Faulty feeding practices in children less than 2 years of age and their association with nutritional status: A study from a rural medical college in Central India

Niriti S Chaudhary, Abhishek V Raut, Akash Ranjan Singh

Department of Community Medicine, Mahatma Gandhi Institute of Medical Sciences, Sewagram, Maharashtra, Department of Community Medicine and Family Medicine, All India Institute of Medical Sciences, Bhopal, Madhya Pradesh, India

ABSTRACT

Background: Undernutrition has a direct correlation with the prevailing feeding practices. Early years are crucial in determining the rate and extent of growth and mainly depend on the level of nutrition and care provided. The first episode of growth faltering occurs mostly in children <2 years of age that often goes unnoticed. Objective: The objective of this study was to explore the faulty feeding practices, their determinants, and association with nutritional status in children <2 years of age. Materials and Methods: This cross-sectional study using mixed (qualitative and quantitative) methods was conducted in a sample of 187 mothers and their children at the mother and child health (MCH) clinic of a rural medical college. Results: Only 144 (77%) of the study children had received colostrum. 47 (25.1%) of the mothers had used prelacteal feeds. Although breastfeeding (BF) was universal, only 133 (71.1%) of the mothers were exclusively breastfeeding (EBF) their children. The duration of each feed was an issue; in 49 (32.4%) of the children, the duration of each feed was <10 min with almost all the mothers swapping the baby to other breast during one episode of feeding. Not giving colostrum, not giving EBF, duration of feeds <10 min, swapping the breasts during each feed, and decreased frequency of feeding during illness were found to be significantly associated with poor nutritional status. Conclusion: In our study, we found out that although practice of BF was universal, there is definite scope for further improving the practices. A definite gap between knowledge and practice was observed, which was associated with adverse nutritional outcomes.

Key words: Breastfeeding, complementary feeding, malnutrition, prelacteal

INTRODUCTION

Undernutrition is a disparity between the amount of food and other nutrients that the body needs and the amount that it is receiving. For children <2 years of age, the World Health Organization (WHO)/United Nations Children’s Fund (UNICEF) recommends exclusive breastfeeding (EBF) for babies in the first 6 months of life and continued breastfeeding (BF) complemented with appropriate food up to 2 years of age.[1] This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

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Address for correspondence: Dr. Abhishek V Raut, Department of Community Medicine, MGIMS, Sewagram, Wardha - 442 102, Maharashtra, India. E-mail: abhishekraut@mgims.ac.in
Optimal Infant and Young Child Feeding (IYCF) practices are among the 15 priority preventive child survival interventions, with EBF up to 6 months of age and BF up to 12 months being ranked as number one and complementary feeding (CF) starting at 6 months as number three.\textsuperscript{[12,13]}

The first few years of child’s life are critical for growth and development. The first episode of growth faltering occurs in children <2 years of age with the levels of undernutrition increasing markedly from 3 to 18–24 months of age.\textsuperscript{[14]}

Undernutrition occurs when one or more vital nutrients are not present in the desired quantity. This may be due to reduced intake, excess loss, increased demand, or conditions that reduce the absorption capacity. Undernutrition has a direct correlation with the prevailing feeding practices. A severe shortage of food in early life may lead to wasting and stunting.\textsuperscript{[7,8]}

To achieve United Nation Millennium Development Goal to reduce child mortality by 2/3 by 2015, one of the strategies adopted by the WHO was IYCF.\textsuperscript{[9-11]}

In India, only 46.4% of the babies were EBF. The early initiation of BF within 1 h of birth was seen in only 24.5% of the mothers.\textsuperscript{[12,13]} As per hunger and management report 2011, 42% of children in India were stunted. Globally, one in every third malnourished child was an Indian.\textsuperscript{[14]}

There are comparatively fewer studies that primarily focus on assessing the reasons for faulty feeding practices in children under 2 years of age and its association with nutritional status though this is the target group that is most affected. Hence, the present study was conducted to find out the faulty feeding practices, the reasons, and its probable association with the nutritional status of children.

**MATERIALS AND METHODS**

The present cross-sectional study was conducted adopting both qualitative and quantitative methodology. A semi-structured tool with open-ended questions was developed to find out the prevalence of faulty feeding practices and the possible reasons for those practices. The tool before being used in the study was pretested with the mothers who visited the Mother and Child Health (MCH) clinic to see if the framed questions were able to answer the study objectives and were suitably modified accordingly. The tool had questions on basic sociodemographic information (age, gender, education, occupation, color of ration card, etc.), feeding practices, and anthropometric measurements. The anthropometric measurements for measuring the weight and length were done as per the guidelines given in the WHO growth charts 2005.\textsuperscript{[13]} The length was measured using Infantometer to the nearest 0.1 cm while weight was measured using electronic weighing scale and Salter scale to the nearest 100 g. The age of the child was ascertained from the immunization card. The study was carried for 2 months (June–July 2012). The study was carried out in adopted village for the MBBS batch of the principal investigator and MCH clinic of GOPD at Kasturba Hospital, Sewagram. The MCH clinic usually caters to beneficiaries from neighboring villages and newborns from Kasturba Hospital who are brought to MCH clinic for immunization. The universal sampling procedure was followed. At MCH clinic, 175 mothers with children <2 years of age who gave valid written consent were included in the study. In the adopted village, 12 mothers with children <2 years of age who gave written informed consent were included in the study. An approval from the Institutional Ethical Committee was taken before the initiation of the study.

**Inclusion and exclusion criteria**

All children <2 years of age who attended the MCH clinic and from the adopted village were included after taking written consent from the mother. Children suffering from severe illness or chronic disease were excluded from the study.

**Data analysis**

Data entry was done in Microsoft Excel software and data were analyzed using Epi InfoTM 7.0 developed by Centers for Disease Control and Prevention (CDC) in Atlanta, Georgia (USA). Descriptive analysis using frequency and percentage was carried out. Chi-square test and Fisher’s exact test of statistical significance were applied to find the association of nutritional status with the observed feeding practices.

**RESULTS**

Table 1 shows the sociodemographic characteristics of the study participants. 151 (80.7%) of the study population were aged <6 months. Of the 187 infants recruited in the study, 93 (49.7%) were males while 94 (50.3%) were females. None of the parents were illiterate. 146 (78.1%) mothers were homemakers while 64 (34.3%) of mothers lived in nuclear families. Color of ration card was used as a proxy indicator for assessing the socioeconomic status of the families. Most 111 (59.4%) of the families belonged to the above poverty line group while 24 (12.8%) of the families were below the poverty line. 52 (27.8%) did not possess ration cards.

Table 2 shows the obstetric profile of mothers. Mean age of the mothers at the time of marriage was 22.92 ± 2.54 years. Around 84 (44.9%) of the children...
were low birth weight. Only 1 (0.5%) mother had not received any antenatal check-up and had home delivery.

Table 3 shows the feeding characteristics of study participants. Although breastfeeding was universal, only 144 (77%) of the study children had received colostrum while 133 (71.1%) of the study children were EBF. When asked to specify the reason why they considered colostrum “as not good for health,” the mothers could not specify any particular reason and informed that this information was passed to them through their mothers/mother-in-law. Water/gripe water was the most common food substance used in case of 22 (40.7%) children who were not EBF. Hot weather was the most common reason cited by the mothers for giving plain water. Almost all of the mothers informed that “We give gripe water (ghutti) because it helps the child to digest the food and helps gain weight.” Mothers informed that knowledge regarding ghutti was transferred from mother/mother-in-law to them.

Frequency of BF in a day was adequate in 149 (79.6%) of the study children. All the children between 6 and 23 months of age were continuing to be BF at the time of data collection. The duration of each feed was >15 min in 69 (45.7%) of the study children. 178 (95.2%) of the mothers swapped the baby to the other side during each feed, with 25 (14%) of them swapping more than once. Around 46 (25.8%) justified this by stating that “one side contains water while the other side contains food and hence baby must be feed from both sides during each feed.” Forty-three (24.2%) thought that not feeding from the other side would lead to pain/formation of lump on the side not used. 39 (21.9%) informed that they did so on doctor’s recommendation while 32 (18%) did so to satisfy baby’s appetite. Initiation of CF was timely in study children who were 6–23 months of age. Majority of complementary food comprised rice, dal, or other cereals. Vegetables, eggs, biscuits were also included by some.
Universally, all mothers agreed that they should continue to feed their babies during illness. However, 51 (27.3%) of the mothers informed that the frequency of BF decreased during illness. Similarly, the frequency of complementary feeding decreased in most 23 (63.9%) of the babies.

Table 4 shows that in majority of the cases the baby was fed when he/she cried. Food supplied was thought to be adequate when the baby ceased to take any more food/milk by almost all the mothers. Few mothers decided regarding feeding or sufficiency of the food by observing the abdomen of the baby.

Table 5 gives association of possible factors for a child being not EBF. Mothers who had received at least 3 or more antenatal check-ups and those mothers who had received more than grade 10 education were found to be significant for providing EBF to their child. Birth order, socioeconomic status, and type of family were not associated with EBF.

As shown in Table 6, BMI for age was calculated for the children using the measured length and weight of the children. Nutritional status of the children was assessed using the WHO field charts for BMI for age (Z score) separately for the boys and girls. In all, 48 (25.6%) of the children had BMI for age <2 standard deviation (SD) Z-scores of the median for their respective age. The association of nutritional status and feeding practices was assessed. Not giving colostrum, not giving EBF, duration of feeds <10 min, swapping the breasts during each feed, and decreased frequency of feeding during illness were found to be associated with compromised nutritional status. Sex of the child and giving prelacteal feeds did not have any association with the nutritional status.

**DISCUSSION**

Early initiation of breastfeeding, EBF for 6 months, and timely introduction of age-appropriate complementary feeding (CF) are the key interventions to achieve the Millennium Development Goals 1 and 4, which address child malnutrition component of the targets and mortality, respectively.16,17

The present study revealed that breastfeeding was universally present in the study participants, but colostrum was received only by 77% babies which is higher than the national (55%) and regional (54%) figures when compared to the data from NFHS-3 and DLHS-3 for Maharashtra.12,13

The 38.5% initiation of breastfeeding within 1 h of birth was more than the corresponding national average (24.5%) and but less than the Maharashtra (67.7%) figures of the NFHS 312 and lower than 10th plan target of 50%.18

The initiation of BF within 6 h remained similar to the findings of Kishor et al.19 The delay in initiation of BF was mainly due to delivery by caesarean section. Similar result was found by Pandey et al.8
The probable reasons for better observed feeding practices as compared to the state or national averages could probably be due to high coverage of antenatal services and almost 100% literacy among mothers.

133 (71%) babies were EBF which is better than the average of India (46.4%) and Maharashtra (54.8%) when compared with the DLHS-3 findings. The frequency of BF in children <6 months is in accordance, but the duration of each feed is less than the recommended IYCF guidelines.

The initiation of CF after 6 months of age is found to be more than 90% that is much higher than the findings of Zodpey et al. The foodstuff included were rice, dal, vegetables, etc., and is more or less similar to the findings of Zodpey et al.

The higher percentages of EBF and timely initiation of BF and complementary feeding are probably because of the good antenatal coverage and higher rate of hospital deliveries. More than 99% of the mothers had received at least 1 ANC check-up with around 80% mothers receiving more than three antenatal check-ups. Only around 1% of the babies were delivered at home.

In all, around one-quarter of the children had BMI for age <2 SD Z-scores of the median for their respective age which is on the lower side as compared to NFHS-3 data. However, this finding needs to be interpreted with caution as around four-fifths of the children were less than 6 months of age and the proportion of children having malnutrition will increase with increasing age as was seen in the study of Dongre et al.

The association of nutritional status and feeding practices was assessed. Not giving colostrum, not giving EBF, duration of feeds <10 min, swapping the breasts during each feed, and decreased frequency during illness were found to be associated with poor nutritional status. However, the possible confounding effect of education of mother and number of antenatal visits need to be taken into consideration. Better feeding practices were observed with improved education of mother and increased number of antenatal visits.

Most of the mothers were not responsive for the signs of hunger, which a child might express and fed their child only when the child cried. Although almost all mothers agreed that they should continue to feed their babies during illness, 27.3% of the mothers informed...
that the frequency of BF decreased during illness. The scenario was even worse for CF with more than 60% of the mothers reporting that they fed their child in reduced quantities. The findings in our study are in accordance with the findings of NFHS-3. None of the mothers had knowledge regarding the age appropriate quantity of CF that should be given to a child. The practice of mothers was that they used to offer CF to their child till he/she refused the food that was given. There was minimal effort for active feeding by motivating the child to eat further.

Almost all the mothers informed regarding the practice of swapping the baby to other breast during each episode of BF. Around 95% swapped the baby to the other side during each feed, out of which 86% swapped the baby once, 3.7% swapped twice, and 4.2% did more than twice. In children who were not EBF, water/gripe water (40.7%) was the most common food substance used. Hot weather was the most common reason cited by the mothers for giving plain water. Mothers also informed that they gave gripe water (ghutti) because they thought that it helps the child to digest the food that is given and helps the child to gain weight. Mothers informed that knowledge regarding ghutti was transferred from mother/mother-in-law to them.

CONCLUSION

In our study, we found out that although practice of BF was universal, there is definite scope for further improving the practices of BF. This study has helped understand the faulty feeding practices and some of the reasons behind those practices that will definitely help in framing an Information Education and Counseling and behavior change communication strategy for improving the feeding practices in children in our area.

Limitations

- Majority of the study participants were recruited from the MCH clinic from a hospital and may not be representative of the general population
- Most of the study participants were <6 months of age and so the results for children 6–24 months of age should be interpreted with caution as the sample was relatively small.

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Conflicts of interest

There are no conflicts of interest.

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