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FACTORS ASSOCIATED WITH UNDER-NUTRITION AMONG CHILDREN OF 0-5YEARS IN OBOAMA ENYIOGUGU OF ABOH MBAISE LOCAL GOVERNMENT AREA– IMO STATE, NIGERIA

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ABSTRACT

Under-nutrition among children constitutes a major public health concern mostly in developing countries like Nigeria. A Cross-Sectional survey was adopted for this study to determine factors associated with under-nutrition among children of 0-5years of age n Oboama Enyiogugu of Aboh Mbaise Local Government Area, Imo State. Two (2) research questions were raised and one research hypothesis formulated to guide the study. A multi-stage sampling method was used to select 294 children for the study. A questionnaire and observation (anthropometric measurements of heights-for-age, weight-for-age and weight-for-height) were used for data collection. Data were analyzed using inferential and non-inferential statistical methods (Statistical Package for Social Sciences (SPSS version 22.0) and WHOAnthro software (version 3,2,2). The mean z-score for wasting -0.28±0.97, underweight was -0.57±0.82 and stunting was -0.75±1.18. Findings revealed that the prevalence of under-nutrition among children of 0-5years of age was moderate for wasting (7.8%), low for underweight (5.1%), low for stunting (7.1%) and very low for severe stunting (1.1%). Socio-economic factors had no influence on the prevalence of under-nutrition among children of 0-5years of age since ($X2$=10.21, P=0.053) at 0.05level of significant. However, socio-cultural factors such as "religion and marital status of mothers", environmental factors like "household size ($X2$=14.312, P=0.031) number of children under five (5) years of age living in a household ($X2$=14.312, P=0.031) and treatment of drinking water ($X2$=15.058, P=0.049)". Maternal Education($X2$=11.867, P=0.043), had influence in Under-Nutrition among children of 0-5years of age in the study area. Findings revealed that the types of weaning foods ($X2$=11.98,P=0.048 and number of times the child was fed ($X2$ S=13.027, P0.023), all were found to influence under-nutrition among children of 0-5years of age in the study area. The result of the hypothesis testing revealed a positive and significant relationship between associated factors and under-nutrition as results obtained showed that chi-square calculated was greater than the chi-square tabulated value ($X2cal$=19.85> $X2Crit$ =12.59, P<0.05). Based on the findings, it was recommended that health education should be reinforced at child welfare clinics, health facilities and at community level to improve parents' knowledge on the importance of exclusive breast feeding, proper supplementary feeding and weaning practices, reduction in family size and food hygiene in Oboama Community.

INTRODUCTION

Significance of the study for public health

What is already known? Undernutrition in children 0 – 5 years is a public health problem in Nigeria. To reduce this problem, school feeding programme is being implemented in Nursery/primary schools in selected states of the federation by The Federal Government of Nigeria.

What this study adds? A study of this nature had not been conducted in this community to determine factors associated with under nutrition which is a determinant factor for a country's level of development. Socio-cultural factors (religion and marital status), Maternal education, child care and feeding practices, significantly influenced under nutrition in the study area.

Background of Study

Under-nutrition among children constitutes a major public health concern, mostly in developing countries like Nigeria. UNESCO (2012) opined that health and nutrition during early childhood depict a country's level of development. Proper nutrition during the first 1000 days of life is an important factor that determines growth and development. The 1000 days' period from the start of a woman's pregnancy until her child's 2nd birthday represents a critical window of opportunity. Adequate nutrition during this period can avert malnutrition, ensuring that children have the best possible opportunity to grow, learn, and rise out of poverty. When nutrition is not optimized during the 1000-day window, the effects are often irreversible. Malnutrition is one of the main underlying causes of death for many of the world's children contributing to more than a third of under-five deaths worldwide. United Nations Children's Fund (UNICEF) and World Health Organization (WHO)(2015) report that an estimated 159 million children globally under-five years are stunted and 50 million are wasted. According to (WHO) (2012) Africa contribute the highest rates of stunting to the world under nutrition population among under-five children. Manyike, *et al* (2013) assert that about 5 million children especially under-five die globally directly or indirectly due to malnutrition. In Nigeria, 11 million children are reported to be stunted, about a third are underweight while those who are wasted increased from 11 percent in 2003 to 18 percent in 2013 (UNICEF, 2013). Annually about 1 million Nigerian children die before their fifth birthday with malnutrition contributing to nearly half of these deaths (Nigeria Demographic Health Survey, 2014). Malnutrition affects the physical and intellectual growth of children and is considered as a main cause of child morbidity and mortality contributing nearly one-third of the total death among under-five in the world (UNICEF, 2009). WHO, (2008) reports that about half of the world's population suffer from poor nutrition, contributing to about 1.5million of these deaths worldwide. Federal Republic of Nigeria (2007) reported that under-nutrition caused increased morbidity and mortality such that 30-40% of deaths in pre-school age group were associated with under-nutrition. Under-nutrition is the most common form of malnutrition and has been defined as the outcome of insufficient food intake (hunger) and repeated infectious disease (UNICEF, 2008).Under-Nutrition is a major form of malnutrition and has been defined variably by different people (Waterlow, 2006). Under-nutrition often denote lack of intake of nutrients (protein, carbohydrate, fats and oil, vitamins, minerals and water) or problems with digestion, absorption or distribution of nutrients that are inadequately consumed Jemide, Ene-obong, Edet and Udoh (2016). UNICEF, (2009) reported that insufficient food intake makes an individual vulnerable to infection. Garie and Gridy, (2007)said that weight loss and muscle wasting are major manifestations of under-nutrition related to excess use of muscle mass and dispose stores for energy. Marahatharan, (2013) assert that in a severe state of under-nutrition, the body uses fat reserved and convert it into fatty acid and ketones to provide energy for the brain. As the disease process progresses body mass reduced and there is a reduction in energy expenditure and these affect many aspects of development such as retarded physical and mental development, increase susceptibility to infections like diarrhea, sepsis and pneumonia (Federal Ministry of Health and Save the children, 2011).

Individuals exposed to childhood under-nutrition have been reported to face socio-economic difficulty and health consequences which include prevalence of metabolic and cardiovascular diseases that in turn reduced learning ability, poor productivity and poor quality of life and overall poverty that is assessed using anthropometric indicators such as stunting, wasting and underweight. Stunting (low-height-for-age), wasting (low-weight-for-height) and underweight (low-weight-for-age) represents both chronic and acute under-nutrition. Nearly half of all deaths in children, under 5 years of ages is attributed to under-nutrition. This translates into the unnecessary loss of about 3 million young lives a year, under-nutrition put children at greater risk of dying from common infections and contributes to delayed recovery. The interaction between under-nutrition and infection can create a potentially lethal cycle of worsening illness and deteriorating nutritional status. Poor nutrition in the first 1000 days of a child's life can also lead to stunted growth, which is irreversible and associated with impaired cognitive ability and reduced school performance at new level. At macro level, failure to combat child under-nutrition reduces potential economic growth of the country and greatly influences the transfer of poverty from one generation to another at family level. The risk of malnutrition among the under-five years is directly and indirectly linked to many factors. Among them are infant and young child feeding practices which directly affect the nutritional status of children under two years of age that eventually influence child survival (WHO, 2008). Other factors include household size, educational status of caregivers especially mothers, care-giving practices, socioeconomic status of caregivers (mothers), age and parity of mothers (Hamel *et al*, 2015, Mboho & Bassey, 2013, Adeladza, 2009).

Adequate nutrition is emphasized as a human right. The Millennium Development Goals (MGDs) 4 targeted at reducing child mortality by two-third by the year 2015 is yet to be achieve since malnutrition indices in children are still high even with the efforts of the Nigerian Government to combat malnutrition through programs like Maternal Newborn and Child Health Week and IYCF (NDHS, 2014). Several studies have been conducted to identify factors affecting the nutritional status of under-five children in Nigeria (Kimai-Murage, 2012, Sufiyan, Bashir &Umar, 2013, Akorede & Abiola, 2013). There is however, paucity of nutrition information regarding the under-five children in Oboama Enyiogugu community of Aboh Mbaise Local Government Area of Imo State, Nigeria. This study was thus designed to determine the factors associated with under-nutrition among under-five (0-5 years) children in the study area with the following specific objectives:

1. To determine the factors affecting the nutritional status of under-five children in the Obama Enyiogugu community.
2. To determineprevalence of under-nutrition among children of 0-5years of age in the study area
3. To assess the children's health and health related practices among caregivers
4. To determine nutritional status index of children 0-5 years

Hypothesis: There is no significant relationship between Under-Nutrition among children of 0-5years of age in Oboama Enyiogugu community.

METHODOLOGY

The research design adopted for this study was cross-sectional survey for assessment of the factors associated with under-nutrition among children of 0-5years of age in the study area. The setting for this study was Oboama Enyiogugu of Aboh Mbaise Local Government Area in Imo State. It lies in the eastern Nigeria and it is bounded in the north of Owerri by Azaraegbelu village, in the South by Umugaragu and Umueze and in the east by Umuezie Nguru. The population of Oboama is estimated at 5,200 according to the 2006 National Population Census. The people are predominatelytraders, farmers and some are civil servant. Majority of the people are Christians, very few are traditional worshippers and moslems. This setting was chosen because in Oboama Enyiogug community, the researchers observed that some of the under five children manifested signs of under-nutrition. Therefore, the present study was undertaken to determine the factors associated with under-nutrition among children of 0-5years of age in Oboama Enyiogugu of Aboh Mbaise Local Government Area, Imo State. The target population of the study area was estimated at 1110 of which 556 were male and 554 female children (aged 0-5years) in Oboama Enyiogugu of Aboh Mbaise Local Government Area, Imo State (National Population Commission, 2006).The sample population selected was women of childbearing age and their children (0-5 years, while the sample size used for the study consisted of 294 children of 0-5years of age. The sample size was obtained using the Taor Yamane's formula for sample size determination as shown below.

Where n   = sample size
        N   = population size
        e   = level of precision at 0.05
        n   = 294

Sampling procedure

A multistage sampling procedure was adopted for this study. The sampling procedure involved a three stage process. The study area is clustered into four wards with each ward having between 3-5 communities. Four communities were selected through balloting, one community from each ward was further selected by simple random sampling technique to have a total of four communities. Thereafter, 73 children each were randomly selected from two communities while 74 children each were chosen two other communities giving a total of 294 children froma total population of 1110 children of 0-5years of age in the study area. A self-administered questionnaire was given to the respondents to collect information on socio-demographic data of child's parents, child characteristics, and child care practices of children under study. Anthropometric measurement of the children was assessed by taking weight and height measurement and converted to nutritional status indicators; weight-for-height (WFH), weight-for-age (WFA) and height-for- age (HFA). Anthropometric data was collected using standard procedures as stipulated in the World Health Organization Growth Standard Procedure guidelines (World Health Organization Growth Standard Procedure, 2006). The weight was measured in kilograms using the Docbel Brua Baby weighing scale (Docbel Group of Industries, New Delhi, India and the reading taken to the nearest 0.1kg. Although the weighing scale came as a standardized instrument from the manufacturer, it was validated by weighing a known object to ensures it gives the same reading. The children were then weighed with minimum clothing and the mean of the weights computed. Height of the children was measured to was measured using a portable infant board with a headstand to the nearest 0.1cm accuracy. used to measure the height of the children. The validity of the questionnaire (instrument) was determined by subjecting the questionnaire to nutrition experts and in line with the research objectives while the reliability was determined by applying a test-rest method. A total of twenty (20) respondents not included in the study were randomly selected from four (4) communities in the study area, copies of the questionnaire were collected on the spot after filling. Ethical approval was received from Imo State Ministry of Health Ethical Community; a letter of introduction was also presented to the office of the chairman of Oboama Enyiogugu community. The Chairman gave permission for the study after consultation with other community gatekeepers. The caregivers' (respondents) informed consent was also obtained after due explanation of the aim of the study. Confidentiality of the information was assured and privacy of the respondents was maintained.

The questionnaire was distributed to the respondents (parents of the children) using face to face administration. A verbal instruction was used to explain the content of the questionnaire to the level of the parents understanding and the questionnaire was retrieved on the spot after filling. Anthropometric measurement of children's height and weight for age were measured and recorded. A descriptive data on children and their parents' socio-demographic characteristics and other relevant variables in the study were analyzed using Statistical Package for the Social Science (SPSS) version (22.0) and presented in frequency and percentages. Anthropometry data of child's age, sex, height and weight were entered in WHO (2011) Anthro and Macros software version (3, 2, 2) to generate the nutrition indicators of stunting, wasting, and under weight. Weight for age values falling at the median was taken as normal nutritional status and at 1-standard deviation (-1SD) was mild low weight for age. If the child's weight for age lies between -2 and -3 standard deviation was reported as moderate low and if below -3SD was taken as severe underweight or very low weight for age. Hypothesis was tested using Pearson, chi square (X^2) to establish the relationship between independent variables and under-nutrition among five children at the level of 0.05 significant.

RESULTS

The table below shows that 127 (43.2%) were of the age range 26-30 years, 85 (28.9%) were 31 years and 70 (23.8) were between 21-25 years of age. Majority of the respondents were Christians 287(97.6%). Large numbers of the respondents were married women. Significant number of the respondent 167 (56.8%) attained tertiary education followed by 101 (39.1) had secondary education respectively. The table further shows that majority of the mothers 171 (58.2%) were self-employed, 74 (25.2%) had formal employment respectively. On paternal employment, 139 (47.3%) were gainfully employed, 99 (33.7%) were unemployed, while 22 (7.4%) were retirees. Majority of the respondent 123 (41.8%) had two children of age 0-5years, 86 (29.3%) had three children and above in this age category and 22 (7.4%) respondents had just one child which is less but not more than five years of age. Majority 14 (4.8%) families (represented by the respondents) spent less but not more than N5000 every month, 121 (41.2%) spent N10,000 - 20,000 while 81 (27.6%) spent N21,000 - 30,000.

Table 1. Socio-demographic data for parents

Socio-Demographic Characteristics	Frequency	Percentage
Age(yrs)		
15-20	12	4.1
21-25	70	23.8
26-30	127	43.2
≥31	85	28.9
Total	294	100.0
Religion		
Christianity	293	99.6
Islam	1	0.3
Others	0	0
Total	294	100.0
Mothers marital status		
Married	287	97.6
Single	4	1.4
Widowed	2	0.7
Separated	1	0.3
Total	294	100.0
Maternal education		
No formal education	18	1.4
Primary	8	2.7
Secondary	101	39.1
More than secondary	167	56.8
Total	294	100.0
Maternal employment status		
Unemployed	49	16.7
Employed	74	25.2
Self-Employed	171	58.2
Total	294	100.0
Parental employment status		
Unemployed	99	33.7
Employed	139	47.3
Self-employed	34	11.6
Retired	22	7.4
Total	294	100.0
Number of children less than five years of age in a household		
1	85	29.9
2	123	41.8
≥3	86	29.3
Total	294	100.0
Amount of money spent on food monthly		
≤N5,00	14	4.8
N600-10,000	36	12.2
N11,000-20,000	121	41.2
N21,000-30,000	81	27.6
≥N31,000	14.3	42
Total	294	100.0
Decision maker on how money is spent		
Husband	147	50.0
Mother	37	12.26
Both	110	37.4
Total	294	100.0
Number of living rooms in household		
1	18	6.1
2	53	18.0
3	131	44.6
≥4	92	31.3
Total	294	100.0
Household size		
2-4	65	22.2
5-6	148	50.5
≥7	81	27.3
Total	294	100.0
Source of drinking water		
River	6	2.1
Borehole	239	82.1
Water board	46	15.8
Total	294	100.0
Watered treated before drinking		
Yes	95	
No	197	32.5
Total	294	67.5
Method of water purification		
No treatment	238	81.0
Boiling	45	15.3
Filtration	9	3.1
Others	2	0.7
Total	294	100.0

The table also shows that in 147 (50.0%) families, their husband decides how money is spent, while in 110 (37.4%) families, husbands and wives share responsibility. Small portion of 18 (6.1%) respondents lives in one room apartment, 53 (18.0%) lives in two rooms while 131 (44.6%) lives in three rooms and 92 (31.2%) lives in four rooms and above. Majority of the respondents 148 (50.5%) live in a house size of 5-6. 65 (22.2%) live in a house size of 2-4 and 81 (27.3%) live in a house size of 7 and above. Significant number of respondent 239 (8.1%) drinks from borehole, and 46 (15.8%) drinks from the water board source. 95 (32.5%) respondents treats their water before drinking, while 197 (67.5%) do not. Out of the 95 (32.5%) respondents that drinks treated water, 45 (15.3%) treats their drinking water by boiling, 9 (3.1%) uses filtration method while 2 (0.7%) uses other methods of water purification.

Table 2. Distribution of children's characteristics, health and health related practices

Child's Characteristics	Frequency	Percentage
Age		
0-5	5	1.7
6-11	48	16.5
12-23	81	27.8
24-35	75	25.8
36-47	14	4.8
48-60	68	23.4
Total	294	100.0
Gender		
Male	143	48.6
Female	151	51.6
Total	294	100.0
Preceding birth interval (Years)		
1	39	13.3
2	183	62.5
≥3	71	24.2
Total	294	100.0
Weight of child at birth (Kg)		
1-1.5	15	5.2
1.6-2	64	22.0
2.1-3.5	178	61.2
≥3.6	34	11.7
Total	294	100.0
Immunization		
Yes	268	91.2
No	26	8.8
Total	294	100.0
Does work permit child to be taken to hospital		
Yes	268	91.2
No	26	8.8
Total	294	100.0

The Table 2 above shows the percentage distribution of children's characteristics, health and health related practices. The table reveals that 5 (1.7%) of the sampled children were 0 - 5 months, 48 (16.5%) were 6 - 11 months, 81(27.8%) were between 12 -23 months. 75 (25.8%) were between 24 - 35 months while 14 (4.8%) children were between 36 - 47 months and 68 (23.4%) were between 48 - 60 months. Significant number of respondents 151 (51.4%) were female while 143 (48.6%) children were male. The table further shows that 39 (13.3%) children had preceding birth interval (in years) of one year, while 183 (62.5%) had preceding birth interval of 2 years and 71 (24.2%) children had preceding birth interval of 3 years and above. On weight (kg) of the children at birth, 64 (22.0%) weighed 1.6-2kg at birth, 178 (61.2%) weighed 2.1-3.5kg, and 34 (11.7%) weighed 3.6kg and above. Majority of the children 268 (91.8%) were immunized while 24 (8.2%) were not immunized. Significant number 268 (96.8%) of mothers said their work permits them to take their child or children to the hospital while 26 (8.2%) said their work does not permit them to do so.

Table 3. Mean z-score of nutritional status index of children aged 0-60 months

Indicator	All		Male		Female	
	n	Mean ±SD	N	Mean ±SD	n	Mean ±SD
Weight-for-height (WFH)	294	-0.28±0.97	143	-0.28±0.97	151	-0.29±0.97
Weight-for-age (WFA)	294	-0.57±0.82	143	-0.62±0.85	151	-0.53±0.78
Height-for-age (HFA)	294	-0.66±1.18	143	-0.75±1.28	151	-0.57±1.07

Key: Weight for-Height Z score (WHZ), Weight for Height Z score (WAZ) and Height for Age Z score.

Table 4. Prevalence of under-nutrition according to age of children

Age (months)	Wasting %	Normal WFH %	Underweight %	Normal WFA %	Stunting %	Normal HFA %	N
0-5	12.5	87.5	0	100	0.0	100	8
6-11	6.3	93.7	5.3	91.7	2.1	97.9	48
12-23	6.2	93.8	6.2	93.8	1.2	983.8	81
24-35	8.0	92.0	4.0	96.0	1.3	98.7	74
36-47	10.3	85.7	7.1	92.9	0.0	100	14
48-60	7.4	92.6	4.4	95.4	0.0	100	68
Total	7.5	92.5	5.4	94.6	5.1	95.4	294

Table 5. Association between socio-demographic characteristics and wasting

Socio-demographic characteristics	Weight-for-height z-scores		Total	X^2	P
	Wasting (<-2 z-score%)	Normal (-2 to+2 z-score%)			
Maternal age					
15-20	12.7	87.3	12	5.503	0.481
21-25	4.3	95.7	70		
26-30	9.4	90.6	127		
≥31	7.1	91.8	123		
Religion of mother					
Christianity	7.8	91.8	293	0.089	0.956
Islam	0.0	100	1		
Mothers marital status					
Married	8.0	91.6	287	0.673	0.996
Single	0.0	100	4		
Widowed	0.0	100	2		
Separated	0.0	100	1		
Maternal Education					
No formal education	12.7	87.3	18	11.867	0.043
Primary	7.8	92.2	8		
Secondary	8.4	91.0	101		
More than secondary	2.4	98.0	158		
Maternal employment status					
Unemployed	6.1	93.9	49	4.288	0.369
Employed	5.4	93.9	74		
Self-employed	9.4	90.6	171		
Employment status					
Unemployed	9.1	90.9	99	2.528	0.865
Employed	7.2	92.8	139		
Self-employed	9.1	90.9	22		
Retired	5.9	94.1	34		
Number of children less than five years of age in household					
1	9.4	90.6	85	360	0.763
2	8.1	91.9	126		
≥3	6.0	92.9	84		
Amount of money spend on food monthly					
≤N5,000	12.7	86.4	14	10.021	0.053
N6000-10,000	6.6	93.4	36		
N11,000-20,000	7.1	92.4	121		
N21,000-30,000	2.8	97.2	36		
≥N31,000	7.1	92.9	42		
Decision maker on how money is spent					
Husband	7.5	91.8	147	1.044	0.903
Mother	8.1	91.9	37		
Both	8.2	91.8	110		
Number of living rooms in household					
1	9.8	90.2	92	3.602	0.730
2	9.4	90.6	56		
3	6.9	92.6	131		
≥4	0.0	100	18		

The table above present the mean () and standard deviations (SD) values for nutritional status indicators wasting (WHZ), underweight (WAZ), and stunting (HAZ). The table shows that the overall mean Z-score value for wasting was-0.28±0.97, while -0.57±0.82 was for underweight and -0.66±1.88 was the overall mean Z-score value for stunting.

The table further shows that the mean Z-score for male children used for the study are -0.75±1.28 for stunting; while for the female children, the scores are -0.29±0.97 for wasting, -0.53±0.78 for underweight -0.57±1.07 for stunting. The table above shows the prevalence of under-nutrition according to the ages (in months) category of the children.

Table 6. Association between socio-demographic characteristics of caregivers and underweight

Socio-demographic characteristics	Weight-for-height z-scores		Total n	X^2	P
	Underweight ht (<-2 z-score %)	Normal (-2 to +2 z-score %)			
Maternal age					
15-20	8.3	91.7	12	2.789	0.425
21-25	8.6	91.4	70		
26-30	3.9	96.1	127		
≥31	3.5	96.5	85		
Religion of mother					
Christianity	4.8	95.2	293	18.952	0.000
Islam	100	0.0	1		
Mothers marital status					
Married	4.9	95.1	287	18.952	0.000
Single	0.0	100	4		
Widowed	0.0	100	2		
Separated	100	0.0	1		
Maternal Education					
No formal education	0.0	100	18	1.636	0.651
Primary	9.5	91.5	115		
Secondary	6.1	95.8	167		
More than secondary	4.2	100	14		
Maternal employment status					
Unemployed	4.1	95.9	46	1.846	0.397
Employed	8.1	91.9	74		
Self-employed	4.1	95.6	171		
Employment status of father					
Unemployed	4.0	96.0	99	1.218	0.749
Employed	5.0	95.0	139		
Self-employed	4.5	95.5	22		
Retired	8.8	91.2	34		
Number of children less than five years of age in household					
1	4.7	95.3	85	9.160	0.032
2	6.5	93.5	123		
≥3	2.4	97.6	86		
Amount of money spend on food monthly					
≤N5,000	14.3	85.7	14	3.377	0.497
N6000-10,000	5.6	94.4	36		
N11,000-20,000	4.1	95.9	121		
N21,000-30,000	3.7	96.3	81		
≥N31,000	7.1	92.9	2		
Decision maker on how money is spent					
Husband	4.1	95.9	147	1.023	0.596
Mother	8.1	91.9	37		
Both	5.5	94.5	110		
Number of living rooms in household					
1	5.6	94.4	18	1.691	0.639
2	3.8	96.2	53		
3	6.9	93.1	131		
≥4	3.0	96.7	92		
Household size					
2-4	9.2	90.8	65	3.915	0.141
5-6	4.1	95.9	148		
≥7	2.5	97.5	80		
Source of drinking water					
River	0.0	100	6	1.208	0.547
Borehole	5.4	94.6	239		
Water board	2.2	97.8	46		
Water treated before drinking					
Yes	5.1	86.3	95	6.617	0.037
No	13.7	94.9	197		
Method of water purification					
No treatment	8.4	91.6	238	1.128	0.770
Boiling	6.7	93.3	45		
Filtration	0.0	100	9		
Other	0.0	100	2		
Household size					
2-4	2.1	97.9	65	14.312	0.031
5-6	8.1	91.9	148		
≥7	16.2	83.9	80		
Source of drinking water					
River	0.0	100	6	3.396	0.494
Borehole	9.2	90.4	239		
Water board	2.2	97.8	46		
Water treated before drinking					
Yes	5.1	94.4	95	15.058	0.049
No	18.75	81.25	197		
Method of water purification					
No treatment					
Boiling	0.0	100	9	1.377	0.967
Filtration	6.7	93.4	45		
Others	10.0	100	2		

For children between 0-5 months, the prevalence is 12.5% for wasting, 0.0% for underweight and 0.0% for stunting. Children between 6-11 months had prevalence of 6.3% for wasting 5.3% for underweight, and 2.1% for stunting. Children between 12-23 months had prevalence of 6.2% for wasting, 4.0% for underweight and 1.2% for stunting. Children between 24-35 months had prevalence of 8.0% for wasting, 4.0% for underweight and 1.3% for stunting. Children between 36-47 months had prevalence of 10.3% for wasting, 7.1% for underweight and 6.0 for stunting. Children between 48-60 months had prevalence 7.4% for wasting, 4.4% for underweight and 0.0% for stunting. On the overall prevalence rate of the 294 children used for the study, the table shows that 7.5% were wasted, 5.4% were underweight, while 5.1% were stunted.

The table above presents the association between socio-demographic characteristics and wasting. The significant associations observed between socio-demographic characteristics and wasting were maternal education (P<0.05), household size (P<0.05) and treatment of water before drinking (P<0.05). According to the table children of mothers who had no formal education had a higher rate (12.7%) of being wasted compared with those whose mothers had primary education (7.8%), secondary education (8.4%) and more than secondary education (2.4%). Children who did not drink treated water had a higher rate (18.75%) of being wasted, compared to children who drink treated water (5.1%) while children who lives in a household size of seven (7) and above persons had the highest prevalence rate (16.2%) of wasting

Table 7. Association between child characteristics and wasting

Socio-demographic characteristics	Weight-for-height z-scores		Total n	X^2	P
	Wasting (<-2 z-score %)	Normal (-2 to +2 z-score %)			
Childs age					
0-11	5.5	94.5	55	1.786	0.409
12-35	6.5	93.5	155		
36-60	2.4	97.6	82		
Child's gender					
Male	6.3	93.7	143	0.161	0.688
Female	9.3	90.7	151		
Proceeding birth Interval (Years) 1					
2	2.7	97.3	37	0.524	0.769
≥3	5.5	94.5	183		
	5.1	94.4	71		
Weight of child at birth (Kg)					
1-1.5	6.7	93.3	15	2.803	0.234
1.6-2	1.6	98.4	64		
2.1-3.5	5.1	94.9	177		
≥3.6	8.8	91.2	34		
Child ever immunized					
Yes	0.0	100	266	1.327	0.249
No	5.3	94.7	24		
Does work permit child to be taken to hospital					
Yes	0.0	100	8	0.442	0.506
No	5.2	94.8	267		

Table 8. Association between child characteristics and underweight

Socio-demographic characteristics	Weight-for-height z-scores		Total n	X^2	P
	Undereight (<-2 z-score %)	Normal (-2 to +2 z-score %)			
Childs age					
0-11	7.1	92.9	56	1.826	0.401
12-35	5.8	94.2	156		
36-60	2.4	97.6	82		
Child's gender					
Male	4.9	95.1	143	0.472	0.492
Female	0.6	99.4	151		
Proceeding birth Interval (Years)					
1	5.1	94.9	39	2.253	0.324
2	3.8	96.2	183		
≥3	8.5	91.5	71		
Weight of child at birth (Kg)					
1-1.5	6.7	93.3	15	0.139	0.987
1.6-2	4.7	95.3	64		
2.1-3.5	5.4	94.9	178		
≥3.6	5.9	94.1	34		
Child ever immunized					
Yes	4.5	95.5	268	0.717	0.397
No	8.3	91.7	24		
Does work permit child to be taken to hospital					
Yes	0.0	100	9	0.421	0.516
No	4.5	95.5	268		

when compared with those who lives in a household size of 5-6 (8.1%) and those who lives in a household size of 2-4 (2.1%). The table above shows the association of socio-demographic characteristics and stunting. The association probability (p) of chi-square (X^2) computation for the various demographic factors reveals that the relationship existing between these variables and stunting were insignificant at P>0.05 level. Table 7 above shows association between child characteristics and wasting is presented in Table 9. Analysis reveals no significant association between child characteristics and wasting as p-values of chi-square computation for various child characteristics are greater than the significant level (P=0.05).

attributed to gender inequality of children used for the study as most of the children were girls. This result is in line with the report of National and regional studies carried out by Badar *et al.* (2007), which highlights gender inequality as the main socio-cultural determinant that causes nutritional problems among children. Environmental Factor like household size greatly influenced the nutritional status of under 5 years of age. Children who live in a household size of 7 and above had the highest prevalence rate of being wasted and a household with two children less than five years had the highest rate (6.5%) of under-underweight. This finding is in agreement with Jemide *et al* (2016) study report. Ignorance was found to be a key factor for undernutrition among children in this study.

Table 9. Association between child characteristics and stunting

Socio-demographic characteristics	Weight-for-height z-scores		Total n	X^2	P
	Underweight (<-2 z-score %)	Normal (-2 to +2 z-score %)			
Childs age					
0-11	5.4	94.6	56	1.094	0.579
12-35	9.0	91.0	156		
36-60	6.1	93.9	82		
Child's gender					
Male	7.0	93.0	143	0.332	0.564
Female	3.3	96.7	141		
Proceeding birth Interval (Years)					
1	7.7	92.3	39	1.506	0.471
2	8.7	91.3	183		
≥3	4.2	95.8	71		
Weight of child at birth (Kg)					
1-1.5	6.7	93.3	15	0.247	0.970
1.6-2	6.2	93.8	64		
2.1-3.5	6.7	93.3	178		
≥3.6	8.8	91.2	34		
Child ever immunized					
Yes	7.1	92.9	268	0.926	0.336
No	12.5	87.5	24		
Does work permit child to be taken to hospital					
Yes	22.2	77.8	9	3.125	0.077
No	6.7	99.3	268		

DISCUSSION OF FINDINGS

Findings reveal that household size, maternal education age baby was first given other foods than breast milk, religion, marital status, number of children (0-5 years) in a household, reason for exclusive breastfeeding, types of weaning food and number of time care provider other than mother feeds the child, were the identified factors causing under-nutrition in children 0-5years in Oboam Enyiogugu Community. Findings from the study show that variables indicating socio-economic factors are positively associated with the indicators of under-nutrition (wasting, underweight and stunting). However, this association were not significant as P-values of X^2 computation for the various variables were greater than the significant level (P=0.05). The study reveals that socio-economic factors had no significant influence on under-nutrition among children of 0-5years in the study area. This may be as a result of the socio-economic status of the sampled parents as shown in Table 1. This result is contrary to a report of the United Nations (2011), thatreported that poverty is unmistakably the driving factor in the lack of resources for purchase or otherwise procurement of food the root causes of poverty are multifaceted. Socio-cultural factors of respondents reveal that religion and marital status significantly related to under-nutrition. The result showed that children of Muslim mothers had the highest prevalence of underweight (100). Majority of underweight children (4.9% of 287 children) were children of married mother. This could be

Result of analysis showed that maternal education is significantly related to under-nutrition as children of mother who had no formal education had the highest rate (12.7%) of being wasted. This result is in line with the views of Hamel *et al* (2016) and Ma'uwiyyah *et al* (2012) who documented that educated mothers and women who attended antenatal care services were more likely to be assertive and play greater role in intra family decision making in favour of their children's need. The prevalence of under-nutrition was determined through sex and age of the sampled children. Findings revealed that at 95% confident interval, female had the highest prevalence of wasting (9.3%), male had the highest rate of underweight (4.9%) and stunting (2.1%). These results are also in agreement with Jemide *et al* (2016) study that reported higher prevalence rates of wasting among female children and while the prevalence of underweight was higher in males than in females. According to the results presented in table 7, children between 0-5months had the highest rate (12.5%) of being wasted, while children between 36-47 months had the highest prevalence of underweight (7.1%) and children between 6-11 months had the highest rate (2.1%) of being stunted. However, the overall prevalence were 7.8% for wasting, 5.1% for underweight, 7.1% for stunting and 1.1% for severe stunting measured at 95% confident interval. This result is contrary to the report of NNDHS (2009) which indicates that 4% of children under age of 5 were stunted, while 23% and 14% were underweight and wasted respectively.

Summary

The study assessed under-nutrition among children 0-5 years of age in Oboama Enyiogugu Community. The objectives of the study were to determine the factors associated with under-nutrition among children of 0-5years of age in Oboama Enyiogugu Community; to assess the prevalence of under-nutrition among children of 0-5years of age in the study area and, to determine child care practices that influenced under-nutrition among children of 0-5years of age in the study area. One hypothesis was formulated to guide the study. The target population of the study were children of 0-5 years of age in Oboama Enyiogugu Community. A samples size of 294 children (aged 0-5years) was obtained using convenience sampling technique. The instrument for administered, and anthropometric measurement of height-for-age, weight-for-age and weight-for-height. The research hypothesis was tested using chi-square (X^2) with the aid the SPSS version (22.0). Findings revealed that socio-economic factors have no significant influence on under-nutrition as the P-value associated with X2 computation for socio-economic variables were greater than the significant level (i.e. P>0.05). Factors like religion and marital status were the socio-cultural factors found to significantly influence under-nutrition in the study area. For environmental factors, ignorance and child care practices, the study reveals that variables like household size, number of children (less than 5 years) living in a household, treatment of water before drinking, maternal education, age baby was first given other foods than breast milk reason for exclusive breastfeeding, types of weaning food and number of times acre provider other than mother, feeds the child; significantly influence under-nutrition in Oboama Enyiogugu Community. Results shows that the over prevalence of under-nutrition in the study area were 7.8% for wasting, 0.0% for severe wasting, 5.1% for underweight, 0.0% for severe underweight, 7.1% for stunting and 1.1% for severe stunting, measured at 95% confident interval. Finally, the study revealed that child care practices like age baby was first given other foods than breast milk, reason for exclusive breastfeeding, types of weaning food given to children, and number of time care provider other than mother fed the child, significantly influenced under-nutrition in the Oboama Enyiogugu Community.

Conclusion

Based on the findings of this study, it was concluded that socio-cultural factors like religion and marital status of mothers significantly influenced under nutrition. Environmental factors like household size, number of children under five (5) years of age living in a household and treating water before drinking significantly influenced under-nutrition. Maternal education, child care practices, breastfeeding pattern in the first six months of life and types of weaning foods and number of times child is fed care-provider was also found to significantly influenced under-nutrition among children 0-5years in the study area. It is also concluded that the prevalence of under-nutrition. It was then recommended that Health education should be reinforced at child welfare clinics, health facilities and at community level to improve parents' knowledge on the important of exclusive breast feeding, proper complementary feeding and food hygiene. In line with UNICEF and WHO recommendations, there is need for exclusive breastfeeding during the first six months of life and thereafter appropriate complementary foods introduction with continuation of breastfeeding up to least two years. There is an urgent need for adoption, timely support and utilization of Infant and Young Child Feeding programming in these communities.

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