

Malnutrition among Junior Secondary School Students in Lagos-State, Nigeria: A Consequence of Parental Socio-Economic Condition

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Abstract: *The road to good health is through good food which depends on the socio-economic condition of the giver of the food. Numerous studies had been conducted on the causes of child malnutrition among children less than 5 years, that of children between 8 and 16 years with keen interest on the socio-economic context of the giver has not been well documented. This lacuna is what this paper filled. Cross-sectional household survey was used for the study. A total of 322 respondents were selected using a multi-stage cluster sampling design. A well-structured pretested questionnaire was used to elicit the socio-demographic data from the respondents, while the respondents' nutritional status was calculated using the Body Mass Index (B.M.I) method. Chi-square and bivariate logistics regression were used to test the hypotheses. The study discovered that parental education and parental income were the fundamental factors affecting child malnutrition in the study location. Hence, government should ensure that education is made compulsory and affordable to everyone. Also, the menace of poverty should be adequately addressed.*

Keywords: Child Malnutrition, Nutrition, Poverty, Education, Body Mass Index

Introduction

One of the salient dimensions of well-being that has received less attention in the past few decades is nutrition. Adequate nutrition is helpful in enabling people to reap the fruits of their labour (Deaton, 1997:1). Nutrition is one of the most veritable ingredients of labour productivity; it also increases human potentialities of all kinds (Perkins, Radelet, Snodgrass & Roemer, 2001).

Nutrition during childhood is consequential to guarantee a good state of health, including social and cognitive development. Inadequate nutrition can be linked to at least about half of the 10.9 million child deaths yearly (Garcia & Sarmiento, 2007). Nutritional inadequacy leads to malnutrition, which is a condition in which the physical function of an individual is impaired.

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Liu and Lee(2015) defined malnutrition as a situation that results from taking an unbalanced or poor diet, in which certain nutrients are lacking in the wrong proportions or in excess (too high an intake). Malnutrition poses a serious threat to the world, close to 150 million children suffer from malnutrition and children are the most observable victims of malnutrition; they are not well nourished and suffer almost six months of illness yearly (UNICEF, 2010). Nigeria is among the top ten countries in the world with the highest number of children that are underweight, with an estimated six million children under 5 years who are underweight (UNICEF, 2006). National Population Commission (2008) shows that 54.6% of Nigerian kids under five years are considered underweight.

Malnutrition is the core factor in many diseases in both adults and children, and it contributes largely to the disability-adjusted life years globally (Murray & Lopez, 1996). Children who are malnourished have lower resistance to infection and are likely to die from common childhood sicknesses such as diarrhea disease or respiratory infections, malaria, fever etc., and this poses serious threat to the economic institution as many future labour workers might have lost their lives before they attain they age of five which will affect the manpower and workforce of the nation.

Malnutrition can be said to be the consequence of poverty, since most malnourished children live in the underdeveloped and developing nations of Africa, Asia, and Latin America where those mostly affected are from poverty stricken families (Agarwal & Taneja, 2005). Many childhood diseases are an offshoot of malnutrition and they achieve their worst effects in socially deprived and poor homes (Ramachandran & Gopalan, 2011). In Nigeria, poor households mostly do not have the resources to eat balanced diets on a regular basis, hence, they mostly go for foods that they can afford and not foods needed for the optimum functioning of the body. In addition, they are also most likely to live in an unpalatable or poor environments that are plagued by poor hygiene, bad water, mosquitoes etc. All these in turn will affect the nutritional status of the child.

Child malnutrition, however, is not synonymous with the poor ones alone. It is not uncommon to see child malnutrition among the children of the rich ones. The availability of money at their disposal, at times, makes them to overfeed their children, making them to be overweight. Also, mother's employment enhances the household's accessibility to income and this also has negative effects on the nutritional status of children, as it reduces a mother's time for childcare.

Various studies (for example, Safari, Masanyiwa & Lwelamira, 2015; Sharma, Yadav, Mishra & Tiwari 2015; Awoyemi, Odozi & Ogunniyi 2012; Kamal & Aynul Islam, 2010 etc.) in the past had explored the causes of child malnutrition among children of under 5 years. Malnutrition among junior school students with keen attention on the social and economic factors responsible for it has not been explored. This lacuna is what this paper filled.

Literature Review

The degree and distribution of micronutrient deficiencies and protein-energy malnutrition among a population depend on a number of factors including the socio-political and economic situation, the level of education, the cultural and food customs, seasonal and climate conditions, prevalence of infectious

diseases, breastfeeding habits, the availability of quality health services and the existence and effectiveness of nutritional programmes (Young, Borrel, Holland & Salama, 2004; de Waal & Whiteside, 2003).

Demographic and Socio-economic factors seem to be more relevant than genetic features in growth disparities among children (Amugsi, Mittelmark & Lartey, 2013). There is substantial evidence in the health literature that suggests that the nutritional status of a child is related to a number of socio-economic factors such as mother's education, household wealth, place of residence, access to health care services, nature of occupation etc. For instance, some studies showed that households' wealth can be linked to child nutritional status (Mushtaq, Gull, Khurshid, Shahid, Shad & Siddiqui, 2011; Ortiz, Van, Wijaya, Donoso, & Huybregts, 2014).

Sharma, Yadav, Shweta and Pankaj Tiwari (2015) carried out a survey on the socio-economic and demographic correlates of acute under-nutrition among pre-school children in rural and urban wards of Allahabad, North India. The researchers used chi-square and logistics regression to test the relationship between the socio-economic factors and under nutrition. They discovered that socio-economic factors such as per capital income, family size, place of residence and parent's education have a significant relationship with under nutrition. For instance, it was observed from the study that the educational status of both father and mother had an adverse effect on the nutritional status of their wards. As for the influence of per capital income on malnutrition, it was seen that children whose families had the lowest per capital income of 100-500 rupees were the most undernourished and wasted and this relationship was significant at ($p < 0.001$).

Mostafa and Aynul Islam (2010) investigated the socio-economic determinants of malnutrition among ever married women in Bangladesh. The researchers used multivariate logistics regression to determine the social and economic factors affecting malnutrition. They discovered that except for employment status of women, education, age, wealth index, place of residence and current marital status had a significant relationship with women malnutrition. Study by Ali-Idries (2005) on the social and economic correlates of malnutrition among children below the age of 5 also confirms that there is a sharp relationship between social and economic factors and child malnutrition. Specifically, the study found out that parents of malnourished children were stark illiterates and majority of the families lived in slum areas and had low income.

The reasons parental education especially that of mothers affects child health and nutrition are not far-fetched. Glewwe (1999) suggests two possible reasons mother's schooling contributes to child nutritional and health status: formal education exposes mothers to health knowledge; it also makes women to be more receptive to modern medicine and health facilities.

Some studies, however, found no relationship between the socio-economic factors and malnutrition. For example, study by Awoyemi, Odozi and Ogunniyi (2012) on the socio-economic and environmental correlates of malnutrition among children in Iseyin area of Oyo-State, Nigeria showed that only environmental factors and not social and economic factors, affect child malnutrition. Specifically, the study identified poor sanitation and diarrhea infection as the salient factors that increase the likelihood of child malnutrition in the study location. While socio-economic factors used in the study such as sex,

household size, place of residence, parental education, and parental occupation had no significant relationship with child malnutrition. Thus, this reflects the relative significance of environmental factors in the study location. Similarly, study by David, Moncada, and Ordenez (2004) on the determinants of child health and nutritional status in Nicaragua and Western Honduras confirmed no significant relationship between maternal's schooling on child nutrition in Nicaragua.

It is imperative to note that although women's employment enhances household's income, it may also have adverse effects on the nutritional and health status of children as it reduces mothers' time for child care. Abbi, Gujral, and Gopaldas (1991) analyzed the data on 1990 rural children in the Chandrapur area of Maharashtra, India to determine the influence of mothers' work on the health and nutritional status of children. They found that 57% of the children whose mothers were working were cared for by their siblings; 30% were cared for by their grandparents, while 13% were by the parents. The researchers also reported that children of mothers who were working had low weight than children of mothers who were not employed and this relationship was statistically significant. Hence, mother's employment status can be said to be related to child malnutrition in the study location. The reason for this could be that most working mothers do not have the required time to take good care of their children or that have little access to the income they are generating.

Methodology

The study was conducted in Lagos-State, Nigeria. Lagos-State is one of the 36 states that makes up Nigeria. *Lagos State was created on May 27, 1967 by virtue of State (Creation and Transitional Provisions) Decree No. 14 of 1967, which restructured Nigeria's Federation into 12 States (Lagos-State, Nigeria, n.d).* The state is located in the South-Western geo-political zone of Nigeria. Lagos state occupies an area of 3,577 sq kilometers out of which 787sq. km or 22% consist of lagoons and creeks. The state is the smallest state in area among all the 36 states of Nigeria. It shares boundary in the North and East with Ogun state, and West with Republic of Benin (Lagos State, Nigeria, n.d). The state has 20 local government areas and it is the commercial capital of Nigeria and the second most populated state in Nigeria with 9,113,605 based on the 2006 national census (FRN, 2009).

Cross-sectional household survey was conducted to generate data for the study. A multi stage cluster sampling design was used to select eligible respondents for the survey. The inclusion of respondents from different enumeration areas in the study location necessitated the adoption of a multi-stage cluster sampling in the survey exercise. To select eligible respondents, three stages of cluster sampling were adopted. In the first stage, 46 enumeration areas were selected among all the enumeration areas in all the local government areas that make up the study location, and this was done with probability proportional to the size of enumeration areas in each local government area of the study location. In the second stage, a fixed number of seven households were selected in each of the 46 enumeration areas by equal probability systematic sampling. Thus, a total of 322 households were selected for the study. In the last stage, one eligible respondent was randomly selected from the list of all eligible respondents 8 to 16 years of age along with either the mother or father.

The parents of the selected children were interviewed using a well-structured pretested questionnaire. It is imperative to note that only 300 households were successfully interviewed. Although the consent of

the respondents' parents was obtained, the respondents also consented to the survey before being enrolled and they had an option to discontinue or opt out of the exercise at any time.

The nutritional conditions of the children were measured according to the standardized procedures to ensure accuracy. The height of the children was measured using the vertical boards, while the children's weight was measured using scales. The Respondents' nutritional status was calculated using the Body Mass Index (B.M.I) method. Each Respondent's weight and height was recorded then we later calculated the Body Mass Index (B.M.I). This calculation was done by:

Weight of the adult (kg)

Height for the adult (m²)

The respondents were then classified or categorized into one of the following categories: underweight, healthy weight, overweight, obese or morbidity obese. It is important to note underweight, obese and morbidity obese were the units of analysis. Any child that falls in these three categories: underweight, obese and morbidity obese was regarded as being malnourished. Statistical Packages for Social Statistics (SPSS/PC) Version 21.0 was used to analyze the data. The percentages, the mode, chi-square, contingency coefficients and bivariate logistics regression were the statistical methods employed in the analysis

Results

Respondents' Socio-Economic and Demographic Characteristics

Table A in Appendix shows the respondents' socio-economic and demographic characteristics. From the table, 71.3% (214) were females, while 28.7% (86) were males. The age distribution of the respondents shows that 43% (129) were in the age group 33-37 years; 26.3% (79) were in the age group 38-42 years; 18.3% (55) were in the age group 28-32 years; 10% (30) were 48 years and above, while 2.3% (7) were in the age group 23-27 years. 81% (243) of the respondents were married; 11.6% (35) were separated families, while 7.3% (22) were single. 57% (171) reported to be Christians, 41% (123) were Muslims, while only 2% (6) were traditional worshippers.

Data on the ethnic group shows that 70.3% (211) were Yorubas, 16% (48) were Igbos, 8% (24) were Hausas, while 5.7% (17) were from other ethnic groups. Concerning the respondents' family types, 83% (249) were monogamous family, 17% (51) were polygamous family. With reference to the educational qualification of the respondents, the table shows that 33% (99) had secondary education; 26.6% (80) had OND/NCE education; 20.3% (61) had B.SC/HND education; 15% (45) had primary education; 4% (12) did not have any formal education, thus they can be termed as illiterates, while 1% (3) had Quranic education.

Data on the occupation of the respondents shows that 31% (93) were traders; 28% (84) worked in the private sector; 17.3% (52) were civil servants; 14% (42) were artisans; 6% (18) were unemployed, while

3.7% (11) were farmers. The economic status of the respondents shows that 46.3% (139) were medium income earners; 34.7% (104) were high income earners, while 19% (57) were high income earners.

Respondents' Nutritional Status and Knowledge

Table B in Appendix shows the respondents' diet and nutritional knowledge. Question concerning number of times respondents feed their wards per day shows that: 41.7% (125) claimed that they fed their wards more than three times a day; 40% (120) fed their children at least three times daily; 16.3%(49) fed their wards at least two times daily, while 2%(6) fed their wards once a day. Majority of the respondents 91.3% (274) were aware of the classes of nutrients, while 8.7% (26) were not aware of the classes of nutrient. 55.7% (167) were conscious of the classes of nutrient when feeding their wards. Hence, they ensure that they give their children balanced diet. However, 44.3% (133) were not conscious of the classes of food when feeding their children. Hence, they did not bother about balanced diet.

It is important to note that 88% (264) have heard of child malnutrition before, while 12% (36) claimed not to be aware of the child malnutrition. Probing question on the medium shows that 56.8% (150) heard child malnutrition from the hospital; 21.6% (57) chose television; 8.7% (23) heard it from school; 6.1% (16) heard through the internet, 4.6% (12) heard it through the newspaper, while 2.3% (6) heard it through family members and friends. From the analysis, it is obvious that majority of the respondents (57.3%) heard about child malnutrition from the hospital. On the causes of child malnutrition, 52.3% (157) believed poverty is the major cause of child malnutrition in the society; 23%(69) believed child malnutrition is a result of illeracy; 14.3 % (43) went for unemployment, while 10.3%(31) subscribed to shortage of food.

Data on the gender of the children used for the exercise show that 56.3% (169) were females, while 43.7% (131) were males. Data on age of the children show that 39% (117) were 14-16 years, 32.7% (98) were 11-13 years, while 28.3% (85) were 8-10 years. Data on the nutritional status of the children show that 49.7% (152) had <18.5 BMI, thus they were considered underweight; 34.3% (103) had 18.5-24.9 BMI, thus they were considered healthy weight; 11.3% (34) had 25-29.9, thus, they were considered overweight; 6% (18) had 30-39.9, thus they were considered obese, while 1% (3) had > 40, thus, they were considered morbidity obese.

It is imperative to note that for the chi-square and logistics regression analyses, those who were underweight, obese and morbidity obese were considered to be malnourished. However, those who were healthy and overweigh were considered to be nourished. Therefore, 54.3% (163) can be said to be suffering from child malnutrition, while 45.7% (137) were not suffering from malnutrition.

Hypothesis I

H₀: There is no significant relationship between the parental economic status and child malnutrition

H₁: There is a significant relationship between the parental economic status and child malnutrition

Table 1: Cross Tabulation of Parental Economic Status and Child Malnutrition

Parental Economic Status	malnutrition		Total
	Yes	no	
low income	98	6	104
medium income	63	76	139
high income	2	55	57
Total	163	137	300

$$X^2 = 130.609^a; \text{d.f.} = 2; P = 0.000; C = 0.551$$

Table 2: Coefficients, Odds ratio and standard error from the Logistics Regression Model of the Effects of Parental Economic Status on Child Malnutrition

	B	S.E.	Wald	Df	Sig.	Exp(B)
Economic Status			66.316	2	.000	
Step 1 ^a Medium income	2.981	.454	43.153	1	.000	19.704
High income	6.107	.834	53.665	1	.000	449.167
Low income (RG)	-2.793	.421	44.111	1	.000	.061

-2 Log likelihood= 254.684^a; Cox & Snell R Square= .411; Nagelkerke R Square= .550; Model Chi-Square= 158.948; N= 300

Decision rule

Table 1 shows the cross tabulation of the parental economic status and child malnutrition. The chi-square value of the relationship is $(X^2) = (130.609^a)$, degree of freedom = 2, $P = 0.000$. Therefore, the null hypothesis was rejected while the alternative hypothesis that there is a significant relationship between the economic status of parents and child malnutrition was accepted. The contingency coefficient of the two variables is 0.551. This means that about 55 percent of the occurrence of child malnutrition is a function of parental economic status.

The results of the model on Table 2 show that parental economic status is a determinant of child malnutrition. The odds ratio result shows that the children from low income families had 0.061 odds of not suffering from child malnutrition; those from middle income families had 19.704 odds of not suffering from child malnutrition, while those from high income families had 449.167 odds of not suffering from child malnutrition. These relationships are significant at 0.05 level of significance.

Hypothesis II

H₀: There is no significant relationship between the parental education and child malnutrition

H₁: There is a significant relationship between the parental education and child malnutrition

Table 3: Cross Tabulation of Parental Education and Child Malnutrition

Parental Education	Malnutrition		Total
	yes	No	
no formal education	12	0	12
primary education	42	3	45
secondary education	87	12	99
OND/NCE	20	60	80
B.SC	1	60	61
Quranic	1	2	3
Total	163	137	300

$$X^2 = 179.109^a; \text{d.f.} = 5; P = 0.000; C = 0.611$$

Table 4: Coefficients, Odds ratio and standard error from the Logistics Regression Model of the Effects of Parental Education on Child Malnutrition

	B	S.E.	Wald	Df	Sig.	Exp(B)
Education			94.016	5	.000	
Primary	18.564	11602.703	.000	1	.999	115391292.246
Secondary	19.222	11602.703	.000	1	.999	222824564.337
OND/NCE	22.302	11602.703	.000	1	.998	4846434274.330
B.SC/HND	25.297	11602.703	.000	1	.998	96928685486.605
QURANIC	21.896	11602.703	.000	1	.998	3230956182.887
No formal education	- 21.203	11602.703	.000	1	.999	.000

-2 Log likelihood= 199.170^a; Cox & Snell R Square= .511; Nagelkerke R Square= .683; Model Chi-Square= 214.463; N= 300

Decision rule

Table 3 shows the cross tabulation of the parental educational qualification and child malnutrition. The chi-square value of the relationship is $(X^2) = 179.109^a$, degree of freedom = 5, $P = 0.000$. Therefore, the null hypothesis was rejected while the alternative hypothesis that there is a significant relationship between the parental education and child malnutrition was accepted. The contingency coefficient of the two variables is 0.611. This means that about 61 percent of the occurrence of child malnutrition is a function of parental education.

Table 4 shows the results of the model parental education and child malnutrition. The results show that parental education is a determinant of child malnutrition in the study location. The odds ratio of children whose fathers had no formal education of not suffering from child malnutrition is 0.000. Hence, they are more likely to be malnourished. The odds ratio of those whose parents had B.SC education of not

suffering from malnutrition is 96928685486.605 which is more than those whose parents had OND/NCE, secondary, Quranic and primary education respectively. This identified relationship is significant at 0.05 level of significance.

Discussion of findings

The study revealed the parental social and economic factors affecting child malnutrition in the study location. The first hypothesis was on the relationship between parental economic status and child malnutrition. This hypothesis was accepted at $P < 0.05$. Thus, there is a significant relationship between parental economic status and child malnutrition. The contingency coefficient of the two variables was 0.551. This means that about 55% percent of the occurrence of child malnutrition in the study location could be attributed to the economic status of the parents. Similarly, the logistics regression model also lends credence to the chi-square results. The logistics regression model shows that the higher the parental economic status of the children, the higher their chances of not being malnourished. This finding corroborates Sharma, Yadav, Shweta and Pankaj Tiwari (2015) finding on parental socio-economic factors and malnutrition. They found out that there was a significant relationship between parental income and child malnutrition.

The second hypothesis was on parental education and child malnutrition. This hypothesis was accepted at $P < 0.05$. Thus, there is a significant relationship between parental education and child malnutrition. The contingency coefficient of the two variables was 0.611. This means that about 61% percent of the occurrence of child malnutrition in the study location could be attributed to the educational qualification of the parents. The result of the logistics regression model also shows a significant relationship between the parental education and child malnutrition. This finding is in line with the work of Ali-Idries (2005) which confirms that there is a sharp relationship between social and economic factors and child malnutrition. Specifically, he found out that parents of malnourished children were stark illiterates and majority of the families lived in slum areas and had low income.

Conclusion and Recommendation

The kernel of the study was to find out the parental socio-economic factors responsible for child malnutrition. From our findings, it is established that parental education and parental economic condition are the fundamental factors contributing to the prevalence of child malnutrition in Lagos-State, Nigeria. In order to address the menace of child malnutrition, governments at all levels and non-governmental organizations should ensure that education at least to the level of OND/NCE should be made compulsory and affordable to all and sundry. Government and non-governmental organizations should provide welfare and robust palliative measures that will adequately tackle poverty in the society.

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APPENDIX

Table A

Percentage Distribution of Respondents by their Socio-Economic and Demographic Characteristics

Socio-Economic Characteristics	Frequency	Percentage
Sex		
Male	86	28.7
Female	214	71.3
Total	300	100
Age		
23-27years	7	2.3
28-32years	55	18.3
33-37years	129	43
38-42years	79	26.3
48years and above	30	10
Total	300	100
Marital Status		
Single	22	7.3
Married	243	81
Separated	35	11.6
Total	300	100
Religion		
Christianity	171	57
Islam	123	41
Traditional	6	2
Total	300	100

Ethnic Group

Yoruba	211	70.3
Hausa	24	8.0
Igbo	48	16.0
Others	17	5.7
Total	300	100

Family Type

Monogamous	249	83
Polygamous	51	17
Total	300	100

Occupation

No formal education	12	4
Primary education	45	15
Secondary	99	33
OND/NCE	80	26.7
B.SC/HND	61	20.3
Quranic	3	1
Total	300	100

Occupation

Civil Service	52	17.3
Private sector employee	84	28
Trading	93	31
Farming	11	3.7
Artisan	42	14
Unemployed	18	6
Total	300	100

Economic Status

Low-income	104	34.7
Medium income	139	46.3
High income	57	19
Total	300	100

Source: Researchers' Survey (2016)

Table B**Percentage Distribution of Respondents by their Nutritional Status and Knowledge**

Nutritional Status and Knowledge	Frequency	Percentage
No of times you feed your children daily?		
Once	6	2
Twice	49	16.3
Three times	120	40
More than three times	125	41.7
Total	300	100
Are you aware of the classes of nutrient?		
Yes	274	91.3
No	26	8.7
Total	300	100
Do you consider the classes of nutrients when feeding your children?		
Yes	167	55.7
No	133	44.3
Total	300	100
Have you heard of child malnutrition		
Yes	264	88
No	36	12
Total	300	100
Through which medium		
Hospital	150	56.8
Television	57	21.6
School	23	8.7
Internet	16	6.1
Newspaper	12	4.6
Family and friends	6	2.3
Total	300	100

Causes of Child Malnutrition

Poverty	157	52.3
Unemployment	43	14.3
Illiteracy	69	23
Shortage of food	31	10.3
Total	300	100

Child's Gender

Male	131	43.7
Female	169	56.3
Total	300	100

Child's Age

8-10	85	28.3
11-13	98	32.7
14-16	117	39
Total	300	100

Child Nutritional Status

Underweight	149	49.7
Healthy weight	103	34.3
Overweight	34	11.3
Obese	18	6
Morbidity obese	3	1
Total	300	100

Source: Researcher's Survey (2016)