

Original Research Article

Nutritional status of infant and young children at a tertiary care hospital and factors affecting the nutritional status

Arvind Chavan, Shraddha Dubewar*, Sarfaraz Ahmed, Saleem H. Tambe

Department of Pediatrics, Dr. Shankar Rao Chavan Government Medical College, Nanded, Maharashtra, India

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*Correspondence:

Dr. Shraddha Dubewar,

E-mail: shraddha_debewar@yahoo.co.in

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ABSTRACT

Background: Communicable diseases like acute respiratory infections and diarrhea are the major killer of less than five populations. This is especially true among those who are malnourished. Malnutrition is related to the increased morbidity and mortality due to diarrhea. The objective of this study was to study nutritional status of infant and young children at a tertiary care hospital and factors affecting the nutritional status

Methods: A hospital based cross sectional study was carried out. A total of 165 children were included in the study which comprised of 107 males and 58 females. The study was carried out for a period of one year. Anthropometric measurements and their interpretation were done as per WHO guidelines.

Results: Out of 165, 19 children were under weight and 3 were overweight. 143 children were well nourished according to the WHO standards. 18 were having wasting and two were obese. There was no significant difference in nutritional status of children in relation to education of their mothers; with respect to weight for age ($p = 0.265$) and height for age ($p = 0.425$). There was no difference in nutritional profile of bottle fed and non-bottle-fed children.

Conclusions: Majority of children (143/165) were well nourished. There was no difference in the nutritional profile of children among those of graduate and non-graduate mothers. There was no difference in nutritional profile of bottle fed and non-bottle-fed children.

Keywords: Factors, Infant, Nutritional status, Young children

INTRODUCTION

With the objective of achieving proper growth and development of the children, WHO and UNICEF are constantly encouraging “appropriate feeding practices” for all children.¹

The guidelines have been framed at international level. As per these guidelines, they recommend giving exclusive breast feeding to the infant for not less than six months, give the breast feeding to the infant on demand, continue the breast feeding to the infant for up to two years, and as per child requirements complementary feeding should be given at an appropriate age.² Special

attention has to be given to achieve proper growth towards the infants and young children. This is a special high-risk group which is vulnerable to malnutrition as this period is a period of rapid growth.³

Communicable diseases like acute respiratory infections and diarrhoea are the major killer of less than five populations. This is especially true among those who malnourished. Malnutrition is related to the increased morbidity and mortality due to diarrhoea. In children less than two years of age, deaths from acute respiratory infections are increased many folds in malnourished children. Thus, malnutrition accounts for more than 50% of the deaths among under five population.

Malnutrition also affects the brain development. After six months of age, due to increased nutrition demands, breast milk is not sufficient to supplement the growth of the child. Hence there is more risk of malnutrition and related consequences.⁴

Many research studies tried to find out the association between breast feeding practices and the effect of these practices on the growth of the children. Some studies tried to study the association between association between introduction of complementary feeding practices with that of nutritional status among infants and young children. But most of these studies were cross sectional in nature. Thus, we may not get proper findings from these studies. But even in the follow up studies, the association between infant feeding practices and the nutritional status has been documented. But current guidelines on feeding and the nutritional status of the children studies are not available.⁵

Infant feeding practices are directly related to the nutritional status of infants and the occurrence of morbidity and mortality among them. In that breast feeding is more important. As breast fed infants are found to be healthier than the supplementary fed infants. Due to lack of proper nutrition, nearly 5.6 million infants die annually. Hence exclusive breast feeding has been recommended. But even today, exclusive breast feeding is low among mothers.⁶

Present study was conducted to study nutritional status of infant and young children at a tertiary care hospital and factors affecting the nutritional status.

METHODS

A hospital based cross sectional study was carried out. A total of 165 children were included in the study which comprised of 107 males and 58 females. The study was carried out for a period of one year. Institutional Ethics Committee permission was obtained. Study was carried out after due consent from parents.

While considering nutritional status as the final outcome and maternal education as the causal factor, and assuming a difference of at least 30% of incidence of malnutrition of children of mothers who are graduate as compared to those of mothers who have not completed their graduation, with 5% level of significance and 90% power of the study, the estimates sample size was calculated to be 165.

Detailed history and thorough clinical examination was carried out for each and every subject in the present study. All this data was entered in the pre-designed, pre-tested and semi structured questionnaire.

At the same time, nutritional profile of the children was also noted: including their weight and length/height.

Weight was noted with an electronic digital weighing machine and length with the help of an infantometer. For older children who can stand, a stadiometer was being used to measure the height. WHO charts were used for reference and 'Z' scores (i.e. the deviation from the mean) were used for comparing among various groups. "Z" scores were calculated for weight and heights using the "WHO-Anthro software".

Another thing looked for in this study was the prevalence of use of bottle for feeding by the mothers. If present, reasons for the same were also asked; we have also looked for statistical co-relation of it with recurrent respiratory and gastrointestinal infections if applicable. The data was analyzed using proportions and appropriate statistical tests.

RESULTS

Total of 165 children were included in the study which comprised of 107 males and 58 females.

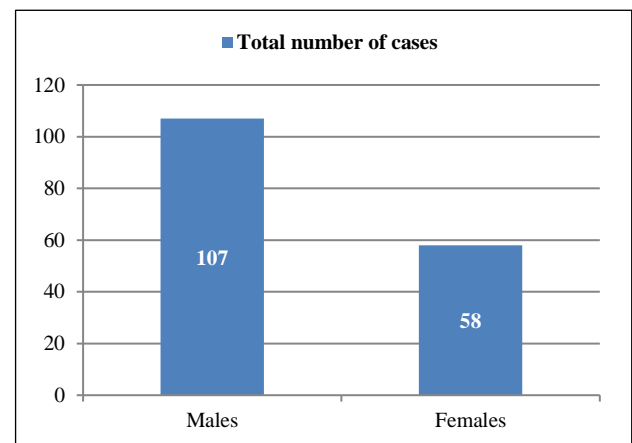


Figure 1: Sex wise distribution of the study subjects.

The mean age of males taken into study was 14 months with a standard deviation (SD) of 7.6 and that of females was 12.5 months with a standard deviation of 5.8.

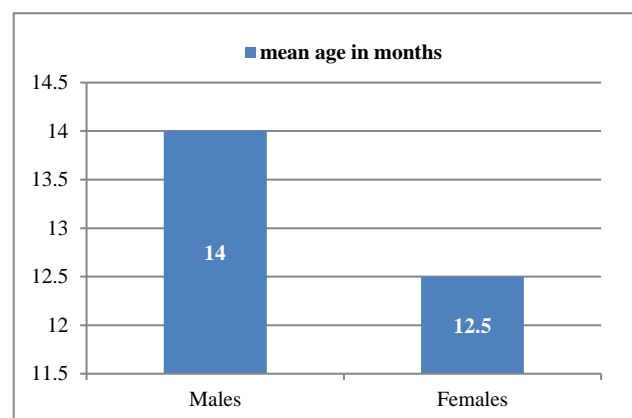


Figure 2: Age wise distribution of the study subjects.

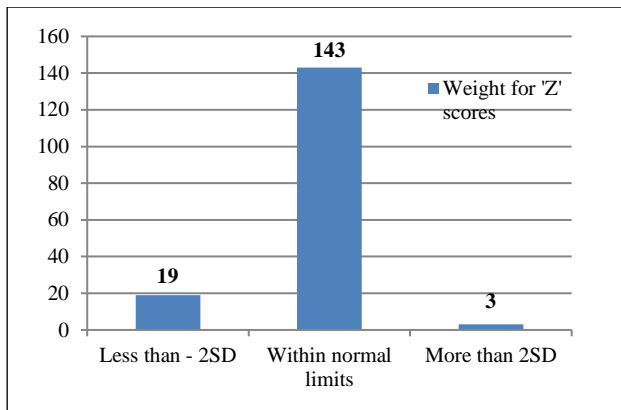


Figure 3: Nutritional status of children (weight for age Z scores).

Out of 165, 19 children were underweight and 3 were overweight. And regarding height for age, 143 were appropriate height for age, 18 were having less height for age and 4 with height of more than 2sd for the mean height of that age.

143 children were well nourished according to the WHO standards. 18 were having wasting and two were obese.

The mean 'z' scores for weight for age of children of graduate mothers was -0.439 and that in children of non-

graduate mothers was -0.669, with a mean standard error of 0.120 and 0.145 respectively. Comparable values were found for height age z scores also.

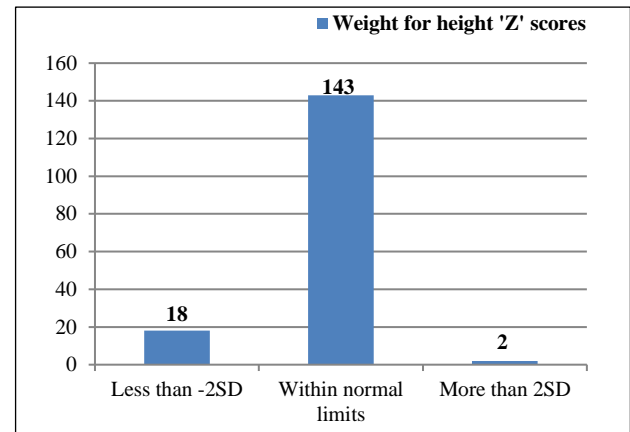


Figure 4: Nutritional status of children (weight for height Z scores).

Although the mean z scores for weight for age of children of non-graduate mothers were slightly less, this difference was not significant statistically. There was no significant difference in nutritional status of children in relation to education of their mothers; with respect to weight for age ($p=0.265$) and height for age ($p=0.425$).

Table 1: Education of mothers and nutritional status of children.

Variable	Non-graduate	Standard error	Graduate	Standard error	Test	Probability
Weight Z score (mean)	-0.669	0.145	-0.439	0.120	1.118	0.265
Height Z score (mean)	-0.701	0.124	-0.545	0.149	0.799	0.425

Table 2: Bottle feeding and nutritional profile.

Variable	Non graduate	Standard error	Graduate	Standard error	Test	Probability
Weight Z score (mean)	-0.613	0.151	-0.556	0.134	0.278	0.781
Height Z score (mean)	-0.673	0.127	-0.617	0.136	0.287	0.774

The mean 'z' score for weight for age in non-bottle-fed babies was 0.613 with standard error of 0.151; and those in bottle fed babies was 0.556 with a standard error of 0.134. Similarly mean 'z' score for height for age in non-bottle-fed babies was 0.673 with a standard error of 0.127 and that for bottle fed babies was 0.617 with a standard error of 0.136. Using the 't' test for correlation, p value of 0.7 (i.e. more than 0.05) was found; indicating a no difference in nutritional profile of bottle fed and non-bottle-fed children.

DISCUSSION

Comprised of 107 males and 58 females. The study was carried out for a period of one year. Anthropometric

measurements and their interpretation were done as per WHO guidelines. Out of 165, 19 children were underweight and 3 were overweight. 143 children were well nourished according to the WHO standards. 18 were having wasting and two were obese. There was no significant difference in nutritional status of children in relation to education of their mothers; with respect to weight for age ($p=0.265$) and height for age ($p=0.425$). There was no difference in nutritional profile of bottle fed and non-bottle-fed children.

Fekadu Y et al in their study found that the prevalence of wasting was 17.5%, prevalence of stunting was 22.9% and the prevalence of underweight was 19.5%.⁷ Not breastfeeding the babies was found to be associated with

wasting. Wasting was also found to be associated with history of diarrhoea in last fortnight. Contrary to present study finding the authors found that bottle feeding had adverse effect on the nutritional status of the children. The authors concluded that breastfeeding is protective against wasting among children.

Alemayehu M et al found that the prevalence of stunting, underweight and wasting was 56.6%, 45.3%, and 34.6% respectively.⁸ Stunting was found to be associated with education of mother, houses where father ate first and contaminated water consumption.

All children in this study had history of starting breast feeding with first three hours of birth. All children in this study were breast fed for almost two years. These factors were found to be strongly associated with wasting. The determinants of underweight among girls were the factors like mother who could make financial decision, and factor like initiation of breast feeding after six hours of birth.

Fentahun W et al observed that the prevalence of stunting was 57.7% and that of wasting was 16%.⁹ The authors found that the stunting was associated with mother's age being less than 15 years and mothers who gave pre-lacteal feeding to their babies after birth.

The authors concluded that the under nutrition was an important public health problem in their study area. They observed that stunting was negatively associated with increased age of the children and children from upper social classes.

Asfaw M et al noted in their study that the prevalence of stunting was 47.6%, that of underweight was 29.2% and that of wasting was 13.4%. The authors found that underweight was common among males, having history of diarrhea in the last fortnight, illiteracy of father and having mother with more than four children.¹⁰

Stunting was found to be associated with history of giving pre-lacteal feeding, being male and history of diarrhoea in the last fortnight. Wasting was found to be associated with history of diarrhoea in the last fortnight, families not using spacing methods and age at complementary feed was started.

Abdulahi A in their review of 18 studies on nutritional status found a pooled prevalence for stunting as 42%. Similarly, the prevalence for underweight was 33% and that of wasting was 15%. Under nutrition was found to be associated with age of the child, sex of the child, complementary feeding, and no diversity in the diet, episodes of diarrhea, and education of the mother, height of the mother and the residence and the social class.

Scherbaum V et al in their study stressed upon the importance of the breast feeding as it prevents stunting, wasting, obesity and other nutritional deficiencies.¹²

CONCLUSION

Nutritional profile of the studied children revealed that 11.5% of the children were having weight for age less than two SD from the mean; indicating wasting and similar figures were found for height for age (11%). Majority of children were found to have nutritional status within normal range. There was no difference in the nutritional profile of children among those of graduate and non-graduate mothers. There was no difference in nutritional profile of bottle fed and non-bottle-fed children.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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