

Knowledge Attitude and Practice of Complementary Feeding among Mothers and Pattern of Growth in their Infants and Children

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ABSTRACT

Background: India has about 60 million underweight children who face detrimental outcomes, making it one of the countries with the worst rates of child undernutrition in the world. India faces challenges in achieving its development and growth goals due to persistent undernutrition, which mostly impacts the weak and needy. Undernutrition is the reason behind almost one-third of fatalities in children under the age of five.

Methods: A cross-sectional research using questionnaires was conducted on 320 mothers and their children visiting paediatric outpatient departments (OPDs) and IPDs at SCB Medical College and SVPPGIP. The standard WHO growth chart was used to depict the development parameters of mothers' children aged 6 months to 2 years, together with an assessment of their knowledge and practice of supplemental feeding.

Results: This study was conducted using a prospective questionnaire-based approach in the context of a tertiary medical college and hospital. The moms' level of knowledge and the complementary feeding practices' patterns were evaluated. When the mothers in this study were asked to rate their level of expertise about home-based food introduction, 81.6% of them said they knew enough about the introduction of semisolid and solid foods to their diet in addition to breast-feeding, 12.5% said they knew enough about adding only infant formula to their child's meal, and the remaining mothers did not know enough about complementary feeding.

Conclusion: Emphasizing the need for larger, multicenter studies for enhanced validity, the research sheds light on current maternal knowledge and practices, urging future comprehensive investigations to address the complexities of child undernutrition.

Key-words: Growth, Nutrition, Malnutrition, Pediatric care, Health disparities

INTRODUCTION

A healthy diet is essential to a child's normal development.

The first two years of life are crucial for children to grow to their full potential. The infant receives the vital nutrients and energy from exclusive breast-feeding, particularly during the first six months of life. Breast milk alone is no longer sufficient to support an infant's nutritional demands after six months of life. Hence, it is advised to introduce supplementary meals into a child's diet on time.^[1-4]

One undervalues the role that nutrition plays as the cornerstone of healthy growth. Ill health results from

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poor nutrition, and sick health exacerbates the decline in nutritional status. Since newborns and young children are the most vulnerable to the start of malnutrition and have the largest risk of impairment and mortality from it, these consequences are most prominently shown in these age groups. India has one of the worst rates of child undernutrition worldwide, with almost 60 million underweight children who suffer from negative consequences. India has a difficult time meeting its development and growth objectives because of the ongoing undernutrition that mostly affects the weak and impoverished. ^[5-7] The cause of about one-third of deaths in children under five is undernutrition.

When breast milk is no longer enough to support an infant's nutritional needs, semisolid food is introduced in addition to breast milk. This procedure is known as complementary feeding. Enough nourishment during infancy and early childhood is essential for children to reach their maximum potential. It is commonly known that the "critical window" for promoting ideal growth, health, and behavioral development occurs between birth and two years of age. This is the peak age for development failure, shortages in specific micronutrients, and frequent children's diseases, including diarrhea, as demonstrated by several longitudinal studies.

When supplemental feeding starts during the transition phase, infants are susceptible. It has been proposed that additional feeding treatments aimed at this "critical window" effectively eliminate malnutrition and foster appropriate growth and development when used with illness prevention methods. Because they lack information and skills, health workers cannot provide the community with them. ^[8,9] Thus, between adolescence and maturity, there is a decline in overall health, employment ability, reproductive results, and intellectual functioning.

In India, community beliefs determine rural regions' breast-feeding and supplemental feeding practices. Social, cultural, and educational factors further influence these views. In addition to the mother's knowledge, family members and medical professionals must also encourage and assist the nursing mother. In India, practically everyone breast-feeds. However, the rates of early start, exclusive breast-feeding, and complementary feeding schedules are by no means ideal. Studies on rural India's knowledge, attitudes, and supplemental feeding

behaviors are rare. ^[10-12] Child malnutrition in India mainly affects children in their first two to three years of life and is a result of high levels of illness exposure as well as improper infant and young child feeding (IYCF) and care practices.

In India, the Integrated Child Development Services (ICDS) Scheme covers the whole nation; however, the percentage of malnourished children is still rising moderately. Malnutrition-related programs in India emphasize food-based treatments more than modifying the feeding and care practices of families with young children. According to IYCF rules, a baby or young child should be fed according to certain standards, which include starting to breast-feed within an hour of delivery, nursing exclusively during the first six months of life, and providing appropriate and timely supplemental feeding at six months. ^[13-15] These recommendations are essential for children under two to grow normally and avoid malnourishment.

Even after the ICDS project has been in place for more than 30 years, public knowledge about healthy eating habits is still lacking. Mothers don't know how to feed their children properly. Studies on the evaluation of breast-feeding processes and nutrition promotion are few.

MATERIALS AND METHODS

The study design was a cross-sectional observational study conducted at S.C.B Medical College and Hospital & SVPPGIP, nearby UPHC. The study focused on mothers with children aged 6 months to 2 years attending the pediatric outpatient department (OPD), inpatient department (IPD), and UPHC. The research spanned 2 years, from December 2020 to December 2022.

Total 320 mothers and their children participated in the study, responding to questionnaires during their visits to the pediatric OPDs and IPDs at the mentioned medical facilities. The World Health Organization (WHO) growth chart served as the standard for assessing the developmental parameters of children aged 6 months to 2 years.

The study also evaluated the mothers' knowledge and practices related to supplemental feeding. Notably, 81.6% of women were well-informed about initiating supplemental feeding alongside breast-feeding. Interestingly, a significant portion of mothers (46.9%)

acquired knowledge outside health professionals from friends and family.

Inclusion Criteria- All mothers with children from 6 months- 2 years of age.

Exclusion Criteria- Mothers with children <6 months & > 2 years and top-fed babies since birth and babies with congenital anomaly & any chronic medical illness.

Statistical Analysis- The statistical analysis employed in this study included descriptive statistics, with categorical variables presented as sample percentages and continuous variables expressed through median values and interquartile ranges. Group differences were assessed using the chi-squared test for categorical variables and the Mann–Whitney test for continuous variables, following a check for normal distribution via the Kolmogorov–Smirnov test. Logistic regression was utilized to calculate odds ratios (ORs) and 95% confidence intervals (95% CIs), with adherence to nutritional guidelines and introduction of solid foods between 4 and 6 months as reference categories (OR = 1.00). Adjustments for maternal age, maternal nutrition knowledge score, diet type, and adherence to baby-led weaning were made, and significance was determined using Wald's statistics. A significance threshold of $p < 0.05$ was applied to all tests, and data processing was conducted in the Statistical program.

Ethical Approval- Patients and attendants were informed about the study's objectives, procedures, risks, and benefits. Participation was conveyed as optional, without affecting their treatment outcomes during the hospital stay.

RESULTS

Mean (SD), 12.89 (3.87) Range 7.00 - 23.00 Out of 320 cases included in this study 21.9% of the cases were found in the range of 6-9 months, 29.4% in 9-12 months, 38.4% in 12-18 months and 10.3% in 18-24 months with a mean (SD) of 12.89(3.87) and range between 7-23 months (Table 1).

Table 1: Age Distribution of Participants

Age group (month)	Number	Percentage (%)
6-9	70	21.9

9-12	94	29.4
12-18	123	38.4
18-24	33	10.3
Total	320	100

In this study, among the 320 cases, 41.9% were females and 58.1% were males, with a count of 134 females and 186 males respectively (Fig. 1).

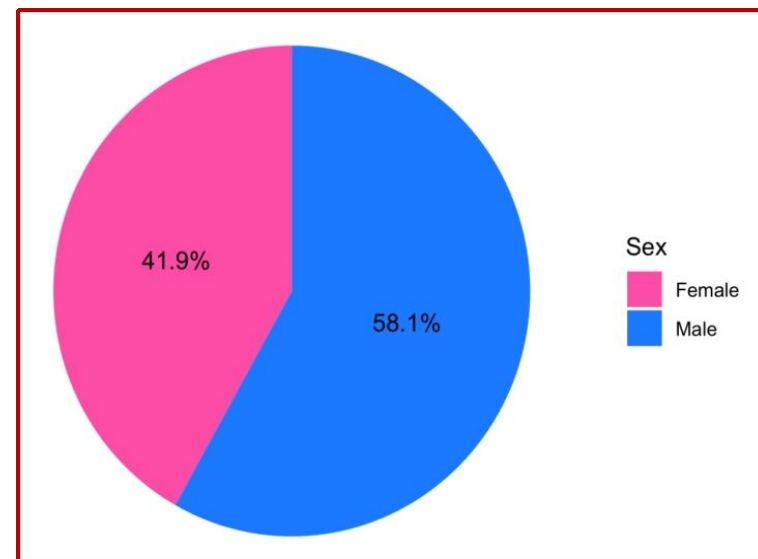


Fig. 1: Sex Distribution of The Study Participants

Among the 320 cases included in this study, 91.9% were Hindu and 8.1% were Muslims, with a count of 294 Hindu and 26 Muslims (Table 2).

Table 2: Mother's Religion

Religion	Number	Percentage (%)
Hindu	294	91.9
Muslim	26	8.1
Total	320	100

In this study, among the 320 cases included, 3.4% of mother had no formal education, 29.38% had primary education, 39.69% had secondary education, 19.38% had studied up to postsecondary, 5.31% were graduated and 2.81% had done their post-graduate (Fig. 2).

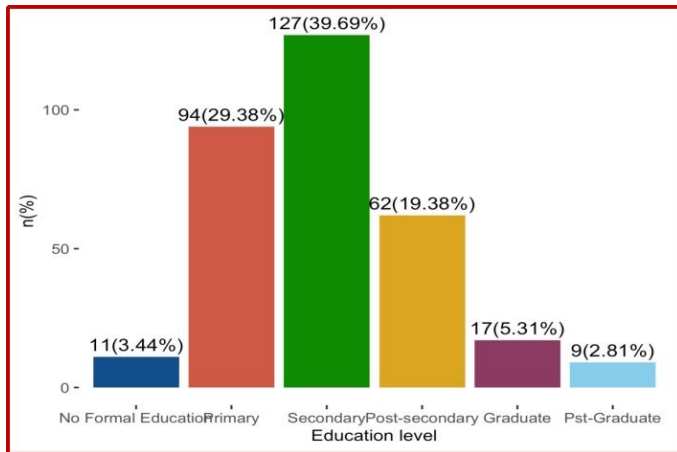


Fig. 2: Education status of participants

Among the 320 cases in this study, 95.3% of mothers were housewives and 4.7% were working, with 305 cases and 15 cases, respectively (Table 3).

Table 3: Mother's Occupation

Occupation	Number	Percentage (%)
House-wife	305	95.3
Working	15	4.7
Total	320	100

DISCUSSION

This study, which included patients who visited our IPD and OPD, was conducted using a prospective questionnaire-based approach in the context of a tertiary medical college and hospital. The moms' level of knowledge and the complementary feeding practices' patterns were evaluated.

When the mothers in this study were asked to rate their level of knowledge about home-based food introduction, 81.6% of them said they knew enough about the introduction of semisolid and solid foods to their diet in addition to breast-feeding, 12.5% said they knew enough about adding only infant formula to their child's meal. The remaining mothers did not know enough about complementary feeding [16-19].

In this study, 60.3% of mothers had proper knowledge about introducing complementary feeding around six months, while 39.7% lacked proper knowledge. This is like a survey conducted in Delhi by Aggarwal et al. in 2008, where 46% of mothers lacked proper knowledge. This suggests that even if moms' understanding of the appropriate age to start supplemental feeding has grown over time, it is still insufficient. Therefore, a healthy

society must have interventional programs that educate mothers on the proper supplementary feeding practices [20-22].

When we examined mothers' understanding of the reasons for the start of supplemental feeding, we discovered that 72% attributed it to their baby's increasing needs, 22.1% to their lack of milk, and 5.9% to customary practice. In this survey, we discovered that 38.8% of moms had learned about supplemental feeding from a health professional, 46.9% from friends and relatives, and 8.4% via the media. This is like the research conducted by UNICEF's country office, Royal Tropical Institute [23].

Although 60.3% of women in our research knew when to introduce supplemental feeding, only 45% of moms began doing so at six months, 44.4% started between seven and nine months, and 5.3% either began very early or never at all. A 45.9% similar result was seen in the NFHS-5 data for 2019–2021. The average age at which supplementary feedings were started was 6.3 months, nearer the age range that the WHO recommends.

Here, we discovered a strong correlation between the mother's educational attainment and the child's development. In the group whose mothers had no formal education, we found that 81.8% of the cases experienced growth failure; however, the growth failure percentage progressively dropped as mothers' educational qualifications increased ($p < 0.001$). This data is comparable to that of NFHS-5 2019–2021 in India and the research conducted by Royal Tropical Institute [23].

When we compared monthly income to growth, we discovered that only 21.5% of cases in the low-income group showed average growth. Still, the percentage progressively increased as family income climbed ($p < 0.001$). An analogous correlation was also discovered in the India 2019–2021 NFHS-5 data [24,26].

CONCLUSIONS

The study found that only 60.3% of mothers knew that complementary feedings should start around 6 months, with only 45% effectively implementing this advice. While the mean age for supplemental feeding aligns with WHO recommendations, specific unresolved issues exist. No instances of growth failure were found in the group starting supplemental feeding between four and five months. Further research is needed to reconsider the

age of introducing supplemental feeding. While many moms struggled with calorie management, they preferred home-cooked meals. Comparing these infants to formula-fed ones revealed higher development failure rates, emphasizing the importance of educating moms on home-cooked nutritional content.

Educated moms from secure economic backgrounds had lower rates of development failure in their infants, showcasing their ability to provide better supplemental nutrition. Babies bottle-fed experienced a higher rate of development failure, suggesting a need to discontinue this practice. Most participating moms employed sanitary practices in preparing and storing supplemental feedings, contributing to reduced growth failure rates.

CONTRIBUTION OF AUTHORS

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REFERENCES

- [1] Heinig MJ, Nommsen LA, Peerson JM, Lonnerdal B, Dewey KG. Energy and protein intakes of breast-fed and formula-fed infants during the first year of life and their association with growth velocity: the DARLING Study. *Am J Clin Nutr.*, 1993; 58: 152-61.
- [2] Dewey KG, Cohen RJ, Brown KH, Rivera LL. Age of introduction of complementary food and growth of term, low birth weight breast-fed infants: a randomized intervention study in Honduras. *Am J Clin Nutr.*, 1999; 69: 679-86.
- [3] Kanashiro H, Penny M, Robert R, Narro R, Caulfield L, et al. Improving infant nutrition through an educational intervention in the health services and the community. Presentation at the WHO Global Consultation on Complementary Feeding, Geneva, 2001.
- [4] Reddy V. Weaning; when, what and why. *National Institute of Nutrition. Indian J Pediatr.*, 1997; 54: 547-52.
- [5] Kishore MS, Kumar P, Aggarwal AK. Breast-feeding knowledge and practices amongst mothers in a rural population of North India: a community-based study. *J Trop Pediatr.*, 2009; 55(3): 183-88.
- [6] Ruel MT, Brown KH, Caulfield LE. Moving forward with complementary feeding: indicators and research priorities. *Food Consumption Nutr Div.*, 2003; 146.
- [7] United Nations Administrative Committee on Coordination. Sub-Committee on Nutrition. ACC/SCN, in collaboration with the International Food Policy Research Institute, Geneva, Switzerland, 2000; 4: 1.
- [8] Role of interpersonal communication in infant and young child feeding practices in an urban slum: An overview based on case studies. *Indian J Paediatr.*, 2012; 11: 63- 67.
- [9] Piovanetti T. Breast-feeding beyond 12 months on historical prospective. *Pediatric Clin North Am.*, 2001; 48: 199-206.
- [10] National guidelines on infant and young child feeding. Ministry of Women and Child Development, Government of India. Food and Nutrition Board, 2006.
- [11] Elizebeth K. Nutrition and child development, Paras medical publisher revised, 2010; 4: 35-36.
- [12] National Rural Health Mission. Mission Document. Ministry of Health and Family Welfare, Government of India, 2005.
- [13] Gragnolati M, Shekar M, Gupta MD, Bredenkamp C, Lee Y. India's undernourished children: a call for reform and action. World Bank, 2005.
- [14] WHO. Physical status: The use and interpretation of anthropometry. Report of a WHO expert committee. WHO technical report series. Geneva: World Health Organization, 2001. Available at:

<https://www.who.int/publications/i/item/9241208546>.

- [15] Patel A, Pusdekar Y, Badhoniya N, Borkar J, Agho KE, Dibley MJ. Determinants of inappropriate complementary feeding practices in young children in India: secondary analysis of National Family Health Survey, 2005–2006; 385: 28-44.
- [16] Arabi M, Frongillo EA, Avula R, Mangasaryan M. Infant and Young Child Feeding in Developing Countries. *Child Dev.*, 2012; 83: 32-45.
- [17] Rao M, Rao KD, Kumar AK, Chatterjee M, Sundararaman T. Human resources for health in India. *Lancet*, 2011; 377: 587–98.
- [18] Agampodi SB, Agampodi TC, Udage K, Piyaseeli D. Breast-feeding practices in a public health field practice area in Sri Lanka: a survival analysis. *Int Breast-feed J.*, 2007; 2: 13.
- [19] Israel R, Lamptey P. Nutrition training manual catalogue for health professionals, trainers and field workers in developing countries, 2005.
- [20] Joint WHO/UNICEF Nutrition Support Programme. Nutrition learning packages. *Young Child Feed.*, 1997; 4.
- [21] Primary health care technologies at family and community levels. Aga Khan Foundation. UNICEF/WHO. Weaning supplement to DD32. Health basics guidelines, 1996; DD online: 1-6.
- [22] League of Red Cross & Red Crescent Societies. Learn More About Breast Feeding & Weaning, 1997; 43: 23-28.
- [23] Royal Tropical Institute, Mauritskade 63, 1092 AD Amsterdam, The Netherlands. Ready-made weaning food mixtures in developing countries, 1993.
- [24] Cameron M, Hofvander Y. Manual on feeding infants and young children. Oxford university press. Child-to-child programme. Child-to-child reader: Good food, 2006; 4: 11-12.
- [25] Taksande A, Tiwari S, Kuthe A. Knowledge and Attitudes of Anganwadi Supervisor Workers about Infant Breast-feeding and Complementary Feeding in Gondia District. *Indian J Commu Med.*, 2009; 34(3): 249-51.
- [26] Krebs NF, Hambidge KM, Mazariegos M, Westcott J, Goco N, et al. Complementary feeding: a Global Network cluster randomized controlled trial. *BMC Ped.*, 2011; 11: 4.

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