A Study of Maternal Factors in Relation to Nutritional Status of Underfive Children in Urban Slum Area of Varanasi

Author
Kavita Baranwal
Associate Professor, Deptt of Community Medicine
B R D Medical College, Gorakhpur, UP, India

Abstract
Objectives: *1-To study the prevalence of protein energy malnutrition (PEM) in under five children (1-5 years age) in relation to some of the maternal factors*
Study Design: *A cross-sectional study*
Study Settings: *Deptt. Of PSM, I.M.S., B.H.U., Varanasi*
Study Subject: *400 children of under five age group (1-5years) of urban field practice area (Sunderpur community)*
Study Period: *July1999 to July 2000*
Result: *In the present study prevalence of PEM was 63.3% by 'weight for age' criteria using IAP classification. it was found that prevalence of PEM in the study area was observed to goes on increasing with increase in age of the mother up to the age of 30 years however the prevalence of PEM was unexpectedly low in mothers beyond the age of 30 years. These differences were not significant.*
There were significant difference in prevalence of PEM was found to be 69.9% in children whose mothers were illiterate, as compared to children whose mothers were literate (57.5%). The maternal factor of parity showed that prevalence of PEM increased with increase in parity but the differences were not significant. In our study, no clear-cut relationship could be seen between birth interval and prevalence of PEM. The difference in mean birth interval in PEM and non PEM group was not significant (t = 0.29, P >0.30).
Keywords: *Maternal factors.*

Introduction

The prevalence of malnutrition varies from country to country and from place to place in the same country. Child malnutrition is the end result of multiple overlapping and interacting factors in the community's physical, biological and socio-cultural environments. Among these maternal factors are more or less directly responsible for the disease and act synergistically. It is felt that maternal factors influences the nutritional status of the infant in the birth and subsequently during preschool age (Datta Banik *et al.*, 1975)[1].

Gopalan[2] pointed out that the maternal malnutrition as a result of multi-parity may result in poor storage of nutrient like Vit. A and Iron in the foetus which makes him more prone to develop nutritional anaemias and hypo-vitaminosis A in early childhood. The period of

childhood, specially the under five (1-5 year) age group, forms the vulnerable group of community, They are too weak to assert their need. Studies on their nutritional status are essential for an understanding of unique individuality of each child, and meaningful interpretation of deviation from normal nutrition. Further the result so obtained from the baseline data is a practical approach to provide health care to this group.

Material and Methods

The total population of the area is about 5,000. Thus the estimated number of under fives in this area was estimated to be around 600. In view of the cross-sectional study design chosen, an attempt was made to enumerate all the under five children in the study area. No sampling was done, as the intention was to cover the entire study universe. However, In spite of best efforts the coverage of under five children in the study was 400 out of 600 (67.0%). This sample size estimate is based on the assumption that approximate extent of the problem is around 50% with permissible error in the estimate equal to 10%.

The studied children were screened for PEM by weight for age using IAP classification of >80% of expected weight for age is considered normal nutrition. Criteria were choosen for standard reference weights at different ages of NCHS standards (50th percentile value)[3] were used. The information about the maternal factors like age of the mother, literacy status of mother, parity, birth interval were elicited and recorded on a predesigned and pretested proforma.

Results

Table-1: Prevalence of PEM according to 'Mother's Age" (in years)

Mother's Age		PEM	
	No Examined	No.	% Prev.
≤20	114	66	57.9
21−25	191	124	64.9
26−30	90	61	67.8
>30	5	2	40.0
Test of Significance $\chi^2 = 3.59$; p> 0.20			

Prevalence of PEM in the study area was observed to goes on increasing with increase in age of the mother up to the age of 30 years however the prevalence of PEM was unexpectedly low in mothers beyond the age of 30 years .No mother had been reported beyond the age of 35years in our study area. Prevalence of PEM was 57.9% in children with ≤20 yrs age of mothers, and 64.9% and 67.8% in children with 21-25 and ≥30 yrs age group of mothers respectively. Prevalence of PEM was unexpectedly low i.e. 40.0% in mothers beyond the age of 30 years which cannot be taken seriously owing to small number of denominator in this age group. These differences were not significant.

Table- 2: Prevalence of PEM according to "Literacy Status of Mother"

Literacy Status	No Examined	PEM	
		No.	% Prev.
Illiterate	186	130	69.9
Literate	214	123	57.5
Total	400	253	63.3
Test of Significance $\chi^2 = 6.59$; p>0.01			
Details of Literacy			
Primary	15	08	53.3
Middle	67	45	67.2
High School & Above	132	70	53.0

In our study the prevalence of PEM was found to be 69.9% in children whose mothers were illiterate, as compared to children whose mothers were literate (57.5%). These differences were statistically significant (P<0.01).

Table-3: Prevalence of PEM according to Parity of the Mothers

Parity of Mother	No Examined	PEM	
		No.	% Prev.
1 – 2	119	67	56.3
3 – 4	191	125	65.4
≥ 5	90	61	67.8
Total	400	253	63.3
$\chi^2 = 3.67$; p >0.10			

The maternal factor of parity was studied, to examine if a particular parity group was more predisposed to cause PEM. It was found that prevalence of PEM increased with increase in

parity. Prevalence of PEM was 56.3% in children with 1-2 parity of mothers, and 65.4% and 67.8% in children with 3-4 and ≥5 parity of mothers respectively.

Further the mean parity of mothers of PEM children was found to be 3.62 ± 1.77; and non-PEM mothers was 3.51 ± 2.14. Statistically it was not different (t = 0.529; p<0.60).

Table-4: Prevalence of PEM according to "Birth Interval"

Birth Interval (yrs)	No Examined	PEM No.	% Prev.
≤ 2	254	159	63.3
3 – 4	127	81	63.8
5 – 6	15	11	73.3
≥ 7	04	02	50.0
Total	400	253	63.3
χ^2 = 3.82 ; p >0.10			

In our study however, no clear-cut relationship could be seen between birth interval and prevalence of PEM. For Birth Interval ≤2 year and 3-4 years prevalence of PEM was more or less same 62.6% and 63.8% respectively, and it was lowest 50.0% with interval of ≥7 years (though number were too small for drawing any inferences).

However, in children with Birth Interval of 5-6 years, the prevalence of PEM was observed to be unexpectedly high (73.3%), which again cannot be taken seriously owing to small size of denominator in this group (only 15 children). The mean birth interval in PEM group was found to be 2.47 ± 1.21 and in non-PEM group was 2.51 ± 1.29. The difference in mean birth interval in PEM and non PEM group was not significant (t = 0.29, P >0.30).

Discussion

In our study area overall prevalence of PEM in under five children were found to be 63.3%.When prevalence of PEM studied in relation to mother's age, its was found that prevalence of PEM going on increase as the age of the mother increases. Logically with the increasing maternal age, the prevalence of PEM should decrease because of past experience gain in bringing up their older children. It may be mentioned here that in the study area the higher prevalence of PEM could be due to high birth order, short birth interval and deprivation of other facilities which might be responsible for higher prevalence of PEM with increasing maternal age

Association of PEM with mothers' illiteracy could be explained due to the fact that mothers with some formal education were more conscious for proper rearing of their children and were more receptive and cooperative in various health care programmes. Higher prevalence of PEM among children of illiterate mothers was probably due to [a] poor knowledge about child's nutrition, [b] improper hygiene, [c] poor immunization coverage, and [d] delayed weaning. Further, it was also observed in the study area that a literate mother even in a joint family setup involved herself in better childcare, and their children apparently, were in better health as compared to children of illiterate mothers. Prasad (1976)[4] observed that illiterate mothers were ignorant of the basic knowledge of child nutrition and hygiene. They also observed delayed weaning among illiterate group. According to NFHS - II (1998-99)[5] prevalence of under nutrition was 54% among children (under - 3 year group) of illiterate mothers. Gupta et al. (1991)[6] in his study in an urban slum area of New Delhi recorded a strong relation between nutritional status of children and educational level of their mothers (p<0.02). Similarly Ray et al. (2000)[7] in his study in municipal area of West Bengal reported that the prevalence of PEM among the children of literate mothers was lower (54.9%) than the illiterate mothers (69.6%) and the differences were also significant (p<0.05).

It is said that with the increase in parity, health status of the mother goes down. Lowered maternal nutrition in turn influences the nutritional status of the child from conception to foetal growth to birth onwards, during infancy and underfive age group (Gupta et al., 1973)[8.] Shukla (1976)[9] in his study

in urban slum area of Varanasi also reported increasing prevalence of PEM after 3rd parity.

Birth interval considered in this study was the gap in years between the birth of study child and birth of immediate previous child. The rationale of considering this variable was that larger the interval between the births, greater is the chances of better maternal nutrition, which in turn should contribute in better nutrition of child. NFHS (1998-99)[5] data have shown a clear relationship between these two variables. Prevalence of PEM was 52.2% in children with smaller birth interval (<2 years), 50.0% in children with birth interval of 2-4 years and 45.1% in children with birth interval of >4 years.

Conclusion & Recommendation

The present study, a cross- sectional, field study was undertaken in the urban practice field of PSM Department, Institute of Medical Sciences, BHU with the objectives of studying the relationship of some of the maternal factors known to influence the occurrence of protein energy malnutrition among children in the age group of 1-5 years in the study area using standard techniques and predesigned schedules. The summary of the results are given here under.

> ➢ Screening of PEM by Weight for Age criteria showed that prevalence of PEM was 63.3 percent .
> ➢ Prevalence of PEM was significantly higher among under five children of those whose mothers were illiterate.
> ➢ It was found that prevalence of PEM increased with increase in parity.No clear-cut relationship could be seen between birth interval and prevalence of PEM.

On the basis of the observation of the present study and available literature on the subject, it emerges that an action research or operational research will offer intervention clues for short term and long-term measures to handle the problem of protein energy malnutrition. In this cross - sectional study the causal relationship of some of the choosen factors can be studied by extending the scope of research through well-planned analytical and experimental study designs. There is a need for carrying out intervention study in terms of identifying modifiable factors and IEC related studies.

References

1. Datta Banik ND. Breast feeding and weaning practices of pre-school children in urban community in Delhi, Ind Pediat 12: 569, 1975.
2. Gopalan C and Maiden M. Nutrition and Fertility. Lancet 2: 1077, 1972.
3. Mehta MN. Protein energy malnutrition. IAP Text Book of Paediatrics. 124 -125, 1999.
4. Prasad KR, Nath LN. A controlled study of socio-culturally determined children feeding habits in relation to PEM. Ind Pediat, 13 (3): 171, 1976
5. National Family Health Survey. International Institute of Population Sciences, Bombay, 263-273, 1998-99.
6. Gupta MC, Mehrotra M, Arora S, Saran M. Relation of childhood malnutrition to parental education and mothers nutrition related KAP. Ind J Paed. 58 (2) : 269- 74, 1991.
7. Ray SK, Biswas AB, Kumar S. A study of dietary pattern, household food security and nutritional profile of underfive children of a community of West Bengal. J Ind Med Asso. 98 (9), ISSN 0019-5847, 2000.
8. Gupta Meera, Agarwal KN and Manwani AH. Nutritional status of preschool children. Ind Pediat, 10 (2) : 81, 1973.
9. Shukla KK. A Comparative Study of Nutritional Status in Preschool Children of Rural and Urban Slum Communities. Thesis submitted for the degree of MD, PSM, BHU, Varanasi, 1976.