Original Article

NUTRITIONAL STATUS IN CHILDREN (1 – 5 YRS) – A RURAL STUDY

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Abstract:

Research question:
What is the prevalence of protein energy malnutrition (PEM) in 1 – 5 yrs of age and factors associated with it.
Objective:
1. To assess prevalence of protein energy malnutrition in children 1 – 5 yrs of age.
2. To identify the socio-economic and cultural factor associated with protein energy malnutrition
Setting:
Rural Health Training Centre, Jawan, Department of Community Medicine, J N Medical College, Aligarh.
Study design:
Cross-sectional study
Study variable:
Nutritional status, sex, family size, caste, social class, literacy status of parents.
Statistical analysis:
Chi-square (χ^2) test of significance
Result:
Overall prevalence of PEM was 56.4% in study population, with higher prevalence in female (58.6%) as compared to males (54.2%). Significant relationship was seen between PEM and sex, social class, caste, literacy status of parents and mother.
Keywords: **PEM, Children 1 – 5 yrs of age, Rural area.**

Introduction:

The most vulnerable period next to infancy is the age of 1 – 5 yrs. Pre school children constitute about 14% of the Indian population. This is a huge human resource which need to be developed and nurtured for the country to progress.

Nutritional status of pre school children is of paramount importance, since the foundation of lifetime health, strength and intellectual vitality is laid during that period. Malnutrition 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[1,2].

So keeping this in mind, the present cross-sectional study was done in the seven villages of Jawan Block registered with Rural Health Training Centre, Jawan, Deptt. of Community Medicine, J N Medical College, Aligarh with the following Aims and Objectives.

1. To assess prevalence of protein energy malnutrition in children 1 – 5 yrs of age.
2. To identify the socioeconomic and cultural factors associated with protein energy malnutrition

Material and Method:

The present cross sectional study was conducted for a period of one year in the field practice area of Rural Health Training Centre (RHTC), Jawan, Deptt of Community Medicine, J N Medical College, Aligarh. Using systematic sampling, every second household was selected in the seven registered villages of RHTC. A door to door visit was made in all these selected households. All the families who could not be contacted or were uncooperative on the first visit, were revisited. If these were still not available, they were not included in the study.

463 households were selected for the study. This constituted about 36% (642) children 1 – 5 yrs of age from these registered villages. All these children were examined and general information as well as those specific to the study subject were elicited by interviewing mother or head of the family. For assessing nutritional status of these children, anthropometric examination was done.

For grading PEM, classification of IAP (1972) was adopted.

Educational status of parents, caste, family size, social class was determined in accordance to Prasad Modified Classification (1970) with price correction index 1992- 93.

Data thus recorded was analyzed and interpreted to find out the relevant association. Statistical test of significance Chi-square (χ^2) was applied.

Result:

In the present study, 642 children of 1 – 5 yrs of age were surveyed. There were 330 (51.4%) males and 312 (49.6%) were females. Out of these 642 children, 362 (56.4%) were found to be suffering from PEM according to IAP (1972) classification.

A study of sex distribution revealed that 179 (54.2%) male children were malnourished with 102 (30.9%) from I degree, 61 (18.5%) from II degree, 14 (4.2%) from III degree and 2 (0.6%) from IV degree as compared to 183 (58.6%) female with 100 (32.0%) from I degree, 54 (17.3%) from II degree, 18 (5.8%) from III degree and 11 (3.5%) from IV degree malnutrition as shown in Table I.

Majority of the children suffering from PEM, 219 (60.5%) belong to social class IV, 129 (35.7%) to social class III, 8 (2.2%) to social class II and 6 (1.6%) to social class I. There is no significant association between social class and PEM in our study because the representation of children from social class I and II is very low 24 (3.37%) and majority of children 617 (96.1%) belongs to social class III and IV (Table II).

Family size observed in the present study was quite high. About half the population 348 (54.2%) of children belongs to family size of 7 and above and out of this population 201 (57.7%) belongs to the children with PEM. The children suffering from PEM, 106 (29.3%) belongs to family size of 5 – 6 while 105 (29.0%) belongs to family size of 7 – 8 (Table III).

Children belonging to higher caste had better nutritional status as compared to children of backward caste and scheduled caste. However 174 (27.1%) children belongs to higher caste and out of this 97 (34.6%) are normal children and 77 (21.3%) belongs to children with PEM.

Further there is a significant association between caste and PEM. (Table IV).

The percentage of both the parents literate or one of them literate was 355 (55.3%) out of this 200 (56.3%) belongs to children with PEM. However, children suffering from PEM 150 (41.4%) belong to one literate parent. Further, 162 (44.7%) belongs to illiterate parents. There is a significance association between literacy status of parents and with PEM (Table V- A).

Similarly, 312 (86.2%) children with PEM belongs to illiterate mothers and association between PEM and literacy of mothers was also found to be significant (Table V-B)

Table I
Distribution of children according to sex and prevalence & grading of PEM

Sex	Normal children	Children with PEM (Grading)					Total
		I	II	III	IV	Total	
Male	151	102	61	14	2	179	330
	(45.8)	(30.9)	(18.5)	(4.2)	(0.6)	(54.2)	(51.4)
Female	129	100	54	18	11	183	312
	(41.3)	(32.0)	(17.3)	(5.8)	(3.5)	(58.6)	(49.6)
Total	280	202	15	32	13	362	642

( ) Percentage ($\chi^2 = 80.62$, $p < 0.05$)

Table II
Distribution of children according to social class and PEM

Social class	Normal children	Children with PEM	Total
I	4 (1.41)	6 (1.6)	10 (1.6)
II	7 (2.5)	8 (2.2)	15 (2.3)
III	114(40.8)	129 (35.7)	243 (37.9)
IV & above	155 (55.3)	219 (60.5)	374 (58.2)
Total	280	362	642

( ) Percentage ($\chi^2 = 2.18$, $p > 0.05$) (not significant)

Table III
Distribution of children according to family size and PEM

Family size	Normal children	Children with PEM	Total
3 – 4	31 (11.1)	55 (15.2)	86 (13.4)
5 – 6	102 (36.4)	106 (29.3)	208 (32.4)
7 – 8	84 (30.0)	105 (29.0)	189 (29.4)
9 – 10	26 (9.3)	52 (14.4)	78 (12.1)
11 & above	37 (13.2)	44 (12.1)	81 (12.6)
Total	280	362	642

Table IV
Distribution of children according to caste and PEM

Caste	Normal children	Children with PEM	Total
Backward caste	94 (33.6)	151 (41.7)	245 (38.2)
Scheduled caste	84 (30.0)	116 (32.0)	200 (31.1)
Scheduled tribe	5 (1.8)	18 (5.0)	23 (3.6)
Higher caste	97 (34.6)	77 (21.3)	174 (27.1)
Total	280	362	642

( ) Percentage ($\div^2 = 17.86$, $p < 0.05$)

Table V- A
Distribution of children according to literacy status of parents & PEM

Literacy status (parents)	Normal children	Children with PEM	Total
Both literate	64 (22.9)	50 (13.8)	114 (17.8)
One literate	91 (32.5)	150 (41.4)	241 (37.5)
Both illiterate	125 (44.6)	162 (44.7)	287 (44.7)
Total	280	362	642

(   ) Percentage ($\chi^2 = 10.64$, $p < 0.05$)

Table V- B

Distribution of children according to literacy status of mothers & PEM

Mother	Normal children	Children with PEM	Total
Literate	64 (22.9)	50 (13.8)	114 (17.8)
Illiterate	216 (77.1)	312 (86.2)	528 (82.2)
Total	280	362	642

( ) Percentage ($\div^2 = 8.85$, $p < 0.05$)

Discussion:

Majority of the children in our study were suffering from PEM. A larger proportion of females were suffering from III and IV grade malnutrition as compared to males. In a study conducted in Aligarh by other author, it was found that most females were suffering from PEM as compared to males[3]. Similar study done in Hissar District shows that grade I PEM was more common in boys than girls but grade II and III PEM was significantly more in girls than boys ($p < 0.01$)[4]. In another study conducted in urban slum of Delhi, it was found that there was significant difference among male and female with respect to malnutrition with more females (9.6%) suffering from severe malnutrition as compared to male (6.5%)[5]. Female children are neglected in our society and particularly in rural areas, is well known and thus results in higher percentage of PEM among females. There was a popular saying in village that female child was like acacia plant and need no attention and care for well being, while male child was compared with banana plant, needing constant care and watering.

Majority of children suffering from PEM belongs to social class III and IV. Study done in Hissar shows that malnutrition prevalence bore a highly significant ($p < 0.01$) inverse 'J' shaped trend with per capita income[4]. Study conducted at Kanpur found that grade II and III PEM was higher among children of social class V[6].

Family size in the present study is quite high. Normal children had a low family size as compared to children suffering from PEM. In study done on "Impact of family size on child nutrition and health", it was found that relationship between family size and nutritional status was inversely proportionate when size of family was large (>8)[7]. Similar study done in Chandigarh shows that prevalence of PEM in under 5 increases significantly with increase in family size[8]. In a study done in rural Hissar, it was found that majority of the cases of PEM had family size of 5 – 8 members[9].

Children belonging to higher caste had better nutrition status as compared to children of backward and scheduled caste. In a study done in Punjab, it was found that prevalence of PEM as well as more severe degree of malnutrition was observed to be higher in scheduled caste as compared to higher caste[10]. Similarly in Ghaziabad, it was found that majority of children suffering from PEM belongs to scheduled caste and backward caste[11].

A higher proportion of children suffering from PEM belongs to illiterate parents and especially that of illiterate mothers. Study done in Chandigarh shows that, with increase in educational status of parents, the prevalence of PEM was steadily and significantly decreases (p<0.001)[8]. Another study done in Kanpur shows that mother education has got statistically significant influence on the nutritional status of the children[6].

Education leads to awareness and better utilization of existing health services.

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