

Infant and Young Child Feeding Practices and Nutritional Status among Children Aged 6–23 Months Attending a Tertiary Care Centre in Villupuram District: A Mixed-Methods Study

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Abstract:

Background: The first two years of life represent a critical window for optimal growth and neurodevelopment. Appropriate Infant and Young Child Feeding (IYCF) practices, including early initiation of breastfeeding, exclusive breastfeeding for six months, and timely complementary feeding, are pivotal in preventing undernutrition. Despite national nutrition programs, suboptimal feeding practices and childhood malnutrition remain major public health challenges in India.

Objectives: To assess IYCF practices among children aged 6–23 months, determine the prevalence of malnutrition, and explore barriers and facilitators influencing optimal feeding practices.

Methods: A mixed-methods study was conducted at a tertiary care centre in Villupuram district between May and November 2024. Quantitative data were collected from 550 mother–child pairs using structured questionnaires and WHO-standard anthropometric measurements. Nutritional status was assessed using weight-for-age, height-for-age, and weight-for-height Z-scores. Associations between feeding practices and nutritional outcomes were analysed using chi-square tests and logistic regression. Qualitative data were obtained through focused group discussions (FGDs) and analysed thematically.

Results: Exclusive breastfeeding for six months was reported by 92% of mothers, and 89.1% initiated breastfeeding within one hour of birth. However, underweight (41.1%), stunting (46.2%), and wasting (41.5%) were highly prevalent. Exclusive breastfeeding was significantly associated with reduced odds of underweight (OR = 0.33; $p < 0.0001$), whereas early initiation alone showed no significant association with anthropometric outcomes. Bottle feeding was reported in 97.1% of infants, and only 55.5% had regular weight monitoring. Qualitative findings revealed cultural practices, misconceptions regarding infant satiety, and gaps in follow-up care as major barriers.

Conclusion: Despite high adherence to recommended breastfeeding practices, a substantial burden of malnutrition persists. Exclusive breastfeeding remains a strong protective factor, but sustained nutritional gains require integrated strategies addressing bottle feeding, growth monitoring, complementary feeding quality, and health-system follow-up.

Keywords: Infant Feeding, Exclusive Breastfeeding, Malnutrition, Complementary Feeding, IYCF, India.

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Introduction

The first two years of life constitute a critical window for physical growth, cognitive development, and long-term health outcomes. Appropriate Infant and Young Child Feeding (IYCF) practices during this period are among the most effective interventions for improving child survival and preventing undernutrition worldwide. Early initiation of breastfeeding, exclusive

breastfeeding for the first six months of life, and timely introduction of adequate complementary feeding are globally endorsed strategies to promote optimal infant growth and development [1,2].

Initiation of breastfeeding within the first hour of birth plays a crucial role in reducing neonatal mortality by promoting early mother–infant bonding and facilitating the intake of colostrum, which is rich

in immunoglobulins and anti-infective factors [1,3]. Exclusive breastfeeding for the first six months provides complete nutrition, enhances immune protection, reduces gastrointestinal and respiratory infections, and supports normal physical and neurodevelopmental growth [2,4]. After six months of age, breast milk alone becomes insufficient to meet the increasing nutritional requirements of the infant, necessitating the timely introduction of complementary foods that are safe, nutritionally adequate, and appropriately diversified, while continuing breastfeeding up to two years of age or beyond [1,2].

Despite well-established guidelines, adherence to optimal IYCF practices remains inadequate in many low- and middle-income countries, including India. Studies across different regions of India have consistently reported delayed initiation of breastfeeding, early introduction of animal milk or solid foods, suboptimal dietary diversity, and inappropriate complementary feeding practices [5,6]. These gaps significantly contribute to the persistent burden of childhood undernutrition.

India continues to face a high prevalence of child malnutrition, with National Family Health Survey (NFHS-5) data indicating that 35.5% of children under five years are stunted, 19.3% are wasted, and 32.1% are underweight [6]. Undernutrition during the first two years of life is associated with increased susceptibility to infections, impaired cognitive development, reduced educational attainment, and long-term economic productivity losses, thereby perpetuating the intergenerational cycle of malnutrition [3,6].

Multiple factors contribute to suboptimal infant feeding practices in India, including low maternal education, poverty, food insecurity, cultural beliefs, limited access to healthcare services, and inadequate counselling by health professionals [5–7]. Traditional practices such as prelacteal feeding, early introduction of cow's milk, and bottle feeding persist despite evidence-based recommendations. In addition, inconsistent health messaging from media and sociocultural influences often undermines effective behaviour change, even among caregivers who have access to healthcare services [5,7].

Understanding caregiver feeding practices and the contextual barriers and facilitators influencing IYCF implementation is essential for designing culturally acceptable, sustainable, and effective nutrition interventions. Facilitators such as antenatal counselling, maternal education, family support systems, and involvement of frontline health workers have been shown to positively influence feeding behaviours, while gaps in follow-up care and continuity of services remain major challenges [2,5].

Tertiary care centres serve as important points of contact for preventive and curative child health services and provide a valuable setting for evaluating real-world feeding practices. Caregivers attending these centres are expected to have greater exposure to health education, allowing assessment of the translation of knowledge into practice and identification of persistent gaps despite healthcare access.

In this context, the present study was undertaken to assess infant and young child feeding practices among children aged 6–23 months attending a tertiary care centre in Villupuram district. The study aims to evaluate nutritional status, examine the association between feeding practices and growth outcomes, and explore barriers and facilitators influencing optimal IYCF practices, thereby generating evidence to inform healthcare providers, program planners, and policymakers engaged in maternal and child health services.

Materials and Methods

Study Design, Setting and Duration: A mixed-methods study design was adopted, integrating a quantitative cross-sectional component with a qualitative exploratory component. The quantitative arm assessed infant and young child feeding practices and their association with nutritional status, while the qualitative component explored maternal perceptions, cultural beliefs, and health-system factors influencing the implementation of recommended Infant and Young Child Feeding (IYCF) practices. The study was conducted at a tertiary care teaching hospital in Villupuram district, Tamil Nadu, over a six-month period from May 2024 to November 2024.

Study Population: The study population comprised mothers of children aged 6–23 months attending the paediatric outpatient department or admitted to the paediatric ward during the study period. Mothers of children older than 24 months were also included if they had another child within the eligible age group.

Eligibility Criteria: Mothers of infants aged 6–23 months attending the study centre were included. Mothers of children with physical or mental disabilities and those not accompanied by their child at the time of data collection were excluded.

Sample Size and Sampling Technique: The sample size was calculated based on an estimated prevalence of 16% for optimal IYCF practices in Tamil Nadu, using a 95% confidence interval and 20% relative precision. After accounting for a 10% non-response rate, a final sample size of 550 mother–child pairs was determined. A convenience sampling technique was employed to recruit eligible participants.

Data Collection Tools and Procedures: Data were collected using a pre-tested, structured proforma

administered through face-to-face interviews. Information regarding sociodemographic characteristics, antenatal and natal history, infant feeding practices, maternal knowledge, and sources of feeding information was obtained.

Anthropometric Assessment: Anthropometric measurements including weight, length/height, mid-upper arm circumference, and head circumference were recorded using standardized techniques. Nutritional status was assessed using WHO growth standards, and children were classified as normal, moderately malnourished, or severely malnourished based on Z-score cut-offs for weight-for-age, height-for-age, and weight-for-height.

Qualitative Component: A subset of mothers participated in focused group discussions to explore cultural beliefs, family and societal influences, health-system facilitators and barriers, and prevailing myths and misconceptions related to infant feeding practices. Discussions were audio-recorded with consent, transcribed verbatim, and analyzed thematically.

Data Analysis: Quantitative data were analysed using descriptive statistics including means,

standard deviations, frequencies, and percentages. Inferential analyses were performed using the independent t-test for continuous variables and Chi-square or Fisher's exact test for categorical variables. Logistic regression analysis was conducted to identify predictors of undernutrition. Statistical significance was set at $p < 0.05$. Qualitative data were analyzed manually using thematic analysis.

Outcome Measures: Primary outcomes included the proportion of children meeting IYCF indicators such as Minimum Meal Frequency, Minimum Dietary Diversity, and Minimum Acceptable Diet, as well as the prevalence of underweight, stunting, and wasting. Secondary outcomes included identification of key barriers and facilitators influencing feeding practices.

Ethical Considerations: The study was approved by the Institutional Ethics Committee prior to initiation. Written informed consent was obtained from all participants. Confidentiality and anonymity were strictly maintained, and participation was voluntary.

Observation Tables

Table 1: Baseline characteristics of the study participants (N = 550)

Variable	Category	n (%)
Age (months)	Mean $\pm$ SD	17.6 $\pm$ 4.89
	Range	6–23
Gender	Male	250 (45.5)
	Female	300 (54.5)
Mode of delivery	Normal vaginal delivery	367 (66.7)
	LSCS	183 (33.3)

Table 2: Nutritional status of children based on WHO Z-score classification

Indicator	Category	n	%
Weight-for-age	Normal (0 to -2 SD)	172	31.3
	Moderate underweight (-2 to -3 SD)	178	32.4
	Severe underweight (< -3 SD)	48	8.7
Height-for-age	Normal	180	32.7
	Moderate stunting	178	32.4
	Severe stunting	76	13.8
Weight-for-height	Normal	174	31.6
	Moderate wasting	178	32.4
	Severe wasting	50	9.1
Head circumference	Normal	394	71.6

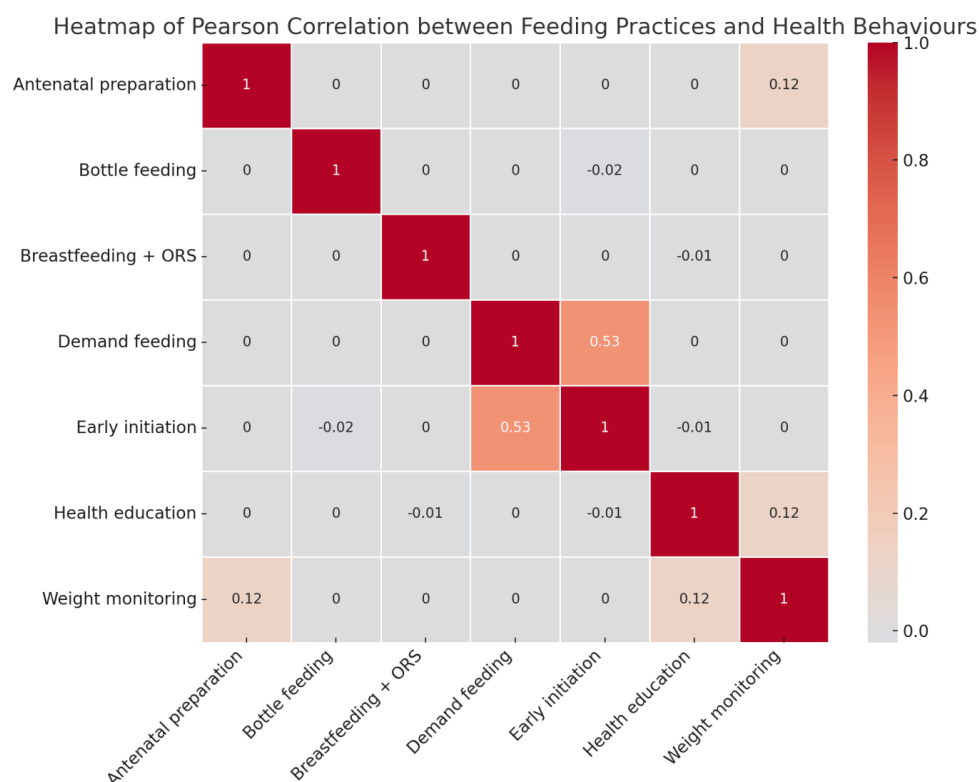
Table 3: Infant and young child feeding practices

Feeding practice	Yes n (%)	No n (%)
Breastfed within 1 hour of birth	490 (89.1)	60 (10.9)
Exclusive breastfeeding for 6 months	506 (92.0)	44 (8.0)
Demand feeding practiced	453 (82.3)	97 (17.7)
Family pot feeding initiated at 1 year	428 (77.8)	122 (22.2)
Vitamin A supplementation received	550 (100)	0 (0)
Health education from HCW	488 (88.7)	62 (11.3)
Bottle feeding at any point	534 (97.1)	16 (2.9)
Breastfeeding + ORS during diarrhoea	512 (93.1)	38 (6.9)

Regular weight monitoring	305 (55.5)	245 (44.5)
Spoon/Paladai used for feeding	550 (100)	0 (0)
Disinfection of feeding utensils	550 (100)	0 (0)

Table 4: Pearson's correlation between feeding practices and health behaviours

Variable pair	Pearson's r	Interpretation
Early initiation ↔ Demand feeding	0.53	Moderate positive
Early initiation ↔ Health education	-0.01	Negligible
Early initiation ↔ Bottle feeding	-0.02	Weak inverse
Health education ↔ Weight monitoring	0.12	Weak positive
Antenatal preparation ↔ Weight monitoring	0.12	Weak positive
Breastfeeding + ORS ↔ Health education	-0.01	Negligible

**Figure 1: Heatmap of Pearson correlation between feeding practices and health behaviours****Table 5: Association between feeding practices and nutritional status (Chi-square test)**

Feeding practice	Nutritional outcome	χ^2	df	p-value	Significance
Breastfed within 1 hour	Weight-for-age	1.28	4	0.8651	Not significant
Breastfed within 1 hour	Height-for-age	3.89	4	0.4209	Not significant
Breastfed within 1 hour	Weight-for-height	1.28	4	0.8651	Not significant
Exclusive breastfeeding (6 months)	Weight-for-age	334.59	4	<0.0001	Highly significant
Exclusive breastfeeding (6 months)	Height-for-age	156.73	4	<0.0001	Highly significant

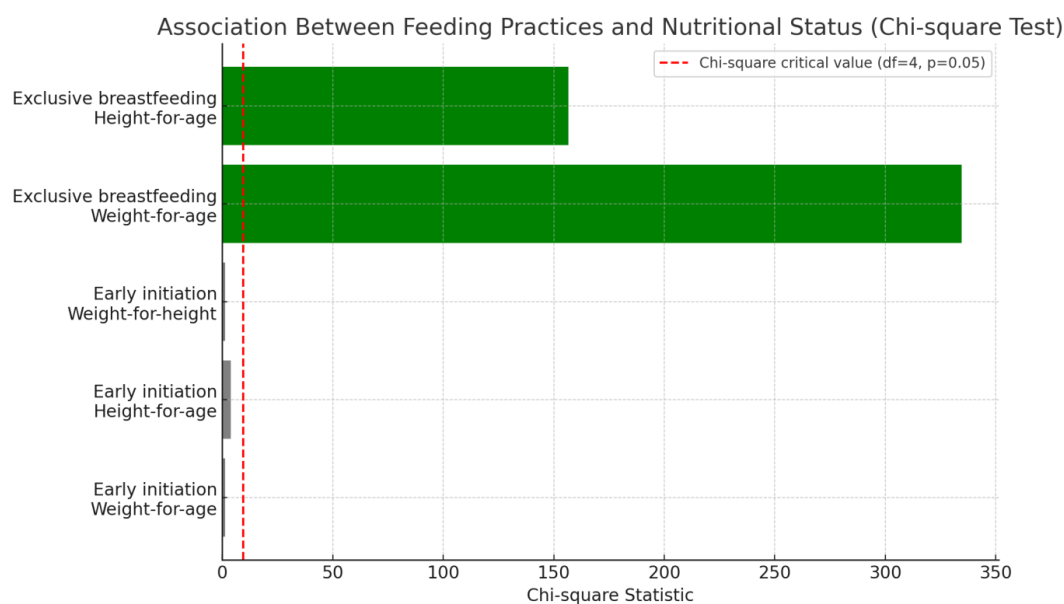


Figure 2: Horizontal bar chart highlights the associations between feeding practices and nutritional outcomes

Table 6: Logistic Regression Analysis for Predictors of Underweight

Predictor	B	SE	z	p-value	95% CI	Interpretation
Intercept	-0.5688	0.7982	-0.71	0.476	-2.13 to 0.99	Not significant
Early initiation of breastfeeding	-0.1162	0.2042	-0.57	0.569	-0.52 to 0.28	Not significant
Exclusive breastfeeding (6 months)	-1.1047	0.1980	-5.58	<0.0001	-1.49 to -0.72	Protective
Health education from HCW	0.3317	0.3823	0.87	0.386	-0.42 to 1.08	Not significant
Regular weight monitoring	-0.0799	0.1974	-0.40	0.686	-0.47 to 0.31	Not significant

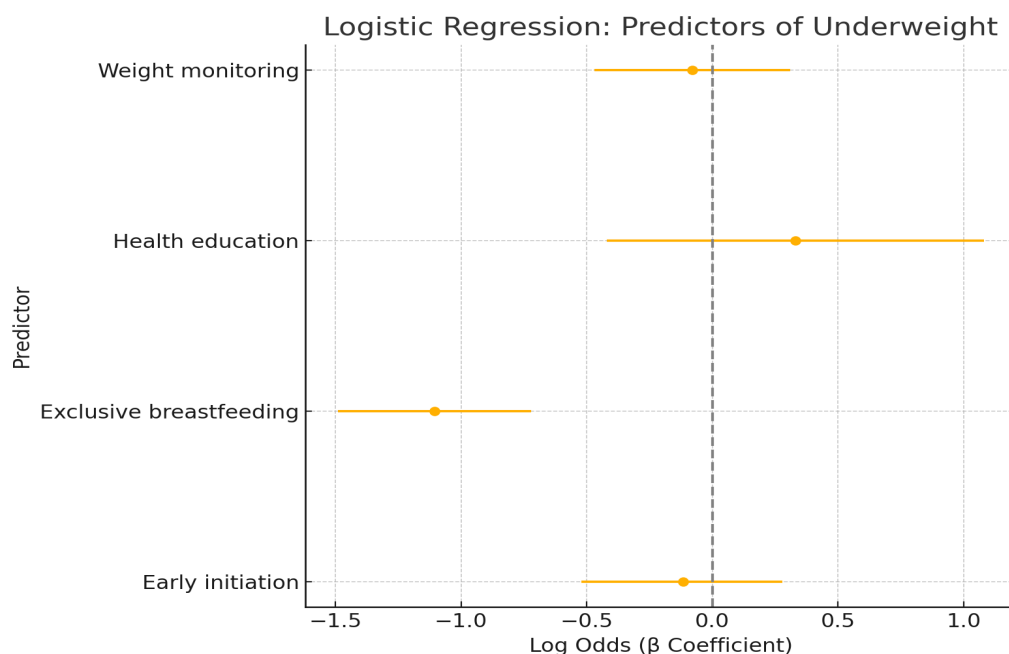


Figure 3: Logistic regression: predictor of underweight

Results

A total of 550 mother-child pairs were included in the final analysis. The children were aged between 6 and 23 months, with a mean age of 17.6 ± 4.89

months. Females constituted 54.5% ($n = 300$) of the study population, while males accounted for 45.5% ($n = 250$). Regarding the mode of delivery, 66.7% ($n = 367$) were born by normal vaginal delivery, and

33.3% (n = 183) were delivered by lower segment caesarean section.

Assessment of nutritional status using WHO Z-score criteria revealed a high burden of undernutrition. Based on weight-for-age, 41.1% of children were underweight. Stunting affected 46.2%, while 41.5% of children were wasted. Head circumference was within normal limits in 71.6% of children. High adherence was observed for several recommended feeding practices. Early initiation of breastfeeding within one hour was reported by 89.1%, and 92.0% of children were exclusively breastfed for six months. Preventive practices such as vitamin A supplementation, hygienic feeding methods, and appropriate feeding during diarrhoeal episodes were widely followed.

However, 97.1% of children were exposed to bottle feeding at some point, and only 55.5% had regular growth monitoring and paediatric follow-up. Correlation analysis showed a moderate positive association between early initiation of breastfeeding and demand feeding ($r = 0.53$). Other correlations were weak or negligible.

Exclusive breastfeeding for six months showed a highly significant association with improved weight-for-age and height-for-age outcomes ($p < 0.0001$). Early initiation of breastfeeding did not show a statistically significant association with anthropometric indicators. Logistic regression identified exclusive breastfeeding for six months as the only statistically significant protective factor against underweight.

High compliance with breastfeeding and preventive feeding practices was observed; however, undernutrition remained prevalent. Exclusive breastfeeding for six months significantly reduced the risk of underweight and stunting, while early initiation alone did not. High bottle-feeding prevalence and inadequate growth monitoring emerged as critical gaps requiring targeted intervention.

Discussion

The present study provides a comprehensive assessment of infant and young child feeding practices and their relationship with nutritional status among children aged 6–23 months attending a tertiary care centre. Despite high reported adherence to several recommended IYCF practices, a substantial burden of undernutrition persisted, highlighting a critical disconnect between feeding knowledge, reported practices, and actual nutritional outcomes.

A key finding of this study was the high prevalence of undernutrition, with 41.1% underweight, 46.2% stunted, and 41.5% wasted children. These findings are consistent with reports from both Indian and international studies documenting persistent

malnutrition despite awareness of optimal feeding practices. Similar levels of stunting and underweight have been reported by Longvah et al. among tribal populations in India and by Rohner et al. in infant feeding studies conducted in low-resource settings, emphasizing that feeding practices alone may be insufficient to prevent growth faltering without addressing broader socioeconomic and health determinants [8,9].

The study demonstrated high rates of early initiation of breastfeeding (89.1%) and exclusive breastfeeding for six months (92.0%), which are considerably higher than national averages reported in NFHS datasets. However, early initiation of breastfeeding did not show a statistically significant association with anthropometric outcomes, whereas exclusive breastfeeding for six months emerged as a strong protective factor against underweight and stunting. This finding aligns with previous evidence indicating that while early initiation confers immunological and survival benefits, sustained exclusive breastfeeding is more influential in determining long-term growth outcomes [10,11].

The protective role of exclusive breastfeeding observed in this study is consistent with findings reported by Zainel et al., who demonstrated lower rates of iron deficiency and improved nutritional outcomes among infants exclusively breastfed for the recommended duration, particularly when supported by maternal counselling [12]. Similarly, Sreedhara et al. reported improved nutritional indicators among infants who received timely and adequate feeding, reinforcing the importance of sustained feeding practices rather than isolated early interventions [13].

Despite high breastfeeding indicators, the extremely high prevalence of bottle feeding (97.1%) observed in this study is alarming. This finding contrasts with WHO recommendations and reflects patterns reported by Anigo et al. and Mafuko et al., where bottle feeding and early introduction of supplementary feeds were associated with higher rates of malnutrition and infection [14,15]. Bottle feeding may undermine breastfeeding frequency, increase exposure to contaminated feeds, and contribute to inadequate nutrient intake, thereby offsetting the benefits of exclusive breastfeeding.

The preservation of normal head circumference in 71.6% of children, despite high rates of underweight and stunting, suggests a possible brain-sparing effect, a phenomenon where essential nutrients are preferentially allocated to brain growth during early malnutrition. Similar observations have been reported in longitudinal studies, including that by Joseph et al., where infants exhibited relatively preserved cranial growth despite suboptimal weight gain [16]. However, preservation of head circumference does not preclude adverse

neurodevelopmental outcomes, as chronic undernutrition is known to impair cognitive function, learning ability, and behavioural development later in life.

Another important observation was the weak correlation between health education and regular growth monitoring, with only 55.5% of children receiving consistent paediatric follow-up. This gap between knowledge dissemination and health-seeking behaviour has been documented in multiple studies. Katepa-Bwalya et al. reported that although caregivers possessed reasonable knowledge of feeding recommendations, this did not consistently translate into appropriate practices or follow-up, underscoring systemic and behavioural barriers [17]. Similarly, Tumwesigye et al. found that nutrition education alone had limited impact on improving nutritional indicators without sustained follow-up and community engagement [18].

Sociocultural influences emerged as important contextual factors influencing feeding behaviour. Studies by Vyas et al. and Shamim et al. have highlighted the role of family members—particularly grandparents—in determining feeding decisions, often leading to early or delayed complementary feeding and suboptimal dietary diversity [19,20]. These findings reinforce the need for family-centred nutrition education rather than focusing solely on mothers.

The strong association between exclusive breastfeeding and improved nutritional outcomes identified through logistic regression analysis further reinforces global evidence supporting exclusive breastfeeding as a cornerstone of early nutrition. Similar protective effects have been reported in studies from Zambia, Ghana, and Kenya, where exclusive breastfeeding and appropriate complementary feeding significantly reduced the risk of chronic malnutrition [17,21,22].

Taken together, the findings of this study highlight that optimal feeding practices must be sustained, supported, and reinforced through robust health-system mechanisms. Feeding behaviour is influenced not only by maternal knowledge but also by cultural norms, family dynamics, accessibility of health services, and continuity of care. High coverage of interventions such as vitamin A supplementation in this study demonstrates that system-driven, universal programs can achieve near-complete compliance, suggesting that similar structured approaches may be effective in improving growth monitoring and reducing bottle feeding.

The strengths of this study include a large sample size, use of standardized WHO growth references, integration of quantitative and qualitative methods, and detailed assessment of feeding practices alongside nutritional outcomes. The mixed-methods approach allowed for a nuanced understanding of

both behavioural patterns and contextual barriers influencing infant nutrition. The cross-sectional design limits causal inference, and reliance on caregiver-reported feeding practices may be subject to recall and social desirability bias. Dietary diversity, household socioeconomic factors, and biochemical micronutrient assessments were not evaluated, which may have influenced nutritional outcomes.

Conclusion

This study demonstrates that although adherence to recommended infant and young child feeding practices—particularly early initiation and exclusive breastfeeding—is high, a substantial burden of undernutrition persists among children aged 6–23 months attending a tertiary care centre. Exclusive breastfeeding for six months emerged as a strong protective factor against underweight and stunting, whereas early initiation alone did not translate into improved anthropometric outcomes. The findings highlight a critical gap between feeding awareness and sustained nutritional benefit, underscored by high bottle-feeding prevalence and inadequate growth monitoring. Strengthening family-centred behaviour change communication, reducing bottle feeding, and reinforcing continuous growth surveillance through integrated health-system support are essential to improve early childhood nutrition outcomes.

Declarations:

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References

1. World Health Organization. Infant and young child feeding: Model chapter for textbooks for medical students and allied health professionals. Geneva: WHO; 2009.
2. World Health Organization, UNICEF. Global strategy for infant and young child feeding. Geneva: World Health Organization; 2003.
3. UNICEF. Improving child nutrition: The achievable imperative for global progress. New York: United Nations Children's Fund; 2013.
4. Victora CG, Bahl R, Barros AJD, França GVA, Horton S, Krasevec J, et al. Breastfeeding in the 21st century: Epidemiology, mechanisms, and lifelong effect. *Lancet*. 2016;387(10017):475–490.
5. 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. *Matern Child Nutr.* 2012;8(Suppl 1):28–44.
6. International Institute for Population Sciences (IIPS) and ICF. National Family Health Survey (NFHS-5), 2019–21: India. Mumbai: IIPS; 2021.
 7. Sreedhara MS, Banapurmath CR, Banapurmath S, Kesaree N. A study of nutritional status and feeding practices in infants in a rural area of Karnataka. *Indian J Community Med.* 2010;35(1):147–150.
 8. Rothman KJ, Greenland S, Lash TL. Growth, iron status, and feeding patterns among infants in South Africa. *Am J Clin Nutr.* 2001;74(4):482–489.
 9. Fahmida U, Santika O, Kolopaking R, Ferguson E. Complementary feeding interventions improve dietary intake and nutritional status of children in low-income settings. *Food Nutr Bull.* 2014;35(1):S16–S29.
 10. Longvah T, Toteja GS. Nutritional status and food security among the Chakhesang tribe of Nagaland, India. *Indian J Med Res.* 2017;145(6):795–803.
 11. Rohner F, Northrop-Clewes CA, Tschannen AB, Bosso PE, Kouassi-Gohou V, Erhardt JG, et al. Prevalence of malnutrition and micronutrient deficiencies in infants and young children. *Public Health Nutr.* 2013;16(3):447–455.
 12. Anigo KM, Ameh DA, Ibrahim S, Danbauchi SS. Infant feeding practices and nutritional status of children in North Central Nigeria. *Nutr Health.* 2010;21(3):171–181.
 13. Zainel AJ, Qotba H, Al-Mohannadi AS, Al-Sheikh R, Al-Malki R, Al-Emadi A. Association between infant feeding practices and iron deficiency in infants. *Nutrients.* 2018;10(3):330.
 14. Sreedhara MS, Banapurmath CR, Banapurmath S, Kesaree N. A study of nutritional status and feeding practices in infants in a rural area of Karnataka. *Indian J Community Med.* 2010;35(1):147–150.
 15. Mafuko JO, Kayembe PK, Mumbere M, Tshimanga M. Feeding practices and nutritional status of children under five years in the Democratic Republic of the Congo. *Pan Afr Med J.* 2014;19:330.
 16. Tumwesigye NM, Tumwine JK, Twebaze F, Ssewanyana S. Infant feeding practices and nutritional status of children in intervention areas. *Public Health Nutr.* 2012;15(3):431–438.
 17. Lawan UM, Nuhu S, Sadiq MA. Age-appropriate feeding practices and nutritional status of infants in Nigeria. *J Trop Pediatr.* 2014;60(3):191–197.
 18. Katepa-Bwalya M, Kankasa C, Maswenyeho S, Babaniyi O, Siziya S, Mulenga J. Infant and young child feeding practices and nutritional status in two districts of Zambia. *BMC Nutr.* 2015;1:23.
 19. Joseph N, Unnikrishnan B, Naik VA, Mahantshetti NS, Mallapur MD, Kotian SM. Infant rearing practices and growth patterns in rural South India: A longitudinal study. *Indian Pediatr.* 2013;50(5):489–493.
 20. Geetha S, Prasad KN, Sushma S, Mohan R. Feeding practices and nutritional status of children in Assam: An observational study. *J Clin Diagn Res.* 2015;9(6):LC01–LC04.
 21. Karall D, Ndayisaba JP, Heichlinger A, Kiechl-Kohlendorfer U. Breastfeeding patterns and factors associated with early weaning: A prospective cohort study. *BMC Pediatr.* 2015;15:124.
 22. Vyas S, Kandpal SD, Semwal J, Srivastava AK. Weaning practices and nutritional status of children in Uttarakhand. *J Family Med Prim Care.* 2016;5(2):291–296.
 23. Shamim AA, Mashreky SR, Ferdous T, Tegenfeldt L, Roy S, Rahman A, et al. Weaning practices and nutritional status of children in rural Pakistan. *J Health Popul Nutr.* 2014;32(2):251–259.
 24. Gonah L, Madzima R, Gombe NT, Shambira G, Tshimanga M. Factors influencing weaning practices among mothers in Zimbabwe. *BMC Public Health.* 2015;15:122.
 25. Patel A, Pusdekar Y, Badhoniya N, Borkar J, Agho KE, Dibley MJ. Determinants of inappropriate complementary feeding practices in young children in India. *Matern Child Nutr.* 2012;8(Suppl 1):28–44.
 26. Saaka M, Larbi A, Hoeschle-Zeledon I. Infant and young child feeding practices and nutritional status in rural Northern Ghana. *BMC Nutr.* 2015;1:25.
 27. Debela BL, Demmler KM, Rischke R, Qaim M. Maternal nutrition knowledge and child nutritional outcomes in Kenya. *Public Health Nutr.* 2017;20(6):1069–1077.
 28. Jama NA, Wilford A, Haskins L, Coutsooudis A, Spies L, Horwood C. Autonomy in infant feeding decision-making among teenage mothers in South Africa: A qualitative longitudinal study. *BMC Pregnancy Childbirth.* 2018;18:52.