

# INFANT FEEDING PRACTICES AND ITS IMPACT ON THE PREVALENCE OF PROTEIN ENERGY-MALNUTRITION

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*Protein-Energy-Malnutrition is an important Public Health Problem among infants and young children. Though poverty is known to be the major factor but faulty feeding habits arising out of ignorance often lead to inadequate intake of essential nutrients by the infant. In order to find out the actual prevailing feeding practices and its impact on the nutritional status of infants this study was conducted in one urban and two rural units of Varanasi district by adopting appropriate sampling procedure. In all mothers of 360 infants (120 in each study unit) were interviewed regarding breast feeding practices, dilution and nature of top milk, age of introducing supplementary feeding etc. It was observed that the overall prevalence of PEM was significantly higher in bottle fed group (72.73%) than spoon fed group (40.11%). Similarly the prevalence of PEM was 67.86% in late weaned group as compared to 48.38% in optimum weaned group.*

## INTRODUCTION

Protein-Energy-Malnutrition is an important public health problem among infants and your children. Though poverty is recognised by far as the most important factor responsible for the wide spread prevalence of this malady but, faulty feeding habits arising out of ignorance often lead to inadequate intake of essential nutrients by this segment of population.

The best food for infant is breast milk. In the first three to four months, a period of rapid growth, most infants thrive well on their mother's milk alone. However by five to six months of age, the baby needs other foods besides milk which supply energy, protein and other nutrients<sup>1</sup>.

In developing countries most severe growth failure occurs in this transitional period when the combined effect of inadequate supplementary foods and infection lead to growth retardation and increased risk of death. Supplementary food are often of poor quality and bacterial contamination of food is very common<sup>2,3,4</sup>. This contamination results in diarrhoeal disease which in turn contributes to under-nutrition and increased risk of death<sup>5</sup>. The study was undertaken to know infant feeding practices and its effect on the PEM of infants of Varanasi.

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## MATERIAL AND METHODS

This study was conducted in one urban and two rural areas of Varanasi. In the first stage, Varanasi sub-division was identified as the study area by simple random sampling. Two blocks namely Kashi-Vidyapeeth and Baragaon were selected from Varanasi sub-division by simple-random sampling and one village per block was selected also by simple random sampling.

The size of the sample was fixed by taking the average prevalence of PEM ranging from 35.52% and 73.2% respectively<sup>6,7</sup>. For the computation of sample size a prevalence rate of 55% and 10% permissible level of error were taken. The required size was worked out to be 327 infants. In all 360 infants were considered for this study. As urban area is densely populated than rural area hence be one third of the total population, it was decided to have 120 infants from urban areas and 240 infants from rural areas according to probability, 120 infants 0 to 12 months of age were selected from rural area. The urban area was taken from Sunderpur.

Birth records or horoscope were utilised for the age assessment of subject. In case these documents were not available, local calendar method was used for age-recording. Data regarding the infant feeding practices. Such as the day of first breast feeding whether colostrum was given or not, dilution nature of top milk and age of introducing supplementary feeding were recorded for this purpose.

## RESULTS AND DISCUSSION

Nutritional grading of infants was done according to the classification of Indian Academy of Pediatrics (IAP) and using Harvard 50th percentile standard for reference.

It was found that almost all the mothers were breast feeding their babies. In addition to breast feeding 74.72% mothers were supplementing their babies with top milk and among them 34.20% were using bottle and rest were using spoon as a media for introducing top milk to their infants. It was observed that the overall prevalence of PEM was significantly higher in bottle fed group (72.73%) than the spoon fed group (40.11%). This difference was highly significant ( $P < 0.005$ ). The probable reasons may be the bottle fed

Delayed weaning was detrimental to health of infants and lead to malnutrition. This to explains higher prevalence of PEM in children, who were weaned late i.e. beyond to six months of age. In the present study it has been observed that the overall prevalence of PEM is 67.86% in late weaned group as compared to 48.37% who were weaned before six month of age. (Table III) As the age advanced breast milk proved to be inadequate.

Chai et al<sup>8</sup> reported that prolonged and exclusive breast feeding did not provide adequate energy to meet the need of the child and to a large extent responsible for high prevalence of PEM. Khare et al found out that delayed introduction of semi solids to be associated with malnutrition in first year of life. They further

**Table 1.**

**Prevalence of Protein-Energy-Malnutrition in infants in relation to the media used for top milk.**

| Nutritional Status | Bottle        | Spoon          | Total          |
|--------------------|---------------|----------------|----------------|
| Normal             | 25<br>(27.17) | 106<br>(59.89) | 131<br>(48.70) |
| Grade - I          | 25<br>(27.17) | 39<br>(22.03)  | 64<br>(23.79)  |
| Grade - II         | 23<br>(25.0)  | 22<br>(12.43)  | 45<br>(16.73)  |
| Grade - III        | 19<br>(20.65) | 10<br>(5.65)   | 29<br>(10.78)  |
| Total              | 92<br>(34.20) | 177<br>(65.80) | 269            |

$\chi^2 = 32.32$                       d.f. = 3                       $p < 0.001$

Figures in parenthesis indicate percentage.

groups were more prone to get infections due to the poor hygienic conditions of both the bottle and nipple as the mothers were not adequately aware of the importance of the sterilisation the bottle used for feeding the babies.

Further it has been observed that (Table 2.) the infants staying in urban areas have significantly better nutritional status as compared to their rural counterparts irrespective of the media, whether spoon or bottle used for top milk feed because of the proper hygienic condition maintained by the urban mothers as compared to rural mothers, and because of better child care under the influence of urban health centre present in the urban area.

observed that malnutrition with started in later infancy was continued through out early childhood by infrequent and inadequate feeding<sup>9</sup>.

Srivastav et al<sup>10</sup> also observed that high prevalence of PEM in children in whom weaning was started beyond 9 months of age. WHO<sup>11</sup> had a similar view and stated that when weaning is delayed server cases of malnutrition are more frequently observed during 2-4 years of life.

Luwang in this comparative study of weight pattern in children under five years in hill and valley areas of Manipur reported that children of poor and well-to-do communities grow parallel upto six months<sup>12</sup>. This is the period when mile stone is adequate to meet the

Table 2.

Prevalence of Protein-Energy-Malnutrition in urban and rural infants in relation to the media used for top milk.

| Nutritional Status | Bottle         |               | Spoon         |               | Total         |               |
|--------------------|----------------|---------------|---------------|---------------|---------------|---------------|
|                    | U              | R             | U             | R             | U             | R             |
| Normal             | 09<br>(500.00) | 16<br>(21.62) | 36<br>(54.55) | 70<br>(63.07) | 45<br>(57.69) | 86<br>(46.49) |
| Grade - I          | 03<br>(16.67)  | 22<br>(29.73) | 06<br>(9.09)  | 33<br>(29.73) | 09<br>(11.54) | 55<br>(29.73) |
| Grade - II         | —              | 23<br>(31.08) | 18<br>(27.27) | 04<br>(3.60)  | 18<br>(23.08) | 27<br>(14.59) |
| Grade - III        | 06<br>(33.33)  | 13<br>(17.57) | 06<br>(9.09)  | 04<br>(3.60)  | 12<br>(7.69)  | 17<br>(9.19)  |
| Total              | 18<br>(21.43)  | 74<br>(40.00) | 66<br>(78.57) | 111<br>(60.0) | 84            | 185           |

Note :- For computation of  $\chi^2$  Grade - I, Grade - II and Grade III, were clubbed for bottle and spoon separately

For bottle fed group  $\chi^2 = 5.89$ , d.f. = 1  $p < 0.05$

For spoon fed group  $\chi^2 = 12.61$ , d.f. = 1  $p < 0.001$

Table 3.

Prevalence of Protein-Energy-Malnutrition in in urban and rural infants in relation to the age of introducing supplementary feeding.

| Nutritional Status | Introducing of supplementary foods (except top milk) |               |               |               |
|--------------------|--|---------------|---------------|---------------|
|                    | Early  | Optimum       | Late          | Total         |
| Normal             | 5.0<br>(100.0)                                       | 16<br>(51.63) | 27<br>(32.14) | 48<br>(40.0)  |
| Grade - I          |  | 06<br>(19.35) | 20<br>(23.81) | 26<br>(21.67) |
| Grade - II         |  | 03<br>(9.68)  | 21<br>(25.0)  | 24<br>(20.00) |
| Grade - III        |  | 06<br>(19.35) | 16<br>(19.05) | 22<br>(18.33) |
| Total              | 05<br>(4.07)   | 31<br>(25.83) | 84<br>(70.00) | 120           |

$\chi^2 = 7.30$       d.f. = 2       $p < 0.050$

Note :

- (1) The criterion used for early, optimum and late introduction of supplementary feeding was 3 months, 4-6 months and 6 months, respectively.
- (2) Supplementary feeding includes feeding of semi-solid, solid supplements other than top milk.
- (3) For computation of  $\chi^2$  early and optimum and Grade-II and Grade-III were clubbed together.

nutritional requirements for the growing child. Further he stated that delayed weaning mixed with cultural and environmental factors generated eventual growth

faltering of the children in poor communities.

Further it was found (Table 4.) that 10% of the urban infants were introduced supplementary feeding on or

**Table 4.**  
**Prevalence of Protein-Energy-Malnutrition in urban and rural infants in relation to the age of introducing supplementary feeding.**

| Nutritional Status | Early          |                | Optimum       |               | Late          |               | Total         |               |
|--------------------|----------------|----------------|---------------|---------------|---------------|---------------|---------------|---------------|
|                    | U              | R              | U             | R             | U             | R             | U             | R             |
| Normal             | 03<br>(100.00) | 02<br>(100.00) | 09<br>(66.67) | 07<br>(36.84) | —             | 27<br>(39.13) | 12<br>(40.00) | 36<br>(40.00) |
| Grade - I          |                |                |               | 06<br>(40.00) | —             | 20<br>(28.99) | —             | 26<br>(28.89) |
| Grade - II         |                |                | 03<br>(33.33) | —             | 06<br>(40.00) | 15<br>(21.74) | 09<br>(30.00) | 15<br>(16.67) |
| Grade - III        |                |                |               | 06<br>(31.58) | 09<br>(60.00) | 07<br>(10.14) | 09<br>(30.00) | 13<br>(14.44) |
|                    | 03             | 02             | 12<br>(40.00) | 19<br>(21.11) | 15<br>(50.00) | 69<br>(76.67) | 30            | 90            |

before the age of three months whereas only 2.22% of rural infants supplemented at the same age all of them were found normal in growth 40% of urban infants were introduced supplementary feeding at the age of 4-6 months as against 21.11% of infants in rural areas. But 76.67% of rural infants were introduced supplementary feeding after the age of six months whereas it is 50% in urban areas.

Again this may be due to the better awareness of urban mothers regarding child care and infant feeding practices which may be possible because of the urban health centre.

### SUMMARY AND CONCLUSION

This study was carried out to know infant feeding practices and its effect on the prevalence of PEM. It was observed that almost all the mothers were breast feeding their babies.

In addition to breast feeding, 74.72% mother were supplementing their babies with top milk among them 34.2% were using bottle and rest 64.8% of mothers were using spoon as a media for introducing top milk to their infants.

It was also observed overall prevalence of PEM was significantly higher in bottle fed group (72.73%) than the spoon was fed group (40.11%). PEM was predominantly present in bottle fed group and this difference was highly significant. Further it has been found that urban infants have significantly better

nutritional status as compared to their rural counterparts, irrespective of the media whether spoon and bottle was used for top milk.

Again it was found that the prevalence of PEM was higher in late weaned group i.e. beyond 6 months of age. It has been observed that overall prevalence of Pem is 67.86% in late weaned group as compared to 48.37% who were weaned before 6 months. Further it was observed that urban mothers are introducing supplementary feeding earlier than rural mothers. Thus nutrition education should be imparted to the mother especially to the rural folk so that at least they can be aware about better feeding practices of infants.

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