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Prevalence of Malnutrition among Under-five School Children

Authors
Mrs. Hemavathi. P[1], Dr Malathi. S[2]
[1]Ph.D Research Scholar, Dept. of Community Health Nursing, Vinayaka Missions Annapoorana College of Nursing, Vinayaka Mission's Research Foundation (Deemed to be University), Salem, India
[2]Professor, Dept. of Community Health Nursing, Vinayaka Missions Annapoorana College of Nursing, Vinayaka Mission's Research Foundation (Deemed to be University), Salem, India

Abstract
Background: *Under-five children are most vulnerable group and their nutritional status and mortality rate is a sensitive indicator of community health and nutrition of a country. The study was carried out to Assess Prevalence of Malnutrition among Under-five School Children.*
Materials & Methods: *Convenience sampling method used to select 140 school children in the age group 2 ½ to 5 Years from selected schools at Alankuppam, Puducherry, India.*
Results: *Prevalence of severe malnutrition more among boys 4 (6.3%) compare to the girls 0 (0) based on Weight for Height Z score of school children. Prevalence of Moderate Malnutrition more among boys 15 (23.4%) and Girls 13 (17.1%) based on Weight for Height Z score of school children. Prevalence of malnutrition more among boys compare to the girls based on Weight for Height Z score of school children. Correlation of Height and Weight of under-five school children with selected demographic variables reveals that mother age have relationship with malnutrition Z score of school children, which has significant at p > 0.04 and with BMI of School children significant at p > 0.02.*
Keywords: *Underfive Children, Under nutrition, Obesity, Overweight, Growth and development.*

Introduction

Malnutrition literally means "bad nutrition" and technically includes both over and under nutrition. In the context of developing countries, under-nutrition is generally the main issue of concern, though industrialization and changes in eating habits have increased the prevalence of over-nutrition.[1]

Under five children are most vulnerable group and their nutritional status and mortality rate is a sensitive indicator of community health and nutrition of a country. Malnutrition accounts for 50% of the under-five deaths[2] and 5.9 million children under the age of 5 years died in 2015[3]. Malnutrition influence growth and development, cognitive function of the children and probability of often getting infection.

India is one of the countries with the highest burden of under nutrition among children. Socio economic factors such as unemployment, poverty, illiteracy, lack of women empowerment, health care inequalities, inadequate implementation of national policy contributes increased health problems among underfive children including malnutrition. Adequate nutrition is essential in early childhood to ensure healthy growth, proper organ formation and function, a strong immune system and neurological and cognitive development.[6]

Research Title

A Study to Assess Prevalence of Malnutrition among Underfive School Children at Alankuppam, Puducherry, India.

Objectives

1. To assess prevalence of malnutrition among underfive school children
2. Determine the Correlation between Malnutrition and selected socio demographic variables of underfive school children.

Methods

Community based Cross Sectional Design was carried out to identify malnutrition among school children at Alankuppam, Puducherry, India. Alankuppam rural area is located about 20 kms towards Puducherry west. There is one Primary Health Sub Centre is available to meet the health care needs of the people. There are total 4960 population and includes children with the age 0 – 5 years is 441 which make up 8.9% of total population of village.

Ethical Consideration

Permission was obtained from Institutions Head. Informed consent was obtained from parents prior to the data collection and their confidentiality was maintained throughout the study.

Sampling Technique

Convenience sampling method used to select 140 school children in the age group 2 ½ to 5 Years from selected schools at Alankuppam, Puducherry, India.

Research Instrument

The tool consists of two sections:

Part I : Socio Demographic information of the underfive School children includes parents age, education, occupation, income and date of birth and gender of the underfive school children.

Part II : Anthropometric Measurement Scale Such as Height, Weight and Mid arm Circumference.

Scoring Interpretation

Score was interpreted based on WHO Standards (Z-Score) as follows

Normal	< -2 z-score < +2
Moderate malnutrition	< -3 z-score < -2
Severe Malnutrition	z -score < -3

Data Collection Procedure

The data was collected for a period of 2 weeks in the month of February 2018. After obtaining the permission from the private & Government schools of Alankuppam, Puducherry and the 140 School children were selected using convenience sampling. About 15 – 20 participants were assessed per day in standard/Class wise for Anthropometric measurements such as Height, Weight and Mid Upper Arm Circumference using Weighing scale, Height measuring stand and Inch tape. Demographic profile was collected by sending the Questionnaire tools to the parents through school diary.

Data Analysis Procedure

Descriptive statistics

- Mean, Median, Percentage, Frequency was used to describe the sociodemographic variables.
- BMI was calculated based on the height and weight of the respondents.

Inferential Statistic

- Z Score was calculated to assess the level of Malnutrition
- Correlation to measure the strength of the relationship between Malnutrition and selected socio demographic variables..

Results

Table 1: Distribution of age and gender of Underfive School Children

Age in Months	Boys		Girls		Total	
	no	%	no.	%	no.	%
18-29 months	1	100.0	0	0.0	1	0.7
30-41 months	9	56.3	7	43.8	16	11.4
42-53 months	29	36.7	50	63.3	79	56.4
54-60 months	25	56.8	19	43.2	44	31.4
Total	64	45.7	76	54.3	140	100.0

Table 1 reveals that, majority of the school children were in the age group of 42 -53 months 79 (56.4%), and regarding gender most of them were girls 76 (54.3%).
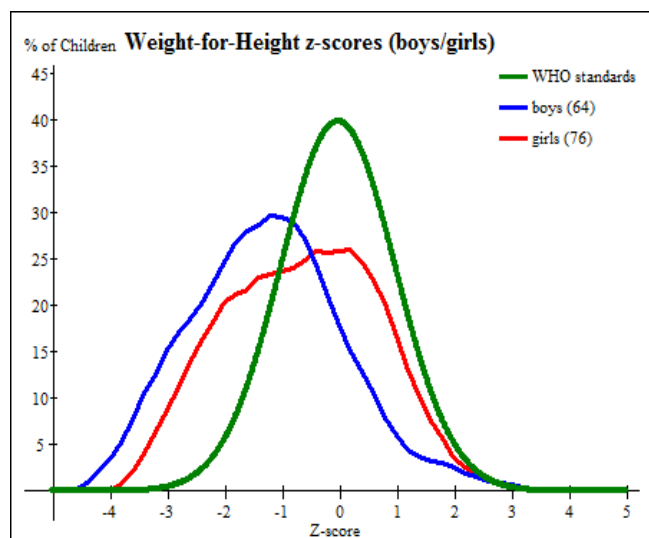

Figure 1: Distribution of Children based on weight-for-height z-scores

Table 2: Prevalence of acute malnutrition based on weight-for-height z-scores and by sex

Prevalence of Malnutrition	All n = 140	Boys n = 64	Girls n = 76
Normal (<-2 z-score)	(32) 22.9 %	(19) 29.7 %	(13) 17.1 %
Moderate malnutrition (<-2 and >=-3 z-score)	(28) 20.0 %	(15) 23.4 %	(13) 17.1 %
Severe malnutrition (<-3 z-score)	(4) 2.9 %	(4) 6.3 %	(0) 0.0 %

Table 2 reveals that, 4 (6.3%) of boys and none of the girls have Severe Malnutrition, 15 (23.4%) of boys and 13 (17.1%) of girls have Moderate Malnutrition.

Table 3: Prevalence of acute malnutrition based on the percentage of the median

Prevalence of Malnutrition	n = 140
Mild malnutrition (<80%)	(10) 7.1 %
Moderate Malnutrition (<80% and >= 70%)	(10) 7.1 %
Severe malnutrition (<70%)	(0) 0.0 %

Table 3 reveal that, prevalence of acute malnutrition based on the percentage of the median Mild malnutrition (<80%) & Moderate Malnutrition (<80% and >= 70%) were 10 (7.1%) respectively.
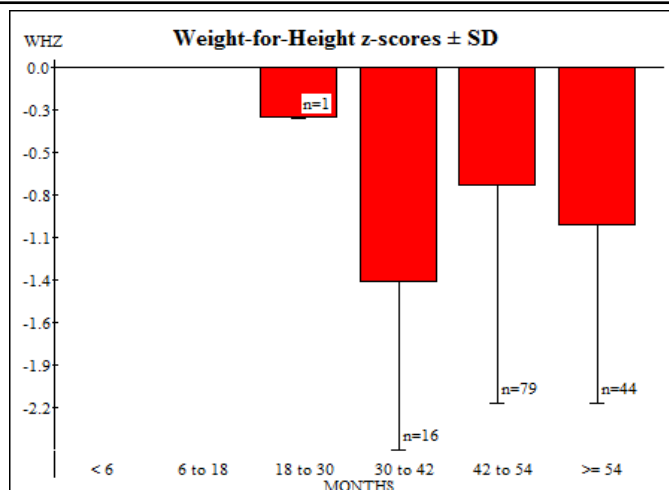

Fig 2: Prevalence of malnutrition by age, based on weight-for-height z Score.

Table 4: Distribution of children based on BMI percentile

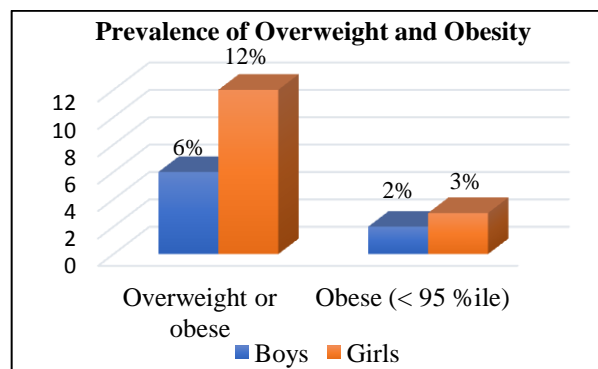| Body Mass Index (%ile)	Boys	Girls	Total
Underweight (< 5th %ile)	52%	33%	**41%**
Normal BMI (5th - 85th %ile)	42%	55%	**49%**
Overweight or obese (≥ 85th %ile)	6%	12%	**8.5%**
Obese (≥ 95th %ile)	2%	3%	1.5%
Total	64	76	**140**

Fig: 3 Prevalence of Overweight and Obesity among underfive School Children.

Conclusion

Prevalence of malnutrition more among boys compare to the girls based on Weight for Height Z score of school children.

Prevalence of severe malnutrition more among boys 4 (6.3%) compare to the girls 0 (0) based on Weight for Height Z score of school children.

Prevalence of Moderate Malnutrition more among boys 15 (23.4%) and Girls 13 (17.1%) based on Weight for Height Z score of school children.

Prevalence of acute malnutrition based on the percentage of the median Mild malnutrition (<80%)

& Moderate Malnutrition (<80% and >= 70%) were 10 97.1%) respectively.

According to z score malnutrition more common among children in age group of 30 – 42 months.

Regarding distribution of School Children based on BMI, 49% of children only have normal BMI (5 - 85th %ile), 41% of them were under nutrition (< 5%ile) and 10% of them were Overweight and Obese (> 85%ile).

Correlation of Height and Weight of school children with selected demographic variables reveals that mother age have relationship with malnutrition Z score of school children, which has significant at $p > 0.04$ and with BMI of School children at $p > 0.02$.

Health status and prevalence of malnutrition among school children and importance of nutrition in growth and development was explained to institutional heads.

Teachers and Parents were educated through distribution of pamphlets regarding Growth and Development and Healthy Nutrition.

Recommendations

- Nutritional survey need to be carried out among underfive school children.
- Knowledge on malnutrition and healthy diet for underfive school children among school teachers and parents to be assessed.
- Hands on training for teachers and parents on anthropometric measurements and growth and development need to be implemented.

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