



## A Comparative Study on Complementary Feeding Practices among Mothers in Urban and Rural Areas in Trichur District, Kerala

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**Financial Support:** None declared

**Conflict of Interest:** None declared

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### How to cite this article:

Kuruvilla BS, Saju CR, Mundodan JM. A Comparative Study on Complementary Feeding Practices among Mothers in Urban and Rural Areas in Trichur District, Kerala. *Natl J Community Med* 2020;11(7):294-298

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**Date of Submission:** 19-05-2020

**Date of Acceptance:** 29-07-2020

**Date of Publication:** 31-07-2020

## ABSTRACT

**Background:** The second half of an infant's first year is a vulnerable time when breast milk alone cannot meet the nutritional requirements and complementary feeding (CF) should be initiated. CF needs to be nutritionally adequate and appropriate.

**Objective:** To study and compare the complementary feeding practices among mothers in selected rural and urban areas in Thrissur district.

**Methods:** A comparative descriptive study was conducted among mothers of children in the age group of one to two years. The house-to-house survey was conducted in field practice area of Amala Institute of Medical Sciences, Thrissur from January 2016 to June 2017. Data was collected using pretested questionnaire using interview method and analysed.

**Results:** All the care givers interviewed were the mothers of the children. 71.2% of mothers in urban areas started weaning at 6 months as compared to 66.8% in rural areas. The most common weaning food was Banana powder in both groups, followed by Ragi. 53% mother started early weaning due to insufficient breast milk.

**Conclusion:** A significant number of infants are initiated on complementary feeds prior to 6 months of age. There is a significant difference in the most of the feeding practices among mothers in the urban and rural area. Intense health education is required to improve the complementary feeding practices.

**Keywords:** Infant nutrition, Appropriate, Complementary feeding, Rural, Urban

## INTRODUCTION

Infant and Young Child feeding (IYCF) is quintessential for childhood growth and development. It is for the simple reason that growth rate is maximum for the first year and moreover, it determines the nutritional status of the child.<sup>[1]</sup> Appropriate feeding practices are the key interventions to achieve Millennium Development Goals 1 and 4, which address malnutrition and child mortality respectively.<sup>[2]</sup>

WHO has recommended exclusive breast feeding for the first six months, followed by complementa-

ry feeding (CF) from six months along with breast feeding (BF) till two years.<sup>[3,4]</sup> CF is required in appropriate quantity, frequency and consistency to fulfil the recommendations adequately.<sup>[5]</sup> The recommendation that CF should be started at six months of age has its rationale based on biological and developmental aspects of infants. Moreover, both early and delayed introduction of CF is associated with negative consequences to health.<sup>[6]</sup>

In Indian scenario, common problems encountered during the weaning period are feeding of inadequate amounts of CF, poor dietary diversity and decline in BF frequency.<sup>[7,8]</sup> District Level House-

hold and Facility Survey (DLHS)-3 data shows only 25% children aged 6-23 months in India had started CF at recommended age of six months.<sup>[9]</sup> According to DLHS-4, in Kerala, children who are underweight (< 3SD) are 8.2% in the rural area and 4.8% in the urban area i.e. almost double that of urban area.<sup>[10]</sup> Since CF is an indirect indicator of nutritional status and that relatively less attention is paid to CF as compared to BF, this study was taken up to study the CF practices in the urban and rural area keeping in mind WHO guiding principles.

### MATERIAL AND METHODS

A comparative descriptive study was conducted in field practice areas of Rural Health Training Centre (RHTC) and Urban Health Training Centre (UHTC) of Amala Institute of Medical Sciences from January 2016 to July 2017. Children aged from one to two years were chosen to study their feeding practices during the age of 6-12 months. Those who were advised against feeding due to medical condition of mother/ child were excluded.

A study done in Karnataka state showed the complementary feeding rates to be 42% and 29% in the urban and rural areas respectively.<sup>[11]</sup> Based on the formula for comparison of proportion of two groups,

$$n = \{Z_{1-\alpha/2} \sqrt{2P(1-P)} + Z_{1-\beta} \sqrt{P_1(1-P_1) + P_2(1-P_2)}\}^2 / (P_1 - P_2)^2$$

where,  $P = (P_1 + P_2)/2$ ;  $P_1$  = Proportion in the first group,  $P_2$  = Proportion in the second group;  $\alpha$  = Significance level,  $1 - \beta$  = Power

The calculated sample size was 202 in each arm. Systematic random sampling was applied to select the houses for survey. Mothers were interviewed with pretested questionnaire after obtaining a written informed consent. Questionnaire consists of socioeconomic details and the details of feeding practices adopted by mothers in the urban and rural area. Complementary feeding is defined as the introduction of other foods and drinks after six months of age. These are in addition to adequate intake of breast milk.

Data was entered in MS Excel. SPSS software version 23.0 was used to analyse the data Ethical Clearance was obtained from the Institutional Ethics Committee of Amala Institute of Medical Sciences, Thrissur.

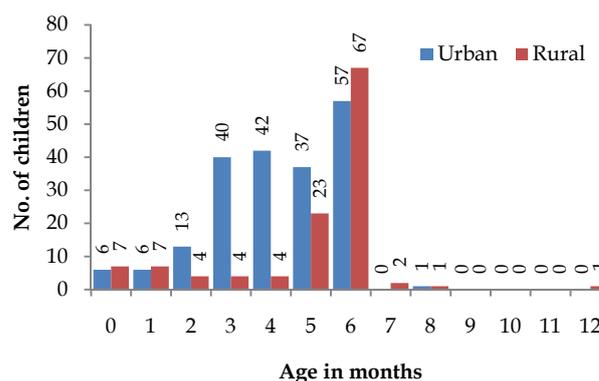
### RESULTS

Mean age of mothers in the urban and rural area are 29.98±4.3 years and 28.66±4.1 years respective-

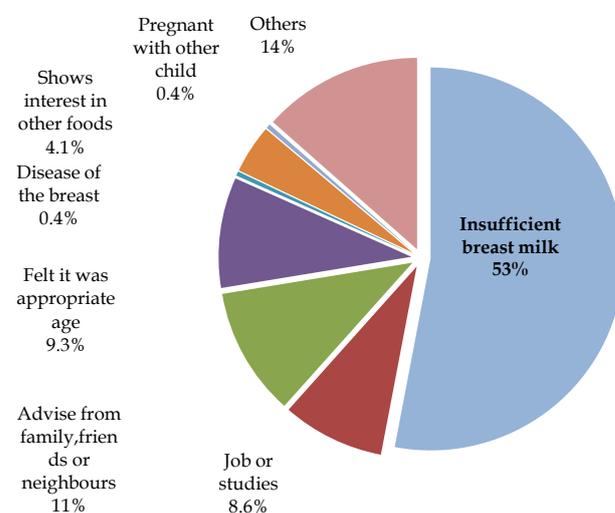
ly. Majority are graduates. None are illiterate in either urban or rural area.

Breastfeeding practices: Breast feeding was initiated within one hour of birth in more than half the infants in urban and rural areas (57.9% v/s 61.9%,  $p=0.002$ ). Two (1%) children in the urban area and 21 (10.4%) children in the rural area were not given colostrum; most common reasons being ICU admission and lack of milk production. Pre-lacteal feeds were given to 19.1% infants, these include Lactogen(42.9%), zamzam water (22.1%), water (10.4%), honey(2.6%), jaggery water(1.3%), zamzam and honey together(10.4%); others included various herbal preparations like *vayambyu* (sweet flag) and rarely, gold preparations. The exclusive Breast Feeding rates at 6 months were 28.2% and 33.2% in urban and rural areas respectively.

**Fig 1: Distribution of study subjects according to age of initiation of weaning (in months)**



**Fig 2: Distribution of study subjects according to the reasons of early complementary feeding**



**Table 1: Distribution of study subjects according to the type of weaning food**

Food Items	Urban (n=202) (%)	Rural (n=202) (%)	Total (n=404) (%)
Banana powder	99(49.0)	101(50.0)	200(49.5)
Ragi powder	60(29.7)	33(16.3)	93(23.0)
Commercial feeds	25(12.3)	32(15.8)	57(14.1)
Mashed rice	6(3.0)	10(5.0)	16(4.0)
Refined wheat	3(1.5)	11(5.5)	14(3.5)
Cow's milk	3(1.5)	0(0.0)	3(0.7)
Others	6(3.0)	15(7.4)	21(5.1)

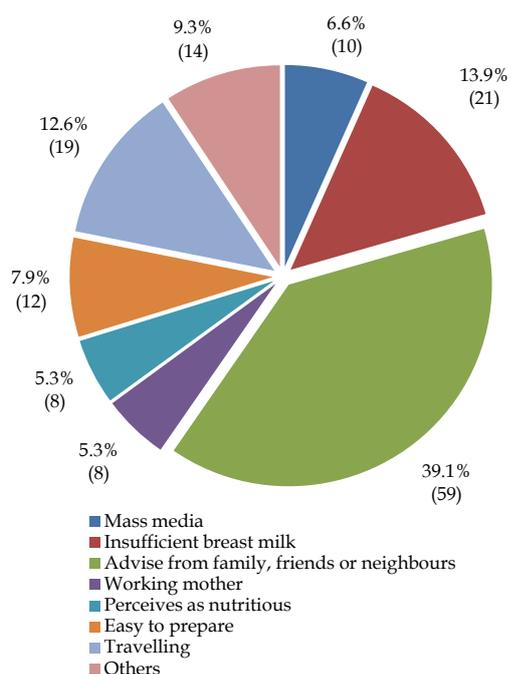
**Table II: Distribution of study subjects according to food taken during 6-8 months of age**

Variable	Urban (n=202) (%)	Rural (n=202) (%)	Total (n=404) (%)	P value
Cereals	160(79.2)	149(73.8)	309(79.2)	0.197
Fruits	131(64.9)	109(54.0)	240(59.4)	0.026
Vegetables	86(42.6)	40(19.8)	126(31.2)	0.001
Pulses	79(39.1)	49(24.3)	128(31.7)	0.001
Fats	63(31.2)	29(14.4)	92(22.8)	0.001
Dairy products	46(22.8)	29(14.4)	75(18.6)	0.030
Commercial feeds	68(33.7)	51(25.2)	119(29.5)	0.064
Amrutham Mix	16(7.9)	68(33.7)	84(20.8)	0.001

**Table III: Distribution of study subjects according to food taken during 9-12 months of age**

Variable	Urban (n=202) (%)	Rural (n=202) (%)	Total (n=404) (%)	P value
Cereals	193(95.5)	193(95.5)	386(95.5)	1.000
Vegetables	162(80.2)	130(64.4)	292(72.3)	0.001
Fruits	163(80.7)	130(64.4)	293(72.5)	0.001
Pulses	153(75.7)	141(69.8)	294(72.8)	0.180
Snacks	72(35.6)	90(44.6)	162(40.1)	0.068
Fats	81(40.1)	32(15.8)	113(28.0)	0.001
Dairy products	57(33.2)	47(23.3)	114(28.2)	0.027
Commercial feeds	71(35.1)	35(17.3)	106(26.2)	0.000
Amrutham Mix	22(10.9)	51(25.2)	73(18.1)	0.000

**Fig 3: Distribution of Study Subjects according to reasons for Commercial feeding**



Weaning Practices: Weaning was started by 71.2% of mothers in urban areas 6 months as compared to 66.8% in urban areas. Weaning was delayed beyond 6 months in five infants, four in the rural area and one in urban.[Figure 1]About half the mothers (53%) started early weaning due to perceived insufficiency of breast milk.[Figure 2]

More than half (51.5%) infants were given at least two feeds during 6-8 months of age. During 9-12 months of age, 61.4% infants were given three feeds and 14.9% infants were given four feeds according to WHO recommendation. The most common weaning food was Banana powder in both groups, followed by Ragi. There was a significant difference in the utilization of Amrutham mix, in the rural and urban groups (33.7% v/s 7.9%, p=0.001). Commercial feeds were given more in the urban area as compared to rural area.[Table 1] Amrutham Powder is a cereal- based powder mix developed by the Central Plantation Crops Research Institute (CPCRI) Kasargode, Kerala, and provided to children through the Integrated Child Development Services (ICDS) Scheme in Kerala. Its constituents are wheat, soya chunks, bengal gram, ground nut and sugar.[12]

Cereals were the common food items given as complementary feeds, 76.5% in 6-8 months and 95.5% in 9-12 months. There was a significant difference in the utilization of fruits, vegetables and pulses in urban and rural areas. Commercially available feed were given to 29.5% children at 6-8 months, this came down to 26.2% by the age of 9-12 months. [Tables 2,3] The most common reason for the use of commercially available feeds was advice from relatives and neighbours, followed by insufficient breast milk. [Figure 3]

## DISCUSSION

Feeding practices: Rates of initiation of complementary feeding at six months of age were 71.2% and 66.8% respectively in the urban and rural area. These rates are comparable to NFHS-4 done in Kerala (64.2% and 62.4% in urban and rural areas respectively); [13] but was higher as compared to a study in Karnataka where the complementary feeding rates were 28.8% and 42.11% in urban and rural areas. [11] Contradictory observation was found in the urban and rural areas of Bihar, where 17.70% urban and 13.10% rural mothers started complementary foods before six months of age. [14] Reasons for early complementary feeding are varied. In our study, 53% mothers had initiated complementary feeding due to insufficient breast milk; other reasons included advice by neighbours, family friends or elders (10.8%), mothers had job or studies (8.6%), etc. In Bihar, reason behind early weaning was the apprehension that breast milk was insufficient (30% in urban and 28.9% in rural area). [14] Delayed initiation (beyond 6 months) of complementary feeding was rare in the present study, with 0.5% of the children in the urban area and 2% in rural., which is much lower than the a study conducted by Saxena et al. which showed 13% delayed feeding. [5] Commonest reason cited in our study was presence of ample breast milk. Reasons reported for delayed complementary feeding in a study conducted in a rural area of Uttar Pradesh included unsuccessful attempt at feeding, mothers felt her milk was enough for the baby, elderly in the family suggested to start complementary feeding after one year only. [5] The reason for difference between our study and other studies may be attributed to the higher socioeconomic and educational status among mothers in our setting.

Majority of the children were given Banana powder as the first complementary feed in urban and rural areas. This result is quite different from a study conducted in Belgaum district in Karnataka where most common weaning food was porridge in the urban area (36.8%) and cow's milk in the rural area (32.6%). [15] Cultural variations are expected in the choice of first weaning food. WHO recommends at

least two feeds be given from 6-8 months of age. In this study, 51.5% infants were given at least two feeds during 6-8 months of age; 61.4% and 14.9% infants were given three and four feeds respectively during 9-12 months of age. A study conducted in a rural area of Uttar Pradesh showed that 63% of children aged 6-23 months were given the minimum recommended number of feeds in a day so this is comparable to our study. Reasons for not giving recommended number of feeds were that 66% mothers think that child can eat only so much and a few of them are unaware about the frequency of feeding. [16]

Commercial feeds were given to 45.5% children in the urban area and 34.7% children in the rural area. Factors influencing use of commercial feeds were advice from family members, friends and neighbours (39.1%), insufficient breast milk (13.9%), travelling (12.6%), easy to prepare (7.9%), mass media (6.6%), working mother (5.3%), perceives as nutritious (5.3%), and so on. The commercial feeding rate in a study conducted in Uttar Pradesh was 8.3%. The major reasons for giving commercial feeds mentioned in the study were insufficient lactation (36%) and high price of animal milk (37%). The family members (75%) and medical functionaries (16%) were the major source of advice for initiating the use of commercial feeds. [17]

## CONCLUSION

A significant number of infants are initiated on complementary feeds prior to 6 months of age, both in urban and rural areas, the main reason being perceived insufficiency of breast milk. This needs to be probed further. The choice of weaning foods depend on cultural factors. However utilization of *Amrutham* mix in the children aged 6-12 months needs to be improved by better sensitization of the mothers, particularly in the urban areas.

## REFERENCES

1. Singhal P, Jain S, SKGarg, HChopra, SKBajpai, Arun Kumar. Infant and Young Child Feeding Practices with Special Reference to Complementary Feeding In an Urban Area of Meerut. IOSR Journal Of Humanities And Social Science. 2015;20(2):22-26.
2. Dadhichi JP, Agrawal RK. Mainstreaming early and exclusive breastfeeding for improving child survival. Indian Pediatr. 2009;46:11-17.
3. World Health Organization. The optimal duration of exclusive breast-feeding; Report of an expert consultation (WHO/FCH/CAH/01.24). Geneva; March 2001. Available from : [https://www.who.int/nutrition/publications/infantfeeding/WHO\\_NHD\\_01.09/en/](https://www.who.int/nutrition/publications/infantfeeding/WHO_NHD_01.09/en/)
4. World Health Organization. Child health research: a foundation for improving child health. Geneva, WHO; 2002. Available from : [https://www.who.int/maternal\\_child\\_](https://www.who.int/maternal_child_)

- adolescent/documents/fch\_cah\_02\_3/en/
5. Saxena V, Kumar P. Complementary feeding practices in rural community: A study from block Doiwala district Dehradun. *Indian Journal of Basic and Applied Medical Research*.2014;3:358-363.
  6. Agostoni C, Decsi T, Fewtrell M, et al. Complementary feeding: a commentary by the ESPGHAN Committee on Nutrition. *J Pediatr Gastroenterol Nutr*. 2008;46(1):99-110. doi:10.1097/01.mpg.0000304464.60788.bd
  7. Sethi V, Kashyap S, Seth V. Effect of nutrition education of mothers on infant feeding practices. *Indian J Pediatr*. 2003;70(6):463-466. doi:10.1007/BF02723133
  8. Olatona FA, Adenihun JO, Aderibigbe SA, Adeniyi OF. Complementary Feeding Knowledge, Practices, and Dietary Diversity among Mothers of Under-Five Children in an Urban Community in Lagos State, Nigeria. *Int J MCH AIDS*. 2017;6(1):46-59. doi:10.21106/ijma.203
  9. Vahini RV, Muthu P. Complementary feeding practices among non working women in North Chennai, Tamil Nadu (South India): a descriptive study. *International Journal Of Scientific Research*.2013;2(12):271-274.
  10. District level Household and Facility Survey (DLHS 4). 2012-13 State fact sheet Karnataka Ministry of Health and Family welfare, Government of India, International Institute for Population Science Deonar, Mumbai 2014. Available from [www.nrhm-mis.nic.in/SitePages/DLHS-4.aspx](http://www.nrhm-mis.nic.in/SitePages/DLHS-4.aspx)
  11. Ashwini S, Katti SM, Mallapur MD. Comparison of complementary feeding practices among urban and rural mothers - a cross sectional study. *Al Ameen J Med Sci*. 2014;7:257-264.
  12. Pati R, Arshad B. A concept note on Amrutham Nutrimix. NIRD;2015:15p. Availbale from : [http://kudumbashree.org/storage//files/di9x7\\_12.%20a%20concept%20note%20on%20amrurtham%20nutrmix.pdf](http://kudumbashree.org/storage//files/di9x7_12.%20a%20concept%20note%20on%20amrurtham%20nutrmix.pdf)
  13. International Institute for Population Sciences. National Family Health Survey 4: State Fact Sheet- Kerala. Mumbai: IIPS; 2017. Available from : [rchiips.org/NFHS/pdf/NFHS4/KL\\_Factsheet](http://rchiips.org/NFHS/pdf/NFHS4/KL_Factsheet).
  14. Yadav RJ, Singh P. Knowledge, attitude and practice of mothers about breast-feeding in Bihar. *Indian J Community Med*. 2004;29(3):130-131.
  15. Chaudhry R, Humayun N. Weaning practices and their determinants among mothers of infants. *Biomedica*. 2007; 23(2):120-124.
  16. Aruldas K, Khan ME, Hazra A. Increasing appropriate complementary feeding in rural Uttar Pradesh. *Journal of Family Welfare*.2010;56:43-50.
  17. Kapil U, Verma D, Sachdev HP, Nayar D, Shah AD, Gnanasekaran N. Use of milk based commercial weaning foods amongst scheduled caste communities in Haryana. *Indian Pediatr*. 1995;32(8):905-908.