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Community Medicine

UNDER NUTRITION & MORBIDITY AMONG PRE-SCHOOL CHILDREN IN RURAL AREA OF PUDUCHERRY, INDIA.

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ABSTRACT **BACKGROUND:** Malnutrition is very rampant in India. It's a leading cause of childhood morbidity and mortality as well as permanent impairment of physical and possibly mental growth of survived children.

OBJECTIVES: 1) To find out the prevalence of under nutrition and morbidity among under five children. 2) To identify various socio-demographic factors associated with under nutrition.

STUDY DESIGN: Cross sectional study was conducted during Jan 2014 to August 2014 in anganwadis in rural area of Puducherry with 135 children.

RESULTS: We observed that overall prevalence of under nutrition was 34.8%. Among girls 38% were undernourished while 29% boys were undernourished at the time of survey. Morbidities like diarrhea, ARI (acute respiratory infection) were observed among 38.2% of malnourished children while 12% of the well-nourished children had some morbidity at the time of our survey. Under nutrition among children was significantly associated with morbidity ($\chi 2=12.07$, $p<0.001$). Educational status of mother and socio-economic status of family have significant impact on the nutritional status of the child.

KEYWORDS : Under nutrition, morbidity, children, rural, India

INTRODUCTION:

Malnutrition is a silent emergency. Nutritional status of pre-school children is of paramount importance since during this period, the foundation of lifetime health, strength and intellectual vitality is laid. 1 Under-nutrition is a global health problem. In developing countries, particularly where the population is high; hunger and malnutrition are wide spread among the pre-school age children.2 One in every three malnourished children of the world lives in India. India also contributes to the highest number of the deaths among under-fives in South East Asia region and one-fifth of under-five deaths worldwide. At least half of Indian infant deaths are related to malnutrition.3 Assessment of growth thus not only serves as a means for evaluating the health and nutritional status of children, but also provides an indirect assessment of the quality of life of an entire population.4 Nutritional problems like Protein Energy Malnutrition (PEM), Anaemia and Vitamin-A deficiency continue to be major problems in Indian children. These nutritional deficiencies adversely affect the health and development of children and contribute to high level of morbidity and mortality in the developing countries like India.5 Socio-demographic variables like age, gender, socio-economic status, mother's education are very crucial in determining the nutritional status of under five children.[6]

MATERIAL & METHODS:

Cross sectional study was conducted from January 2014 to August 2014 involving under five children attending two anganwadis in Manapet, located 6 km from Medical College which is the rural field practice area of Department of Community Medicine, Aarupadai Veedu Medical College, Puducherry. We visited the anganwadis and mothers of the children were informed to gather in the anganwadis. The purpose of the study was discussed with them and nutritional status of all 135 children was assessed by computing weight for age and grading the children using the IAP (Indian Academy Of Pediatrics) classification. Children were weighed using salter weighing scale. Association of nutritional status with gender, mother's education, socioeconomic status and birth order was determined. Mothers were interviewed using predesigned & pretested structured questionnaire to collect additional information about birth order, birth details, mother's literacy, occupation & socio-economic status. Associated illnesses like diarrhea, respiratory infections, skin infections, fever and dental caries, ENT infections were also recorded. Data was collected and was entered into MS Excel 2010, analyzed using percentages, Chi square test with the help of SPSS. Socioeconomic status was determined by using modified B. G. Prasad's classification. Health education was given to the mothers regarding healthy diet for their children and dangers of under nutrition among children, immunization, importance of small family norm, female education. They were encouraged to adopt appropriate family planning methods. The children with any morbidity were referred to Manapet Rural Health Center for further treatment and regular follow up was done with the help of anganwadi workers to monitor health status of these children.

RESULTS:

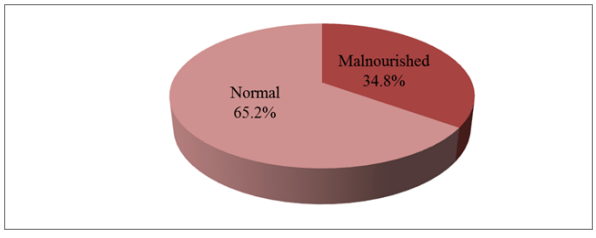

Fig. 1: Overall prevalence of under nutrition among the study participants.

Out of the total 135 children surveyed, 78(57.7%) were girls and 57 (42.3%) were boys; 47 (34.8%) were underweight & among them, 30 (63.8%) were girls and 17 (36.2%) were boys which shows higher prevalence of under nutrition among girls. Among the undernourished children; 61.7% were having grade-I malnutrition, 25.53% were with grade-II malnutrition & 12.76% had grade-III malnutrition. No child was suffering from grade-IV under nutrition as per the IAP classification (Table 1).

Table 1: Distribution of children according to grades of malnutrition.

IAP (Indian Academy Of Pediatrics) Grade	n	%
Grade- I	29	61.7
Grade- II	12	25.53
Grade- III	6	12.76
Total	47	100

As shown in Table 2, out of the total 135 children, 29 (21.4%) were having morbidity at the time of our visit. Among the undernourished children, 38.2% were having morbidity like diarrhoea, ARI while 12.5% of children with normal weight had some morbidity at the time

of our visit. Under nutrition among children was significantly associated with morbidity ($\chi2$=12.07, p<0.01).

Table 2: Distribution of children according to morbidity.

Nutritional status	Number of children	Having infection		Not having infection	
		n	%	n	%
Well nourished	88	11	12.5	77	87.5
Undernourished	47	18	38.2	29	61.8
Total	135	29	21.48	106	78.52

$\chi2$ = 12.07, (p<0.01)

Majority of the children (67.4%) who were undernourished belonged to class-IV as per modified B.G. Prasad classification while, rate of under-nutrition tends to increase with lower socio-economic class and tends to decrease with better socio-economic status (Table 3). This difference is statistically significant ($\chi2$=18.9, p<0.05). Prevalence of underweight was higher among the children whose mothers were less educated than those who were graduates (Table 3).

Table 3: Factors affecting nutritional status among study participants.

	Total no. of children		Underweight		
	n	%	n	%	$\chi2$ value
Socio-economic Class					
High	22	16.2	6	12.7	18.9
Medium	65	48.3	7	14.8	(p<0.05)
Low	48	35.5	34	72.3	
Total	135	100	47	99.8	
Mother's education					
Higher secondary & below	104	77.1	39	82.9	0.73
Graduate & above	31	22.9	8	17.1	
Total	135	100	47	100	

DISCUSSION:

The problem of malnutrition is multifaceted; causes may be acting in combination with various factors like poverty, lack of education, ignorance or may be cultural barriers. The number of malnourished children in India is among the highest in the world. Nutritional inadequacy during childhood will definitely hamper growth and development of children. It's important to study the prevalence of malnutrition among the children in order to take necessary steps to tackle the issue.

In the present study the prevalence of under nutrition was 34.8% which is similar to findings of the study conducted in West Benga[17] which reported the prevalence as 33.7%; while the study conducted in rural area in Bareilly (UP)[8] recorded the prevalence of malnutrition as 76.36% which is very high compared to our findings. The study done at Mangalore9, revealed the prevalence of under nutrition to be 63.16% while the study conducted in Kancheepuram district of Tamil Nadu[6] stated that 52.9% of the under five children were undernourished. Almost 57.4% of children in the study done at Meerut[10], 50.4% of children according to findings of the study done in the rural area of Loni, Maharashtra[11] and 63% of children in the study done in Miraj, Maharashtra[12] and 66.5% of the children in the study done in Kuthambakkam Village in Tamil Nadu[13] were found undernourished which is much higher compared to our findings.

In our study, the prevalence of under-nutrition was higher among girls (38.46%) than the boys (29.82%) but the difference is statistically not significant ($\chi2$=1.07, p> 0.05), while the prevalence of under nutrition was higher among boys (76.9%) than girls (56.3%) in the study conducted in Kuthambakkam, Tamil Nadu[13] & this difference was statistically significant. In the present study, 61.7% of children were having grade-I malnutrition and 25.53% had grade-II malnutrition while 12.76% had grade-III malnutrition and none were suffering from grade-IV under nutrition. The study done in Rithora (U.P.)14 reported that 45.49% of children were having grade-I malnutrition, 38.30% had grade-II malnutrition, 14.86% had grade-III and 1.35% had grade-IV malnutrition.

In our study, the prevalence of malnutrition was highest among children from low socio-economic status and it reduces as the socio-economic status improves. Similar findings were given in the studies done at Kuthambakkam village, Tamil Nadu[13] & the study done at Meerut.[10]

Among the present study participants, mother's educational status has positive impact on the nutritional status of the child (Table- 3). Under-nutrition is more common among children, whose mothers have less education than the graduate mothers. Similar findings were given by studies done in Aligarh[15], Chandigarh[16] and Kanpur[17] and in the study done in rural area of Allahabad district[18]. As the socio-economic status increases, the prevalence of under-nutrition is reduced among our study participants and this difference is statistically significant (Table-3). Similar results were given in various studies conducted in Allahabad[18], Bareilly[8] and Miraj[12]. The study done at Belgaum, Karnataka[4] reported that under-nutrition among children was significantly associated with father's education and not with the mother's education.

Among the 135 study participants in our study, 29 (21.4%) were having some infections as shown in (Table-2). According to findings of the study conducted in Visakhapatnam19, nearly 41% children had some infections at the time of the survey which is higher compared to our observations. According to our observations, under-nutrition among children was significantly associated with morbidity ($\chi2$=12.07, p<0.001). Similar findings were observed in the studies done at Visakhapatnam[19], Varanasi[20] , Mysore[21]. Similar observations were given by the study conducted at Domana village in Jammu[22] that; infections like diarrhea, skin infections, respiratory infections were more common in malnourished children than the well-nourished children.

CONCLUSION:

Even though ICDS has been established for more than 35 years, problem of malnutrition is still very much prevalent in India. Necessary steps need to be taken for better community participation to tackle the problem.

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