



## NUTRITIONAL ASSESSMENTS OF CHILDREN UNDER FIVE BASED ON ANTHROPOMETRIC MEASUREMENTS IN SAPELE CENTRAL HOSPITAL, DELTA

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**ABSTRACT:** *Child malnutrition Reduction is another SDG related to an improvement in child welfare. National data on underweight provided under NFHS-3 (National Family Health Survey) (2005-06) revealed an underweight prevalence rate of around 40%. This cross-sectional study was conducted in Central Hospital Sapele during the month of December 2022 among children under five years of age. WHO guidelines for anthropometric measurement and nutritional status categorisation among children were used. A total of 52 children participated in the study. About 80.8% of study participants were found not to show muscle wasting as their nutritional status while taking the Composite Index of Anthropometric Failure for nutritional status into consideration. Nearly 71.2% of the participants were well nourished. The composite anthropometric index determines the prevalence or percentage of well-nourished children who receive vaccinations at Central Hospital Sapele. So, nurses are to encourage mothers whose children are within the border lines and below normal to top up their games to ensure that their children are well-fed through health talks, food demonstrations, and awareness programs.*

**KEYWORDS:** Underweight, stunting, wasting, CIAF, Anthropometric, Children, Under-five.



## INTRODUCTION

### Background of the Study

Anthropometric measurements are noninvasive techniques that aim to quantify body composition. Analogous measures of the human body are referred to as anthropometric. When evaluating nutrition, anthropometric measures are employed. Length, height, weight, weight-for-length, and head circumference are the ones that are used to measure growth and development in newborns, kids, and teenagers (length is used in place of height in infants and toddlers since they are unable to stand). Normal comparisons between individual measures and growth chart benchmarks are made. Accurate measuring methods are necessary for meaningful anthropometric measurements.

Nutritional assessment evaluation aids in preventing and managing malnutrition, a leading cause of death, particularly in children under the age of five. Children's malnutrition is a significant global health issue. The World Health Organisation (WHO) reported around 5.9 million deaths among children under the age of five in 2015, with undernutrition concerns accounting for more than half of these fatalities. The 2015 Sustainable Development Goals identified undernutrition as a significant public health concern, with target 2.2 intending to "end hunger" by 2030. Long-term malnutrition can result in problems such as a low intelligence quotient, decreased motor development, and lowered immunity making one more susceptible to infectious and fatal illnesses. Measuring head circumference for possible abnormal growth may help identify neurological abnormalities, malnutrition, or other health-related concerns for infants and toddlers. Contrarily, over-nourished children tend to become overweight and obese, making them prone to developing non-communicable diseases like type two diabetes, hypertension, dyslipidemia, pulmonary complications, musculoskeletal problems, and psychosocial problems, which may affect the child or adolescent throughout life. Many researchers across the globe also report that childhood undernutrition is related to poorer levels of academic achievement, cognitive development, health, and, ultimately, poorer levels of labour productivity in adulthood. Thus, child labour has both financial and human implications.

The two morphological characteristics most frequently assessed are height and weight, which, together with a child's gender and age, provide anthropometric indices to determine a child's nutritional condition. However, completing this work in remote areas is challenging due to the difficulty of transporting large, bulky equipment that needs to be correctly and thoroughly calibrated.

Anthropometric measures alone cannot reveal protein and micronutrient shortages, modest shifts in the ratio of body fat to lean mass, or slight changes in nutritional status. For example, measuring women's subscapular and supra-iliac skinfold thicknesses by males may not be socially or culturally acceptable. Other anthropometric measures, including height in persons who are unable to stand up straight, may also be impracticable. Observers may not record some measures due to their inability to read if they have poor literacy abilities. Weight is an anthropometric measurement that does not, by itself, typically assess development and/or body composition and, consequently, suggest nutritional health. Measurements alone or combined must be compared to reference values for each age and sex to understand anthropometric measurements. Not all population groupings or age groups have access to these reference figures.



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## OBJECTIVES OF THE STUDY

### Main objective

To assess the nutritional status of under-five children using anthropometric measurements.

**Specific objective:** To assess for wasting, stunting, and overweight, using anthropometric indices such as length/height, weight, head circumference, mid-upper arm circumference (MUAC) and so on

### Research Questions

- Is there stunting?
- Is there muscle wasting?
- Are these children underweight, normal weight or overweight?

**Significance of the Study:** Use of morphological traits such as height, weight, etc., to generate anthropometric indices to establish a child's nutritional status as measured against a reference population.

**Scope of the Study:** **Children** under five attending immunisation at Central Hospital, Sapele, Delta State.

## METHODOLOGY

This chapter discusses the method used for this study. It is discussed under the following; research design, study setting, research population, sample size/ sampling technique, the instrument for data collection, the validity of the research instrument, reliability of the research instrument, method of data collection, method of data analysis and ethical considerations.

### Research Design

A quantitative research design was adopted to explore nutritional assessments of children less than five years of age based on anthropometric measurements in sapele central hospital, delta state. This research design allowed for large data and was generalised.

### Research Site Setting

This research was carried out in Central Hospital, Sapele, which was established in the year 1929. Its location is located in the northern part of the Sapele Local Government Area between Sapele main market and Sapele stadium, opposite its post office. The hospital is composed of different units from which health care services are dispensed to patients and clients alike in need of them. Namely: Accidents and emergency, Amenity, Antenatal, Antiretroviral, Chest ward, Female and children's ward, Gynecology unit, Male ward, Maternity ward, and Outpatients department. The Delta State Government recently commissioned the Sickle cell unit of the hospital to care for those with Sickle cell disorders. The hospital also is affiliated with the State School of Midwifery, Sapele, where students gain practical clinical experiences during their training.



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## **Research Population**

A population is the entire collection of distinct items or results that a researcher explores, interacts with or studies. Children under the age of five who attend the immunisation clinic at Central Hospital in Sapele make up the target population.

## **Inclusion and exclusion criteria**

Children less than five years of age attending an immunisation clinic at the central hospital, Sapele, were included in the research, while those  $\geq 5$  years were excluded from participating in the research.

## **Sample and Sampling Techniques**

Fifty-two (52) participants were involved in this study. The sampling technique used was the random sampling technique. The accidental sampling method made use of available subjects.

## **Instrument for Data Collection**

The study employed the use of a checklist from the area of research. The checklist was used in generating relevant data, and its self-developed and designed in the English language. All variables were represented. Anthropometric variables were added, such as weight, height/length, MUAC, and head and chest circumference. All of these were measured and recorded using the appropriate means of measurement.

## **Validity and Reliability of Instrument**

In order to ascertain the validity, a draft copy of the checklist was submitted to the research supervisor for appropriate screening and consultation. The reliability of the instrument was obtained by measuring under-five children attending immunisation at Central Hospital, Sapele.

## **Method of Data Collection**

In view of the purpose of this study, measurements were obtained from the respondent and recorded simultaneously using the checklist.

## **Procedure for Data Analysis**

Microsoft Excel and SPSS (Statistical Package for Social Sciences) was used to analyse the data, represented using tables, and pie charts, as required.

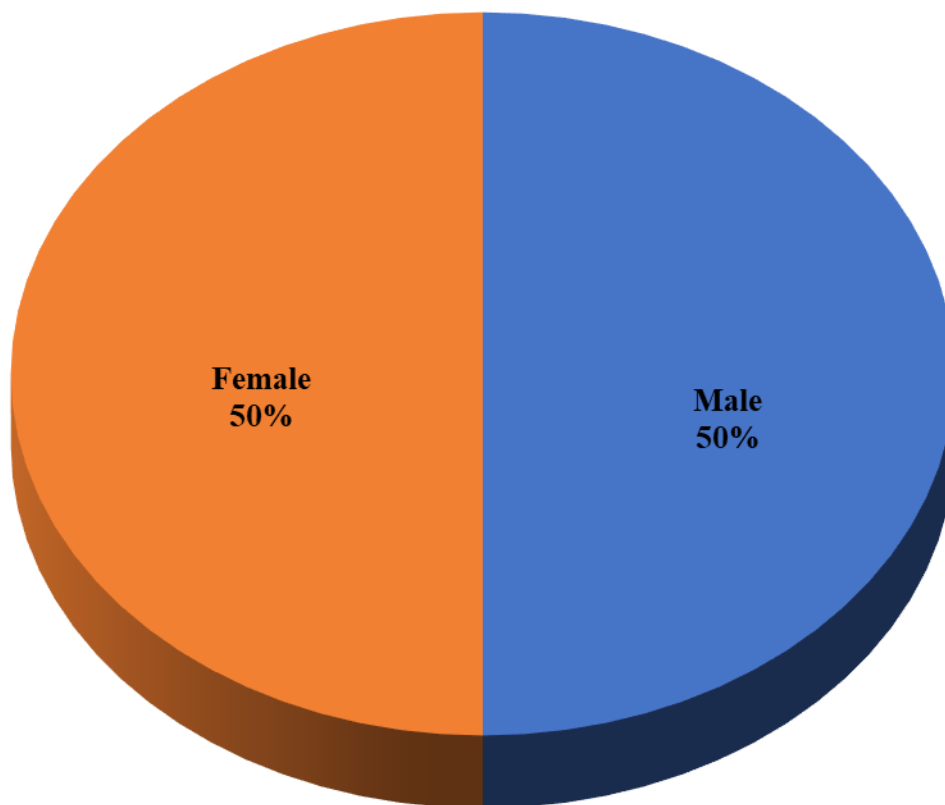
## **Ethical Consideration**

The research sought the consent of the ethical committee at Central Hospital, Sapele. Also, information about the study was given to respondents before data was collected from them. The checklist had no columns for names, initials, addresses and signatures to ensure privacy, anonymity and confidentiality for all involved in the research process.

**DATA ANALYSIS**

**TABLE I: Age distribution of study participants**

Age	Frequency (%)
1-5 months	23 (44.2)
6-10 months	26 (50.0)
11-15 months	3 (5.8)
Mean $\pm$ SD	6.00 $\pm$ 3.66



**Figure 1: Pie chart showing equal gender distribution of study participants**

**Table 2: Anthropometric measurements of study participants**

Parameters	Frequency (%)
Length (CM)	63.87 ± 9.44
Weight (Kg)	6.68 ± 1.82
Mid-upper arm circumference(CM)	13.48 ± 1.50
Head circumference(CM)	41.69 ± 5.27
Chest Circumference(CM)	42.14 ± 3.64

**Table 3: Showing comparison of MUAC among sexes of different age groups**

MUAC	AGE					
	1.0-5.0		6-10.0		11-15.0	
	F (%)	M (%)	F (%)	M (%)	F (%)	M (%)
6-10.9 (Red)	1(4.5)	--	-	-	-	-
11-12.5 (Yellow)	3 (13.6)	4(18.2)	1(3.7)	4(14.8)	-	-
12.6>26 (Green)	8(36.4)	6(27.3)	10(37.0)	12(44.4)	3 (100.0)	-

**Table 4: Prevalence of growth /Anthropometric indices of study participants**

Parameter	Frequency (%)
<b>Weight for length (wasting)</b>	
Normal (within 2 S.D of the expected weight for height)	42 (80.8)
low (Less than 2 S.D of the expected weight for height)	10 (19.2)
<b>Mid Upper Arm Circumference ( Protein-energy malnutrition)</b>	
Normal	37 (71.2)
Borderline	8 (15.4)
Low	7 (13.5)
<b>Head and Chest circumference (malnutrition/ poor development)</b>	
Normal	27 (51.9)
Abnormal	25 (48.1)



## **DISCUSSION OF FINDINGS**

Table 1 shows the age distribution of study participants ages 1-5 months having a frequency of 23(44.2%), 6-10 months 26(50%), 11-15 months 3(5.8%) with a mean of 6.0 and standard deviation of 3.66.

From this table, it can be deduced that the majority of the participants are within the age range of 6-10 months of age 26(50%)

Figure 1 is a pie chart showing the equal gender distribution of study participants being 26(50%) males and 26(50%) females.

Table 2 shows the length, weight, mid-upper arm circumference (MUAC), Head and chest circumference with their mean and standard deviation 63.87(9.44), 6.68(1.82), 13.48(1.50), 4.69(5.27), 42.14(3.64) respectively.

## **ANTHROPOMETRIC INDICES OF STUDY PARTICIPANTS**

Table 4 shows that 42(80.8%) of study participants have normal weight for height (that is, within 2 S.D of the expected weight for height) while 10(19.2%) are less than 2 S.D of the expected weight, which is different from Rohtak district result which showed wasting of 13.8%.

Table 3 shows the MUAC of the different age groups with their sexes that fall under the different colour grades of the shakir strip used for its measurements.

Table 4 shows that 37(71.2%) of the participants are within the normal range, implying that a majority of the study group does not have wasting (protein energy malnutrition), 8(15.4%) are in the borderline, while 7(13.5%) are malnourished. This is the same with the findings of the result from Rohtak district, where 1.6% of the study participants show Severe undernutrition and 6.5% show moderate undernutrition.

Head and chest circumference results show that 27(51.9%) of study participants have proper development while 25(48.1%) have poor development.

## **IMPLICATION TO NURSING PRACTICE**

The current study's findings indicate that the majority of the kids receiving vaccinations at Central Hospital Sapele are well-fed. This demonstrates that health conversations are conducted during immunisation days, disclosing the population's health state and decreasing morbidity and death among children under the age of five.



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