Prevalence of Wasting and Underweight Amongst Preschool Aged Children in Awka South LGA, Anambra State, Nigeria

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ABSTRACT

This study was carried out in Awka-South Local Government Area, Anambra State, Nigeria, to determine the current prevalence of wasting and underweight amongst preschool aged children using anthropometry. A cross sectional survey research design was used for the study to collect sampled data of 449 children (240 boys and 209 girls) between 0 and 5 years of age. Anthropometric measurements of weight and height were taken using standardized methods. The weight was measured using a calibrated digital bathroom weighing scale while the height was measured using standiometer. Socioeconomic and health related data of the pupils were also collected. From the anthropometric measurements, nutritional indicators (weight-for-height and weight-for-age) were generated by analysis of the data using WHO Anthro Survey Analyser (Version 3.2.2). The study revealed that 7.7% of the children were wasted including 0.7% who were severely wasted while O.4% were underweight. This study also revealed that more children were wasted in the urban areas (8.8%) including 0.4% that were severely wasted than in the rural areas (6.3%) including 1.1% that were severely wasted. However, underweight children were more in the rural areas (0.5%) than in the urban areas (0.4%), though the difference is not significant. It was concluded that the results of this study showed a great reduction in the prevalence of wasting and underweight amongst preschool aged children below 5 years in Awka-South LGA Anambra State, Nigeria base on comparison with previous studies.

Keywords: Wasting, underweight, prevalence and preschool aged children.

INTRODUCTION

Nutrition of preschool children is very important because the foundation for lifetime health, strength and intellectual ability is laid during this period. Nutrition is the sum total of the processes involved in the intake and utilization of food substances by which growth, repair and maintenance of the body are accomplished [1,2,3]. All deviations from adequate nutrition is called malnutrition [4,5,6]. Malnutrition could be defined as deficiencies or excesses in nutrient intake, imbalance of essential nutrients or impaired nutrient utilization (World Health Organization, 2022). It still remains a big challenge in developing countries [7,8,9]. A malnourished child is one who has failed to attain the expected values for any of the nutritional indicators (e.g weight-for-height, weight-for-age and height-for-age) as compared with a healthy child of the same sex and age in the reference population [10,11,12]. Undernutrition which is one of the types of malnutrition, occurs as a result of inadequate food intake or poor absorption (due to disease) and has negative impact on growth and development. Undernutrition results to low weight-for-height (wasting), low weight-for age (stunting) [13,14]. Wasting or thinness is defined as a low weight for height which is below -2 standard deviation of the median value of the WHO international weight-for-height reference [15,16]. Wasting which reflects acute malnutrition, is not as common as either underweight or stunting in school age

children. Nevertheless, rates of wasting or acute malnutrition can change rapidly in condition of acute food crisis, with school-age children and adolescents, becoming severely malnourished [17,18,19]. Wasting in children is associated with a higher risk of death if not treated properly (WHO, 2015). However, lack of evidence of wasting in a population does not imply the absence of current nutritional problems, as stunting and other deficits may be present (Food and Agriculture Organization [20]. On the other hand, underweight could be defined as low weight for age below -2 standard deviation (SD) of the median value of WHO international growth reference [17]. Weight-for-age reflects body weight relative to child's age on a given day. This indicator is used to assess whether a child is underweight or severely underweight but it is not used to classify a child as overweight or obese. Underweight among school age children is a condition which results prenatal undernutrition (inadequate consumption), poor absorption or excessive loss of macro-and micro-nutrient, infection and possibly, neglect by caregivers [8]. Weight-for-age reflects currents nutritional status and is primarily a composite of weight-for-height and height-for-age. This means that a child who is underweight may be wasted and stunted or both [11]. However, it fails to distinguish tall, thin children from short, well proportioned children. Undernourished children do not grow to their full potential physically and mentally [4]. Preschool aged children constitute the right group for assessing wasting and underweight so that timely interventions can be applied. This study was done with the objective to determine the current prevalence of wasting and underweight, amongst preschool aged children 0-5 years in Awka-South LGA, Anambra State, Nigeria using [14] standard and z-score. It is important for evaluation of performance of impacts of set intervention goals.

METHODS AND MATERIALS
Study Design

The study was a descriptive cross sectional study, involving preschool aged children (0-5 years) in public primary schools in Awka-South LGA, Anambra State, Nigeria.

Study Area

The study area is Awka South Local Government Area (LGA) of Anambra State, Nigeria which counts as one of the 21 existing LGAs of the state. Awka South is located at latitude $6°20^1$N amd $6°33^1$N and longitude $7°00^1$E and $7°15^1$E and is situated in the southeast geopolitical zone of Nigeria. Awka South LGA is made up of nine towns; namely, Amawbia, Awka, Ezinato, Isiagu, Mbaukwu, Nibo, Nise, Okpuno and Umuawulu. Awka South LGA has a population of 189, 654 (one hundred and eighty-nine thousand, six hundred and fifty four) according to the 2006 national population census figures [10]. There are 45 registered public primary schools in Awka South LGA, Anambra State,Nigeria.

Selection of Samples

The study population included preschool aged children 0-5 years in Awka South LGA. Survey data collection was carried out at the primary school level. 15 primary schools were randomly selected out of 45 primary schools with at least one primary schools per a town in nine towns that make up Awka South LGA. 30 preschool children were selected from each of the 15 randomly selected primary schools in Awka South LGA. The total number of samples was 450 children. Preschool children 0 to 5 years old and free from skeletal deformities, medical disorder such as kidney diseases, diabetes mellitus, asthma were considered for this study. Children above 5 years old and those whose age could not be ascertained were excluded from this study.

Data Collection

A structured questionnaire was designed which includes anthropometric measurements (of weight, height and age) and socioeconomic and health related questions (such as class, age, sex, occupation of parents and clinical examinations).

Anthropometric Measurements

Anthropometric measurements of weight and height of all selected preschool children were taken. Their weights were measured using a calibrated standardized digital bathroom weighing scale with the accuracy of the scale to the nearest 0.1kg. The children were asked to stand straight in the middle of the scale's platform without shoes, without touching anything and the eyes were looking at the horizontal line. The weight was recorded twice and the average value used in the analysis. The scale was set to zero point before each use.

Their heights were also measured with standiometer placed on a flat surface. The children were asked to stand straight and look straight in a horizontal plane with feet together, without shoes. The top of the standiometer (movable head piece) was lowered to the top of the head. Their heights were recorded to the nearest 0.5cm. Two measurements were taken and the average value was obtained [14].

Statistical Analysis

The anthropometric data were analysed using WHO Anthro Survey Analyser (Version 3.2.2) to obtain [14] normalized reference tables of weight-for-height, weight-for-age and mean z-scores. These tables were used to determine the prevalence of wasting and underweight. Mean z-scores and standard deviations of the parameters were used to summarize the data for each age group.

RESULTS

Table 1: Prevalence of low weight-for-height (wasting) between both sexes within the age groups in a sample of 449 preschool aged children from Awka-South LGA.

Age Groups (Months)	Sex	Number	% Z<-2 SD	% Z<-3 SD	Mean Z-score	SD
0-5	Boys	0	-	-	-	-
	Girls	0	-	-	-	-
	Combined	0	-	-	-	-
6-11	Boys	0	-	-	-	-
	Girls	0	-	-	-	-
	Combined	0	-	-	-	-
12-23	Boys	32	9.4	0	-0.67	0.99
	Girls	31	0	0	-0.56	0.79
	Combined	63	4.8	0	-0.61	0.89
24-35	Boys	44	0	0	-0.76	0.73
	Girls	39	10.3	0	-0.65	1.10
	Combined	83	4.8	0	-0.71	0.92
36-47	Boys	78	7.9	0	-0.55	0.96
	Girls	63	11.5	0	-0.87	0.95
	Combined	141	9.5	0	-0.69	0.97
48-60	Boys	86	8.7	2.9	-0.76	1.02
	Girls	76	9.2	1.5	-0.83	1.02
	Combined	162	9.0	2.2	-0.79	1.02
0-60 (Total)	Boys	240	6.8	0.9	-0.67	0.94
	Girls	209	8.7	0.5	-0.76	0.98
	Combined	449	7.7	0.7	-0.72	0.96

From the result in table 1, 9% of children 48-60 months (4 and 5 years) old were wasted including 2.2% who were severely wasted (i.e. with severe acute malnutrition). Prevalence of wasting decreased as the age increased. Total population prevalence of wasting was 7.7% including 0.7% rate of severe wasting. Wasting was more prevalent amongst the girls compared with the boys (8.7% against 6.8%).

Table 2: Prevalence of low weight-for-age (underweight) between both sexes within the age groups in a sample of 449 preschool aged children from Awka-South LGA.

Age Groups (Months)	Sex	Number	% Z<-2 SD	% Z<-3 SD	Mean Z-score	SD
0-5	Boys	0	-	-	-	-
	Girls	0	-	-	-	-
	Combined	0	-	-	-	-
6-11	Boys	0	-	-	-	-
	Girls	0	-	-	-	-
	Combined	0	-	-	-	-
12-23	Boys	32	0	0	0.8	0.95
	Girls	31	0	0	1.09	1.06
	Combined	63	0	0	0.94	1.01
24-35	Boys	44	0	0	0.21	1.06
	Girls	39	0	0	0.21	0.99
	Combined	83	0	0	0.21	1.02
36-47	Boys	78	1.3	0	0.47	0.99
	Girls	63	0	0	0.34	0.88
	Combined	141	0.7	0	0.41	0.94
48-60	Boys	86	1.2	0	0.36	0.97
	Girls	76	0	0	0.32	0.88
	Combined	162	0.6	0	0.34	0.93
0-60 (Total)	Boys	240	0.8	0	0.43	1.00
	Girls	209	0	0	0.42	0.97
	Combined	449	0.4	0	0.42	0.98

The result in table 2, depicts no case of underweight among children below 3 years old and among the girls in the population studied. Only the boys in the age groups 36-47 months and 48-60 months old were underweight with prevalence rates of 1.3% and 1.2% respectively. Underweight was more among age range 36-47 months. Total population prevalence of underweight was 0.4%. There was no case of severe underweight.

Table 3: Comparison of Prevalence of low weight-for-height (wasting) between preschool aged children (0-5 years) in urban and rural communities in Awka-South LGA.

Cluster	Number	% Z<-3 SD	% Z<-2 SD	% Z<+1 SD	% Z<+2 SD	% Z<+3 SD	Mean Z-score	SD
Urban	239	0.4	8.8	4	0.9	0	-0.76	0.91
Rural	209	1.1	6.3	3.2	1.1	0	-0.67	1
Total	448	0.7	7.7	3.6	1	0	-0.72	0.95

Table 3 showed that preschool aged children 0-5 years in urban communities of Awka-South LGA were more wasted (8.8%) than children in rural communities (6.3%) with severe wasting of 0.4% and 1.1% respectively.

Table 4: Comparison of Prevalence of low weight-for-age (underweight) between preschool aged children (0-5 years) in urban and rural communities in Awka-South LGA.

Cluster	Number	% Z<-3 SD	% Z<-2 SD	Mean Z-score	SD
Urban	239	0	0.4	0.44	0.99
Rural	209	0	0.5	0.4	0.98
Total	448	0	0.4	0.42	0.98

From the above result in table 4, underweight children was more in the rural areas (0.5%) than in the urban areas (0.4%), though the difference is not significant. There was no case of severe underweight (0%) in either urban or rural communities in Awka-South LGA.

DISCUSSION

In this study, the prevalence of wasting and underweight among 449 preschool aged children 0-5 years was 7.7% and 0.4% respectively.

Wasting (Acute Malnutrition)

The result indicated that 9% of children 48-60 months (4 and 5 years) old were wasted including 2.2% who were severely wasted. Between both sexes, wasting was more prevalent amongst the girls (8.7%) than the boys (6.8%). Total population prevalence of wasting was 7.7% including 0.7% who were severely wasted. What this implies is that wasting (acute malnutrition) was more prevalent (7.7%) than underweight (0.4%) among the studied population. The result of this study is consistent with the pattern observed in previous studies by Akubugwo *et al,* 2013 and 2014 in Anambra State which recorded wasting prevalence of 40% and 24.9% respectively.

There was drastic reduction compared with prevalence observed in this study. This was expected because there has been a lot of community enlightenment on nutrition, health education and intervention programmes particularly at the community level. This study also revealed that more children were wasted in the urban areas (8.8% including 0.4% that were severely wasted) than in the rural areas (6.3% including 1.1% that were severely wasted). This reverse result may be due to the time this survey data was collected which was early harvest season when rural dwellers have started enjoying produce from agriculture such as maize, vegetables, yam, cassava etc.

Underweight

There was no case of underweight among the girls in the population studied. Only the boys in the age groups 36-47 months and 48-60 months old were underweight with prevalence rates of 1.3% and 1.2% respectively. Underweight was more among age group 36-47 months than 48-60 months though the difference is insignificant. Total population prevalence of underweight was 0.4%. There was no case of severe underweight, but moderate underweight. Again, there was decline in prevalence of underweight in this study compared with previous work conducted by [2] in Anambra State which observed prevalence of 0.8%. Children below 3 years were not underweight (0%) because they are still fed by their mothers at home and in school by caregivers and teachers. The boys were underweight. The reason according to [3] may be differences in activity level of boys and girls; from age 3 and up, the average boy is more active than about two thirds of girls. The findings of this study also showed that underweight children was more in the rural areas (0.5%) than in the urban areas (0.4%), though the difference is not significant. It is important to note that the prevalence of underweight in these areas

was moderate underweight while there was no case of severe underweight in the population.

CONCLUSION

The results of this work have shown a great reduction in the prevalence of wasting and underweight amongst preschool children below 5 years old in Awka South Local Government Area, Anambra state, Nigeria and is a welcome development. But, more interventions should be undertaken by governments, and nutrition stakeholders aimed at eradicating malnutrition which is in line with United Nations Decade of Action on Nutrition (2016-2025).

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CONFLICT OF INTEREST

We declare that we have no conflict of interests. All authors read and approved the manuscript.

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