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Research Article

A CROSS-SECTIONAL STUDY OF MALNUTRITION AMONG UNDER FIVE CHILDREN OF PARLA VILLAGE, KURNOOL DISTRICT.

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Abstract

Introduction: Children under five are most vulnerable to malnutrition and infection. Morbidity pattern of this age group has several determinants like socio-economic status, maternal education, occupation, socio-cultural practices, living environment etc. With almost half of under five children In India, the Millennium Development Goal 1 (indicator 4) of halving the prevalence of underweight by 2015 seems a distant dream. **Objectives**: (1).To study prevalence of malnutrition in under five children in Parla village, Subcentre Parla, Kurnool district . 2. To identify different grades of malnutrition according to WHO Child Growth Standards. 3. To recommend modes of intervention based on severity of malnutrition. **Materials and Methodology:** This cross-sectional study was conducted from May to June 2014 in under five children in Parla village, Subcentre Parla, Kurnool. 100 study subjects out of 480 under five children were selected using simple random sampling. The data recorded in the predesigned questionnaire was used to grade malnutrition according to WHO classification. Statistical analysis was done using EPI INFO VERSION 2007. **Results**: The prevalence of malnutrition in the present study was 63%. There were 33% moderately underweight and 30% severely underweight children and 37% had normal nutritional status. **Conclusions**: Emphasis should be laid on maternal nutrition education, home- based management of childhood illnesses, referral of severely malnourished children to the Nutrition Rehabilitation centre, hygiene and improvement of socio-economic status to reduce the burden of childhood undernutrition. The present study may help the policy planners to combat different forms of malnutrition by addressing these issues.

KEYWORDS: Malnutrition, under five children

INTRODUCTION

Malnutrition is the principal cause of child deaths. Half of all child deaths in India could be prevented if this one issue is tackled. "Children are our future and their mothers are its guardians." Almost 11 million children will die before they reach the age of five, four million of them in the first month of life. It is a significant public health problem described as a silent killer, silent emergency, invisible enemy affecting those who cannot express their voice and have to depend upon others for their advocacy [1]. Despite India's remarkable economic growth over the last decade, many children still struggle to meet their basic needs, which include access to sufficient food and health care. In this context, it is important to get a more recent data on child nutritional status[2].

Under five children comprise about 13% of the total population[3]. Faulty feeding practices are commonly observed and diets of most children are not adequate for calories and proteins as per Indian Council of Medical Research (ICMR) guidelines. Hence there is an urgent

need for the government to strengthen the policies and invest more funds to combat malnutrition among under five children[1]. At present, 65% of under five children are underweight for age which includes 47% moderate and 16% severe cases of undernutrition (UNICEF 2006 State of Worlds children)[4]. In April 2006, the World Health Organization (WHO) released new standards for assessing the growth and development of children from birth to five years of age[5,6]. India has adopted the new WHO growth standards in February 2009, for monitoring the young child growth and development within the National Policy and the ICDS[7].

The WHO estimates that about 60% of all deaths, occurring among children aged less than five years in developing countries, could be attributed to malnutrition[8]. At the first meeting of the Prime Minister's National Council on India's Nutrition challenges held in November 2010, the Prime Minister noted that "the levels of undernutrition continue to remain unacceptably high and the rates of reduction in undernutrition over time disappointingly low, this is simply unacceptable. Reducing child malnutrition requires simultaneous intervention along multiple fronts[9].

As India becomes more and more developed and we have greater means at our disposal, our response to our health challenges must reflect our changing health and socio-economic status [10]. Undernutrition predisposes the child to infection and complements its effect in contributing to child mortality[11]. It is therefore logical to direct increasing attention to the quality of survivors[12]. The present study aims to determine the prevalence of malnutrition, to identify different grades of malnutrition according to WHO Child Growth Standards and to recommend modes of intervention based on severity of malnutrition, among under five children of a village coming under the field practice area of the Rural Health Centre of Kurnool Medical College, Kurnool .

MATERIALS AND METHODOLOGY:

The present cross-sectional study was conducted to address the study objectives during the months of May 2014 to June 2014 in Parla village, Subcentre Parla, under Rural Health Centre, Parla, field practice area of Department of Community Medicine, Kurnool Medical College, Kurnool. Parla village has a total population of 5000. The study subjects, under five children in the above study setting were selected using simple random sampling. The sample size was calculated taking the prevalence of moderate degree of malnutrition, in Kurnool district, according to WHO classification, as per May 2014 statistics, provided by the Department of Health and Family Welfare, Andhra Pradesh. The sample size of 100, was calculated using formula $4pq/L^2$, where p is prevalence of moderate degree of malnutrition in Kurnool district, i.e p=50.5%, q=100-p, L is allowable error set at 20% of p. Chi-Square test was used to verify the statistical significance of associations. p-value of less than 0.05 was considered statistically significant.

An informed parental consent was obtained for all the under five children enrolled in the study. The investigator first visited the Anganwadi centres in Parla village, where the information regarding the under five children (0-5 years) was provided by the anganwadi workers. Data was collected by house-to-house visit using a predesigned questionnaire administered in the local language to obtain information regarding socio-demographic information, child feeding practices, anthropometry, nutritional deficiencies and other

morbidities. In the absence of the mother, any other responsible adult member of the family, who was involved in taking care of the child, was interviewed. The investigator received training in standard procedures in anthropometry in the Department of Community Medicine prior to conducting the study. Children were weighed as per WHO guidelines on anthropometry [13].

Data was classified according to WHO Child Growth Standards as Moderately underweight: -2SD, Severely underweight: -3SD. The questionnaire was checked for completeness of data and then entered in MS Excel and analyzed for descriptive and inferential statistics in EPI INFO 2007 version. Ethical approval by the Institutional Ethics Committee of Kurnool Medical College, Kurnool on research involving Human subjects was obtained prior to conducting research and written informed consent was taken from the parents or caregivers of the child.

RESULTS:

In our study, there were 48 (48%) male and 52 (52%) female children out of 100 study subjects as depicted in Table 1. Table 2 shows that most of the children (95%) belonged to Hindu religion and 93% children in below poverty line category ascertained by the presence of a white-colored ration card in the family shown as proof of residence during the interview. Mother was the caregiver in 86% of the cases. In the remaining 14%, the child was taken care by a member of the family, most commonly the grandmother (12%) and father (2%).

Table 3 shows the breast feeding practices of the under five children. About 91% of children were breast fed exclusively for more than 6 months, and 2% were breast fed exclusively for less than 6 months. 1 male child had difficulty in feeding. Complementary feeding was initiated after 6 months for majority of the children (83%) and, for very few(4%), it was initiated before 6 months. For remaining 13% children, complementary feeding was not yet initiated.

On general examination, 37% were found to be thin built, of which 16(33.33%) among 48 male children, where as among 52 female children, it was found in 21(40.38%). Remaining 63(63%) children were normal in appearance. 32% had thin sparse hair, of which 19(39.58%) among 48 male children, where as among 52 female children, it was found in 13(25%). Head was tonsured in 3% children. Remaining 65% children had normal hair.

Table 1:Age and sex wise distribution of Study subjects

Age group	Males (%)	Females (%)	Total (%)
0-12 months	13 (50%)	13 (50%)	26 (26%)
13-24 months	11 (84.61%)	2 (15.38%)	13 (13%)
25-36 months	9 (42.85%)	12 (40%)	21(21%)
37 - 48 months	12 (40%)	18 (60%)	30 (30%)
49 - 60 months	3 (30%)	7 (70%)	10 (10%)
Total	48 (48%)	52 (52%)	100 (100%)

Table 2: Baseline characteristics of the under five children

Characteristics	No of children, N=100(%)
Sex	
Male	48(48)
Female	52(52)
Religion	
Hindu	95(95)
Muslim	5(5)
Socio-economic status	
Below poverty Line	93(93)
Others	7(7)

Table 3: Breast feeding practices among the under five children

Breast feeding practices	No of children, N=100(%)
Initiation of breast feeding	
> half an hour after birth	46 (46)
< half an hour after birth	53 (53)
Duration of exclusive breast breastfeeding	
>6 months	91 (91)
<6 months	2 (2)
still breast feeding	6 (6)
Initiation of complementary feeding	
after 6 months	83 (83)
before 6 months	4 (4)

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Table 4: Chi-Square Test of Association between Mother's Literacy and Underweight:

		Underweight +	Underweight –	
Mother's Literacy	+	25	23	48
	–	39	13	52
		64	36	100

Chi-square=5.6892, degrees of freedom=1, $p<0.05$.

Literacy rate of mothers (49%) of the under five children is less when compared to fathers (62%) literacy rate. The hypothesis that mother's illiteracy is associated with increased prevalence of malnutrition among the study subjects was tested as above using Chi-Square test of association. We reject the null hypothesis, since computed chi square value (5.6892) was more than the tabled value at 5% level of significance (3.84). Thus we conclude that the association between Mother's literacy status and underweight was statistically significant.

Table 5: Sex wise distribution of the under five children according to Nutritional status

Sex	Normal Nutritional status	Underweight		Total
		Moderately Underweight	Severely Underweight	
Male children	21(43.75%)	15 (31.25%)	12 (25%)	48
Female children	16 (30.76%)	18 (34.61%)	18 (34.61%)	52
Total	37(37%)	33 (33%)	30 (30%)	100

The prevalence of malnutrition in the present study was 63% as shown in the Table 5. 33% children were moderately underweight and 30% children were severely underweight. 37% of the study subjects were found to have normal nutritional status. There were no overweight and obese children in our study. Malnutrition was prevalent in 27(56.25%) male

children and 36(69.23%) female children. Female children were comparatively more malnourished than male children.

Table 6: Age wise Distribution of Malnutrition among the under five children

Age group	Malnutrition	Normal	Total(N=100) (%)
0-12 months	13 (50%)	13(50%)	26(26%)
13-24 months	9(69.23%)	4(30.76%)	13(13%)
25-36 months	15(71.42%)	6(28.57%)	21(21%)
37-48 months	21(70%)	9(30%)	30(30%)
49-60 months	5(50%)	5(50%)	10(10%)
Total	63(63%)	37(37%)	100(100%)

Table 6 shows that in our study of children of 0-60 months age group, prevalence of malnutrition was highest among 37-48 months age group (21 of 63, 33.33%) and lowest among 49-60 months age group (5 of 63, 7.93%). Age wise prevalence of malnutrition was highest in 0-12 months age group (29.62%) among male children and lowest in 49-60 months age group where as among female children, it was highest in 37-48 months age group (38.88%) and lowest in 13-24 months age group (5.55%).

DISCUSSION:

100 under five children were included out of which 63% of the children were underweight in this study which was close to the prevalence of undernutrition of under five children in field practice area of the Dr.D.Y.Patil Medical College i.e, 65.2% [14]. In a study conducted in urban slum of Delhi, by Saxena N et al, it was observed that prevalence of moderate underweight was 37.3% and severe underweight was 20.3%[15]. The prevalence of underweight in this study was comparable to our study. The mean, mode and median of the body weight in the present study were 9.26kg, 11kg and 9.5kg respectively. The body weight ranges from 5 to 15 kg. Standard deviation of the body weight was found to be 11.12. The study of socio-demographic characteristics showed that 26% of the children were infants, 60% were between 1 and 3 years and about 43% were between 3 and 5 years of age.

In a study conducted by Reddy DC et al, in Uttar Pradesh, the prevalence of underweight was maximum at 75% among children of low socio-economic status while only 24% among children of high socio-economic status[16]. This finding was comparable to our study where the prevalence of underweight was 67.74%, among children of low socio-economic status and 14.28%, among children of high socio-economic status. The mean and median age among these children were found to be 29 months and 28 months respectively.

In the present study, female children (69.23%) were comparatively more malnourished than male children (56.25%). There was a statistically significant association as shown by chi-square test of association between mother's literacy status and prevalence of undernutrition among the study subjects.In a study conducted by A Mittal et al, education of mother significantly influenced the nutritional status of under fives as the prevalence of undernutrition was 60.9%, where mother was illiterate and it was only 21.2% with literate mothers.[17]

The findings of the present study amply reveal that problem of malnutrition is multifaceted and has links with various socio-economic and demographic factors. Feed back about the under five children, found to be moderately underweight in this study was given to the local health personnel for prompt and effective management, while the severely underweight were referred to the Nutrition Rehabilitation Centre, Government General Hospital, Kurnool, a tertiary level care provider for the district. Awareness through health education campaigns, regarding infant and young child feeding practices needs to be generated among the local grass root level health personnel and mothers to address the problem of undernutrition in the community.

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