



# **Knowledge, Attitude, and Practice Analysis among Rural Mothers of 6 to 24 Month Age Child Regarding Complementary Feeding**

**N. T. Katole <sup>a≡</sup>, J. S. Kale <sup>b≡\*</sup>, Meghali Kaple <sup>c#</sup> and S. M. Wagmare <sup>d#</sup>**

<sup>a</sup> Department of Pharmacology, Datta Meghe Medical College, Shalinitai Meghe Hospital and Research Centre, Nagpur, India.

<sup>b</sup> Department of Physiology, Datta Meghe Medical College, Shalinitai Meghe Hospital and Research Centre, Nagpur, India.

<sup>c</sup> Department of Biochemistry, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences, Sawangi (Meghe) Wardha, India.

<sup>d</sup> Department of Civil Engineering, Yeshwantrao Chavan College of Engineering, India.

## **Authors' contributions**

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

## **Article Information**

DOI: 10.9734/JPRI/2021/v33i60A34567

## **Open Peer Review History:**

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://www.sdiarticle5.com/review-history/80018>

**Original Research Article**

**Received 14 October 2021**  
**Accepted 19 December 2021**  
**Published 21 December 2021**

## **ABSTRACT**

**Introduction:** According to WHO, exclusive breastfeeding is essential for first 6 months of life, afterward by six months to meet raised energy and nutrient needs of growing infant complementary feeding is necessary [1]. Proper complementary feeding very essential for the proper physical, neurocognitive development of the child.

**Objectives:** To assess the knowledge, attitude, and practice among rural Indian mothers of age 6 to 24 month child regarding complementary feeding.

**Methods:** This cross-sectional analysis study was conducted at a tertiary care teaching rural hospital in India between December 2020 and June 2021. A self-administered questionnaire was distributed to mothers of 6 to 24 month age children attending pediatrics outpatient department at hospital. The questionnaire consisted of 3 parts; first part consist of demographic variables, second and third part regarding knowledge, attitude and practice of mother towards complementary feeding practice. SPSS 21 was used for data analysis.

<sup>≡</sup> Assistant Professor;

<sup>#</sup> Associate Professor;

**Results:** Out of the 250 participants, 220(88%) completed questionnaire completely and validly, 96% mothers initiated breastfeeding within first 48 hrs of birth, and about 62% mothers continue exclusive breastfeeding till six moth age. 72 % mother knew that complementary feeding should start at 6 month of age but only 66% mother able to start at that age, major reason for delayed start is mother perception that her feeding is sufficient for baby, other that family member's advice. 64% mother believe in homemade complementary feeds and 26% mothers believe in commercial feeds, though major source of knowledge is family members (69%), electronic media(12%) also important source of knowledge while only 19% mothers get information from health professionals. Significant number of mother have knowledge about iron rich foods(63%), iodized salt (50%) etc. however only 36% mother knows about dietary diversity. During illness 52% mothers prefer to decrease in feeding while, 10% prefer to withhold it. 91% mother practice washing hands before cooking and 85% practice giving boil water to baby. However, still 70% mother practice bottle feeding for their children's.

**Conclusion:** Though there is good knowledge among mothers regarding exclusive breastfeeding, complementary feeding in term of age of start, type of feeding, nutrient value of feeding, importance of consistency, however still there is lack of knowledge about dietary diversity, cultural and social food taboos, bottle feeding etc. Strategies need to employ like health education, awareness programs, training programs for mothers to improve their practice and attitude towards complementary feeding.

*Keywords: Complementary feeding; awareness; knowledge; attitude; practice; health education.*

## 1. INTRODUCTION

According to WHO exclusive breast feeding is essential for first 6 moth of life, afterward by 6 month to meet raised energy and nutrient needs of growing infant complementary feeding is necessary [1]. Proper complementary feeding very essential for proper physical, neurocognitive development of child. It's very important for development of child to introduced complementary feeds in timely manner, adequate quantity, appropriate consistency and hygienically. So mother must know basic knowledge about complementary feeding, as children's are highly susceptible to growth faltering, if they not get essential nutrient especially between 6 and 24 month of age, moreover it's difficult to reverse shunting after 2 years of age [2,3].

In India malnutrition is one of major public health problem in under 5 children [4,5] several studies shows that mothers knowledge and attitude and practice about complementary feeding is one of key factor for malnutrition [6,7] furthermore multiple studies shows malnutrition is more prevalent in rural India than urban region.

Very few studies available in literature which discuss knowledge, practice and attitude of mother of age 6 to 24 month age about complementary feeding belong to rural area, hence current study plan.

## 2. MATERIALS AND METHODS

### 2.1 Study Design and Population

This is cross-sectional analysis study was conducted at tertiary care rural hospital in India between December 2020 to April 2021 and consist of interviews mother of child age between 6 to 24 month age who were attending mostly pediatric OPD for various reasons.

Well-structured English and local language (Marathi) questionnaires were made. The questionnaire was formed based on the questions taken from various previous studies and edited to suit the objectives. A literature review of past similar studies of complementary feeding was done to identify potential domains for the study instrument and changes made to suit the local population. A pilot study was also conducted to test the validity of the questionnaire for content, readability, design and comprehension on 20 local peoples and necessary modifications were made so that the questionnaire was simple for understanding and answering, still gave accurate data.

The final version of the questionnaire consists of 34 questions divided into four parts. The first part was about socio demographic variables of local populations. The second part consists of questions regarding knowledge and belief of participant regarding complementary feeding with multiple options given. Third part consist of

questions regarding attitude of respondent towards complementary feeding and consist of 7 statements with yes – no options or suitable multiple choices while Fourth part consist of 9 multiple choice questions with suitable options.

Data analysis was done using SPSS 21. Numerical variables were reported as percentage.

### 3. RESULTS

Out of the 250 questionnaires distributed, 220 participant (88%) completed questionnaires and were included in study, while the remaining 30 (12%) were excluded

due to incomplete, invalid filling or double answers.

Respondents' mothers were compared according to their demographic parameters: age, educational level, occupation, type of family, age and gender of children etc. Among all respondent 82% are belong to age group 20 to 30 years , while only 10% belong less than 20 years group. Only 5% mothers were illiterate while 31% mothers having education graduation or more. More than 84% mother are homemaker while rest are doing either service (11%) or business (5%). Around 68% family are nuclear in nature, and 89% mothers have less than 2 children, 90% mothers live in rural area, 51% children s are male.

**Table 1. Sociodemographic variable of participant**

Sr. no	Characteristic	n	%
1	<b>Age of mother</b>		
	<20	23	10%
	20-25	74	34%
	25-30	106	48%
	>35	18	8%
2	<b>Mother's educational status</b>		
	Illiterate	12	5%
	Primary education	26	12%
	Secondary education	49	22%
	intermediate education	64	29%
	Graduation	46	21%
	Postgraduation	22	10%
3	<b>Mother's occupational status</b>		
	Housemaker	185	84%
	Service	25	11%
	Business	10	5%
4	<b>Type of family</b>		
	Nuclear	150	68%
	Joint	70	32%
5	<b>number of children in family</b>		0%
	01-2	195	89%
	>2-4	25	11%
6	<b>Residence</b>		
	Rural	199	90%
	Urban	12	5%
	Semi-urban	10	5%
7	<b>age of child</b>		
	6-8 month	50	23%
	8-12 month	26	12%
	12-18 month	96	44%
	18-24 month	46	21%
8	<b>sex of child</b>		
	Male	112	51%
	Female	108	49%

While analysis of knowledge domain of questionnaires it was found that, around 96% mothers start breastfeeding within 48hr after birth and only 4% could not establish breastfeeding, about 62% mother followed exclusive breastfeeding till 6 month of age, while 11% for 4 month and 12% mother for 2 month. 72% mothers started complementary feeding at 6 month while 18% at 4 month and 10% mother started complementary feeding at 8month of age.

63% mother prefer to give three times a day complementary feeding and 22% give more than 3 times a day feeding. 64% mothers source of knowledge about complementary feeding is family and relatives, 19% mother get knowledge from health professionals. 63% mother have knowledge about iron rich foods, while 50% mother knew about importance of adding iodine salt.56% mother knew about importance of consistency of meal.

**Table 2. Mother’s knowledge of complementary feeding**

Sr. no	Characteristics	Frequency	
		n	%
1	<b>Initiation of breastfeeding</b>		
	Soon after birth	88	40%
	1 day after birth	101	46%
	2-3 days after birth	22	10%
	No idea	9	4%
2	<b>Exclusive breastfeeding duration</b>		
	Upto 6 months	137	62%
	4-5 months	24	11%
	2-3 months	26	12%
	Upto 1 month	25	11%
	No breastfeeding	8	4%
3	<b>Age of start of complementary feeding</b>		
	4-5 months	39	18%
	At 6 months	158	72%
	At 8 months	23	10%
4	<b>Frequency of complementary feeding</b>		
	Twice a day	33	15%
	Thrice a day	139	63%
	more than 3 times a day	48	22%
5	<b>Source complementary feeding</b>		
	Homemade	140	64%
	Commercially available	57	26%
	Both	23	10%
6	<b>Source of knowledge about complementary food</b>		0%
	Health professional	42	19%
	Family and relatives	152	69%
	Electronic media	26	12%
7	<b>Knowledge of iron-rich food</b>		0%
	Yes	139	63%
	No	81	37%
8	<b>Knowledge about adding iodized salt</b>		
	Yes	89	40%
	No	21	10%
	<b>knowledge about importance of consistency of meal</b>		
9	yes	123	56%
	No	97	44%
	<b>knowledge about dietary diversity</b>		
10	yes	79	36%
	No	141	64%

While analyzing attitude domain of questionnaire it was found that, around 38% mothers agree dietary diversity is essential, 52% mothers believe in decrease quantity and frequency of food during illness, also 10% mothers believe in withhold feeding during illness. 55% respondent think that Banana, yogurt, and rice as cold food, while 65% Meat, pulses, nuts, and eggs are hot and hard to digest, while 54% believe in both taboos.65% mother prefer homemade feed while 12% prefer commercial feed. 90% mother made complementary feed separately, while 10% made combine with adult food. 66% mothers are confident while making complementary feeding. 89% mother perceive that feeding several times in a day is beneficial to mother.

Table 3 Attitude domain questions towards antibiotics use among respondents.

Table 4 shows how mother practice of complementary feed. 91% mothers prefer to wash hands before cooking, 85% mother give boiled water to baby, majority of mother give homemade porridge, khichadi, dalia, sujikheer to baby. Only 21% prefer commercial complementary food.81% mother prefer thick meal while remaining prefer thin consistency meal. 70% mothers preferred bottle feeding practice. 81% mothers give feeding by siting on lap. Major reason delayed start of complementary feeding as mother think, her milk is enough or if any family member told her to do so.

**Table 3. Mother’s attitude on infant and young child feeding**

Sr. no	Characteristics	Frequency	
		n	%
1	<b>Dietary diversity is essential</b>		
	yes	83	38%
	No	137	62%
2	<b>during illness Complementary feeding</b>		0%
	Decrease quantity and frequency of food	114	52%
	Withhold quantity and frequency of food	22	10%
	Maintain the same quantity and frequency of food	58	26%
	Increase the quantity and frequency of food	26	12%
3	<b>Cultural and social food taboos</b>		0%
	Banana, yogurt, and rice as cold food	122	55%
	Meat, pulses, nuts, and eggs are hot and hard to digest	142	65%
	Both	118	54%
	Does not believe in food taboos	33	15%
4	<b>Preferences about complementary food</b>		0%
	Homemade	146	66%
	Commercially available foods	26	12%
	Both	48	22%
5	<b>Preferences about the preparation of complementary food</b>		0%
	separate for children	199	90%
	combinely with adult	21	10%
6	<b>Feels confident in preparing food for child</b>		0%
	yes	145	66%
	No	75	34%
7	<b>Perceives that feeding child several times each day is beneficial</b>		0%
	yes	196	89%
	No	24	11%

**Table 4. Mother’s practices on complementary feeding**

Sr. no	Characteristics	Frequency	
		n	%
1	<b>Washing hands before cooking</b>		
	yes	200	91%
	No	20	9%
2	<b>Boils drinking water</b>		0%
	yes	188	85%
	No	32	15%
3	<b>Reason for delayed complementary feeding</b>		
	not know when to start	10	5%
	Vomits everything	12	5%
	mother'sMilk is enough	120	55%
	Elder told to do so	56	25%
	The child did not accept other food	22	10%
4	<b>Types of complementary food</b>		
	Commercial food as complementary food	46	21%
	homamade porridge	110	50%
	Khichadi	125	57%
	Dalia	145	66%
	sujikheer	45	20%
	fruits, vegetables	76	35%
	upma, idli	63	29%
6	<b>Frequency of complementary feeding</b>		
	thrice a day	156	71%
	twice a day	75	34%
7	<b>Consistency of complementary food</b>		
	Thick	178	81%
	Thin	40	18%
8	<b>bottle feeding practice</b>		
	yes	155	70%
	No	65	30%
9	<b>method of feeding</b>		0%
	by making child sit on lap	179	81%
	by making child sit on chair	41	19%

**4. DISCUSSION**

As per WHO guidelines, complementary feeding should be started at 6 month of age, along with breastfeeding up to 2 year of age [6,7]. Complementary feeding is complements to breastfeeding, but not replaces it. Period of complementary feeding (between 6 month to 24 month) is very crucial period, as rapid physical and cognitive growth takes place between this period, if proper nutrient are gets during this period there is risk of under nutrition and growth and development of child will be affected [8]. Timely introduction of complementary feeding is very crucial, early introduction can leads to

multiple GI and respiratory infection, overload on kidney, weight gain infancy and obesity in later life while late introduction can leads nutritional deficiency, malnutrition, immune disorders and type 2 diabetes later in life [9].

Mothers knowledge, practice and beliefs regarding complementary feeding play key role in baby’s growth and development. All mothers must have basic knowledge about complementary feeding about time of onset, frequency, consistency, nutrient value of meal.

Current study is conducted at Indian rural area. Many studies shows under nutrition is

more prevalent at rural area than urban region [6,7].

In our study around started breastfeeding by 2 days after delivery and continued exclusive breastfeeding till 6 month of age, only 4% mother failed to give lactation, this is positive finding in our study; this is because in rural India still breastfeeding consider prime importance for baby. Also on positive note 72% mothers knew when to start complementary feeds, but only 66% mother able to start complementary feeds at 6 month age. Major reason for delayed start is mothers own perception that her milk is sufficient for baby(55%), or due to family members advice(25%), 10% mother face problems,, that baby not taking feeds. 63% mothers give three times a day meal to baby and 89% think that giving frequent feeds are beneficial to mother. Major source of complementary feeds are homemade, this may be due to source of information for complementary feed are family members, other sources are health professionals and electronic media, hence around 26% mothers prefer commercial available feeds at rural region also this may be due to aggressive marketing policies, easy availability and easy preparation. Consistency of meal play important role for calories intake, more calorie rich, thick meal is better than thin meal. In our study 81% mother prefer to give thick meal which corresponds with other Indian studies [10,11]. Most of mother knew about iron rich foods, importance of Iodised salt and importance of dietary diversity. A number of studies on infant and young child feeding were reported by Kogade et al. [12], Puri et al. [13], Thow et al. [14], and Uddin et al. [15], Goyal et al. reported on Breastfeeding Practices: Positioning, Attachment (Latch-on) and Effective Suckling [16]. Similar study was reported by Thakare et al. [17]. Quazi et al. reported on Challenges and Patterns of Complementary Feeding for Women in Employment [18].

Furthermore, many mother prefer to decrease quantity and frequency of meals during illness in fact, 10% mothers withhold meals during illness. Similar to other part of India, here also many taboos are present regarding foods like 55% mother think Banana, yogurt, and rice as cold food whereas Meat, pulses, nuts, and eggs are considered as hot and hard to digest by 65% mothers. 70% mothers still practice of bottle feeding, which causing multiple infections to baby.

In current study we interviewed only mothers who attended pediatric OPD, actual perception regarding complementary feeding might be slightly different in community an general public, hence large population based study is required.

## 5. CONCLUSION

Though knowledge and practice about complementary feeding is adequate among mother, still many false belief, wrong socio cultural taboos are present among mothers. Hence here is need to give proper education and training and also need to motivate mother's and caregivers regarding complementary feeding practices, so that prevent malnutrition and improvement in overall health status of children.

## CONSENT AND ETHICAL APPROVAL

A written consent was taken from all respondent before participation in study, Participants' confidentiality was assured by assigning each respondent a unique a code number for the purpose of analysis only. No any specific incentives or rewards were given to participants. Study was approved by the institutional review committee.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

## REFERENCES

1. Saaka M. Relationship between mothers' nutritional knowledge in childcare practices and the growth of children living in impoverished rural communities. *J Health Popul Nutr.* 2014;32(2):237-48.  
PMID: 25076661  
PMCID: PMC4216960
2. Appoh LY, Krekling S. Maternal nutritional knowledge and child nutritional status in the Volta region of Ghana. *Matern Child Nutr.* 2005;1(2):100-10.  
DOI: 10.1111/j.1740-8709.2005.00016.x  
PMID: 16881885  
PMCID: PMC6860941
3. Murarkar S, Gothankar J, Doke P et al. Prevalence and determinants of undernutrition among under-five children residing in urban slums and rural area, Maharashtra, India: A community-based

- cross-sectional study. *BMC Public Health*. 2020;20:1559.  
Available:<https://doi.org/10.1186/s12889-020-09642-0>
4. Nguyen PH, Scott S, Headey D, Singh N, Tran LM, Menon P, et al. The double burden of malnutrition in India: Trends and inequalities (2006–2016). *PLoS ONE*. 2021;16(2):e0247856.  
Available:<https://doi.org/10.1371/journal.pone.0247856>
  5. Shrestha S, Pokhrel M, Mathema S. Knowledge, attitude and practices among mothers of children 6 to 24 months of age regarding complementary feeding. *JNMA J Nepal Med Assoc*. 2020;58(230):758–63. DOI: 10.31729/jnma.5274. Epub 2020 Oct 31  
PMCID: PMC7654499.
  6. Rao S, Swathi P, Unnikrishnan B, Hegde A. Study of complementary feeding practices among mothers of children aged six months to two years - A study from coastal south India. *Australas Med J*. 2011;4(5):252-7.  
DOI: 10.4066/AMJ.2011.607  
Epub 2011 May 31  
PMID: 23393516  
PMCID: PMC3562932.
  7. World Health Organization. Global strategy for infant and young child feeding [Internet]. Geneva: World Health Organization. 2003 [cited January 23, 2019].  
Available:  
<https://www.who.int/nutrition/publications/infantfeeding/9241562218/en/>
  8. World Health Organization. Complementary feeding of young children in developing countries: A review of current scientific knowledge. Geneva: World Health Organization; 1998.  
Available:[https://www.who.int/nutrition/publications/infantfeeding/WHO\\_NUT\\_98.1/en/](https://www.who.int/nutrition/publications/infantfeeding/WHO_NUT_98.1/en/)
  9. Dewey KG. The challenge of meeting nutrient needs of infants and young children during the period of complementary feeding: An evolutionary perspective. *J Nutr*. 2013;143 (12):2050-4.
  10. Przyrembel H. Timing of introduction of complementary food: Short- and long-term health consequences. *Ann Nutr Metab*. 2012;60(Suppl 2):8-20.
  11. Aggarwal A, Verma S, Faridi M, Dayachand. Complementary feeding--reasons for inappropriateness in timing, quantity and consistency. *Indian J Pediatr*. 2008;75(1):49-53.
  12. Kogade, Priti, Abhay Gaidhane, Sonali Choudhari, Mahalaqua Nazli Khatib, Umesh Kawalkar, Shilpa Gaidhane, Zahiruddin Quazi Syed. Socio-Cultural determinants of infant and young child feeding practices in Rural India. *Medical Science*. 2019;23(100):1015–22.
  13. Puri, Seema, Sylvia Fernandez, Amrita Puranik, Deepika Anand, Abhay Gaidhane, Zahiruddin Quazi Syed, Archana Patel, Shahadat Uddin, Anne Marie Thow. Policy content and stakeholder network analysis for infant and young child feeding in India. *BMC PUBLIC HEALTH*. 2017; 17(2).  
Available:<https://doi.org/10.1186/s12889-017-4339-z>.
  14. Thow, Anne Marie, Sumit Karn, Madhu Dixit Devkota, Sabrina Rasheed, Roy SK, Yasmeen Suleman, Tabish Hazir, et al. Opportunities for strengthening infant and young child feeding policies in South Asia: Insights from the SAIFRN policy analysis project. *BMC PUBLIC HEALTH* 2017;17(2).  
Available:<https://doi.org/10.1186/s12889-017-4336-2>.
  15. Uddin, Shahadat, Hana Mahmood, Upul Senarath, Zahiruddin Quazi Syed, Sumit Karn, Sabrina Rasheed, Michael Dibley. Analysis of stakeholders networks of infant and young child nutrition programmes in Sri Lanka, India, Nepal, Bangladesh and Pakistan. *BMC PUBLIC HEALTH*. 2017;17(2).  
Available:<https://doi.org/10.1186/s12889-017-4337-1>
  16. Goyal Ram C, Ashish S. Banginwar, Fatima Ziyo, Ahmed A. Toweir. Breastfeeding practices: Positioning, attachment (latch-on) and effective suckling - A Hospital-Based Study in Libya. *Journal of Family and Community Medicine*. 2011;18(2):74–79.  
Available:<https://doi.org/10.4103/2230-8229.83372>.
  17. Thakre, Subhash B, Sushama S. Thakre, Suresh M. Ughade, Samir Golawar, Amol D. Thakre, Priya Kale. The breastfeeding practices: The positioning and attachment initiative among the mothers of Rural Nagpur. *Journal of Clinical and Diagnostic Research*. 2012;6(7):1215–18.
  18. Quazi Syed, Zahiruddin, Abhay Gaidhane, Priti Kogade, Umesh Kawalkar, Nazli



Khatib, Shilpa Gaidhane. Challenges and patterns of complementary feeding for women in employment: A qualitative study from Rural India. Current Research in

Nutrition and Food Science. 2016;4(1):48–53.  
Available:<https://doi.org/10.12944/CRNFSJ.4.1.06>.

---

© 2021 Katole et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

*Peer-review history:*

*The peer review history for this paper can be accessed here:  
<https://www.sdiarticle5.com/review-history/80018>*