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ASSESSMENT OF NUTRITIONAL STATUS IN UNDER FIVE CHILDREN ATTENDING CHILD WELFARE CLINIC, IN ABEOKUTA SOUTH LOCAL GOVERNMENT AREA, OGUN STATE, NIGERIA.

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This study was conducted in Abeokuta South Local Government of Ogun State to assess the nutritional status of under five children. A structured Questionnaire was used to obtain information from parent or guardian of 150 randomly selected children of six to fifty-nine months attending child welfare clinics. Data were analyzed using SPSS version 16 and "Epi Info" (version 6.0) software. The nutritional status of the children was assessed using a weight-for-age z-score based on the World Health Organization 2007 cutoff points, in which any child with a z-score of <-2 is considered to be malnourished. This study reveals that stunting was the most prevalent under nutrition problem among the children with 98.5%, 98.8% of male and female respectively found to be stunted. More than one-third (38.2%) of male respondents were found to be severely underweight (low weight for age) while only 28.8% of the female were underweight. There was no significant difference in the prevalence rate for underweight and stunting between males and females (p=0.315, p=0.915) respectively. However, the percentage of underweight children was slightly higher among males (38.5%) compared to females (28.8%). There was a significant relationship established between mother's occupation and underweight, with p=0.060 but no significant association was shown between underweight and mother education (p=0.768). The study shows that childhood malnutrition is still a public-health concern in Abeokuta South Local Government Area.

Key Words: Pre shool, Nutritional status, underweight, stunting.

INTRODUCTION

The United Nations provided eight Millennium Development Goals (MDG), which is aim to achieve better child health resulting in reduction of child morbidity and mortality by the year 2015. The best indicator of overall well being of a nation is the nutritional status of children (Kana Sop, et al 2013). Nutritional status is the result of complex interactions between food consumption, overall health status and care practices. Poor nutritional status is one of the most important health and welfare problems facing developing countries at the individual level inadequate or inappropriate feeding patterns lead to malnutrition.

There are extensive evidences, which demonstrate that lack of proper nutrition for young children has consequences not only for health and survival but also physical and intellectual growth and performance at school. According to UNICEF\ WHO\World Bank (2012) report, Africa and Asia lose 11% Gross Domestic Products (GDP) per year to malnutrition, 162 million or 25% of all children under five are stunted (36% of these children lived in Africa). Many school–age children, adolescent suffer the consequence of stunting that they experienced during their early years. These consequences are associated with ill health, poorer school performance, an increased risk of chronic diseases (such as diabetes and obesity) later in life and high infant morbidity and mortality (Black, *et al*, 2008, Senbanjo *et al*, 2013). Globally, more than 3.5 million children under five years of age die unnecessarily each year due to the underlying cause of under-

nutrition, and millions more are permanently disabled by the physical and mental effects of poor nutrition, the vast majority in south-central Asia and sub-Saharan Africa (Black, et al, 2008). Malnutrition is one of the biggest health problems that the world currently faces and is associated with more than 41% of the deaths that occur annually in children from 6 to 24 months of age in developing countries which total approximately 2.3 million (Sandoval, Priego *et al*., 2002). World Health Organization (WHO) in 2001 reported that 54% of all childhood mortality is attributable, directly or indirectly, to malnutrition. Sub-Saharan Africa has a high prevalence of the different types of malnutrition, namely stunting, wasting and underweight (Lutter &Rivera, 2003). Survivors are left vulnerable to illness, stunted growth and lack of intelligence. If these children are girls, they often grow up to become malnourished mothers themselves. Her compromised nutritional status affects the health and nutrition of her own children. These intergenerational effects can be turned into a vicious cycle perpetuating malnutrition from one generation to the next.

Nigeria is the most populous country in Africa, with a population of about 173 million. About sixty percent of this population resides in the rural areas, while about forty-four percent of the population is made up of children and mothers (NBS, 2010). In Ogun state, Nigeria, the infant mortality rate is 67 deaths per 1000 live births, relatively better than the national average (97 deaths\1,000) but higher than the zonal average (55 deaths\1,000) . The Under five mortality rate is 105 deaths per 1,000 live births (MICS, 2013). Most of these deaths have malnutrition as the predisposing factor, either directly or indirectly. However, these deaths are preventable. The risk factors for under-nutrition among mothers and children have been well described but data establishing differences in risk factors for under-nutrition between urban and rural communities for both mothers and children are few.

Abeokuta south local government is usually referred to as the premier Local Government because of its historical eminence of geographical entity as the traditional seat of the local or Native Authority in Egba since 1898 as well as the seat of the Government of Ogun State that came into existence in 1976. Abeokuta south local government occupies a land area of 71sq kilometer an estimated population of 250,278 according to 2006 population census (Nigeria Demographic and Health Survey, 2008).

Data on the prevalence and degree of malnutrition among children attending post-natal clinic is limited (UNICEF, 2002). Information on the nutritional status of this age group is therefore essential for effective program planning, implementation and achieving advocacy goal that will bring about quality health, improve human capacity and overall national development.

The main objective of this cross-sectional study is to assess the prevalence of malnutrition among children aged 6 to 59 months in Abeokuta and to determine the association between demographic factors and nutritional status of the children.

MATERIALS AND METHODS

This cross-sectional study was carried out between April 2013 and August 3013 at Abeokuta South Local Government, Ogun state, Nigeria. A structured Questionnaire was used to obtain information from parent or guardian of 150 randomly selected children of six to fifty-nine months attending child welfare clinics. The study was explained to the parents or guardians of the children to seek their consent. For selection of subjects, children less than 6 months or above 59months of age were excluded from the study. Also those who presented with factors that could influence their growth such as congenital diseases, history of metabolic diseases and chronic diseases were excluded too. Socio demographic information was collected from a questionnaire survey completed by parents or guardians. Three anthropometric parameters were measured

according to the standard method of World Health Organization (WHO, 2006). Height was recorded to the nearest 0.1cm. The weight was measured with minimum cloth on and bare footed and recorded to the nearest 0.1kg using standard techniques (Bruce, 2003). The age of the child was determined from the date of birth given by the parents or guardian and confirmed from the immunization card.

Three anthropometric indices weight for age, Weight for height and Height for age were selected for the evaluation of nutritional status of the children. Z-score median values were calculated and tabulated were carried out using Statistical Package for Social Sciences (SPSS) (Version 16.0); computer program "Epi Info" (version 6.0) was used for obtaining weight for age, Height for age and Weight for Height z-score. The association between nutritional status (Stunting and underweight) and socio demographic factors and living environment variables was examined by a chi-square test (for categorical variables).

RESULTS AND DISCUSSIONS

Table 1 shows the social demographic characteristics of respondents' and their parents.

In this cross sectional study 80 (53.3%) of the children were female while 67 (44.7%) were male children. Out of 150 children the majority (40.0%) of the children was aged between 26 to 30 months, 32.7% were between age 21 to 25 months, 18% were between age 31 to 35 months and 2.7% were between age 36 to 40 months. Out of the 150 mothers interviewed majority (39.3%) of the mother were aged between 36 to 40 years, 33% were age between 21 to 25 years and 18% were aged between 31 -35 years. On marital status, (78.8%) of the respondents' mothers were still married, 6% divorced while 2.7%, 3.3% were widow and single mothers respectively.. The most common level of education in majority (44%) of the mothers was secondary school, (26%) primary school, (17.3%) post secondary and (3.3%) in Quranic school/Adult education. Among fathers, about 51% had secondary education, 23%, 10% had post secondary and primary education respectively. Almost 93% of the fathers were working and only 4% were not working. Among the mothers, 87% were working or doing something (mostly as traders) and 10% were full time housewife.

Table 1: Social Demographic Characteristics of Respondent

Variables	**Frequency**	**Percentage**
Sex		
Male	67	44.7
Female	80	53.3
Missing system	03	2.0
Total	**150**	**100.0**
	09	6.0
	49	32.7
	60	40.0
	27	18.0
	04	2.7
	1	0.7
	150	100.0
Mother Age Group (years)		
15 – 20	09	6.0
21 – 25	50	33.3
26 – 30	59	39.3
31 – 35	27	18.0
36 – 40	04	2.7

Missing system	01	0.7
Total	150	100.0
Marital Status		
Married	118	78.7
Divorced	09	6.0
Widow	02	1.3
Single	05	3.3
Missing	16	10.7
Total	150	100.0
Mother Education		
No formal	10	6.7
Quranic sch/adult	5	3.3
Primary school	39	26.0
Secondary school	66	44.0
Post secondary	26	17.3
Missing	4	2.7
Total	150	100.0
Mother Occupation		
Fulltime housewife	15	10.0
Civil servant	16	10.7
Marketer/trader	79	52.7
Artisan	30	20.0
Farmer	6	4.0
Missing	4	2.7
Total	150	100.0
Father Education		
No formal	13	8.7
Quranic sch/adult	6	4.0
Primary school	15	10.0
Secondary school	76	50.7
Post secondary	34	22.7
Missing	6	4.0
Total	150	100
Father Occupation		
Doing nothing	6	4.0
Civil servant	25	16.7
Marketer/trader	58	38.7
Artisan	36	24.0
Farmer	20	13.3
Missing system	5	3.3
Total	150	100.0

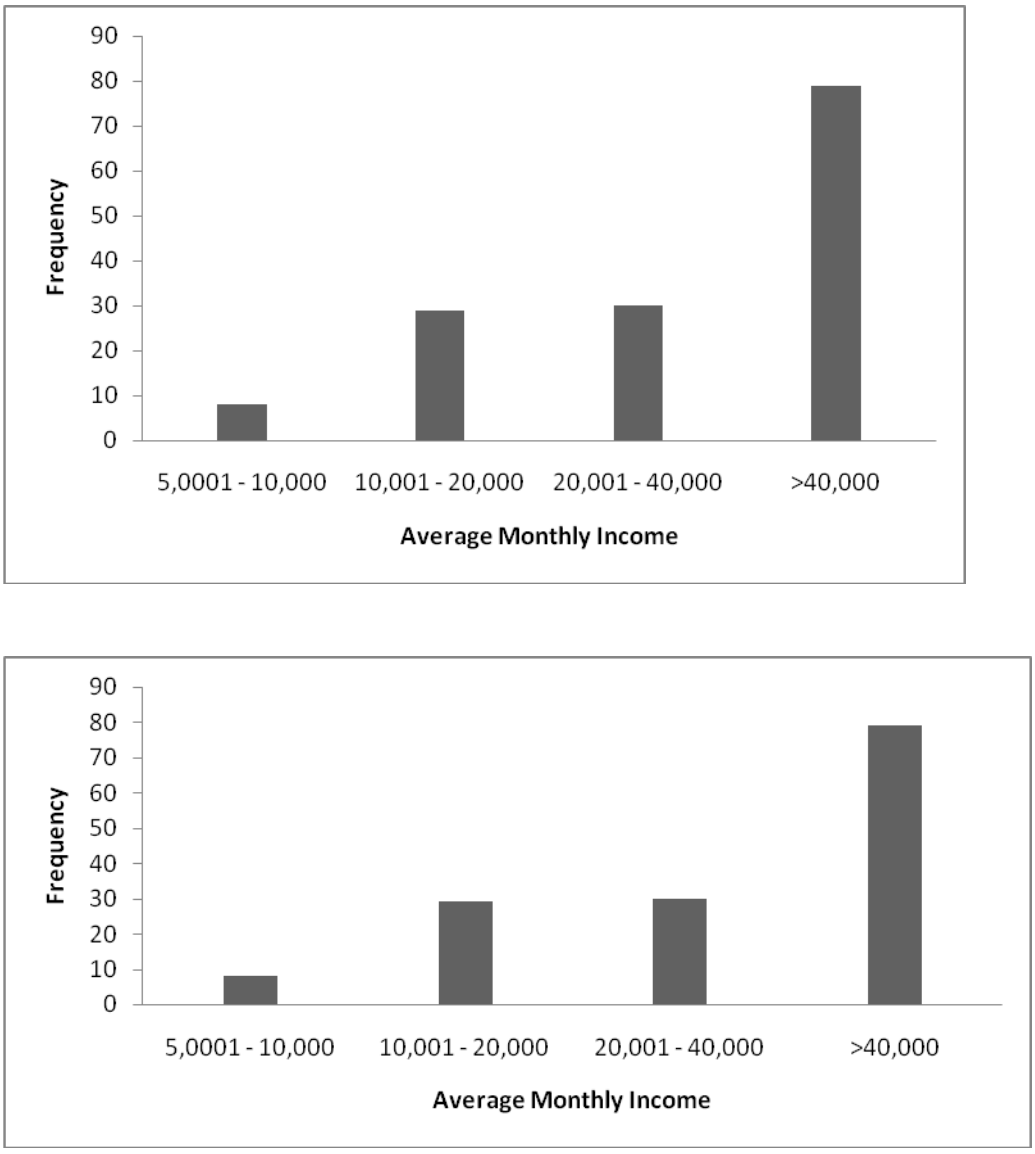

Figure 1: average monthly income of the respondents

Table 2: Prevalence of underweight, stunting and wasting (Acute malnutrition)

Sex	**Underweight (WAZ) (f) %**			**Wasting(WHZ) (f) %**			**Stunting HAZ (f) %**		
	Severe -3zscore	Moderate -2z Score	Normal	Severe -3zscore	Moderate--2z Score	Normal	Severe -3zscore	Moderate-2z Score	Normal
MALE	(26)38.2%	(14)20.6%	(28)41.2%	(0)0.0	(2) 4.3%	(66)95.7%	(67)98.5 %	(0)0.0 %	(1)1.47 %
FEMALE	(23)28.8%	(15)18.8%	(42)52.5%	(1)1.7%	(0)0.0	(79)98.7%	(78)97.5 %	(1)1.3 %	(1)1.25 %

Table2 shows the prevalence of underweight, stunting and wasting (acute malnutrition). The prevalence of under-nutrition among Nigerian children remains high despite several attempts at reducing the rate. The national policy on food and nutrition was launched by the Nigerian government in 2002 with the specific targets, which include reducing moderate and severe malnutrition among children under five years old by 30% by the year 2010 in order to improve the nutritional status of all Nigerians (Akinyele, 2009). Instead of a reduction, what has been observed is that the national prevalence of under-nutrition remained largely stable between the years 2003 and 2009, with the prevalence of underweight, wasting and stunting essentially static at 24%, 11% and 43%, respectively (UNICEF,2012). In our study, the values obtained were far higher than both the national and zonal figures, except for the prevalence of wasting. This is similar to what was observed by Sebanjo *et al* (2013) in their work in Lagos, Nigeria which indicates that children from different geographical areas grow at a similar rate during the first few years of postnatal years (WHO,2000).

Height-for-age is a measure of long-term or chronic nutritional status in children. Children who suffer from chronic under nutrition grow poorly and have low height for their age i.e. they are short (Waterlow, 1992). Children who grow poorly in height are termed stunted. This study reveals that stunting was the most prevalent under nutrition problem among the children with 98.5%, 98.8% of male and female respectively found to be low in height for age (stunting). More than one-third (38.2%) of male respondents were found to be severely underweight (low weight for age) while only 28.8% of the female were underweight. On wasting, female children were found to be more (1.7%) severely wasted compared to male children who were found to be moderately wasted respectively.

The high level of stunting among the children observed in the study may probably be indicating inappropriate breastfeeding and complementary practices as well to some extent intrauterine growth retardation. For children, it is believed that the risk factors for underweight, wasting and stunting differs across communities which could be socio-economic or biological factors. According to a WHO report (1989), high rates of malnutrition are largely due to poor Exclusive Breastfeeding Practices, over dilution of infant formula and poor quality of water used for food preparation which lead to infections and may result in dehydration at long run. Therefore these risk factors need to be taking into consideration when discussing likely causes or planning interventional strategies aimed at reducing child under-nutrition in our communities.

Table 3. Relationship between social demographic factors and underweight

	Nutritional status of children		
Variables	**Underweight N (%)**	**Normal**	**P value**
Sex of child			
Male	35 (52)	33 (49)	0.315
Female	41 (52)	38 (48)	
Mother occupation			
Fulltime housewife	7 (47)	8 (53)	0.060
Civil servant	6 (37)	10 (63)	
Marketer/Trader	48 (62)	30 (39)	
Artisan	10 (33)	20 (67)	
Farmer	4 (67)	2 (33)	

Father occupation			
Doing nothing	3 (50)	3 (50)	0.147
Civil servant	11 (44)	14 (56)	
Marketer/trader	35 (61)	22 (39)	
Artisan	13 (36)	23 (64)	
Farmer	12 (60)	8 (40)	
Mother education			
No formal education			
Quranic sch/adult education	6 (60)	4 (40)	0.768
Primary school	2 (40)	3 (60)	
Secondary school	23 (59)	16 (41)	
Post secondary education	31 (48)	34 (52)	
	13 (50)	13 (50)	
Father education			
No formal education			
Quranic sch/adult education	7 (54)	6 (46)	0.946
Primary school	3 (50)	3 (50)	
Secondary school	7 (47)	8 (53)	
Post secondary education	41 (55)	34 (45)	
	16 (47)	18 (53)	
Marital status			
Married	62 (53)	55 (47)	0.803
Divorced	1 (50)	1 (50)	
Widow	4 (60)	2 (40)	
Separated	1 (25)	3 (75)	
Single	69 (52)	3(60)	

Table 3 shows the relationship between social demographic factors and underweight (WAZ).This study shows that there was no significant difference (P=0.315) between male and female regarding underweight, although the level of underweight was higher in males (38.2%) than in female (28.8%) children. The findings of this study are supported by other studies done by Garenne (2003) and Yammano *et al* (2003), but contrary to the findings of Svedberg (2007) which found female children in India to be at disadvantage and that of Guerrero-Serdan (2009) which found no gender difference. There was a significant relationship established between mother's occupation and underweight, with p=0.060 but no significant association was shown between underweight and mother education (p=0.768), father occupation (p=0.147), father's education (p=0.946) and marital status (p=0.803).

Table 4 shows the relationship between socio demographic factors and stunting (HAZ) among the children. No significant difference (P=0.915) was observed between male and female regarding height for age (stunting), There was no significant relationship established between mother's occupation (p=0.783), mother education (p=0.239), father occupation (p=0.455), father's education (p=0.765) and marital status (p=0.991).

Although the result of this study, found no significant relationship between the social demographic factors and stunting, but reveals a high prevalence of stunting among the children regardless of mother's occupation or education. This study supports or lay credence to the research of Dewey and Huffman (2009) which established that African children are at risk or outright stunted from birth as observed in a cumulative difference of 10cm in stature

between Malawian children and the WHO growth standard median by 3 years. It is worthy to note that about 97% of the respondents in this study is within the bracket age of 3 years (Table1).

Table4: Relationship between Socio Demographic factors and Stunting

	Nutritional status of children		
Variables	Stunting N (%)	Normal N (%)	P value
Sex of child			
Male	67 (99)	1 (1.5)	0.915
Female	78 (99)	1 (1.3)	
Mother occupation			
Fulltime housewife	15 (100)	0 (0)	0.783
Civil servant	16 (100)	0 (0)	
Marketer/Trader	76 (97)	2 (26)	
Artisan	30 (100)	0 (0)	
Farmer	6 (100)	0 (0)	
Father occupation			
Doing nothing	6 (100)	0 (0)	0.455
Civil servant	25 (100)	0 (0)	
Marketer/trader	57 (100)	0 (0)	
Artisan	35 (97)	1 (28)	
Farmer	19 (95)	1 (5)	
Mother education			
No formal education	10 (100)	0 (0)	0.239
Quranic sch/adult education	5 (100)	0 (0)	
Primary school	37 (95)	2 (51)	
Secondary school	65 (100)	0 (0)	
Post secondary education	26 (100)	0 (0)	
Father education			
No formal education	13 (100)	0 (0)	0.765
Quranic sch/adult education	6 (100)	0 (0)	
Primary school	15 (100)	0 (0)	
Secondary school	73 (97)	2 (27)	
Post secondary education	34 (100)	0 (0)	
Marital status			0.991
Married	115 (98)	2 (1.8)	
Divorced	2 (100)	0 (0)	
Widow	5 (100)	0 (0)	
Separated	4 (100)	0 (0)	
Single	5 (100)	0 (0)	

Table5: Relationship between economic status and nutritional status of children

	Nutritional status					
Average month income	**Underweight N (%)**	**Normal N (%)**	**P value**	**Stunting N (%)**	**Normal N (%)**	**P. value**
5001-10,000	6 (75)	2 (25)	0.315	8(100)	0(0)	0.628
10,0001-20,000	16 (55)	13 (45)		29 (100)	0 (0)	
20,0001-40,000	12 (40)	18 (60)		30 (100)	0 (0)	
> 40,000	41 (53)	37 (47)		76 (97)	2 (2.6)	

Table 5**.**shows the relationship between average monthly income and nutritional status of children (underweight and stunting), though, no significant relationship was established between income and nutritional status as measured by stunting (p=0.628) and underweight (p=0.315), but a gradual decrease in underweight was noticed as the respondent income increased from less than ₦20, 000 to ₦40, 000 and at an income greater than ₦40, 000 a 13% increased in underweight was observed from 40% to 53%. According to the Multiple Indicators Cluster Survey (MICS) (2013) report, prevalence of malnutrition decreases with improves in wealth status from poorest to richest quintiles, this study seems to agree with this assertion to some extent as there was decrease in underweight as income increase until respondent's income is greater than N40,000, where 53% of the children were observed to be underweight which is higher than 40% recorded for those whose income is lower, indicating that increase in income might not necessarily means improve nutritional status. The impacts of increase in income on nutritional status is affected by different factors such as who control the family income, studies has shown that children benefit more if mothers are in charge of family income. Study has also shown that mothers spent more than 70% of their income on their household especially on the purchase of food. It is also good to note that malnutrition is not affected by food intake alone, in the same manner it is affected by access to health services, quality of antenatal and postnatal care for child and pregnant mother as well as good hygiene practices, all which requires some level of income to acquire.

On stunting all the children from household whose monthly income is less than N 40,000 were stunted while 97% of those whose income is above N 40,000 were stunted. This study is at variance with Black et al (2013) which predicted a higher stunting prevalence rate of 2.47 times in the poorest than in the richest quintile. Therefore, the result obtained in this study further buttress the importance of other factors like environmental factors such as feeding practices, hygiene and sanitation, frequency of infection and access to health care in proper growth and development of a child.

CONCLUSION

Prevalence of stunting and underweight of children in Abeokuta LGA of Ogun State was found to be very high. A range of factors responsible including poor child feeding practices, low level of household monthly income and poor complementary feeding program were identified as some of the main contributors to malnutrition of these children.

Therefore outreach program targeting on the importance of good nutrition for proper child growth and development should be carried out by appropriate sector.

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