

FACTORS ASSOCIATED WITH CHILDHOOD MALNUTRITION IN MELELE COMMUNITY OF PLATEAU STATE, NIGERIA.

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ABSTRACT

Background: Optimal nutrition during childhood, particularly in the first five years of life, is essential for a healthy and productive adult life. Under-five malnutrition is a serious public health issue because it impairs children's cognitive and physical development and raises their risk of morbidity and death. This study is to determine the prevalence of malnutrition and factors influencing it among under five children in a rural area of Plateau state.

Methods: This cross-sectional community-based survey was conducted in Melele community of Mangu ward II, Mangu Local Government of Plateau State. Data from a total of 167 under-five children was obtained and analyzed using SPSS version 23 to determine the association between the nutritional status and independent variables (age group, sex, immunization status, deworming status within last six months, being given ITN, sleeping under ITN and attainment of developmental mild stone).

Results: There were 56.3% males out of the 167 under-five respondents; about three-quarters of the children were 12 months or older with a median age of 24 (5 – 45) months. about half (53.9%) of the participants were exclusively breastfed with most of them starting complimentary feed at a median age 6 (5 – 7) months of age. This study revealed a disproportionately high degree of malnutrition of under-fives in Melele community with 58.1% stunted, 46.7% wasted, and 31.1% underweight. There was a statistically significant relationship between deworming children within the last 6 months ($p=0.012$) and ownership of ITN ($p=0.047$) with nutritional status

Conclusion: We recommend that there should be an increase of nutritional interventions in rural communities in Plateau State as presently, most intervention and awareness programmes target urban areas. In addition, further research needs to be done to explore other factors, such as maternal and household characteristics, in relation to under-five malnutrition.

Key words: childhood, malnutrition, deworming, insecticide treated nets, rural, Nigeria

Introduction

Optimal nutrition during childhood, particularly in the first five years of life, is essential for a healthy and productive adult life. Under-five malnutrition is a serious public health issue because it impairs children's cognitive and physical development and increases their risk of morbidity and death.¹ Malnutrition refers to deficiencies, excesses, or imbalances in a person's intake of energy and/or

nutrients and can be categorized as undernutrition or over nutrition respectively.^{2,3} By the age of 50, the risk of diabetes and major cardiovascular illness, such as cardiac arrest and cardiovascular accidents (CVAs), is doubled for children born with low birth weights (LBW).⁴

Globally, in 2022, 45 million children under the age of five were projected to be wasted (too thin for

height) and 149 million were stunted (too short for age), and about half of the total mortality among under-fives was associated to undernutrition.³ Africa and Asia currently houses more than 90% of the worlds stunted children, contributing to 56% of all deaths in under-fives in developing countries,⁵ and a stunting prevalence of 36% in Africa.⁶

According to the Nigeria's National Demographic Health Survey (NDHS) 2018, 37% of the nation's children under five were stunted, with 7% being wasted and a 22% underweight (too thin for age).⁷ The burden of malnutrition varied across the geopolitical zones and even within areas in states. And there was a north – south variation in under-nutrition, with Sokoto state having the worst indices (68.1% prevalence of malnutrition among under-fives) and Anambra state the least, with a 17% prevalence.⁸ In Plateau state, the prevalence of underweight among under-fives was found to be 22.7% (slightly above the national average of 22%) while stunting was 42.8%, significantly higher than the national average.⁹

Different determinants have been explored to affect the nutritional status of children, including environmental factors, household incomes, family factors (mother's educational qualification, health behaviours concerning the child's immunization and deworming) and child's socio-demographics (age and sex).^{1,10-12} Another study in Plateau State showed other associated factors such as hygiene, socioeconomic factors of parents, and diet-related non-communicable diseases to be associated with under-five malnutrition.¹³

The variability in the prevalence of under-five malnutrition and its determinants calls for qualitative research into understanding the community determinants and uniqueness in different communities which will shape interventions that fit best into each community. This information can also serve as a baseline in measuring effect of nutritional interventions.

Methods

Study area

Melele is a community in Mangu ward II, Mangu district of Mangu Local government area. The population is predominantly Mwaghavul and

Fulfulde speaking, majority of whom are peasant farmers with maize, beans and millet being the major crops. Major religions are Christianity and Islam. There is a primary health care center which meets the people's health needs and provide services such as health education, immunization, growth monitoring and treatment of common ailments.

Study design

The study was part of a cross-sectional community-based survey of Melele community.

Study setting and data collection

Melele community was purposively selected as a site for medical student's community diagnosis, based on its ease of access as well as security during the time of data collection. A total population sampling was used where all under-fives who were permanent residents with their primary caregivers as at the time of the study were included in the survey after obtaining verbal informed consent from the primary caregivers. The verbal permission of household heads was also sought while household numbering and community mapping were ongoing with the help of community guides, and medical students.

Data collection was done using a pre-tested interviewer administered, semi-structured questionnaire by trained research assistants (medical students). Data was collected from caregivers, mostly mothers, in Hausa language which is the primary language of communication and commerce in the community. Information on immunization history was gotten from immunization hand cards. The questionnaire collected data on the children's characteristics which covered the age, sex, immunization status and health seeking behaviours which may affect nutritional status. Weight of children was measured using the bathroom weighing scale while the basinet was used for children who could not stand. The height/length measurement was done using a measuring tape. All anthropometric measurements were taken after zero-correction and with the subjects minimally dressed and recorded to the nearest 0.1kg or cm.

Data management and analysis

Data was entered into Microsoft excel, cleaned and subsequently exported for analysis using SPSS version 23. Socio-demographic variables (sex and

age) and other characteristics were expressed as frequencies and proportions. Furthermore, age and duration of breast feeding were explored for normality where the distribution was found to be skewed, therefore, median and interquartile range were used for descriptive statistics.

Estimation of nutritional status (weight for height/length, weight for age and height for age) was done using the WHO Anthro v3.2.2 software. The z-scores were used in classifying children into normal

and the various forms of malnutrition (stunting and wasting; Table 1).¹⁴ However, the assessment of factors associated with malnutrition (weight for height/length) classifying children into normal and malnourished (overweight and underweight) was done using chi-square test at a significance level of p 0.05.

Ethical considerations

Ethical approval was gotten from the Jos University

Table 1. Z-score classification of malnutrition used

Variable	Z-score
Weight for height	
Wasted	- 2
Normal	> -2 to > 2
Overweigh	
Weight for age	
Underweight	- 2
Normal	> -2 to > 2
Overweight	
Height for age	
Normal	> -2
Stunted	- 2

Results

The sociodemographic and health behaviour characteristics of the study participants is shown in **Table 2** below. There were 94 (56.3%) males out of the 167 under-five respondents; 126 (75.4%) of the children were 12months or older with a median age of 24(5 – 45) months. Ninety (53.9%) of the participants were exclusively breastfed with most of them starting complimentary feed at a median age 6 (5 – 7) months of age. There were 74 (55.7%) respondents who were fully immunized for age. Though 97 (58.1%) of them received insecticide treated net, more of them 118 (70.7%) slept under it the night before data was collected. One hundred and forty-six (85.6%) of the under-fives received care from a health facility when sick.

Table 2. Characteristics of under-fives in Melele community

Variable	Frequency (n=167)	Percentage
Sex		
Female	73	43.7
Male	94	53.6
Age		
Infants	41	24.6
Older	126	75.4
<i>Median age of children in months (IQR) - 24 (5 – 45)</i>		
Nutritional status		
normal	78	46.7
malnourished	89	53.3
Immunization status		
Appropriate for age	74	44.3
Inappropriate for age	93	55.7
Child being exclusively breastfed		
Yes	90	53.9
No	77	46.1
Median duration of breastfeeding in months (IQR) 18 (12 – 21)		
Median age at commencing complementary feeding in months (IQR) 6 (5 – 7)		
Developmental milestone		
Appropriate for age	97	64.7
Delayed for age	53	35.3
Dewormed in last 6 months		
Yes	35	21
No	132	79
Point of care when sick		
Health facility	143	85.6
Traditional medicine	17	10.2
Prayer house	7	4.2
Child given ITN		
Yes	97	58.1
No	70	41.9
Child sleep under ITN last night		
Yes	118	70.7
No	49	29.3

IQR – interquartile range; ITN-insecticide treated net

Table 3 below shows the nutritional and developmental characteristics of the study participants. It is observed that 46.7% of them were wasted, 31.1% underweight while 58.1% were stunted.

Table 3: Nutritional status of under-fives in Melele community of Plateau State (n = 167)

Variable	F	%
Weight for height		
Wasted	78	46.7
Normal	27	16.2
Overweigh	52	37.1
Weight for age		
Underweight	53	31.1
Normal	103	61.7
Overweight	12	7.2
Height for age		
Normal	70	41.9
Stunted	97	58.1

F – frequency; % - percentage

There was a statistically significant relationship between deworming children within the last 6 months ($p=0.012$) and ownership of ITN ($p=0.04$) with nutritional status. Those who were dewormed within the last 6 months of the survey were 2.9 times more likely to have normal nutritional status as compared to those that have been dewormed. Similarly, those who owned ITN (59.8%) had more malnourished children (**Table 4**).

Table 4. Factors associated with nutritional status of under -fives in Melele community of Plateau State

Variable	Nutritional status (F [%])		χ^2	P-value	OR	95% CI
	Normal	Malnutrition				
Sex						
Female	39(53.4)	34(46.6)	2.352	0.125	1.618	0.873 – 2.996
Male	39(41.5)	55(58.5)				
Age in months						
0 – 12	22(53.7)	19(46.3)	1.055	0.304	1.447	0.714 – 2.936
13 – 59	56(44.4)	70(59.6)				
Immunization status						
Completed for age	31(41.9)	43(58.1)	1.238	0.266	0.706	0.381 – 1.305
Incomplete for age	47(50.5)	45(49.5)				
Child dewormed in the last 6 months						
No	55(53.4)	48(46.6)	6.255	0.012*	2.928	1.236 – 6.936
Yes	9(28.1)	23(71.9)				
Child given ITN						
No	39(55.7)	31(44.3)	3.928	0.047*	1.871	1.004 – 3.486
Yes	39(40.2)	58(59.8)				
Child slept under ITN last night						
No	27(55.1)	22(44.9)	1.964	0.161	1.612	0.825 – 3.152
Yes	51(43.2)	67(56.8)				
Attainment of developmental milestone						
Attained	43(44.3)	54(55.7)	0.112	0.738	0.892	0.456 – 1.746
Delayed	25(47.2)	28(52.8)				

F – Frequency, % -percentage, χ^2 – chi square, ITN – insecticide treated net, OR – odd ratio, CI – confidence interval.

Discussion

This study reveals a disproportionately high degree of malnutrition of under-fives in Melele community when compared to previous studies in Kwara State (stunting of 23.6%, wasting of 14.2% and underweight of 22%), the average national, and Plateau State figures of 2018 NDHS.^{2,7,9} The findings may also be a revelation of the worsening nutritional status of under-fives in rural communities in Nigeria. Seasonal variations however exist in availability of food; particularly in rural agrarian populations. This high level of malnutrition may also not be unconnected to the time of the year within which the study was done

The study also found a significant relationship between deworming 6 months prior to data

collection and nutritional status; the largest proportion of malnutrition was found among dewormed children. In contrast, similar studies conducted in Jos and Abuja reported lower proportion among those who were dewormed.^{15,16} This variation may be due to fact that parents in this community mostly get their children dewormed on presentation to the health facility for treatment of illnesses; suggesting that these children have been sick within the last 6 months and therefore received anti-helminths alongside other treatments for their ill-health. However, their being dewormed has a positive impact on their health and purports a good outlook for their nutritional status in the nearest future.

Owing to the relatively high degree of malnutrition

found in this study, there is a high risk of under-five morbidity and mortality in this community. This is to be expected as under-5 mortality rate is generally higher in rural than urban communities in Nigeria. The public health implication of this finding is that, it can be postulated that in the future, except this high prevalence of malnutrition is controlled, there will be a high prevalence of chronic illnesses in this population and community; as this level of undernutrition might result in increased risk of DM and cardiovascular illnesses in later life.¹⁷

In spite of this addition to knowledge, the absence of qualitative component to explore cultural nutritional factors that could affect the nutritional status of under-fives is a limitation to this study. Also, cause-effect relationship cannot be established because of the cross-sectional nature of the study.

Conclusion

There is a high prevalence of all forms of undernutrition among under-fives children in Melele Community, Mangu LGA. There should be upscaling of nutritional interventions in rural communities as most interventions and awareness programmes largely target urban areas. Parents (and especially Mothers) of under-fives need to be given nutritional education on ways to improve the nutrition of their children as well as the dire implication of undernutrition on their children. Further qualitative studies need to be done to explore other factors such as maternal and household characteristics, in relation to under-five malnutrition.

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