	38.5
Secondary	40	13.9

Results

The study showed that more than half (55.2%) of the mothers of under-five children were within the age group 20-29 years while only 0.7% of the respondents were within the 50-59 year age group (Table 1). The mean age of the mothers was 26 ±7.6 years. With regard to their educational level 39.6% of them had only Quranic education while 13.9% had secondary education; none of the respondents had tertiary education (Table 2). Of the 288 children, 59.72% were stunted, 36.81% were underweight while 13.54% were wasted (Table 3). The greatest proportion of under-fives (37.6%) who were malnourished were within the 12 to 23 months age group (Table 4). There was a statistically significant relationship between the educational level of the mother and stunting $p<0.001$ but the relationship between underweight and wasting among under-fives and maternal educational level was statistically insignificant (Table 5). Those respondents with only Quranic education were 11 times more likely to have a stunted child than those with secondary education [AOR=11.21, 95% CI (2.01, 8.39)] ($p<0.001$) (Table 8). The relationship between the mother's occupation, stunting and underweight among under-fives was statistically significant $p<0.0001$and 0.019 respectively, however the relationship between the mother's occupation and wasting was statistically

Table 2: Nutritional Status of the Children (n=288)

Nutritional Status	Frequency	Percentage
Stunted	172	59.72
Underweight	106	36.81
Wasted	39	13.54

Table 3: Prevalence of malnutrition in children according to age group (n=221)

Age (months)	Malnourished	Percentage
0-11	55	24.8
12-23	83	37.6
24-35	28	12.7
36-47	32	14.5
48-59	23	10.4

Table 4: Relationship between educational status of the mother, maternal occupation, family income and stunting, underweight and wasting (n=288)

Variables	Normal	Stunting	p-value	Normal	Underweight	p-value	Normal	Wasting	p-value
Educational Status									
None	5	18	χ^2 =64.7, df = 3 p<0.0001	16	7	χ^2 =5.55, df = 3 p= 0.136	20	3	
Quranic	19	95		63	51		97	17	
Primary	60	51		74	37		100	11	
Secondary	32	8		29	11		32	8	
Occupation									
None	19	71	χ^2 =63.79, df = 4, p<0.0001	59	31	χ^2 = 11.84 df = 4, p=0.019	86	4	
Farming	24	68		65	27		85	7	
Trading	19	20		23	16		28	11	
Civil Servant	29	8		24	13		29	8	
Vocational (tailor,hairdresser/barber, dyer, manual labourer)	15	25		11	19		21	9	
Family income									
<10,000	54	148	χ^2 = 49.73, df = 1, p<0.0001	117	85	χ^2 = 11.84 df = 4, p=0.019	171	31	*Fisher's exact test p= 0.823
	62	24		65	21		78	8	

insignificant (Table 6). Those mothers with no occupation were three times more likely to have stunted children than those who were civil servants [AOR=3.85, 95% CI (1.42, 6.37)] (p = 0.013) (Table 8). There was a statistically significant relationship between family income and stunting and underweight among under-fives p<0.0001and 0.0067 respectively however, the relationship with wasting was statistically insignificant. (Table 7) It was found that families with a monthly family income of less than 10,000 naira were 6 times more likely to have a stunted child than those with higher incomes [AOR=6.38, 95% CI (3.26, 10.85)] (p<0.001) (Table 8)

Discussion

This study reports on the level of malnutrition and the effects of socio-demographic factors on the nutritional status of children under five years old in a rural community in North-West Nigeria.

The study revealed that malnutrition is still a problem affecting among under-fives in Mil-Goma. The prevalence of stunting (59.72%) and under-fives who were underweight 36.81%) is comparable to prevalence rates from previous studies. The prevalence of wasting (13.54%) in this study is comparable to a previous survey in a rural community in Zamfara state where the prevalence of wasting was 15%. These alarming values could be explained by the studies were carried out in rural communities where the lower educational level, lower socio economic status, large family size and/ composition and limited resources are associated with developing malnutrition especially among under-fives. Studies have shown that children in rural areas are two times more likely to be stunted than those in the urban areas. There is similarity of the findings of the current study when compared with national figures from the National Demographic Health Survey 2013, as the prevalence of wasting, underweight and stunting in the North-West region was 12.5%, 42.9% and 55.3%.[12] It was observed that the trend was the same with statistics of stunting being the highest and wasting the lowest. Stunting is the result of chronic or recurrent under-nutrition, usually associated with poor socioeconomic conditions, poor maternal health and nutrition, frequent illness, and/or inappropriate infant and young child feeding and care in early life. Furthermore, stunting holds children back from reaching their physical and cognitive potential. For these reasons, the high prevalence is quite alarming and there is an urgent need to address it with sustainable, resilient food systems and ensuring the health facilities are aligned with the nutritional needs of the community they serve. The disparity observed from the national values may be as a result of the contribution from other factors, such as differences in sociocultural contexts and also morbidity patterns in the different states in the country their contribution to the determination of the nutritional status of children under the age of five.[13]

It has been observed from this study that children aged 12 to 23 months had the highest prevalence of malnutrition (37.6%). This is similar to a study carried out in Ethiopia where the children aged 12 to 23 months had the highest prevalence of malnutrition. This could be due to early weaning, delayed introduction of complementary foods, a low-protein diet and severe or frequent infections. Malnutrition at this early stage could have effects on cognitive function, metabolic syndrome, gastrointestinal and immunity which could last well into adulthood. In line with the aforementioned reason, these children are at an increased risk for severe infections and dying from these infections as a result of the poor immunity associated with malnutrition.

There was a statistically significant

relationship between stunting, underweight under-fives and the monthly family income as shown in this study. Additionally the study showed that those who earned less than 10,000 naira were 6 times more likely to have stunted children than those who earned more. A study in Ibadan showed that socioeconomic factors like monthly income, monthly food expenditure are significant risk factors for malnutrition. In Nigeria, it has been reported that over half of the population live in poverty, with regional disparities showing a higher proportion of those who live in poverty located in the north of the country. With poverty, comes a reduced purchasing power for necessities like food. Poor feeding in turn leads to poor immunity and increased susceptibility to various diseases. Majority of the health expenditure comes from out-of-pocket and as such, those who live below the poverty line are less likely to utilize health facilities as they will be unable to afford it. This would give a plausible explanation as to why the prevalence of chronic malnutrition (which is associated with recurrent infections) is high in this study. There is a statistically significant association between lower family income and stunting as shown in a study carried out in Iran. This highlights the need for interventions targeted to improving the socioeconomic prowess of the populace thereby ensuring food security.

There was a statistically significant relationship between maternal occupation and the prevalence of stunting and underweight. There was a statistically significant relationship between maternal occupation and malnutrition in study carried out in Pakistan. This association is not unexpected as job security goes hand in hand with economic power. Consequently, the mother is likely going to be able to feed her family, make decisions regarding their health and access health care.

The association between stunting and maternal education was shown to be statistically significant ($p<0.0001$) in this study. Furthermore, a woman who had only Quranic education was 11 times more likely to have a stunted child than a woman who had secondary education. A study conducted in Enugu, eastern Nigeria reported that maternal education had significant statistical influence on the nutritional indices tested. Other studies have also shown that maternal education is crucial to child survival and good nutritional status.' Highly educated women have been found to be more likely to engage in healthy behaviour, hygienic practices and ensure equitable distribution of the family resources to ensure better care of their children. An educated mother will challenge harmful traditional beliefs and practices which could have a negative effect on children. Maternal education could also be a proxy to socio-economic conditions implying that an educated mother is more likely to be economically stable and make autonomous decisions regarding her family. Thus, the importance of strategies targeted at improving maternal education among residents in the community cannot be overemphasized considering that none of the mothers of the sampled children had tertiary education.

Conclusion

The study showed that there was a high prevalence of stunting in the community which was associated with poor socioeconomic status and maternal education. In order to meet the relevant targets in the Agenda for Sustainable Development by 2030—in particular, Sustainable Development Goal (SDG) 2 (end hunger, achieve food security and improved nutrition and promote sustainable agriculture) and SDG 3 (ensure healthy lives and promote wellbeing for all at all ages), there is an urgent need for mounting sustainable nutritional, intervention programmes which will consist of an integrated package of measures that tackle both the cause and effect of malnutrition. The programme should be targeted towards improving the socioeconomic status of families, and also empowering mothers through education, vocational training and job creation; as well as providing nutrition-related education for all, creating sustainable, resilient food systems for healthy diets; and providing universal coverage of essential nutrition interventions.

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