

# Feeding practices and nutritional status of children of sub-centre Kotamoni, Assam

K. GEETA, N. SEEMA AND D. KAPUR

An observational cross sectional study was carried out on 200 mother-child (6 months to 2 years) pair among the rural women of Kotamoni, Assam. The study aimed to find out breast feeding and complimentary feeding practices and to determine the effect of nutrition education on mother's knowledge regarding the infant and child feeding practices. Questionnaire cum interview schedule was used to collect data for sociodemographic characteristics and feeding practices. Weight and length/height were measured with standard technique. A pre prepared educational material was used to impart nutrition education. Knowledge assessment questionnaire were developed to determine the effect. Nutritional status of the children was assessed with different indicators using WHO standard (2006). Results revealed that only 30 per cent of the subjects started breast feeding within 1 to 4 hours. Exclusive breast feeding for 6 months were followed only by 24 per cent of the subjects. Use of pre lacteal feed was common (95%). Only 26 per cent of the subjects continued breast feeding after one year. Mothers/care takers scored very low for infant and children feeding practices ( $4.96 \pm 14.86$ ). Results revealed that 59 per cent of the children were under weight (weight for age), 59 per cent wasted (weight for length) and most of the children (95%) were stunted. Nutrition education significantly improved mother's knowledge ( $4.96 \pm 14.86$  to  $17.50 \pm 27.28$ ,  $p < 0.01$ ). Nutritional status also improved significantly, weight for age (41% to 74%) and height for age (5% to 35%). Severely malnourished (weight for age) decreased from 18 per cent to 4 per cent and severely stunting from 76 to 27 per cent. The results provided strong evidence for the positive effects of nutrition education.

**Key Words :** Infant, Feeding practices, Nutritional status, Nutrition education

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## INTRODUCTION

Childhood malnutrition is a major health problem in India. Recent achievements in economic fields have

failed to ensure a better nutritional status of children in our country. Millions of children in India either die because of not getting proper nourishment or stay in a state of sub optimal nutrition. It is erroneous to say that the root cause of all nutritional deficiencies is food shortage. Many deficiency disorders, at times, occur as a result of aberrant food habits, prejudices, taboos, food fads, and wrong feeding practices particularly during early years of life. Many studies have shown that there is a strong relation between wrong feeding habits and practices and malnutrition (Chakrabarty *et al.*, 2006; Chatterjee and Saha, 2008; Ghosh, 2004; Gyasi, 2008).

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Malnutrition or undernutrition is the underlying cause of the various infections, which again has a strong association with improper feeding practices and faulty habits like erosion of breast feeding practices and unhygienic and improper use of weaning foods. Available studies indicate that apart from poverty and illiteracy, prevalence of wrong feeding practices is due to lack of knowledge regarding correct and appropriate feeding practices. (Chatterjee and Saha, 2008; Ghosh, 2004).

The link between malnutrition and improper feeding practices indicates that much can be done to rectify the cause of malnutrition through nutrition education. Nutrition education to mothers for proper child feeding practices as they are the primary care giver can be used as a tool to enhance the knowledge of the mothers (Galhotra *et al.*, 2008; Saha *et al.*, 2008). Kotamoni is a village in Karimganj district of Assam and is a very far off area to get the benefit of various awareness programmes run by various agencies. A community based educational intervention study was therefore designed to create awareness and assess the effect of nutrition education in improving mother's knowledge for optimal breastfeeding and complementary feeding practices.

## METHODOLOGY

### Subject selection :

The community based educational intervention study was carried out at rural sub center of Kotamoni in Karimganj district, Assam. A total of 200 subjects (100 mother-child pairs, infants of 6 months to 24 months) were selected for the study from different nearby villages. The mother- child pairs were identified from the immunization register with the help of health workers. Mother-child pairs were screened for the occurrence of any disorders. Mothers with known disorders and critical children were not recruited in the study.

### Data collection :

Questionnaire cum interview schedule was used for gathering information for sociodemographic profile and infant and child feeding practices. Information regarding demographic profile which was reported by mother included age of the mother, literacy level, economic status, family type, gender of the child and age of the child. To elicit the information regarding infant and child feeding practices, mothers and grand mothers were asked about the practices they follow for initiation of breast

feeding, use and type of pre-lacteal feed, duration and frequency of exclusive breast feeding, initiation of complementary feeding and duration of breast feeding with complementary feeding.

### Knowledge assessment of mother :

Knowledge assessment questionnaire having 23 close ended questions on norms and the importance of breast feeding and complementary feeding were developed. The questions were based upon the guidelines given by WHO (2002) for breast feeding and complementary feeding. The developed knowledge assessment questionnaire was pretested and necessary suggestions from the expert of the subject were incorporated and was administered to assess the knowledge of mothers and also to determine the effectiveness of nutrition education. Mothers were asked to answer the questions in the form of 'yes' or 'no'. Response of the subjects were quantified by assigning the score 1 for 'yes' answer and score 0 for 'No' answer. Total score of each subject was obtained by adding up the score for each of the 23 questions. After getting total score of each of the subject, average score for all the 100 subjects (mean and standard deviation) was calculated to assess the knowledge of mothers.

### Nutrition education of mother :

Training materials like charts, posters, and displays based upon the relevant information regarding infant and child feeding practices recommended by WHO (2002), were prepared and nutrition education was imparted through lectures, demonstrations, displays and exhibition. This was conducted in small groups of mothers depending upon the availability of the subjects for five days in a row. The sessions were open all through the day as the subjects were either house wife or daily wagers and they were not available at any given time. It was ensured that all the subjects enrolled in the study gives minimum of two hours of nutrition education for five days. After one month of nutrition education intervention, knowledge of the mother and nutritional status of children was assessed again with same tools and techniques. Collected datas were compiled and tabulated for analysis and interpretation for any difference between pre and post intervention score of the mother's knowledge.

### Nutritional status of the children :

Nutritional status of the children was assessed twice

before the nutrition education of mother and also after one month of intervention of nutrition education to the mother. Subject being the infant and toddlers, change was expected in the nutritional status within two to three months after using right feeding practices by the mother. With the help of trained staff of sub-centre and standard techniques, length/height and weight of the infant/children were measured. BMI for age was calculated by using the formula weight in kg/height in metre<sup>2</sup>. Categorization of the subjects (infants/children) for their nutritional status was done by WHO (2006), z score criterion using the indices of nutritional status: weight-for-age, length-for-age, weight-for-length and BMI-for-age. Nutritional status of the children was categorized as 'normal', 'underweight, stunting or wasting' and 'severely underweight, severely stunted, severely wasted or overweight' depending on the indicators. The cut off used was as per WHO criteria ( $\geq 2$  z-score for normal,  $< 2$  z-score for underweight, stunting or wasting and  $< 3$  z-score for severely underweight, severely stunted, or severely wasted of the median WHO child growth standards).

**OBSERVATIONS AND ASSESSMENT**

The results obtained from the present investigation as well as relevant discussion have been summarized under following heads :

**Demographic profile :**

Data regarding socio-demographic characteristics of the subjects are depicted in Table 1. Mother's age ranged from 15 years to 35 years and as evident from the Table 1, 12 per cent of the subjects became mother before or at 20 years of age. Majority of the subjects had education either up to middle class or less (70%) and fairly large numbers (28%) were illiterate. Only 2 per cent of the subject could see high school. Majority of the subjects had irregular source of income (87%), as their main occupation was vegetable or fruit selling, daily wage laborer, contractual helper etc. Most of the subjects (65%) lived in a joint family set up. The infants enrolled in the study consisted of 55 per cent female and 45 per cent male and majority of them (60%) were below 15 months of age. Percentage of Children in different age group has been presented in Table 1.

**Infant feeding practices :**

Breast feeding and infant feeding practices

**Table 1 : Socio-demographic characteristics of the subjects**

| Variables/category                 |                   | N(%)        |
|------------------------------------|-------------------|-------------|
| Age of the mothers (Years)         | 15-20             | 12 (12)     |
|                                    | 21-25             | 34(34)      |
|                                    | 26-30             | 32(32)      |
|                                    | 30-35             | 22(22)      |
| Literacy level of mother           | Illiterate        | 28(28)      |
|                                    | Primary (Madarsa) | 52(52)      |
|                                    | Middle            | 18(18)      |
| Source of income of family         | Irregular         | 87(87)      |
|                                    | Regular           | 13(13)      |
|                                    | Family type       |             |
| Family type                        | Joint family      | 65(65)      |
|                                    | Nuclear family    | 35(35)      |
| Gender of the children             | Male              | 45(45)      |
|                                    | Female            | 55(55)      |
| Age group of the children (months) | 6-<10months       | 10B+13G(23) |
|                                    | 10-<15months      | 14B+23G(37) |
| B-boys                             | 15-<20months      | 12B+7G(19)  |
| G-girls                            | 20-24months       | 9B+12G(21)  |

commonly followed by the subjects has been given in Table 2. Analysis of data for infant feeding practices showed that use of colostrum feeding was dismally low with only 30 per cent of the subjects started breast feeding within 1 to 4 hours of delivery. It shows that one of the most appropriate feeding practices that are initiation of breast feeding immediately after birth (WHO, 2002) is

**Table 2 : Infant feeding practices followed commonly by the subjects (n=100)**

| Variables/Category                       |                          | N (%)   |
|--|--------------------------|---------|
| Initiation of breast feeding (BF)        | Within 1-4hours          | 30(30)  |
|  | After 24-48hours         | 52(52)  |
| Use of Pre-lacteal feeds                 |                          | 95 (95) |
| Types of pre-lacteal feeds               | Honey, sugar water       | 70 (70) |
|  | Goat milk, jaggery water | 55(55)  |
| Exclusive BF for 6 months                |                          | 24 (24) |
| Frequency of breast feeding per day      | 2-4 times                | 55(55)  |
|  | 5-7 times                | 33(33)  |
|  | 8-10 times               | 12(12)  |
| Initiation of complementary feeding (CF) | 2-3 months               | 42(42)  |
|  | 4-5 months               | 34(34)  |
|  | 6 months onward          | 24(24)  |
| Duration of BF along with CF             | <6months                 | 26 (26) |
|  | 6-12months               | 48 (48) |
|  | 13-24months              | 24 (24) |
|  | >24months                | 2(2)    |

not followed by majority of the subjects. The practice of using pre-lacteal feeds was very common, 95 per cent of mothers used some or the other pre-lacteal feeds prior to initiation of breast feeding (BF). Honey, jaggery or sugar in water (70%) and animal milk (55%) were the most common pre-lacteal feeds, reported by mother, mother in-law or elderly people. Only 24 per cent of mothers practiced exclusive breast feeding for first 6 months and as high as 55 per cent of the mothers breast fed their infants only for 2 to 4 times in a day. Exclusive breast feeding for the first 6 months which is recommended by WHO (2002), was also not practiced by majority of the subjects (76%). Most of the subjects (76%) started giving complementary feeding before 6 months of age and as high as 74 per cent of the subjects practiced breast feeding along with complementary feeding only up to 12 months or less (Table 2) and thus not going with the recommendation of continuation of breast feeding along with complementary feeding till or more than two years of age (WHO, 2002). Several other studies have also reported the lack of proper knowledge regarding infant feeding practices among mothers and care takers (Roy *et al.*, 2009).

### Mothers knowledge of feeding practices and effect of nutrition education :

To assess the knowledge of mother, a questionnaire cum interview schedule comprised of 23 questions on norms and the importance of breast feeding and complementary feeding was administered. Same questionnaire was used to find out the impact of nutrition education. Table 3 presents the pre and post intervention score of the mother's knowledge regarding importance and norms of breast feeding and complimentary feeding practices. The average score obtained by the subjects before intervention was 4.96 which is very low as compared to the maximum average score. This shows very low level of knowledge of the mother regarding feeding practices. After nutrition education the score

increased to 17.50 and showed significant increase in their knowledge for breast feeding and complimentary feeding practices ( $4.96 \pm 14.86$  to  $17.50 \pm 27.28$ ,  $p < 0.01$ ). Similar finding have also been reported by the researcher working in this area. A study was carried out by Galhotra *et al.* (2008) on 210 lactating women in Chandigarh to assess the effect of nutrition education on mothers' knowledge. In this study breast feeding awareness campaign was organized and the effect of this campaign was assessed after one month on mother's knowledge for infant feeding practices. They reported the positive effect of nutrition education. A study in Gujarat showed that maternal and paternal education and better socio-economic condition has positive association with exclusive breast feeding (Chudasama, 2009).

**Table 3 : Pre and post- intervention score of mothers' knowledge**

| Pre-intervention | Total scores (Mean $\pm$ SD) |  | t-value |
|------------------|------------------------------|--|---------|
|                  | Post-intervention            |  |         |
| 4.96 $\pm$ 14.86 | 17.50 $\pm$ 27.28            |  | 3.62**  |

\*\*= $p < 0.01$

### Effect of nutrition education of mother on nutritional status of the children :

Nutritional status of the subjects (infants/young children) was assessed with the help of anthropometric measurements *viz.*, length, weight and BMI. The subjects were categorized as per the WHO, z-score criteria for different indices; weight for age, weight for length, length for age and BMI for age.

### Anthropometric measurements:

The age of the subjects varied from 6 months to 24 months showing large variations in length and weight among the subjects. To make mean length and weight more meaningful, the subjects were categorized in to four categories as per their age; 6-<10 months, 10-<15 months, 15-<20 months and 20-24 months. Length and weight of each of the subjects were measured before and after the intervention of nutrition education to the mother. Mean

**Table 4 : Pre and post-intervention mean length and weight of the children in different categories**

| Categories          | Weight (kg)<br>Mean $\pm$ SD |                 | length (cm)<br>Mean $\pm$ SD |                 |
|---------------------|------------------------------|-----------------|------------------------------|-----------------|
|                     | Pre                          | Post            | Pre                          | Post            |
| 6-<10months (N=23)  | 6.62 $\pm$ 1.16              | 7.49 $\pm$ 1.27 | 59.9 $\pm$ 2.67              | 64.3 $\pm$ 2.08 |
| 10-<15months (N=37) | 8.24 $\pm$ 1.23              | 9.03 $\pm$ 1.55 | 67.1 $\pm$ 2.53              | 71.2 $\pm$ 3.22 |
| 15-<20months (N=19) | 8.07 $\pm$ 0.77              | 8.97 $\pm$ 1.24 | 69.8 $\pm$ 2.75              | 73.0 $\pm$ 3.12 |
| 20-24months (N=21)  | 9.91 $\pm$ 1.77              | 11.2 $\pm$ 1.76 | 73.9 $\pm$ 3.25              | 78.3 $\pm$ 3.36 |

length and mean weight for each category of the subjects before and after intervention were calculated and are presented in Table 4. Saha *et al.* (2008) reported similar mean length and weight for same age group.

Subjects (children) were categorized for being boys and girls and their mean weight and mean length were separately calculated. This was done to compare with the mean of length and weight of WHO (2006) growth standard for same age. Table 5 presents mean length and weight for age of the girls and the boys in pre and post intervention phase. Table 5 also depicts mean of length and weight of boys and girls for same age of WHO growth standard. Mean length and weight for both the groups were lesser than the mean of WHO growth standard even after the intervention.

**Nutritional status:**

Categorization of children for their nutritional status was done as per the z-score criterion given by WHO (2006). Subjects were categorized for all the indicators; weight for age, weight for length, length for age and BMI for age. Table 6 depicts percentage prevalence of malnutrition among the subjects before and after the intervention. It is evident from the Table 6 that there was high prevalence of malnutrition among the children. For

weight for age, as high as 59 per cent of the children were underweight, out of which 18 per cent were severely underweight. While majority of the children (91%) were normal for weight for length, a fair percentage of the children were wasted (8%) and 1 per cent was severely wasted too. Regarding length for age 95 per cent of the subjects were stunted out of which 76 per cent were severely stunted. From the above result it can be inferred that low weight and stunting are more prevalent than wasting among the subject. High prevalence of malnutrition among young children in the different region has also been reported in several other studies (Gyasi, 2008; Kumar *et al.*, 2006 and Saha *et al.*, 2008).

When children were categorized for their BMI for age, fairly large numbers (20%) were overweight also which is not for better. This was also reflected from weight for length where majority of the children fell under normal category showing that weight for length of the children was either normal or more. For BMI for age, 7 per cent of the children were under weight too. Overall analysis of the results for the nutritional status of the infants/children in pre-intervention phase reflects that low weight for age and lesser length for age for most of the children was a matter of concern.

Post-intervention result showed a significant

**Table 5 : Pre and post intervention mean length and weight of the girls and boys**

| Groups/Categories    | Boys (age 6 to 24 months) (n=45) |                        | Girls (age 6 to 24 months) (n=55) |                        |
|----------------------|----------------------------------|------------------------|-----------------------------------|------------------------|
|                      | Weight (kg)<br>Mean±SD           | Length (cm)<br>Mean±SD | Weight (kg)<br>Mean±SD            | Length (cm)<br>Mean±SD |
| Pre-intervention     | 8.58±1.81                        | 67.1±4.47              | 7.7±1.62                          | 67.6±6.32              |
| Post-intervention    | 9.57±1.92                        | 71.4±4.44              | 8.8±1.85                          | 71.5±6.41              |
| Mean of WHO standard | 10.22±1.28                       | 78.62±6.23             | 9.53±1.27                         | 76.98±6.41             |

**Table 6 : Categorization of the children for their nutritional status using different indicators**

| Indicators        | Category             | Pre-intervention n (%) | Post-intervention n (%) | Chi-square |
|-------------------|----------------------|------------------------|-------------------------|------------|
| Weight for age    | Normal               | 41(41)                 | 74(74)                  | 21.16**    |
|                   | Underweight          | 41(41)                 | 22(22)                  |            |
|                   | Severely underweight | 18(18)                 | 4(4)                    |            |
| Weight for length | Normal               | 91(91)                 | 89(89)                  | 0.24       |
|                   | Wasted               | 8(8)                   | 10(10)                  |            |
|                   | Severely wasted      | 1(1)                   | 1(1)                    |            |
| length for age    | Normal               | 5(5)                   | 35(35)                  | 52.12**    |
|                   | Stunting             | 19(19)                 | 38(38)                  |            |
|                   | Severely stunting    | 76(76)                 | 27(27)                  |            |
| BMI for age       | Normal               | 73(73)                 | 59(59)                  | 4.48       |
|                   | Underweight          | 7(7)                   | 9(9)                    |            |
|                   | Overweight           | 20(20)                 | 32(32)                  |            |

\*\* indicates significance of value at P<0.01

improvement in the percentage of children in normal category for weight for age and length for age (41% to 74% and 5% to 35%, respectively,  $p < 0.01$ ), (Table 6). Percentage of under weight and severely under weight children decreased significantly after nutrition education to the mother. Weight for length did not show any significant change. Percentage of stunted and severely stunted children decreased significantly ( $p < 0.01$ ). There was no significant change observed in the percentage of underweight children due to intervention. The non significant increase of overweight children in post-intervention phase (20% to 32%) was not a good sign. The increase in the percentage of overweight children may be because the normal children gained further more weight without significant increase in length. There were some cases of 'odema' also.

Impact of nutrition education to mothers showed encouraging result in terms of improvement in the nutritional status of the children. A positive relationship between the education of mother and the nutritional status of children has been reported by a study in Pakistan by Liaqat *et al.* (2006). A community based nutrition education for improving infant growth was carried out in rural area of Karnataka. Results revealed that nutrition education and counseling to care givers was significantly associated with increased weight among girls and improved feeding behaviour in both boys and girls (Kilaru *et al.*, 2005).

### Summary and Conclusion :

A large percentage of the children had lower weight for age and length for age showing high prevalence of malnutrition among children below 2 years of age. Nutrition education was effective in improving the knowledge of mother/care taker for better breast feeding and infant feeding practices which in turn had a positive impact on nutritional status of the children. It can be concluded that, nutrition education intervention enables the women to shed off some of the unhealthy traditional practices by increasing the knowledge of appropriate infant feeding practices. The nutrition education intervention has potential for adaptation and development to large-scale implementation as malnutrition in infant/children is still a major problem in our country.

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