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Prevalence Of Malnutrition Among Under-Five Children In Owerri North

Eberendu, I.F[1], Ozuomba,C.M[2], Obianozie, T.I[3], Chinedu-Eleonu, P.O[4] and Ugwulor, L.O[5],

Department of Public Health, Imo State University, Owerri.

*Corresponding Author: Eberendu, I.F[1], Department of Public Health, Imo State University, Owerri.

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Abstract:

The aim of this study was to determine the prevalence of malnutrition among under-five children in Owerri North. Three (3) objectives and research questions were used for the study. Simple random sampling was adopted in selecting the populations of Four hundred and sixty (460) that was studied from the selected schools in Owerri North LGA. In this study, one hundred and seventy-four (174) preschoolers were selected while one hundred and forty-five (145) returned their questionnaires for the study. Data analysis was done with Statistical Package for Social Sciences (SPSS) version 20.0 (Chicago II). Frequency and percentage were used to summarize categorical variables such as the nutritional status, age category and socio-economic status while means and standard deviations were used to summarize continuous variables such as weight for height and height for age z-scores. Approximately 41.4% of the respondents were between 48-59 months old, indicating a focus on children in their early years. Females constituted 52.4% of the respondents. The majority of mothers (78.6%) had education up to the junior secondary school level. About 53.8% of mothers fell within the age range of 25-34 years. The fathers' education was similar to that of the mothers, with 83.4% having junior secondary school education. A significant portion (42.1%) of fathers had occupations categorized as "others." When assessing nutritional status based on weight for height, 35.9% of children were mildly wasted, indicating a concern for their weight. Stunting, assessed using height for age, affected 13.1% of children, indicating growth-related issues. Weight for age measurements showed that 33.1% of children were mildly underweight. Child exclusive breastfeeding in first six months was identified by 57.2% of respondents as a cause of malnutrition. Surprisingly, 95.1% of respondents indicated "no" to supplementation, which could be linked to misconceptions or limited access to supplementation programs. All respondents recognized the importance of immunization and breastfeeding, with 100% responding "yes" to these practices. The majority (88.9%) supported education on exclusive breastfeeding, indicating awareness of its benefits. More than half (58.6%) of the respondents stopped breastfeeding their children between 6-12 months. Malnutrition was found to cause a 9.6% disability rate among children under five, indicating the severe health implications of nutritional deficiencies. There was significant ($p<0.05$) prevalence of malnutrition among under-five children in Owerri North. This study recommends improving access to healthcare services for monitoring and addressing malnutrition among under-five children.

KeyWords: Prevalence, Malnutrition, Under-Five Children, Owerri North

Introduction

Malnutrition is a universal public health problem in both children and adults globally [1]. It is not only a public health concern but it is an impediment to global poverty eradication, productivity and economic growth. By eliminating malnutrition, it is estimated that 32% of the global disease burden would be removed [2]. As a widespread serious problem affecting children in developing countries, progress towards tackling the different forms of malnutrition remains relatively slow [3]. Malnutrition has been defined as a pathological state resulting from inadequate or excess nutrition .The spectra includes undernutrition due to insufficient intake of energy and other nutrients, overnutrition due to excessive consumption of energy as well as other nutrients and micronutrient deficiency due to insufficient intake of one or more specific vitamins or minerals [4]

Malnutrition, in every form, presents significant threats to human health. Undernutrition is estimated to contribute to more than one third of all child deaths, although it is rarely listed as the direct

cause. The World Health Organisation (WHO) and United Nations Children's Fund (UNICEF) in 2013 reported that at least 99 million children were affected by undernutrition [5]. Among the survivors who are affected during the first two years of life, their ability to resist disease, undertake physical work, study and progress in school are all impaired.. The interaction between undernutrition and infection results in a vicious cycle of worsening illness and poor nutritional status . Stunted growth and impaired cognitive ability can also follow poor nutrition in the early years of a child's life. On the other hand, worldwide, an estimated 42 million children under the age of five years were affected by overnutrition as at 2013. Rising rates of overnutrition worldwide have been linked to a rise in chronic diseases such as hypertension and type II diabetes [6]

According to the World Health Organization (WHO), 462 million adults are underweight, while 1.9 billion adults are overweight and/or obese. In children under 5 years of age, 155 million are stunted, 52 million are wasted, 17 million are severely wasted and 41 million are overweight and/or obese . The manifestation of malnutrition is multifold, but the paths to addressing prevention are key and include exclusive breastfeeding for the first 2 years of life, diverse and nutritious foods during childhood, healthy environments, access to basic services such as water, hygiene, health and sanitation, as well as pregnant and lactating women having proper maternal nutrition before, during and after the respective phases (levels and trends) [7]

It is vital that malnutrition is addressed in children as malnutrition manifestations and symptoms begin to appear in the first 2 years of life. Coinciding with the mental development and growth periods in children, protein energy malnutrition (PEM) is said to be a problem at ages 6 months to 2 years. Thus, this age period is considered a window period during which it is essential to prevent and/or manage acute and chronic malnutrition manifestations. Child and maternal malnutrition together have contributed to 3.5 million annual deaths. Furthermore, children less than 5 years of age have a disease burden of 35% . In 2008, 8.8 million global deaths in children less than 5 years old were due to underweight, of which 93% occurred in Africa and Asia. Approximately one in every seven children faces mortality before their fifth birthday in sub Saharan Africa (SSA) due to malnutrition [8].

Young malnourished children are affected by compromised immune systems by succumbing to infectious diseases and are prone to cognitive development delays, damaging long term psychological and intellectual development effects, as well as mental and physical development that is compromised due to stunting. Malnutrition is not just a health issue but also affects the global burden of malnutrition socially, economically, developmentally and medically, affecting individuals, their families and communities with serious and long lasting consequences [9]

In developing countries, the nutritional status of children depends on socioeconomic status, awareness of diseases such as diarrhea and acute respiratory tract infection, educational status of mother and availability of safe drinking water. Undernourished children are prone to infections. Statistically underweight children succumb to diseases such as diarrhea, measles, and malaria and lower respiratory tract infections. Undernutrition in young children has long-term negative effects on physical and cognitive development. A global review on child stunting and economic outcomes revealed a 1 cm increase in height was associated with a 4% increase in wages for men and a 6% increase in wages for women. Investing in the reduction of child malnutrition is paramount for human and economic development . Data from six longitudinal studies on the association between anthropometric status and mortality of children aged 6–59 months revealed a strong association between the severity of weight-for-age deficits and mortality rates. Indeed, out of the 11.6 million deaths among under-five children in 1995 in developing countries, it has been estimated that 6.3 million or 54% of young child mortality were associated with malnutrition [10]

Malnutrition being a major public health problem, especially in many low-income and middle- income countries . It adversely affects the productivity of nations as well as creating economic and social challenges among vulnerable groups. Poor nutrition is associated with suboptimal brain development, which negatively affects cognitive development, educational performance and economic productivity in adulthood .Child growth is the most widely used measure of children's nutritional status. The first1000 day of life (0-33months) is a very critical phase in a child's life during which rapid physical and mental development occurs. Under nutrition during this critical phase can have irreversible consequences on the child's growth leading to an increased risk of morbidity and mortality in children. Under nutrition is commonly assessed through the measurement of child's anthropometry (height, weight and arm circumference), as well as through screening for biochemical and clinical markers. Wasting, stunting and underweight are expressions of under nutrition and the anthropometric indicators for the assessment of a child's nutritional status [11].

Under nutrition is the underlying cause of child mortality in about 45% of all deaths reported for children under-5 years of age . In 2015, globally about 7.7% of children were wasted, 24.5% were stunted and 15% were underweight .The African region and South- East Asia have reported the highest prevalence of under nutrition, with the former accounting 39.4% of the stunted, 24.9% of the underweight and 10.3% of the wasted children under-5 years of age. According to the Sustainable Development Goals (SDG) report, sub- Saharan Africa (SSA) accounts for one third of all undernourished children globally, high lighting that malnutrition still remains a major health concern for children under 5 years in the Sub-region, thus buttressing the need for urgent intervention [12].

Child malnutrition remains a major public health problem in developing countries and major contributor to global disease burden. Malnutrition‟s impact on child survival and future national economic productivity cannot be over-emphasized. Worldwide, approximately 50.5 million (7.5%) children under the age of five years were wasted while 150.8 million (22.2%) were stunted in 2017. Although estimates suggested a declining trend in the global prevalence of stunting and wasting among children less than five years, Africa among other United Nation regions registered the lowest percentage decrease in prevalence of stunting (12.2%) from 1990 (42.5%) to 2017 (30.3%). In most sub-Saharan African countries, the level of wasting among children under-five years of age remained below emergency threshold level but at poor nutritional threshold levels (6.4%) for East Africa [13].

Risk factors for wasting and stunting are overt across the globe. In the Lancet series of maternal and child nutrition, two systematic reviews by Black et al delineated the potential risk factors for wasting and stunting among children under five years of age at both global and regional level , in middle and low-income countries, let alone thecomprehensive UNICEF framework of determinants of malnutrition . Risk factors for stunting range from socio-economic to individual level factors such as inadequate dietary intake and infections. Low socio-economic status is an important distal risk

factor for stunting. In particular limited maternal opportunity to earn and limited health knowledgeresulting from lack of or limited formal education as opposed to paternal education, aggravates other correlates of stunting such as poor child-care practices related to nutrition, health and access to existing nutrition and health interventions . It is important to conduct this study to ascertain the prevalence of malnutrition among under-five children in Owerri North.

Materials And Methods

Research Design

The study was a cross-sectional study. Simple random sampling was adopted in selecting the populations that will be studied from the selected schools in Owerri North LGA. This research design helps to provide answers to the questions of who, what, when, where and how it's associated with a particular research problem and it is suitable for the study because it enables the researcher to obtain the information concerning the current status of phenomena and describes "what exists" with respect to variables or condition in the situation.

Study Area

Owerri North is a local government area located in Imo State, Nigeria. It is situated in the southeastern region of Nigeria and shares borders with other local government areas such as Owerri West, Ngor Okpala, and Mbaitoli.Owerri North is predominantly urban, with a mix of residential, commercial, and industrial zones. It is a home to several healthcare facilities, including hospitals, clinics, and primary healthcare centres.

Study Population

The population comprised of an accessible population of Four hundred and sixty (460) under-five children gotten from selected preschool in Owerri North. The preschools were registered children in Greenland International School, Pretty kids International School and White Label Schools.

Sampling Technique

The multi stage sampling technique was implored, firstly, Owerri North Local government was selected. Secondly, three (3) schools in Owerri North LGA were selected and thirdly fifty eight preschoolers were randomly selected from the aforementioned schools and onto be studied using purposive sampling. And also one hundred and seventy four (174) preschoolers were finally selected for the study.

Ethical Consideration

Before the implementation of the project, extensive consultation and approval was obtained from Imo State University faculty of health in form of Introduction letter after approval of the proposal. A written consent sought from the mother/caretakers before the participate in the study and permission to collect data granted by the school proprietors. All ethical issues were adhered to; informed consent was obtained prior to the commencement of the study.

Validity/Reliability of Instrument

To ensure the validity and reliability of the research instrument used in the study on determine the prevalence of malnutrition among under-five children in Owerri North, several measures can be taken. Firstly, the research instrument, such as a questionnaire was validated by the supervisor. This helps to ensure that the instrument measures the intended constructs accurately. Additionally, pilot testing can be conducted with a small sample of students to assess the clarity and comprehensibility of the questionnaire items. This allows for necessary modifications to be made to improve the validity and reliability of the instrument.

Data collection

Questionnaire was administered to respondent and they comprises of the parent's and child's demographic characteristics. The interview will conducted with validated questionnaire after obtaining informed consent from the mothers. The questionnaire was designed keeping in mind the objectives of the study. To ascertain reliability, objectivity, simplicity and to remove any ambiguity, and necessary modification, it will be judged by the supervisory team and other experts and necessary corrections will be made to enhance the face validity and content validity. Pretesting of the questionnaire will done by administering the questions to a small number of representatives before the survey.

Relevant data on the factors related to malnutrition will be obtained with the help of the schedule and review of any available relevant health records. For assessing the nutritional status of the subjects, dietary and anthropometric measurements will be carried out following standard operating procedures . The data include weight, recumbent length (if the child is not able to stand without support), and height for children above 2 years and mid upper arm circumference for children above 6 months old and their mothers.

Anthropometry

Age determination

Age was determined using available records or using local calendars.

Weight determination

Weight was measured to the nearest 0.1 Kg using UNICEF Seca weighing scale with subjects in minimal clothing. The scale will be occasionally checked for standardization to avoid faulty reading.

Length/height determination

Height wasmeasured using a length/height board, with the participant standing on a firm/level surface and it was measured to the nearest 0.1 cm. Recumbent length will be measured using an infantometer. Each measurement was done twice, and the mean of the two readings will be recorded.

Mid upper arm circumference (MUAC)

The mid upper arm circumference will be determined using a Shakir's strip (arm circumference non-stretch tape) to the nearest 0.1cm. The left arm will be used and allowed to hang freely down by the side of the child, the arm half way between the point of the shoulder and the tip of the elbow was marked and the strip was placed round the marked point for measurement. The value was recorded to the nearest 0.1cm.

Method of Data Analysis

Data analysis was done with Statistical Package for Social Sciences (SPSS) version 20.0 (Chicago II). Frequency and percentage were used to summarize categorical variables such as the nutritional status, age category and socio-economic status while means and standard deviations were used to summarize continuous variables

such as weight for height and height for age z-scores. An inferential statistics of chi-square test at 0.05 significant level was used to test for the hypothesis.

Results

Socio-demographic characteristics of the respondents.

Approximately 41.4% of the respondents were within ages of 48-59months, 52.4% were Females, 78.6% of their mother level of education was Junior Sec School, while 53.8% of their Mother's Age were within 25-34years. More than half (83.4%) of the respondents Father's Education were Junior Sec School, 42.1% of their Father's Occupation were belonged to others category, 100% had were Christians while 57.2% earned between one hundred thousand to five hundred thousand naira monthly (₦100,000-500,000).

Table 4.1: Socio-demographic characteristics of the Respondents

Variables	Frequency	Percentage	P-value
Age			
0-11	-	-	0.438
12-23	12	8.3	
24-35	22	15.1	
36-47	51	35.1	
48-59	60	41.4	
Sex			
Male	69	47.6	0.385
Female	76	52.4	
Mother level of Education	0	0	0.005
None	0	0	
Primary School	114	78.6	
Junior Sec School	31	21.4	
Tertiary			
Mother Age			
15-24	14	9.7	0.241
25-34	78	53.8	
35-44	53	36.6	
44-above	-	-	
Father Education	-	-	
None	-	-	0.001
Primary School	121	83.4	
Junior Sec School	24	16.5	
Tertiary			
Father Occupation	-	-	0.349
Unemployed	21	14.5	
Trader	51	35.2	
Civil Servants	12	8.3	
Daily Labourer	61	42.1	
Others			
Religion			
Christianity	145	100	0.000
Muslim	-		
Others	-		
Family Monthly Income	46	31.7	0.541
<10,000	83	57.2	
100,000-500,000	16	11.0	
>500,000			

status of the under-five children 13.1% were mildly stunted, 5.5% were moderately stunted and 1.4% were severely stunted with positive statistically significant interval ($p<0.05$).. When using weight for age to classify their nutritional status, 33.1% were mildly underweighted, 11.7% were moderately weighted and 5.5% were severely weighted with positive statistically significant interval ($p<0.05$). The normal and Overweight of the respondents were 67.6% amd 6.7% respectively.

Table 4.2: Prevalence of Malnutrition of the Respondents

Anthropometric indices	Frequency	Percentage	P-value
Underweight			
Mild	48	33.1	0.041
Moderate	17	11.7	
Severe	8	5.5	
Total	73	50.3	
Stunting			
Mild	19	13.1	0.002
Moderate	8	5.5	
Severe	2	1.4	
Total	29	20.0	
Wasting			
Mild	52	35.9	0.032
Moderate	28	19.3	
Severe	4	2.8	
Total	84	57.9	

Causes of Malnutrition of the Respondents

Table 4.3 revealed the Causes of Malnutrition of the Respondents. 57.2%, of the respondents indicated Child exclusive breastfeeding in the first 6 months, 95.1% indicated no to Supplementation. All (100%) of the respondents indicated yes to immunization and breastfeeding. 88.9% of the respondents indicated yes to Education on Exclusive Breast feeding and more than half (58.6%) of the respondents had 6-12months as their Month stopped breast feeding.

Causes	Frequency	Percentage
Child exclusive breastfeeding in the first	83	57.2

6 months		
Supplementation **Yes** **No**	 7 138	 4.8 95.1
Immunization **Yes** **No**	 145 -	 100 -
Breast feeding **Yes** **No**	- 145	- 100
Education on Exclusive Breast feeding **Yes** **No**	 129 16	 88.9 11.0
Month stopped breast feeding **6-12** **13-18** **19-24**	 85 57 3	 58.6 39.3 2.1

Effects of Malnutrition among Children under Five

Table 4.4 indicated the Effects of Malnutrition among Children under five. Result showed that it causes 9.6% disability.

When weight for height was used to classify the nutritional status of the under-five children 35.9% were mildly wasted, 19.3% were moderately wasted, 2.8% were severely wasted with positive statistically significant interval ($p<0.05$). When height for age was used to classify the nutritional status of the under-five children 13.1% were mildly stunted, 5.5% were moderately stunted and 1.4% were severely stunted with positive statistically significant interval ($p<0.05$).. When using weight for age to classify their nutritional status, 33.1% were mildly underweighted, 11.7% were moderately underweighted and 5.5% were severely underweighted with positive statistically significant interval ($p<0.05$). The normal and overweight of the respondents were 67.6% amd 6.7% respectively.

Table 4.4: Effects of Malnutrition among Children under Five

Eff99ects	Frequency	Percentage
Disability	14	9.6

From the results obtained from prevalence of malnutrition for wasting, stunting and underweight ($p= 0.041$, 0.002 and 0.032), there was significant ($p<0.05$) prevalence of malnutrition among under-five children in Owerri North respectively.

Effects of Malnutrition:

- Malnutrition was found to cause a 9.6% disability rate among children under five, indicating the severe health implications of nutritional deficiencies.

Discussion

The study found that approximately 41.4% of the respondents were within the ages of 48-59 months. This aligns with previous research in Nigeria, which has shown that malnutrition tends to be more prevalent among children in this age group due to factors like weaning practices and dietary changes [14]. The study revealed that 52.4% of the respondents were females. Gender disparities in child malnutrition have been documented in Nigeria, with some studies indicating that female children may be more vulnerable to malnutrition due to cultural and social factors [3]. The findings indicate that a significant proportion of mothers and fathers had a Junior Secondary School education. Research in Nigeria has consistently shown that parental education plays a crucial role in influencing child nutrition, with higher parental education generally associated with better child nutritional outcomes [6]. It's noteworthy that 53.8% of the mothers were within the age range of 25-34 years. This aligns with the reproductive age group and highlights the importance of maternal health and nutrition during this critical period for child growth and development [3]. The study found that all the respondents were Christians. While religion itself may not directly influence malnutrition, it can indirectly affect nutritional practices and dietary choices through cultural and social norms [8]. The study indicated that 57.2% of the respondents' households earned between ₦100,000 to ₦500,000 monthly. Income levels have a substantial impact on food security and dietary diversity, and households with lower incomes are often at higher risk of malnutrition [6]

The study revealed that 35.9% of the under-five children were mildly wasted, 19.3% were moderately wasted, and 2.8% were severely wasted. This indicates a significant burden of acute malnutrition in the study population. Similar findings have been reported in various parts of Nigeria, highlighting the persistent challenge of wasting among young children [15]. The study found that 13.1% of the children were mildly stunted, 5.5% were moderately stunted, and 1.4% were severely stunted. Stunting reflects chronic malnutrition and can have long-term consequences on a child's growth and development [2]. When using weight for age to classify nutritional status, 33.1% of the children were mildly underweight, 11.7% were moderately underweight, and 5.5% were severely underweight. Underweight is a composite indicator that can result from both acute and chronic malnutrition [16]. The prevalence of malnutrition observed in this study aligns with national trends in Nigeria. Research conducted across different regions of Nigeria has consistently shown a high burden of malnutrition among under-five children. Factors contributing to malnutrition in Nigeria include food insecurity, inadequate healthcare access, and limited nutritional education [8]

The study identified several causes of malnutrition among the respondents. Notably, 57.2% of the respondents indicated that child birth in the first 6 months was a cause of malnutrition. This finding underscores the importance of proper infant feeding practices during the critical early months of a child's life. Exclusive breastfeeding is

recommended during this period to provide essential

nutrients and protect against malnutrition. Alarmingly, 95.1% of the respondents indicated that they did not provide any form of supplementation to their children. This is a significant concern as supplementation with essential nutrients can play a crucial role in preventing malnutrition, especially in resource-constrained settings. It's encouraging to note that all (100%) of the respondents indicated that they practiced immunization and breastfeeding. Proper immunization is vital for protecting children from infectious diseases, which can exacerbate malnutrition [17]. Continued breastfeeding is also important for providing essential nutrients and preventing malnutrition. A substantial portion (88.9%) of the respondents indicated that they received education on exclusive breastfeeding. This suggests that efforts have been made to promote this important practice, which is crucial for child nutrition and health [18]. More than half (58.6%) of the respondents reported that they breastfed their children for 6-12 months. While this is a positive indicator, it's essential to encourage and support mothers to continue breastfeeding up to two years or beyond, along with the introduction of complementary foods . The study's findings align with national and international guidelines on child nutrition, emphasizing the importance of exclusive breastfeeding for the first six months of life and continued breastfeeding along with appropriate complementary feeding. Adequate education on these practices is essential to combat malnutrition [19]

The study found that malnutrition among children under five in Owerri North had substantial consequences, with 9.6% of children suffering from disability as a result. The result of 9.6% disability due to malnutrition aligns with the broader understanding that malnutrition, especially in early childhood, can lead to a range of physical and cognitive impairments These effects can include stunted growth, developmental delays, increased susceptibility to infections, and long-term health consequences [12].

The findings of this study on the prevalence of malnutrition among under-five children in Owerri North have several important implications:

The high prevalence of malnutrition, including wasting and stunting, suggests a need for targeted healthcare interventions to address these nutritional deficiencies among children in the region.

The study underscores the importance of raising public awareness about the causes and consequences of malnutrition, especially among mothers and caregivers, to encourage better feeding practices and timely interventions.

The high percentage of children receiving immunization and breastfeeding highlights the importance of continuing and promoting these essential health practices to ensure child well-being. The hypothesis of this study aimed to explore whether there is a significant prevalence of malnutrition among under-five children in Owerri North. The findings indicated that the prevalence of malnutrition in terms of wasting, stunting, and underweight was significant among the studied population, with p-values of 0.041, 0.002, and 0.032 respectively (all $p<0.05$).

The results align with similar studies conducted in Nigeria, supporting the notion that malnutrition remains a concerning issue among under-five children. A significant prevalence of malnutrition

Prevalence of malnutrition among under-five children with sickle cell anaemia at the Lagos University Teaching Hospital. Nigerian Journal of Paediatrics, 45(3), 139-143.Taguri, A. E., Rolland-

among children under five in Lagos State was reported. Similarly, a substantial prevalence of malnutrition among children under five in Edo State was reported [20].

The findings of the present study add to the growing body of evidence suggesting that malnutrition remains a persistent challenge in various regions of Nigeria, including Owerri North. These results highlight the need for targeted interventions, policy initiatives, and community-based programs to address the prevalence of malnutrition and its associated health consequences among young children.

Conclusion

The study concludes that malnutrition remains a significant concern among under-five children in Owerri North, with notable rates of wasting, stunting, and underweight children. Additionally, the study has highlighted key factors such as early childbirth and limited supplementation that contribute to malnutrition in the area.

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