Section: Community Medicine

Original Research Article

COMPLEMENTARY FEEDING PRACTICES AMONG MOTHERS OF CHILDREN AGED SIX MONTHS TO TWO YEARS ATTENDING AN IMMUNIZATION CLINIC IN A TERTIARY HOSPITAL IN LOWER ASSAM

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Received : 07/10/2025
Received in revised form : 27/11/2025
Accepted : 13/12/2025

Keywords:
complementary feeding, child nutrition, feeding practices.

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DOI: 10.47009/jamp.2025.7.6.190

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2025; 7 (6); 1022-1025

ABSTRACT

Background: Complementary feeding, the transition from exclusive breastfeeding to family foods between 6–24 months, is critical for child growth and development. Despite WHO recommendations and national IYCF guidelines, inappropriate complementary feeding practices remain a major contributor to childhood malnutrition in India. NFHS-5 reports that only a small proportion of Indian children receive a minimum acceptable diet, with Assam performing even poorer. Understanding local feeding patterns is essential for targeted interventions. **Materials and Methods:** A hospital-based cross-sectional study was conducted in the immunization clinic of a tertiary medical college in lower Assam during July–August 2025. Purposive sampling was used to select 104 mothers of children aged 6–24 months. Data were collected using a pre-tested semi-structured questionnaire covering age of initiation of complementary feeding, feeding frequency, food groups consumed in the previous 24 hours, food texture, feeding method, and maternal knowledge based on WHO/UNICEF IYCF indicators. Descriptive statistics were generated using MS Excel. **Result:** Among the children, 52.9% initiated complementary feeding at 6 months, while 24% started early and 23.1% late. Liquid foods were commonly used as first feeds (64%). Minimum Dietary Diversity was achieved by only 35%, Minimum Meal Frequency by 75%, and Minimum Acceptable Diet by 24%. Dietary diversity was particularly poor, with just 20.2% consuming five or more food groups. Bottle feeding was prevalent (56.7%), and male children had better dietary diversity than females. Although most mothers attended ANC and interacted with ASHA workers, only 49% had adequate knowledge. **Conclusion:** The study highlights major gaps between recommended and actual complementary feeding practices, emphasizing the need for strengthened counselling and targeted nutrition education.

INTRODUCTION

Complementary feeding is a crucial stage in an infant's life that bridges the transition from exclusive breastfeeding to family foods. According to the World Health Organisation (WHO), complementary feeding is defined as the process of providing foods and liquids along with breast milk once breast milk alone is no longer sufficient to meet the nutritional requirements of infants.[1-3] This phase generally begins at 6 months of age and continues up to 24 months or beyond, while breastfeeding is maintained.[1]

During the first six months of life, breast milk provides all the necessary energy and nutrients required for optimal growth and development[1]. However, after six months, infants require additional energy, proteins, vitamins, and minerals that breast milk alone cannot supply in adequate amounts. Timely introduction of safe, appropriate, and nutritionally adequate complementary foods becomes essential to ensure healthy growth, cognitive development, and prevention of malnutrition.[4-9]

The period between 6–24 months is often referred to as a "critical window of opportunity," as inappropriate feeding practices during this stage

ISSN (O): 2687-5365; ISSN (P): 2753-6556

may lead to irreversible consequences such as stunting, underweight, micronutrient deficiencies, frequent infections, and poor cognitive outcomes[8]. Globally, poor complementary feeding practices are considered one of the major contributors to child malnutrition and mortality.[8]

The principles of complementary feeding include:

1. Timeliness – Initiating at 6 months of age1,2,3
2. Adequacy – Providing sufficient energy, protein, and micronutrients.[1,9]
3. Safety – Ensuring hygienic preparation and storage to prevent infections.[1]
4. Appropriateness – Age-appropriate texture, frequency, and variety of foods.[1,3]

In India, challenges such as cultural beliefs, lack of awareness, poverty, and inadequate access to diverse foods often result in delayed initiation, low dietary diversity, and insufficient feeding frequency[5]. Data from the National Family Health Survey (NFHS-5, 2019–21) revealed that only around 11.3% of children aged 6–23 months received an adequate diet[6], highlighting the urgent need for interventions.

To address these issues, the Government of India has launched several initiatives such as the Integrated Child Development Services (ICDS), Infant and Young Child Feeding (IYCF) guidelines, and PoshanAbhiyaan (National Nutrition Mission), which emphasize the promotion of optimal complementary feeding practices.[5,7]

Thus, complementary feeding is not only a nutritional necessity but also a cornerstone of child survival, growth, and development. Effective policies, community awareness, and caregiver education are essential to improve complementary feeding practices and reduce the burden of malnutrition among children in India and worldwide.[4,7]

Objectives

General Objective

To assess the complementary feeding practices among mothers of children aged 6 months to 2 years attending the immunization clinic in a tertiary hospital in Barpeta district, Assam.

Specific Objectives

1. To assess the complementary feeding practices among mothers of children 6 months - 2 years.
2. To assess the socio-demographic profile and its effect on complementary feeding.
3. To assess awareness among parents regarding complementary feeding.

MATERIALS AND METHODS

We conducted a hospital-based cross-sectional study at the Immunization Clinic of Fakhruddin Ali Ahmed Medical College and Hospital (FAAMCH), Barpeta, Assam, during July and August 2025. The study population consisted of mothers of children aged 6 months to 2 years who attended the clinic during the study period. Mothers were included if they had a child within the specified age range and provided informed consent. Mothers whose children had chronic illnesses or congenital malformations affecting feeding practices, and those unwilling to participate, were excluded. A total of 104 mothers were recruited using purposive sampling based on eligibility at the time of clinic attendance.

Data were collected using a pre-tested, semi-structured questionnaire administered in person. Information was obtained on the age of initiation of complementary feeding, daily feeding frequency as per age, and the types of foods consumed in the previous 24 hours based on the UNICEF-recommended eight food groups (breast milk; grains, roots, tubers, and plantains; pulses, nuts, and seeds; dairy products; flesh foods; eggs; vitamin A–rich fruits and vegetables; and other fruits and vegetables). Maternal knowledge of complementary feeding was classified as adequate only if all three criteria were correctly fulfilled: knowledge of initiating complementary feeding at 6 months, correct feeding frequency for the child's age, and awareness of all eight food groups. Failure to meet any one of these criteria was categorised as inadequate knowledge.

Data were entered in Microsoft Excel and analysed using descriptive statistics. Responses were stratified and summarised according to sociodemographic variables and feeding-related indicators. The results are presented using pie charts and simple or complex bar diagrams to illustrate the distribution of knowledge and practices among participating mothers.

RESULTS

A total of 104 mother–child pairs were included in the study. Among the children, 12.5% were aged 6–8 months, 23.1% were 9–11 months old, and 64.4% belonged to the 12–24-month age group. Slightly more than half of the children were male (52%) and the remainder were female (48%). Most participants identified as Muslim (74%), followed by Hindu (26%). With respect to maternal education, 55.8% had completed primary schooling, 39.4% had secondary education, 3.8% were graduates and 1.0% were postgraduates. Nearly all mothers were homemakers (95%), while the remainder reported occupations such as nursing (2%), farming (2%), and advocacy (1%). More than half of the households (53%) were nuclear families, while 47% were joint families.

Most mothers (91%) reported at least one antenatal care (ANC) visit, and 70% had interacted with an ASHA worker and availed services. Among all children, 62.5% were completely immunised for age, whereas 37.5% were partially immunised. Complementary feeding was initiated at 6–7 months for 52.9% of children, before 6 months for 24.0%, and after 7 months for 23.1%. The first complementary food offered was predominantly

ISSN (O): 2687-5365; ISSN (P): 2753-6556

liquid (64%), followed by semisolid preparations (37%).

Dietary diversity in the preceding 24 hours varied considerably. Overall, 11.5% of children consumed foods from only one food group, 27% from two groups, 14.4% from three groups, 13.5% from four groups, 20.2% from five groups, 12.5% from six groups, and 1% from seven food groups; none consumed all eight UNICEF-recommended food groups. Based on the WHO/UNICEF criterion of minimum dietary diversity (MDD ≥4 food groups), 35% met the required diversity, whereas 65% did not. Notable gender differences were observed: 46.3% of male children achieved MDD, compared with only 22% of female children.

Minimum meal frequency (MMF) as per UNICEF guidelines was met by 75% of children, while 25% did not receive the recommended number of meals. In contrast to MDD, MMF was higher among females (84%) than males (68.5%). Minimum acceptable diet (MAD), defined as meeting both MDD and MMF, was achieved by only 24% of children; the remaining 76% did not meet the criterion. Male children again performed better, with 31.5% meeting MAD compared with 16% of females.

Regarding consumption of unhealthy foods, 77% of children had not consumed any unwanted foods or sweetened beverages during the previous day, while 23% had. Overall, only 49% of mothers demonstrated adequate knowledge of complementary feeding, whereas 51% had inadequate knowledge. Educational level showed a positive association with knowledge: among mothers with primary education, 25 had adequate and 33 had inadequate knowledge; among those with secondary education, 21 had adequate and 20 had inadequate knowledge. All graduate and postgraduate mothers demonstrated adequate knowledge, indicating improved understanding with higher education.

Most children received complementary food in mashed form (43.3%), followed by pureed (22.1%), family food (13.5%), and liquid preparations (12.5%); the remainder consumed mixed-texture diets. Despite UNICEF discouraging bottle feeding due to risks of infection and interference with breastfeeding, 56.7% of children were bottle-fed and 43.3% were not.

Table 1: Minimum acceptable diet

MAD	No. of Children	Percentage (%)
Yes	25	24%
No	79	76%
Total	104	100%

Table 2: Minimum dietary diversity

MDD	No. of Children	Percentage (%)
Yes	36	35%
No	68	65%
Total	104	100%

Table 3: Feeding method

Feeding Method	No. of Children	Percentage (%)
Bottle fed	59	56.7%
Non-bottle fed	45	43.3%
Total	104	100%

Table 4: Type of first complementary feed

Type of 1st Complementary Feed	No. of Children	Percentage (%)
Liquid	67	64%
Semi-solid	37	36%
Total	104	100%

DISCUSSION

The present study was conducted among 104 children aged 6–24 months to assess complementary feeding practices, parental knowledge, and related factors. In this study, initiation of complementary feeding at 6 months was reported in 52.9% children, which is comparable to NFHS-5 data where timely initiation ranges around 52–55%[6]. Early initiation (<6 months) in 24% and delayed initiation (>6 months) in 23.1% indicate persisting gaps in awareness. Similar findings have been observed in studies from rural Maharashtra and Uttar Pradesh.[10,11]

Liquid feeds (64%) were the most common first complementary food, followed by semisolids (37%). This reflects cultural reliance on diluted foods and highlights the need for counselling on nutrient-dense options. UNICEF recommends introduction of varied semisolid family foods beginning at 6 months,[1,4]which was sub-optimal in our study. Minimum Dietary Diversity (MDD) was met by only 35% of children, and Minimum Acceptable Diet (MAD) by 24%, which is lower than WHO's recommended standards for complementary feeding.[1,9] Studies in other Indian states also show low dietary diversity (25–40%), suggesting that

ISSN (O): 2687-5365; ISSN (P): 2753-6556

inadequate knowledge and sociocultural practices are important barriers.[10,11]

Meal frequency was adequate in 75% of children, aligning with UNICEF standards,[1,4] but still leaving one-fourth of children at risk of undernutrition. Notably, 77% had not consumed unwanted food or sweet beverages, showing some positive trends in feeding practices; similar findings are noted in NFHS-5.[6] Maternal education significantly influenced knowledge about complementary feeding. Mothers with higher education had better awareness regarding correct timing, food groups, and frequency, consistent with findings from multiple Indian studies.[10-12]

Breastfeeding status was satisfactory, with 87% mothers reporting adequate milk production. Immunization coverage (62.5% complete) and ANC/PNC participation (91%) were encouraging and align partially with national estimates[6]. Overall, the findings highlight that while awareness and certain practices (meal frequency, avoidance of unhealthy foods, breastfeeding) are adequate, dietary diversity and acceptable diet indicators remain poor. This gap between knowledge and practice reflects the need for sustained community-based education, stronger counselling by ASHAs/ANMs, and focused IEC activities, as emphasized in the IYCF guidelines and PoshanAbhiyaan.[5,7]

CONCLUSION

The present study on complementary feeding practices among 104 children aged 6–24 months highlights that, although breastfeeding status and awareness levels are encouraging, significant gaps remain in the quality of complementary feeding.

The key findings are as follows:

1. Knowledge of complementary feeding: Only 41% of mothers demonstrated adequate knowledge regarding complementary feeding. Nearly one-fourth (24%) reported initiating complementary feeding before 6 months of age, 50% at 6 months, and 23.1% after 6 months.
2. Overall awareness: Less than half of the parents (49%) had comprehensive knowledge regarding the correct age of initiation, dietary diversity, and recommended feeding frequency. The remaining 51% lacked adequate awareness in one or more of these domains.
3. Type of first complementary feed: A majority of children (64%) received liquids as their first complementary food, while 36% received semi-solid foods.
4. Dietary diversity in the previous 24 hours: Only 11.5% of children consumed foods from a single food group. The proportions consuming foods from 2, 3, 4, 5, 6, and 7 food groups were 27%, 14.4%, 13.5%, 20.2%, 12.5%, and 0.96%, respectively. Notably, no child consumed foods from all 8 recommended food groups.
5. Bottle feeding practices Despite UNICEF's recommendation against bottle feeding, due to its association with infections and interference with breastfeeding, more than half of the participants (56.7%) reported bottle feeding, while 43.3% did not.

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ISSN (O): 2687-5365; ISSN (P): 2753-6556