

## Original Research Article

# DETERMINANTS OF INFANT AND YOUNG CHILD FEEDING PRACTICES AND MATERNAL KNOWLEDGE AMONG MOTHERS OF CHILDREN UNDER TWO YEARS IN RURAL KOLAR: A CROSS-SECTIONAL STUDY

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## ABSTRACT

**Background:** Appropriate Infant and Young Child Feeding (IYCF) practices within two years of birth are critical in ensuring optimal growth & development of children. World Health Organization suggests that breastfeeding should be initiated early, exclusive breastfeeding for the initial six months from birth and that complementary feeding should be introduced at the right time and breastfeeding continued till two years or more. In spite of these evidence-based guidelines, inappropriate feeding practices have continued to exist in India. To improve the child nutrition outcomes, a holistic understanding of the behavioural determinants of maternal knowledge that affect feeding practices is necessary. This study has evaluated the determinants of IYCF behaviours and assessed maternal knowledge in mothers with children aged 0-24 months in rural Kolar, Karnataka.

**Materials and Methods:** A prospective, cross-sectional study was carried out in 107 mothers with children aged 0-24 months residing in randomly selected four rural villages of Kolar. An interviewer-administered questionnaire based on WHO IYCF indicators was used to collect data. Maternal knowledge, attitude and feeding practices were evaluated and categorized based on predetermined scoring systems. Socio-demographic variables were expressed by descriptive statistics. Chi-square test and multivariable logistic regression analysis were used to find out determinants of appropriate IYCF practices.

**Results:** Out of the 107 participants, 59.8% of mothers demonstrated poor knowledge of recommended feeding practices, and only 5.6% of mothers showed good knowledge. Most of the mothers (68.2%) had a neutral attitude regarding IYCF practices. Only 34.6% of mothers practised appropriate IYCF behaviours, and 65.4% followed inappropriate feeding behaviours. The multivariate logistic regression analysis revealed that maternal attitude was the only significant predictor of appropriate feeding practices (AOR 2.49; 95% CI: 1.00-6.21; p = 0.049).

**Conclusion:** The research found that there were significant gaps in maternal knowledge and feeding habits in rural Kolar. The decisive factor that determined the adoption of appropriate feeding practices was behavioural determinants, especially maternal attitude. Enhancing community-based counselling and behaviour-change communication initiatives can thus be useful towards enhancing infant feeding behaviour and child nutrition.

**Keywords:** Breastfeeding, Child Nutrition, Complementary Feed, Infant and Young Child Feeding, Maternal Knowledge, Maternal Practices.

## INTRODUCTION

Infant and Young Child Feeding practices within first two years of birth are vital determinants of child survival, growth, and cognitive development. This constitutes a critical period in which proper nutrition can significantly impact future health. Ideal feeding practices, especially exclusive breastfeeding and appropriate initiation of complementary foods, significantly reduce child morbidity, mortality and malnutrition all around the world.<sup>[1]</sup>

UNICEF & WHO suggest that breastfeeding should be initiated within the first hour of birth, exclusive breastfeeding should be practised during initial six months, along with initiation of safe complementary foods at the age of six months, with breastfeeding continued for at least 2 years.<sup>[2]</sup> These practices are a source of essential nutrients, enhance the immune system, and promote healthy physical and cognitive development. Existing literature has shown that with the best use of breastfeeding, hundreds of thousands of deaths among children under five can be prevented every year.<sup>[3]</sup>

In spite of these international recommendations, the practice of optimum IYCF is still not well followed in most parts of India. Inappropriate feeding practices like late breastfeeding initiation, early initiation of complementary food, and lack of sufficient dietary variety are common. These practices contribute greatly to the undernutrition of children, which is still a major global concern in public health. Early childhood undernutrition is linked to increased risk of infections, poor cognitive growth, and low educational and economic achievements in the future.<sup>[4]</sup>

Even though breastfeeding is commonly practised in India, the various indicators with respect to optimal infant feeding are still below the optimum level. According to recent national estimates, although most mothers start breastfeeding, most infants are not breastfed exclusively in initial six months as recommended. In addition, complementary feeding practices like minimum acceptable diet & diversity are inadequate to many children.<sup>[5]</sup> These knowledge gaps highlight the need to enhance maternal awareness and community-based interventions to enhance infant feeding behaviours.

Education of the mother, socioeconomic status, cultural practices, health services access and family support have been found to be critical factors influencing feeding behavior.<sup>6</sup> Maternal knowledge regarding the recommended feeding practices is of specific interest since it influences the decision-making and adoption of the proper feeding practices. However, research has indicated that despite the mothers having the basic knowledge about breastfeeding and complementary feeding, sociocultural beliefs and household factors can affect the real practices.<sup>[6]</sup>

Rural populations frequently face additional challenges in the adoption of optimal feeding

practices. Limited access to health information, dependence on traditional beliefs, and reduced exposure to counselling services may contribute to inadequate awareness regarding recommended infant feeding practices. Community-based studies performed in many areas of India have documented considerable gaps in maternal knowledge and feeding behaviour among rural mothers.<sup>[7,8]</sup> These results suggest the need for enhanced community-based health education and counselling interventions.

Furthermore, maternal attitudes and perceptions toward infant feeding practices play a profound role in influencing maternal behaviour. Positive maternal attitudes toward breastfeeding and complementary feeding are associated with improved adherence to recommended feeding guidelines.<sup>[9]</sup> Behaviour change communication strategies focusing on maternal beliefs and cultural norms have therefore been recognized as essential components of effective maternal and child health programs.<sup>[10]</sup>

Though several studies have examined feeding practices of infants in India, region-specific evidence from many rural districts remains limited. Kolar district in Karnataka has a predominantly rural population, and data regarding maternal knowledge and determinants influencing IYCF practices in this region are scarce. Understanding the local determinants of feeding practices is essential for designing targeted interventions that focus contextual barriers and strengthen child nutrition outcomes.

Hence, this study was conducted to determine the prevalence of appropriate infant and young child feeding practices and assess maternal knowledge related to recommended IYCF practices in mothers of children aged 0–24 months in rural Kolar, Karnataka. The study also aimed to identify sociodemographic and behavioural determinants associated with appropriate feeding practices.

## MATERIALS AND METHODS

**Study Design, Setting and Period:** This prospective, community-based, cross-sectional study was conducted in rural villages of Kolar. The study was conducted over a period of 2 months from February 2026 to March 2026.

**Study Population (Inclusion and exclusion criteria):** The study consisted of mothers with children aged 0–24 months who were residing in rural areas of Kolar. Children with major congenital anomalies affecting feeding (such as cleft lip/palate, congenital heart disease), children with chronic medical conditions affecting feeding (such as cerebral palsy, metabolic disorders, chronic renal disease), children with documented feeding disorders (such as oro-motor dysfunction, swallowing dysfunction), children with severe gastroesophageal reflux requiring ongoing treatment, children who were hospitalized for severe acute illness and mothers with severe psychiatric illness or cognitive impairment were excluded from the study.

**Sampling Technique and Sample Size:** A multi-stage sampling technique was used in this study. Based on the study carried out by Alsada *et al.*,<sup>11</sup> prevalence of exclusive breastfeeding reported by mothers was 49%, which highlighted that 49% of infants were breastfed exclusively, with a continued prevalence of pre-lacteal feeding practices and poor dietary diversity. Considering it as a prevalence with a 95% confidence interval, the allowable error of 10%, the sample size is calculated as,

$$n = \frac{(Z_{\alpha/2})^2 pq}{d^2}$$

$$n = \frac{(1.96)^2 * 49 * 51}{10*10} = 96.01$$

$$n \approx 96$$

On accounting for 10% non-response rate, the final sample size was calculated as **107** participants.

In this formula,

$Z_{\alpha/2}$  = standard normal variate for 5% significance level = 1.96

p = prevalence (based on existing literature) = 49%

q = 100-p = 51%

d = absolute precision = 10%

**Procedure:** A complete list of all villages under the rural field practice areas of Sri Devaraj Urs Medical College (Tamaka) was obtained, among which four villages were selected using a computer-generated random number method. Mothers attending Anganwadi workers, Primary Health Centres and paediatric outpatient services in the four selected villages were approached. A purposive sampling technique was followed, where all eligible participants were involved till the desired sample size was achieved.

Mothers were informed regarding the study procedure. After obtaining written informed consent, they were interviewed using a structured questionnaire framed based on UNICEF and WHO guidelines to assess Infant and Young Child Feeding practices.

**The questionnaire comprised of three sections:**

- Knowledge of mothers related to IYCF practices
- Attitude of mothers regarding recommended feeding practices
- Infant feeding practices

**Outcome Measures:**

- Primary Outcomes:** Prevalence of appropriate Infant and Young Child Feeding practices
- Secondary Outcomes:** Maternal knowledge and attitude toward recommended IYCF practices and determinants associated with appropriate IYCF practices

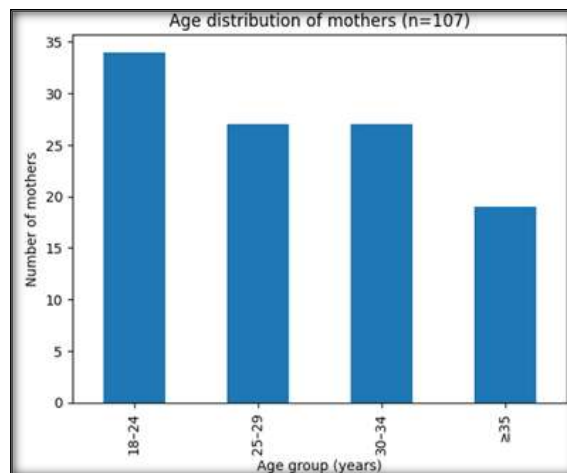
**Statistical Analysis:** The collected data were analysed using IBM-SPSS software version 22.0. The

qualitative variables were expressed in frequency & percentage. Chi-square test was used to analyse the association between variables. Multivariable logistic regression was performed to identify independent predictors and to rule out confounders. A p-value less than 0.05 was considered statistically significant.

**Ethical Considerations:** Ethical Committee approval was acquired from the Institutional Human Ethics Committee of Sri Devraj Urs Medical College before initiation of data collection. Written informed consent was procured from all participants regarding the procedure. Confidentiality of participants was maintained throughout study period.

## RESULTS

Totally, 107 mothers of children aged 0–24 months were included in the study conducted in rural Kolar. [Table 1] presents the sociodemographic characteristics of mothers included. Most of mothers belonged to 18–24-year age group (31.8%), followed by mothers aged 25–29 years and 30–34 years (25.2% each). Regarding educational status, secondary education (34.6%) was the most common, followed by primary education (31.8%). Most of the mothers were housewives (81.3%), while 18.7% were employed, depicting that the majority of mothers were primarily engaged in household and childcare activities.



**Figure 1: Age distribution of mothers in the study population (N = 107)**

[Figure 1] illustrates the distribution of age among the mothers. Most of the mothers fell within 18–29 year age group, suggesting that many participants were in early reproductive age.

**Table 1: Sociodemographic characteristics of mothers (N = 107)**

Variable	Frequency (n)	Percentage (%)
<b>Age group (years)</b>		
18–24	34	31.8
25–29	27	25.2
30–34	27	25.2

≥35	19	17.8
<b>Education</b>		
No formal education	18	16.8
Primary	34	31.8
Secondary	37	34.6
Graduate/Postgraduate	18	16.8
<b>Occupation</b>		
Homemaker	87	81.3
Employed	20	18.7

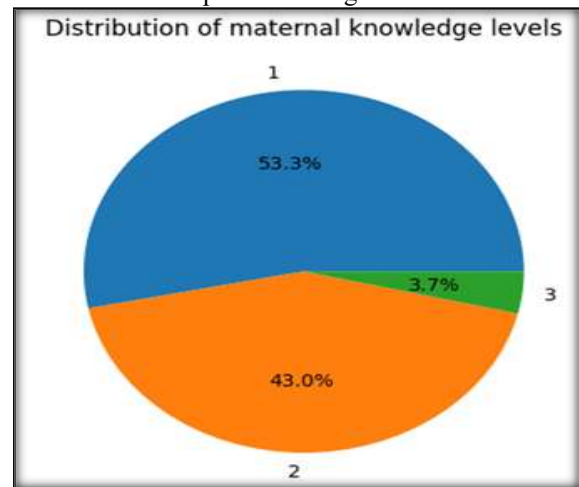
**Table 2: Categorized maternal knowledge regarding recommended IYCF practices (N = 107)**

Knowledge Category	Frequency (n)	Percentage (%)
Poor	64	59.8
Moderate	37	34.6
Good	6	5.6
Total	107	100

[Table 2] demonstrates overall knowledge level of mothers regarding recommended infant and young child feeding practices. Around 59.8% of mothers revealed poor knowledge, while 34.6% had moderate knowledge, and only a small proportion (5.6%) demonstrated good knowledge. These findings highlight that a significant proportion of mothers lacked adequate awareness about optimal breastfeeding and complementary feeding practices. [Figure 2] demonstrates the distribution of maternal knowledge regarding IYCF practices. Almost 60% of mothers exhibited poor knowledge, indicating significant gaps in maternal awareness related to recommended feeding practices.

[Table 3] presents maternal attitudes toward infant and young child feeding practices. Several mothers (68.2%) revealed a neutral attitude, while 31.8% demonstrated a positive attitude toward recommended feeding practices. These findings indicate that although negative perceptions were not

common, many mothers lacked strong positive attitudes toward optimal feeding behaviours.



**Figure 2: Distribution of maternal knowledge regarding IYCF practices (N = 107)**

**Table 3: Maternal attitude toward recommended IYCF practices (N = 107)**

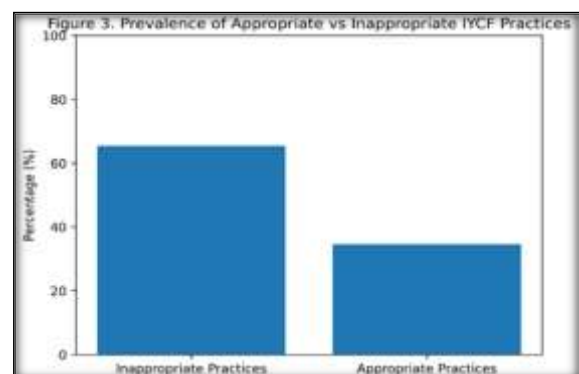
Attitude Category	Frequency (n)	Percentage (%)
Neutral attitude	73	68.2
Positive attitude	34	31.8
Total	107	100

**Table 4: Prevalence of appropriate Infant and Young Child Feeding practices (N = 107)**

Feeding Practice Category	Frequency (n)	Percentage (%)
Inappropriate practices	70	65.4
Appropriate practices	37	34.6
Total	107	100

[Table 4] shows the overall prevalence of infant and young child feeding practices in participating mothers. Many mothers (65.4%) revealed inappropriate feeding practices, while only 34.6% practised appropriate IYCF practices as per recommended guidelines. This highlights that optimal feeding behaviours were noted in only around one-third of mothers.

[Figure 3] demonstrates the distribution of infant and young child feeding practices among the mothers. Most of mothers exhibited inappropriate feeding practices (65.4%), whereas 34.6% of mothers practised appropriate IYCF practices as per recommended guidelines. This highlights that optimal feeding behaviours were followed by only around one-third of the study population.



**Figure 3: Prevalence of appropriate versus inappropriate Infant and Young Child Feeding (IYCF) practices among mothers in the study population (N = 107)**

**Table 5: Association between maternal education and appropriate IYCF practices (N = 107)**

Education Level	Inappropriate n (%)	Appropriate n (%)	Total	$\chi^2$ , df, p-value
No formal education	14 (77.8)	4 (22.2)	18	$\chi^2 = 5.02$ , df = 4; p = 0.29
Primary	24 (70.6)	10 (29.4)	34	
Secondary	26 (70.3)	11 (29.7)	37	
Graduate	5 (33.3)	10 (66.7)	15	
Postgraduate	1 (33.3)	2 (66.7)	3	
Total	70 (65.4)	37 (34.6)	107	

[Table 5] presents association between maternal educational status and infant and young child feeding practices among study participants. Mothers with graduate education revealed a high prevalence of appropriate feeding practices (66.7%) when compared to inappropriate practices (33.3%). Similarly, mothers with postgraduate education also demonstrated higher appropriate feeding practices

(66.7%), although the sample size was small. In contrast, mothers with lower educational levels showed relatively higher prevalence of inappropriate feeding practices. However, statistical analysis revealed that association between maternal education and feeding practices was not statistically significant ( $\chi^2 = 5.02$ , df = 4, p = 0.29).

**Table 6: Multivariate logistic regression analysis identifying determinants of appropriate IYCF practices (N = 107)**

Variable	$\beta$ Coefficient	Adjusted Odds Ratio (AOR)	95% CI	p-value
Maternal education	0.14	1.15	(0.76 – 1.75)	0.515
Maternal occupation	-0.59	0.55	(0.18 – 1.63)	0.304
Maternal knowledge	0.16	1.17	(0.59 – 2.49)	0.684
Maternal attitude	0.91	2.49	(1.00 – 6.21)	0.049

[Table 6] demonstrates the multivariate logistic regression analysis identifying independent determinants of appropriate infant feeding practices. Among the variables that were analysed, maternal attitude toward IYCF practices emerged as a statistically significant predictor (p = 0.049). Mothers with a positive attitude were around 2.49 times more likely to practice appropriate feeding behaviours when compared to mothers with neutral attitudes. Other factors like maternal education, occupation,

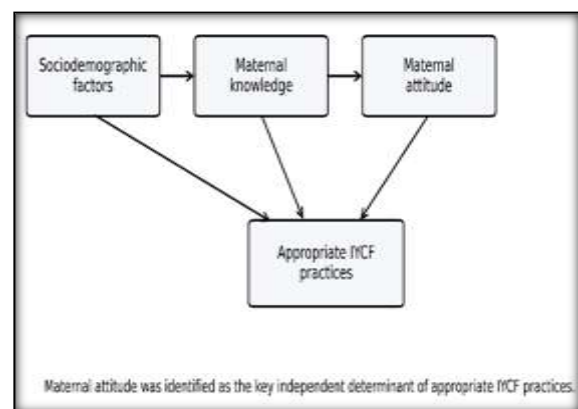
independent determinant of appropriate feeding behaviour.

## DISCUSSION

Infant and Young Child Feeding practices during initial two years of birth play a vital role in determining child growth, nutritional status & overall survival. Appropriate breastfeeding & complementary feeding practices are widely recognized as effective strategies for preventing malnutrition and reducing infant morbidity and mortality.<sup>[12]</sup> Global evidence indicates that optimal breastfeeding practices can substantially improve child health outcomes and support long-term cognitive and developmental benefits.<sup>[13]</sup> However, despite strong policy initiatives and national nutrition programs, gaps in maternal awareness and feeding behaviour continue to persist in many low- and middle-income countries, especially India.<sup>[14]</sup>

National data from NFHS-5 demonstrate that although breastfeeding indicators have improved in recent years, the implementation of optimal infant feeding practices remains inconsistent across regions and socioeconomic groups.<sup>[15]</sup> One key finding of the present study was the profound knowledge gap regarding recommended IYCF practices.

Nearly 59.8% of mothers demonstrated poor knowledge, while only a small proportion had adequate awareness regarding recommended feeding guidelines. The results show that a significant proportion of mothers have inadequate knowledge of crucial practices like exclusive breastfeeding duration, timely commencement of complementary feeding & variety of infant diets. Similar knowledge gaps were reported in previous studies on maternal awareness of infant feeding practices.<sup>[16]</sup> These knowledge deficiencies may be attributed to reduced

**Figure 4: Conceptual model illustrating determinants of appropriate Infant and Young Child Feeding practices**

[Figure 4] illustrates conceptual framework revealing relationship between maternal sociodemographic characteristics, maternal knowledge, attitude, and infant feeding practices. The model indicates that sociodemographic factors influence maternal knowledge and attitudes, thereby affecting the likelihood of appropriate IYCF practices. In this study, maternal attitude emerged as the key

access to credible health information, dependence on traditional family advice and inconsistent counselling during the course of antenatal and postnatal care. Similar tendencies were also reported by Lokesh et al. (2023) in Mysuru, Karnataka, where mothers in rural settings were observed to have a low level of awareness about the appropriate infant feeding practices.<sup>[17]</sup> The authors indicated that sociocultural practices and lack of exposure to organised health education programmes might be the reason for the knowledge gaps among mothers in rural areas. Cohort studies in Karnataka have also provided evidence underscoring that maternal awareness of infant nutrition is not constant in spite of rising institutional births and exposure to health facilities.<sup>[18]</sup>

Besides the knowledge gap, there was also a practice gap in the infant feeding behaviour as observed in the current study. Only 34.6% of mothers practised appropriate IYCF practices, while most of the mothers revealed inappropriate feeding practices. These results suggest that the feeding practices that are recommended are not always practised and followed in the community.

Similar pattern has been observed in many Indian studies that have evaluated the feeding practices of mothers with young children. Patil et al. (2025) demonstrated similar results in rural Kalaburagi, where mothers of children below 2 years were found to be following inappropriate practices of infant feeding.<sup>[19]</sup> The authors emphasized that cultural beliefs, absence of constant counselling, and family influence may be some of the factors that lead to deviations in the recommended practices of infant feeding. Moreover, infant feeding behaviour variability has also been observed in community-based studies in other parts of India, although maternal healthcare services have been improved.<sup>[11]</sup>

One more significant finding of the current research was that maternal knowledge and education were not statistically significant predictors of appropriate feeding practices. Despite education being regarded as one of the major determinants of health behaviour, the current findings indicate that knowledge does not always translate into proper feeding behaviours. These findings are also observed in numerous studies on determinants of breastfeeding behaviour in low-resource environments, which highlight the fact that behavioural choices in the context of infant feeding are affected by a multifaceted integration of cultural norms, family practices, and maternal perceptions.<sup>[11]</sup>

On the other hand, the multivariate logistic regression analysis revealed that maternal attitude was the only significant variable determinant of appropriate IYCF practices, with mothers exhibiting positive attitudes being 2.49 times more likely to engage in the recommended feeding practices. This highlights how behavioural and psychosocial factors are important in influencing maternal feeding behaviour. Maternal attitude mirrors beliefs, perceptions and confidence related to recommended feeding practices, which

may have a compelling effect on maternal decision making.

Several community-based studies have pointed out the significance of maternal attitude in the determination of feeding practices. Saha et al. (2024) highlighted that behaviour-change communication strategies, such as maternal perceptions and cultural beliefs, are necessary to enhance infant feeding practices in rural communities.<sup>[20]</sup> Bhatia et al. (2025) also showed that the frontline health workers, like ASHAs and Anganwadi workers, can substantially enhance timely breastfeeding initiation & appropriate feeding practices by mothers. They are considered the primary providers of maternal health education and counselling in rural India.<sup>[21]</sup>

Hence, the results of the current research point to the possible impact of the behavioural determinants on infant feeding practices more than educational factors. Cultural backgrounds and family guidance can affect actual feeding behaviour even when mothers hold low-level knowledge about feeding practices. The solution to these behavioural barriers is community-based interventions that should not only deliver information but also build maternal confidence and encourage positive attitudes towards recommended feeding practices.<sup>[22]</sup>

In terms of public health, the study findings indicate that community-based counselling and behaviour-change interventions should be strengthened in rural Kolar. Enhancing maternal knowledge might not be enough to enhance feeding practices. Maternal and child health programmes should rather be aimed at strengthening positive attitudes and assisting mothers with the help of continuous counselling by ASHAs, Anganwadi workers and primary health care providers. Strengthening these community support systems may aid in bridging the gap between knowledge and practice, and eventually enhance infant nutrition and child health outcomes among rural populations.

## CONCLUSION

The current research revealed that majority of mothers in rural Kolar lacked appropriate knowledge of recommended IYCF, and that only one-third of mothers adhered to appropriate feeding practices. Maternal education and knowledge were supposed to influence feeding behaviour, but they were not revealed to be statistically significant determinants in the current research.

The most significant determinant that emerged significantly in influencing appropriate feeding practices was maternal attitude, which underscores the significance of behavioural and psychosocial determinants in maternal decision making. The gap between knowledge and practice could be bridged by strengthening behaviour change communication, enhancing counselling services via the frontline health workers and incorporating structured IYCF education into maternal as well as child health programmes. Future studies are required to identify

culturally specific interventions and longitudinal community-based approaches to enhance infant feeding behaviours and child nutritional outcomes among rural communities.

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