



ORIGINAL RESEARCH PAPER

Paediatrics

A STUDY ON COMPLEMENTARY FEEDING PRACTICES AMONG CHILDREN AGED 6 MONTHS TO 23 MONTHS – A CROSS SECTIONAL OBSERVATIONAL STUDY

KEY WORDS:

Complementary feeding, exclusive breast feeding, Nutritional status, malnutrition

R. Monika*

Department of Paediatrics, Meenakshi medical college hospital and research institute, Kancheepuram, Tamilnadu, India *Corresponding Author

Nayeemul Rehaman Shaik

Department of Paediatrics, Meenakshi medical college hospital and research institute, Kancheepuram, Tamilnadu, India

Ubaidur Rahman

Department of Paediatrics, Meenakshi medical college hospital and research institute, Kancheepuram, Tamilnadu, India

ABSTRACT

Background: For a child's optimal growth and development, breast feeding exclusively for the first six months, followed by supplemental feeding in addition to breast feeding, is crucial. A lack of information and proper eating habits worsen childhood morbidity and death. As a result, the purpose of this study was to determine the factors that influence supplemental feeding behaviours in infants and young children aged 6 to 23 months. **Methodology:** This study was conducted as a Cross-sectional Observational study in the pediatric Out-patient department of pediatrics in Meenakshi Medical College Hospital and Research Institute, among children aged 6 months to 23 months during February 2022-September 2022. A total of 100 children aged 6 months to 23 months with were included in this study. After taking the written informed consent, children were assessed for the demographic, and clinical presentation by the principal investigator using a pre structured proforma. **Results:** Knowledge about EBF was known to maximum number of the study participant's mothers but only few mothers practiced EBF. Knowledge regarding frequency of complementary feeding was known to 38.4%. Colostrum was offered to most of the children in this study which is highly nutritious to the baby. The common complementary food practiced among this study population was noticed as Ragi Sari and cow's milk. The most common reasons coded for not practicing EBF was found to be work status of the mothers in this study. **Conclusion:** We conclude that the maternal factors like education, their occupation, information received regarding CF, and Correctness of CF practice were strongly influence the nourishment status of the infants. Hence special attention needs to be paid on these areas in terms of health education and creating awareness.

INTRODUCTION

The World Health Organization (WHO) recommends exclusive breast feeding for the first six months of life, with supplemental feeds added at six months and maintained breast feeding until the child is at least two years old^{1,2}. From the age of six months, when breast milk alone is no longer sufficient to cover all of their nutritional needs and supplemental feeding should begin, infants and young children are at an increased risk of malnutrition. Malnutrition might result from starting supplemental foods too early or too late³. Appropriate infant and young child feeding (IYCF) practises include starting solid and semi-solid foods around 6 months of age and gradually increasing the variety and quality of foods taken as the child grows older, all while retaining nursing⁴.

One of the most cost-effective ways for increasing health and lowering morbidity and death in early children has been to improve the quality of supplementary foods. Optimal supplemental feeding methods might save nearly a third of child fatalities. Malnutrition was responsible for over half of all childhood deaths in the first two years, a key period of susceptibility⁵⁻⁷. Many children are victims of inappropriate supplemental feeding practises, which remain a serious public health issue in many underdeveloped nations. If not done correctly, complementary feeding can result in diarrhoea and months of development retardation, leading to kwashiorkor, marasmus, and immunodeficiency characterised by recurrent and chronic infections⁸.

Furthermore, due to the immaturity of the gastrointestinal and neurodevelopment systems, as well as the kidneys, it is assumed that newborns under the age of six months are not physically ready to consume supplemental meals. Early administration of supplemental feeds does not promote growth velocities or food acceptability, according to studies⁹.

In our nation, just 46.3 percent of moms practise exclusive breastfeeding for the first six months. Only 23% of newborns

received the breast milk within the first hour of life, which is most appropriate time to start breast feeding and only 55.8% of babies aged 6 to 9 months received both solid and semi-solid meals and breast milk¹⁰. The nutritional state of the community's youngsters is likewise concerning. Stunting and wasting affect 44.9 percent and 22.9 percent of children under the age of three years, respectively¹⁰. Appropriate community feeding practises can significantly enhance children's nutritional status and reduce morbidity¹¹. Also it was proved in the literature that the interventions practiced in the feeding habits can considerably reduce the childhood mortality globally¹². Accurate knowledge and expert assistance from the family, community, and healthcare system are required for proper supplemental feeding. Malnutrition is frequently caused by a lack of understanding about proper eating and feeding habits, rather than a lack of food. It will be easier to develop interventions to enhance feeding patterns if moms are aware of these aspects. Many studies have revealed that Indian moms are unable to initiate supplemental feeding at the appropriate period¹³. Hence this study was conducted to identify the factors that influence complementary feeding practices among infants and young children aged 6-23 months.

METHODS:

This study was conducted as a Cross-sectional Observational study in the pediatric Out-patient department of pediatrics in Meenakshi medical college hospital and research institute, among children aged 6 months to 23 months during February 2021-September 2021. Infants and children with congenital anomalies, children with metabolic disorders affecting normal growth, sick babies and children with diarrhea in preceding 15 days of study were excluded from the study. A total of 100 children aged 6 months to 23 months with were included in this study. After taking the written informed consent, children were assessed for the demographic, anthropometry and clinical presentation by the principal investigator using a pre structured proforma. Following which the principal investigator assessed the detailed history of the

participants feeding practices from their parents. Quantity of the complementary feed was assessed by using a standard 150 ml bowl to get the near exact dietary intake of the child. Time of initiation of Complementary Feeding (CF) by the parent was compared with recommended time of six months of starting CF, to decide if the feed in the child was early, at recommended time or started late. Adequacy of the feed was analyzed based on the amount, consistency of Complementary Feed the child received and the frequency of meal/day. The data was entered in excel sheet and analyzed using SPSS.

RESULTS:

In this study about the complementary feeding practices among children of 6 months to 23 months age and its correlation with nutritional status maximum number of participants were between 12-24 months of age with slight increase in distribution of male to female children. Most of the mothers were in the age group of 26 to 30 years and maximum participants belonged to nuclear family.

Table 1: Demographic profile of child and mother

Age (in months)	Percentage
6-8	26
9-11	24
12-24	50
Gender	Percentage
Male	52
Female	48
Mothers Age	Percentage
20 years	10
21-25 years	36
26-30 years	40
>30 years	14
Type of Family	Percentage
Nuclear	63
Joint	37
Education of Mother	Percentage
No education	8
Lower Primary	23
Upper Primary	42
SSLC and Intermediate	16
Bachelor and above	11
Profession	Percentage
Housewives	24
Agricultural work	8
Business	6
Service Sector Employees	10
Skilled Worker	51
Labour	1

Information gained regarding complementary feeding by the mother was noted to be around 14.2% during the ANC checkup, 22.2% at the time of delivery and 53.2% at immunization which was the maximum.

Knowledge about EBF was known to maximum number of the study participant's mothers but only few mothers practiced EBF. Knowledge regarding frequency of complementary feeding was known to 38.4%. Colostrum was offered to most of the children in this study which is highly nutritious to the baby.

The common complementary food practiced among this study population was noticed as Ragi Sari and cow's milk. The most common reasons coded for not practicing EBF was found to be work status of the mothers in this study. Likewise the common reason for delay in initiation of complementary feed was known to be Child refused to accept other foods.

However a group of the mothers felt breast milk is not enough so they started complementary feed earlier whereas another

group of mothers felt that breast milk sufficient so they delayed complementary feeds.

Most of the children were cared by their grandparents in our study. Hand hygiene and usage of purified water while feeding the babies was followed known and it was practiced by the mothers except few who were not aware about its importance. Very few mothers were found to practice proper amount, frequency and consistency of complementary feed in our study.

On assessing the association between factors like mother educational status, mother's occupation, history of information received regarding CF, knowledge about starting of CF and Correctness of CF practice and the presence of stunting was found to be statistically significant. On assessing the association between factors like mother educational status, knowledge about starting of CF and Correctness of CF practice and the presence of wasting was found to be statistically significant however factors like mother's occupation and history of information received regarding CF were found to be not associated with wasting. On assessing the association between factors like mother educational status and Correctness of CF practice and the presence of underweight was found to be statistically significant however factors like knowledge about starting of CF, mother's occupation and history of information received regarding CF were found to be not associated with underweight.

Table :2 Mothers receiving information about complementary feeding

During ANC checkup	Percentage
Yes	14
No	86
At the time of delivery	Percentage
Yes	22
No	78
At the time of immunization	Percentage
Yes	53
No	47
Knowledge about duration of exclusive breast feeding	Percentage
Yes	84
No	16
Knowledge to start complementary feeding	Percentage
Yes	84
No	16
Knowledge of frequency of complementary feeding	Percentage
Yes	38
No	62
First Feed Offered to Child	Percentage
Colostrums	83
Infant Formulas	6
Cows/ Buffalo milk	5
Water/ sugar water/ honey	6
Duration (in months)	Percentage
< 6 months	33
6 months	59
> 6 months	8
Complementary food	Percentage
Ragi Sari	63
Cow Milk	20
Rice Ganji	3
Commercial Products	10
Fruits	3
Others	1

DISCUSSION:

Findings of this study were comparable with the findings of the following studies. Sreedhara MS et al¹⁴ reported that the EBF was found to be prevalent in 68 percent of people after six months. In 55 percent of babies, complementary meals were offered at the recommended age. Approximately 72% of newborns were given thick supplementary meals. A sufficient amount of supplementary meals was provided to 61% of the participants. At one year, 34 percent of children were wasting and 32 percent were stunted. Infants who started supplemental feeding before the age of six months and whose complementary feeding was poor or improper had a higher prevalence of malnutrition. Dipta KM et al¹⁵ reported that the standardised IYCF score of undernourished children was considerably lower than that of children with normal grades. After controlling for other factors, each unit increase in the standardised IYCF score was predicted to lower the prevalence of underweight, stunting, and wasting by 2% to 3%. Underweight and stunting were linked to low/very low household food security, a low level of life, and female gender. Vartika S et al¹⁶ reported that 87.3 percent of children over the age of six months were on CF, albeit only 70.1 percent of them received it on time. Only 17.2 percent of youngsters were provided green leafy vegetables, whereas 36.4 percent were given additional meals in liquid form. According to the study, 25.1 percent of toddlers under the age of six months are presently put on early supplemental feeding because their mothers believe they don't have enough milk or need to return to work.

Also, Shreyash JG et al¹⁷ reported that only 56.4 percent of moms started nursing within an hour after giving birth. Only 36.2 percent of infants were nursed exclusively for 6 months, and 97.5 percent had received supplemental feeding by the time they were 6–9 months old. There were 11.5 percent of people who were underweight, 15.6 percent who were stunted, and 8.6 percent who were wasting. There was a link between underweight and the child's birth order, birth weight, and the time of the child's first breastfeed. There was a strong link between stunting and the gender of the kid. There was a link between the child's birth order and the manner of delivery at the time of breast-feeding beginning. Indrapal IM et al¹⁸ reported that only 26% of babies were breastfed during the first hour of their lives. Approximately 57 percent of children aged 6 to 11 months were diagnosed with CF. Underweight, stunting, and wasting were found to be prevalent in 41 percent, 29 percent, and 33 percent of children, respectively. According to multivariate analysis, children from scheduled castes and scheduled tribes were 1.4 times more likely than others to be underweight or stunted, 1.4 to 1.6 times more likely to come from families with the lowest wealth index, and 1.5 times more likely to be born to illiterate mothers. Under nutrition was also connected with hygienic procedures, birth weight, home delivery, and CF practices.

In another study, Rana K et al¹⁹ reported that 54.4 percent of moms started CF at the age of six months, 19.2 percent started before six months, and 26.4 percent started after six months. Insufficient breast milk was cited by 33.3 percent of mothers as a reason for early CF beginning, whereas baby digestion was cited by 50 percent of mothers as a reason for delayed CF initiation. At 6 months, 61.5 percent of children born in a government institution acquired CF, compared to 32.1 percent of infants delivered in a private institution or at home. When opposed to 50% of children born by caesarean section, 60.8 percent of regularly delivered infants started CF at 6 months. The majority of moms (56.8%) have given semi-solid food as CF, followed by animal milk (35.2%). Tarun A et al²⁰ reported that 34.4 percent of the participants were underweight, 58.8% were stunted, and 17.6 percent were obese. 17.6% of the babies that were thrown away were breastfed exclusively until they were six months old. Colostrum was provided to 42.0 percent of the animals.

Complementary nutrition was provided to 20.0 percent of the youngsters. The mother's educational status was shown to be strongly linked to the occurrence of underweight offspring. Breastfeeding initiation was delayed in 13.2% of babies, and this was linked to underweight and stunting. 55.6 percent of youngsters were completely vaccinated, whereas 16% were not. Veena S et al²¹ reported that nursing habits such as starting breastfeeding within one hour of birth, feeding colostrum, avoiding pre-lacteals, and exclusively breastfeeding for up to six months were all greater in intervention regions than in comparison areas. In terms of supplementary eating patterns, however, there were minimal and mixed changes across research arms. The mean weight-for-age z-score among intervention children was higher at 9 months, and the incidence of underweight status was decreased at 12 months.

However, Mansi VD et al²² found that introducing solid, semi-solid, or soft foods (CF) to babies aged 6–8 months was most common in the South (61%) and least common in the Central and Northern areas (38 percent). In the same way, minimal dietary diversity was highest in the South (33%), and lowest in the Central (12 percent). Both the minimal meal frequency and the minimum permissible diet differed significantly between areas. CF habits were connected with a variety of characteristics that vary by Indian area. Higher family wealth index for the adoption of supplementary meals in North and Eastern India were significant modifiable factors related with CF practices. Pragti C et al²³ reported that in 60.6 percent of children, the minimal meal frequency was appropriate, the minimum dietary diversity was 15.1 percent, and the minimum suitable diet was 9 percent. According to Zscore, the prevalence of wasting was 43.7 percent, underweight 43.4 percent, and stunting 29.1 percent. They noted that a statistically significant link between wasting and low birth weight, bottle feeding, and market food use.

CONCLUSION:

We infer that the maternal factors like education, their occupation, information received regarding CF, and Correctness of CF practice were strongly influence the nourishment status of the infants. Hence special attention needs to be paid on these areas in terms of health education and creating awareness.

REFERENCES:

1. World Health Organization. Global strategy for infant and young child feeding. Geneva, WHO, 2003. Available from: http://www.who.int/nutrition/publications/infantfeeding/infant_feeding.
2. World Health Organization. Complementary feeding - Report of the global consultation Summary of Guiding principles Geneva, 2001. Available from: www.who.int/entity/nutrition/publications/infantfeeding/Complementary_Feeding.pdf.
3. Aggarwal A, Verma S, Faridi MMA, Dayachand. Complementary feeding reasons for inappropriateness in timing, quantity and consistency. Indian J Pediatr. 2008;75:49-53.
4. UNICEF and WHO. Global Strategy for Infant and Young Child Feeding, Geneva, Switzerland 2006.
5. UNICEF. Infant and young child feeding, nutrition section program. June 2012.
6. International Baby Food Action Network (IBFAN). Report on the situation of infant and young child feeding in Liberia. The convention on the rights of the child, 2012.
7. Nancy F Krebs, K Michae Hambidge. Complementary feeding: clinically relevant factors affecting timing and composition. Am J Clin Nutr. 2007
8. The breast feeding promotion network of India. Introducing solids (Complementary Feeding) Available from: http://www.bpni.org/breastfeeding/introcomplementary_feeding.html
9. Cohen RJ, Rivera LL, Canahuati J, Brown KH, Dewey KG. Delaying the introduction of complementary feeding until 6 months doesn't affect appetite or mother's report of food acceptance of breast fed infants from 6-12 months in a low income Honduran population. J Nutr. 1995; 125(11):2787-92.
10. International Institute for Population Sciences (IIPS) and Macro International. 2007. National Family Health Survey (NFHS-3), 2005–06: India: Volume I. Mumbai: IIPS.
11. Bhandari N, Mazumder S, Bahl R, Martinez J, Black R E, Bhan M K et al. An educational intervention to promote appropriate complementary feeding practices and physical growth in infants and young children in rural Haryana India. J Nutr 2004; 134: 2342-48.
12. Jones G, Steketee RW, Black R E, Bhutta Z A, Morris S S. How many child deaths can we prevent this year? The Lancet 2003; 362:65-71.
13. Sethi V, Kashyap S, Seth V. Effect of nutrition education of mothers on infant feeding practices. Indian J Pediatr. 2003; 70:463-466.
14. Sreedhara M, Banapurmath C. A study of nutritional status of infants in relation to their complementary feeding practices. Nature. 2013;4(9).

15. Mukhopadhyay DK, Sinhababu A, Saren AB, Biswas AB. Association of child feeding practices with nutritional status of under-two slum dwelling children: A community-based study from West Bengal, India. *Indian journal of public health.* 2013 Jul 1;57(3):169.
16. Saxena V, Kumar P. Complementary feeding practices in rural community: A study from block Doiwala district Dehradun. *Indian J Basic Appl Med Res.* 2014 Mar;3(2):358-63.
17. Gandhi SJ, Godara N, Modi A, Kantharia SL. Impact of feeding practices on nutritional status of children in rural area of Navsari district. *Religion.* 2014;20(204):84-90.
18. Meshram II, Kodavanti MR, Chitty GR, Manchala R, Kumar S, Kakani SK, Kodavalla V, Avula L, Ginnela Narsimhachary Veera B. Influence of feeding practices and associated factors on the nutritional status of infants in rural areas of Madhya Pradesh state, India. *Asia Pacific Journal of Public Health.* 2015 Mar;27(2):NP1345-61.
19. Kakati R, Barua R, Borah M. Complementary feeding practices and its determinants in rural areas of Kamrup district, Assam, India. *Sch. J. Appl. Med. Sci.* 2016;4:2260-5.
20. Aggarwal T, Srivastava S. Nutritional status and its correlates in under five children of labour population in urban slums of Lucknow, Uttar Pradesh, India. *Int J Contemp Pediatr.* 2017 Jul;4:1253-8.
21. Singh V, Ahmed S, Dreyfuss ML, Kiran U, Chaudhery DN, Srivastava VK, Ahuja RC, Baqui AH, Darmstadt GL, Santosham M, West Jr KP. An integrated nutrition and health program package on IYCN improves breastfeeding but not complementary feeding and nutritional status in rural northern India: A quasi-experimental randomized longitudinal study. *PLoS one.* 2017 Sep 20;12(9):e0185030.
22. Dhami MV, Ogbo FA, Osuagwu UL, Agho KE. Prevalence and factors associated with complementary feeding practices among children aged 6–23 months in India: a regional analysis. *BMC Public Health.* 2019 Dec;19(1):1-6.
23. Chhabra P, Gupta A, Thakur N. Complementary feeding practices and nutritional status of children (6–23 months) in an urban resettlement colony of East Delhi. *Indian Journal of Community Medicine: Official Publication of Indian Association of Preventive & Social Medicine.* 2021 Jul;46(3):528.