

KNOWLEDGE AND PERCEPTION OF MALNUTRITION AND ITS EFFECT ON UNDER-FIVE CHILDREN AMONG MOTHERS ATTENDING PRIMARY HEALTH CENTERS IN SAGAMU LOCAL GOVERNMENT AREA, OGUN STATE: A CROSS-SECTIONAL STUDY

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ABSTRACTS

Background

Childhood malnutrition remains a global challenge and the most prevalent nutritional problem in developing countries, including Nigeria. This study assessed the knowledge and perception of malnutrition and its effect on under-five children among mothers attending primary health centers in the Sagamu Local Government Area of Ogun State, Nigeria.

Method

The study adopted a cross-sectional quantitative design and used a multi-stage sampling technique to select sixty-one mothers from the three selected primary health centers in Sagamu LGA. A researcher-developed questionnaire was used for the collection of data from participants. Data was collected, coded, and analyzed using Statistical Package for the Social Sciences (SPSS) 23. Descriptive and inferential statistics were used to present the findings from the study, and all were tested at the level of 0.05 significance

Results

The result shows that the majority of the mothers were between the ages of 18 and 28 years (44.9%), attained tertiary education (73.5%), were from Yoruba land (65.3%), were Christian (75.5%), and most had one to three children (80.6%). Mothers had high knowledge of malnutrition 138(91.8%), and high knowledge of the effects of malnutrition 144 (95.8%). The result also revealed a significant relationship between respondent's knowledge of malnutrition and the effects of malnutrition ($p=0.001$), level of education and knowledge of malnutrition ($p=0.000$), and between the knowledge of malnutrition and perception of malnutrition in under-five children ($p=0.006$)

Conclusion

The study concludes that the Majority of the mothers demonstrated high knowledge of malnutrition and good knowledge of its effects, and it established a positive relationship between knowledge and perception of malnutrition in children under five.

Recommendation

Therefore, the study recommended that training programs should be done periodically for mothers to ensure they are abreast with the proper knowledge and ways to prevent malnutrition in their under-five children.

Keywords: Knowledge, Malnutrition, Mothers, Perception, Under-Five Children.

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BACKGROUND TO THE STUDY

Malnutrition is a health condition that evolves due to insufficient or excessive nutrients in the body. This condition can be presented as either undernutrition or overnutrition. Malnutrition prevails everywhere around the

world, and both developed and developing countries are suffering from it. The effect of malnutrition brings devastation to individuals, communities, and the national standard of living. Among the malnourished, women, children, and the elderly are observed to have malnutrition,

whereas among the children, preschool age is an important stage of life where nutrition plays an important role and has long-lasting effects in the later years of life (1). Malnutrition results from eating a diet in which one or more nutrients are either not enough or are too much such that the diet causes health problems (2). Malnutrition may involve inadequate calories, protein, carbohydrates, vitamins, or minerals in the body system.

Globally, half of the mortality burden is due to undernutrition (3). Malnutrition is one of the major health issues affecting approximately 2 billion people worldwide. (4). It has also been reported in a recent study that approximately 151 million children aged <5 years are stunted, while 50 million children are wasted and almost 17 million children are severely wasted across the world (5,6). It has also been estimated that malnutrition accounts for about 54% of child mortality worldwide (7). Another estimate, also by WHO, states that childhood malnutrition is the cause of about 35% of all deaths of children below 5 years that are stunted, most of whom live in Sub-Saharan Africa (8).

In 2019, 161,847,936 children under five years of age suffered from nutritional deficiencies globally (9). Nutritional deficiency in children is a public health problem that cannot be ignored, and it is necessary to grasp its status quo to propose preventive measures based on this. Nutritional deficiencies mainly include micronutrient (vitamin and minerals) deficiencies and protein–energy malnutrition (10). It is reported that an estimated 250,000–500,000 children who are vitamin A-deficient become blind every year, and half of them die within 12 months of losing their sight (11).

In Nigeria, malnutrition is widespread, particularly in the rural areas. This is partly due to inadequate food and a low standard of living. The Nigeria Demographic and Health Survey revealed that 38% of under-five children in Nigeria are stunted, 29% are underweight, and 9.2% are wasted (12). Nutritional status can be quantitatively evaluated by assessment techniques that provide information on the nutritional and health status of children, which are indirect measures of the quality of life in a given Community. Malnutrition can also be evaluated by anthropometric measurements (involving height, weight, skin fold, etc), clinical examination, biochemical tests, and the use of dietary history (8). Malnutrition remains one of the most common causes of morbidity and mortality among children throughout the world. Malnutrition has been responsible, directly or indirectly, for 60% of the 10.9 million deaths annually among children under five. Over two-thirds of these deaths, which are often associated with inappropriate feeding practices, occur during the first year of life. Most growth retardation occurs by the age of two, and most damage is irreversible (13).

Malnutrition increases the incidence and severity of infections in children and delays recovery (14). and can

even cause serious personal and social diseases and economic burdens (15). The burden of malnutrition in children is mainly caused by poor dietary quality and intake. Nutrition-related factors account for the difference. (16). Childhood malnutrition remains a global challenge (17). Although the worldwide prevalence of stunting in children younger than five years has decreased over the past 20 years, the figures are higher in certain parts of the world, notably Asia and sub-Saharan Africa. Against this backdrop, the World Health Assembly set nutrition targets for 2025 to address childhood malnutrition. These targets relate to reducing stunting, wasting, and low birth weight in children and anemia in women of reproductive age, increasing exclusive breastfeeding, and halting the increase in childhood overweight (18).

METHODOLOGY

Study Design

This study employed a cross-sectional quantitative research design.

Study Population

The study population was mothers of under-five children attending primary health centers in the Sagamu Local Government Area of Ogun State, Nigeria.

Study Setting

The study was conducted in the Sagamu Local Government Area (LGA) of Ogun State. Sagamu LGA is one of the 20 Local Government Areas in Ogun State, Southwest Nigeria. Sagamu LGA is a conglomeration of thirteen towns, it is an urban LGA with few rural settlements. It has a total area of 614km² (237 sq mi), and it is located within the defunct Remo division and is part of the Ogun senatorial district. It is bounded in the East by Ikenne LGA, in the North by Remo-North LGA, in the West by Obafemi-Owode LGA, and in the South by Ikorodu LGA of Lagos State. Most people who reside in Sagamu are from Yoruba extraction. It is home to several industries. There are several health facilities in Sagamu, ranging from private hospitals to public health facilities, which include Primary healthcare centers, a general hospital, and Olabisi Onabanjo University Teaching Hospital. At the time of this study, the primary health care centres selected for this study were Ajaka Sabo and Makun primary health centres.

Sample size

The sample size was determined by using Solvin's formula

$$n = \frac{N}{1 + Ne^2}$$

Where n sample size

N= Population size

e= margin error

e margin error (0.05)

$$n = \frac{N}{1 + Ne^2}$$

$n = 230 / (1 + 230 \times 0.052)$
 $n = 230 / (1 + 230 \times 0.0025)$
 $n = 230 / 1.575$
 $n = 146.0$

Approximately $n = 146$

Attrition rate = 10% of sample size + sample size

10% of sample size = $10/100 \times 146 = 14.6 = 15$

Attrition rate = $15 + 146 = 161$

A total of 161 participants was used for this study

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Bias

Efforts were made to address potential sources of bias in the study. These include the use of inclusion and exclusion criteria, the use of sample size calculations, and the use of simple random sampling techniques to select study settings.

Method of data collection

Permission to carry out this study was obtained from the Babcock University Health Research and Ethical Committee (BUHREC) and also from the School of Nursing, Babcock University. Informed consent was gained from participants by giving them a consent form to sign. The purpose of the research was explained to them, after which the questionnaire was distributed. During the period of filling out the questionnaire, the researchers stayed with the participants to ensure the correct filling of the questionnaire accordingly before the collection from the participants. The filled questionnaires were retrieved on the same day.

Method of data analysis

Serial numbers were assigned to each questionnaire for easy identification and correct data entry. Data were collated, sorted, coded, and analyzed using the IBM-SPSS (Statistical Package for Social Sciences) version 23. Descriptive statistics of frequency counts, simple percentages, and the mean and standard deviation were used to summarise and present research questions one, two, three, and four. A

Pearson Correlation and t-test were used to test the hypothesis at the level of 0.05 significance.

Ethical consideration

Ethical clearance was obtained from the Babcock University Health Research and Ethical Committee (BUHREC/807/22) before the commencement of the study. Participation was voluntary, and every finding was treated with the utmost confidentiality. Also, a letter of introduction was obtained from the school of nursing. Permission was sought from the right authority before giving the questionnaire to the participants. Informed consent was also obtained before the questionnaire was administered. The participants suffered no harm. Confidentiality was maintained as participants' identities and replies were kept confidential during and after the study.

Ethical approval and consent to participate

The study was approved by the Babcock University Health Research Ethical Committee (BUHREC) with an ethical approval number (BUHREC/807/22).

Inclusion Criteria

Mothers with under-five children who attended primary health care centers in Sagamu LGA. Mothers who consented to participate in the study and mothers who were present at the time the study was being carried out.

Exclusion Criteria

Mothers who did not give their consent to participate in the study and mothers with children above age five were excluded.

RESULTS

The sample size that was calculated for this study was 161 participants, but only 150 participated in the study, giving a response rate of 93.2%

Table 1: Demographic data of participants

Variables	Categories	Frequency (N=150)	Percentage
Age	18-28years	67	44.9%
	29-39years	46	30.6%
	40-49years	37	24.5%
	50 years and above	-	-
Number of children	1-3 Children	121	80.6%
	4-6 Children	29	19.4%
Educational Qualification	No formal education	9	6.1%
	Primary	14	9.2%
	Secondary	17	11.2%
	Tertiary	110	73.5%
Marital status	Single parent	49	32.7%
	Married	95	63.3%
	Divorced	6	4.1%
Occupation	Employed	66	43.8%
	Unemployed	32	21.4%
	Self-employed	47	31.6%
	Artisan	5	3.1%
Religion	Christian	113	75.5%
	Islam	24	16.3%
	Traditional	12	8.2%
	Others	-	-
Ethnicity	Yoruba	98	65.3%
	Igbo	42	28%
	Hausa	10	6.7%
	Others	-	-

In **Table 1**, it was reported that many of the participants were aged 18 to 28 years (35.7%), while the least age group of the participants were 40-49 years (24.5%). Also, the majority (80.6%) of the respondents were mothers of one to three children. On the other hand, many (73.5%) of the respondents were graduates of tertiary education while the least (6.1%) had no formal education. In addition, most of

the mothers were from Yoruba extraction (65.3%), while more than one-third were employed (43.8%). Therefore, this study revealed that most of the mothers were between 18 and 28 years old, with a maximum of three children, employed, and literate with exposure due to their level of education.

Table 2a: Knowledge of malnutrition among the mothers

Knowledge of malnutrition	Yes	No
Have you heard about malnutrition in children	142(94.9%)	8(5.1%)
Breastfeeding for the first 6 months can prevent malnutrition	129(86%)	21(14%)
Breastfeeding for up to 2 years is not good for a child	140(74%)	10(26%)
Not eating a balanced diet can cause malnutrition	139(92.8%)	11(7.2%)
Children are at greater risk of malnutrition	126(84%)	24(16%)
Malnutrition affects all age groups	96(64%)	54(36%)
Low birth weight is a sign of malnutrition	121(81%)	29(19%)
Weight loss is a sign of malnutrition	141(94%)	9(6%)
Malnourished children have big bellies	145(97%)	5(3%)
Scarcity of food can cause malnutrition	116(77.5%)	34(22.5%)

Table 2b: Respondents' level of knowledge toward malnutrition

Level of knowledge	Frequency	Percentage %	Mean; SD; max; min
High [5-10]	138	91.8%	
Low [less than 5]	12	8.2%	7.3; ±3.13; 10; 4
Total	150	100	

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Tables 2a and 2b reveal the level of mothers' knowledge towards malnutrition in Sagamu. It shows that the majority (91.8%) of the mothers were high in knowledge, while very few (8.2%) were low in knowledge towards malnutrition. However, this study further showed that most of the mothers had heard about malnutrition in children (94.9%), and many of them acknowledged that breastfeeding for the first 6

months can prevent malnutrition (86%). Moreso, the majority of the mothers believed that not eating a balanced diet can cause malnutrition (92%); meanwhile, children are at greater risk of malnutrition (84%) as low birth weight and weight loss are signs of malnutrition (81%). Therefore, this study implied that the majority of the nursing mothers in Sagamu were high in knowledge concerning malnutrition.

Table 3 Nursing mothers' perception towards Malnutrition

Perception of mothers	Agree	Undecided	Disagree
There is no such thing as malnutrition	119(79.6%)	8(5%)	23(15.4%)
I can take care of my malnourished child at home	42(28.0%)	4(2.6%)	104(69.4%)
I prefer using herbal medicine for my children	30(20.2%)	3(2.2%)	116(77.6%)
I think it is better to start giving my child other foods and water before 6 months	12(11.2%)	78(1%)	86(87.8%)
My child loves to eat noodles only, and I don't have to give my baby other foods	8(8.1%)	11(7%)	127(84.8%)
I can stop breastfeeding before 6months	44(29%)	5(3%)	102(68%)

Table 3 revealed that the majority of the mothers disagreed that they could take care of their malnourished child at home (69.4%), use herbal medicine for their children (77.6%), and give children other foods and water before 6 months (87.8%). The nursing mothers further disagreed that they could stop breastfeeding before 6 months (68%). Therefore,

this study shows that most of the nursing mothers believed that they couldn't take care of their malnourished child at home using herbal medicine or giving the baby other food and water before 6 months. This shows that most of the mothers' knowledge influences their perceptive care towards the caring of their malnourished child.

Table 4a Knowledge of mothers on effects of malnutrition of under-five children

Items	Yes	No
Improper nutrition can affect a child's growth	139(92.9%)	11(7.1%)
My child can fall sick often because of malnutrition	133(88.8%)	17(11.3%)
Malnutrition can cause mental retardation	98(65.3%)	52(34.7%)
I breastfed my child exclusively for six months	126(83.7%)	24(16.3%)
Poor diet can affect my child's health.	138(91.9%)	12(8.1%)
Not eating well as a mother can affect my breastfeeding baby.	129(85.8%)	21(14.3%)

Table 4b: Respondents' level of knowledge towards effects of malnutrition on under-five children

Level	Frequency	Percentage %	Mean; SD; max; min
Good knowledge [3-6]	144	95.8%	
Poor knowledge [less than 3]	6	4.2%	5.16; ±0.82; 6; 3
Total	150	100	

Tables 4a and 4b show that the majority (95.8%) of the mothers had good knowledge while very few (4.2%) of the nursing mothers were poor in their knowledge of the effect

of malnutrition in Sagamu. This result showed that most of the participants acknowledge that improper nutrition can affect a child's growth (92.9%), also lead to mental

retardation (88.8%), affect his/ her child's health (91.9%) and when not eating well most of the participant knows that it will affect their breastfeeding baby. Therefore, this study

shows that most nursing mothers understand the basis of a balanced diet and have good knowledge of the effects of malnutrition in under-five children.

Table 5. Factors contributing to malnutrition in under-five children in Sagamu, Ogun state, Nigeria?

Factors	Category	Responses	F (%)
Economic factors	Poverty can cause malnutrition	Yes	134(89%)
		No	16(11%)
	Family income per month	N10,000-50,000	93(62%)
		N60,000-N100000	51(34%)
	Above N100,000	6(4%)	
Family factors	Number of children	1-2 Children	95(63%)
		3-4 Children	47(31%)
		5 and above	9(6%)
	My child does not like to eat until I force him/her	Yes	86(57%)
		No	65(43%)
	My child eats mostly junk because that is what he/she loves	Yes	92(61%)
No		59(39%)	
Not eating well can affect my child's growth	Yes	138(92%)	
	No	12(8%)	
Healthcare related factor	Is there education on malnutrition in the Antenatal clinic	Yes	111(74%)
		No	39(26%)
	Poor maternal health contributes to poor child growth	Yes	88(59%)
		No	62(41%)
	Is the cooking demonstration done in the clinic	Yes	46(31%)
		No	104(69%)
	Do you know about treatment food a child can take when sick	Yes	108(72%)
		No	42(28%)
	Do nurses do follow-up care in your home	Yes	58(39%)
		No	92(61%)
Environment	What is your water source	Borehole	124(82.7%)
		River	8(5.2%)
		Others	18(12.1%)
	Water from any source is good for drinking	Yes	10(6.7%)
No		140(93.3%)	

Table 5 showed that the majority of the nursing mothers observed the following factors influencing malnutrition economic factors such as poverty (89%), family income (62%), family factors such as the number of children (63%), not eating well (92%), health-related factor; such as poor maternal health (59%), education on malnutrition in

antenatal clinic (74%) and source of water such as borehole (82.7%). Therefore, this study infers that economic factors, family factors, health-related factors, and environmental factors are factors contributing to malnutrition in under-five children.

Table 6: Correlation Analysis between knowledge and the effect of malnutrition in under-five children

Variables	N	Mean	S.D	R	Sig.	Remark
Knowledge		7.3	±3.13			
Effect of malnutrition	150	5.16	±0.82	.642	.001	Significant

****.** Correlation is significant at the 0.05 level (2-tailed).

Table 6 reveals a positive relationship between knowledge of malnutrition and the effect of malnutrition on under-five children. The calculated p-value and r respectively $0.001 < 0.05$ and $0.642 < 1$ were positively significant at 5% (95% level of confidential interval). Since the p-value = $0.001 < 0.05$. Therefore, the relationship between knowledge of malnutrition and knowledge of mothers on the effect of malnutrition of under-five children in Sagamu was found

statistically significant. Hence, the null hypothesis, which stated there is no significant relationship between the mother's knowledge of malnutrition and the effect of malnutrition in children under five in Sagamu, Ogun state, Nigeria, is hereby rejected by this finding.

Table 7: The relationship between the level of education and knowledge towards malnutrition in under-five children

Educational level	Knowledge			N	X ² (df)	r (p-value)	Decision
	Low	High	Total				
No formal education	3(2%)	6(4%)	9(6%)	150	25.738 ^a (16)	.421(.000)	Reject the null hypothesis.
Primary	5(3.3%)	9(6%)	14(9.3%)				
Secondary	3(2%)	14(9.3%)	17(11.3%)				
Tertiary	7(4.6%)	103(68.7%)	110(73.3%)				
Total	18(12%)	132(88%)	150(100%)				

Table 7 reveals a positive significant relationship between level of education and knowledge of factors contributing to malnutrition in under-five children. The calculated p-value and r respectively nursing mother were found significant as the p-value = $0.000 < 0.05$ and $0.421 < 1$ was significant at 0.05 (95% level of confidential interval). Therefore, the tested variables were found to be related and significant.

This implies that the higher the level of education, the more the level of knowledge of nursing mothers towards malnutrition. Hence, the statement that there is no significant relationship between a mother's level of education and knowledge of factors contributing to malnutrition in under-five children in Sagamu, Ogun state, Nigeria, is hereby rejected by this finding.

Table 8: Relationship between Mother's knowledge and perception of malnutrition in Under-five children

Knowledge	Perception	Remarks
Pearson correlation	0.289	Reject the null hypothesis
Sig. (2-tailed) p-value	0.006	
N	150	

***.** Correlation is significant at the 0.05 level (2-tailed).

The results in Table 8 revealed a positive significant relationship between knowledge and perception of mothers towards malnutrition in under-five children ($r = 0.289$; $p = 0.006 < 0.05$). The hypothesis which stated that "There is no significant relationship between mother's knowledge and

perception on malnutrition in under-five children is hereby rejected by this finding since the p-value is less than 0.05

DISCUSSION

This study implied that the majority of the nursing mothers in Sagamu were high in knowledge concerning malnutrition.

This result contradicts a study led by (20) in Ethiopia, who found that only 28.7% of mothers had sufficient knowledge of infant and young child feeding recommendations. Factors associated with mothers' knowledge were above primary education, attending antenatal care, possession of a radio, and having an employed husband. It was concluded from the study that Mothers' knowledge of infant and young child feeding recommendations was very low. These differences in the result might be a result of the level of maternal education.

Also, this finding revealed that most of the nursing mothers believed that they could not take care of their malnourished child at home using herbal medicine or giving the baby other food and water before 6 months. This result is against a study led by (8), who revealed that the majority of the mothers (99.3%) were aware of malnutrition and believed ignorance/ illiteracy was a major predisposing factor to malnutrition. 85% (number of children by parents), 100% (poverty), 79.4% (food taboos), 92.7% (presence of chronic illness and improper breastfeeding respectively), socio-economic status defined by education, 96.6% (stated that parent's occupation affects children's nutritional health), 88.7% (educational level of mothers has a relationship with children nutritional status) and that, children of 0-10 months (33.3%) are more often predisposed to malnutrition. The similarity between the current finding and the stated one might be a result of their level of education in the setting. The majority of the current findings were tertiary graduates while those from the stated one were secondary school graduates.

Regarding the level of knowledge of mothers on the effects of malnutrition in under-five children, this study shows that most nursing mothers understand the basis of a balanced diet and have good knowledge of the effects of malnutrition in under-five children. This result corroborates a study led by (13) Malnutrition, which found that one of the most common causes of morbidity and mortality among children throughout the world. Malnutrition has been responsible, directly or indirectly, for 60% of the 10.9 million deaths annually among children under five.

Regarding the factors contributing to malnutrition in under-five children in Sagamu, this study infers that economic factors, family factors, health-related factors, and environmental factors contribute to malnutrition in under-five children. This result correlates with a study conducted by (21), who discovered that household characteristics like income, less access to health services, mother's education, paternal education, household food insecurity, poor exclusive breastfeeding, and number of under-five children or family size have explained the occurrence of acute malnutrition. Supported by (22), who found post-natal vitamin A supplementation, child spacing, maternal knowledge and awareness about infant and young child feeding, water sources, low birth weight, and inappropriate

initiation time of complementary feeding are also behind the occurrence of acute malnutrition.

The result from this study also reveals a positive significant relationship between the level of education and knowledge towards malnutrition. This implied that the higher the level of education, the more the level of knowledge of nursing mothers. This result is in line with a study led by (23) who opined that a low level of maternal education has been associated with poor feeding practices, leading to malnutrition, also said educated mothers are more likely to ensure that their child gets adequate nutrition and treatment, while uneducated mothers are likely to have a higher probability of being undernourished.

Conclusion

Malnutrition remains a public health problem in Nigeria, and one of the causal factors has been identified as ignorance of the appropriate recommendation by the World Health Organisation. The mother's knowledge of nutrition can play a vital role in a child's intake to improve nutritional status. A low level of maternal education has been associated with poor feeding practices, leading to malnutrition. Therefore, educated mothers are more likely to ensure that their child gets adequate nutrition and treatment, while uneducated mothers are likely to have a higher probability of being undernourished. Undernourished mothers are at greater risk of giving birth to low-birth-weight babies.

Recommendations

It is recommended that training programs should be done periodically for mothers to ensure they are abreast with the proper knowledge and ways to prevent malnutrition in their under-five children.

Limitations

The study focused only on primary healthcare facilities in Sagamu, LGA Ogun State which may restrict the generalizability of its findings. Self-reported data collection method could have introduced some sort of bias. The time frame for the study may not have captured

Source of funding

The researchers received no form of funding for this study.

Conflict of interest

The researchers have no conflict of interest to declare

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Author contribution

CA and JA were responsible for the conceptualization of the study, methodology, data analysis, and management. AO was responsible for the introduction. SM was responsible for the discussion. CA, JA, SM, and AO were responsible for the editorial, and CA and JA were responsible for instrumentation and data collection.

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List of abbreviations

BUHREC: Babcock University Health Research Ethical Committee.

LGA: Local Government Area

SPSS: Statistical Package for the Social Sciences.

WHO: World Health Organization

Consent for publication

The authors hereby give consent for the publication of this work under the Creative Commons CC Attribution-Non-commercial 4.0 license.

Availability of data and materials

The data and materials associated with this research will be made available by the author upon reasonable request.

Competing interests

The author has declared no conflict of interest.

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