

# Study of age at initiation, type and mode of giving complementary feeds in infants aged 6-12 months in urban and rural population

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## Abstract

**Background:** According to WHO, Complementary Feeds (CF) should be given timely, adequately and appropriately. The present study was undertaken to find the age at initiation, type and mode of giving CF in 6-12 months infants in urban and rural population. **Materials and methods:** This cross-sectional study was conducted at D.Y. Patil Medical College and Hospital, Department of Pediatrics, Out Patient Department. 900 literate mothers of infants between 6-12 months of age from urban and rural area were included. Infant's age, sex, address along with infant feeding practices such as initiation frequency, duration of breast feeding, age at initiation, types (Homemade or commercial) and mode of giving (Katori/wati and spoon or bottle) CF by recall questioning from mothers was obtained. The data was analysed statistically. **Results:** 900 mothers of infants from the age 6-12 months from 464(51.55%) urban and 436(48.44%) rural population were questioned. 512(56.88%) infants received CF at appropriate age, out of which 206(44.4%) urban and 306(70.18%) were from rural which was statistically significant. 196(42.24%) infants from urban and 88(20.18%) from rural received CF in between 3-6 months of age. 62(13.36%) from urban and 42(9.64%) rural infants received CF in < 3 months. 339 (56.65%) infants received homemade preparation as CF out of which 92(19.83%) urban while 247(56.65%) were from rural which was significant. Commercial CF was received by 190(40.94%) urban and 56(12.84%) rural infants. 202(43.53%) urban and 103(23.62%) rural infants were receiving bottle which was significant. Katori/wati and spoon was used by 262(56.47%) urban and 333(76.38%) rural mothers. **Conclusion:** CF practices were poor both in urban and rural infants. Early start less than 6 months of age, use of commercial preparation and bottle feeds for CF was significantly higher for urban than rural infants. CF education should be given to mothers during immunization visits of infants.

**Key Words:** Complementary Feeding, Infants, Mothers

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## INTRODUCTION

Adequate nutrition during infancy and early childhood is essential to ensure the growth, health and development of children to their full potential.<sup>1</sup> Introduction of safe and nutritious foods at about 6 months of age in addition to breast feeding is referred to as Complementary feeds (CF).<sup>2</sup> The World Health Organization (WHO) recommends exclusive breast feeding for the first six months of life, with the addition of CF at six months with continued breast feeds until at least the age of two.<sup>3,4</sup> CF not done properly, can be followed by diarrhoea and months of growth retardation leading to kwashiorkor,

marasmus and immune deficiency marked by recurrent and persistent infections which may be fatal.<sup>4</sup> According to WHO, CF should be given timely, adequately and appropriately.<sup>5</sup> In developing countries, inadequate knowledge on CF is one of the main reason for malnutrition.<sup>6</sup> Age at which CF started is important as initiating CF too early or too late can lead to malnutrition.<sup>7</sup> The type of CF can be either homemade food or commercially available packed preparation. Homemade CF includes rice dal water, khichadi, milk products, mashed potato, kheer, fruits like mashed banana, apple, vegetable soup etc. Also mode of giving CF is important that is either by katori/Wati and spoon or bottle. For bottle feeding, inadequate hygiene is major problem which can lead to recurrent infections leading to growth retardation and a significant contributor to under five mortality. Having good CF knowledge among mothers will prevent malnutrition in infants and also will help in planning interventions to improve feeding practices. The feeding practices also differ from urban to rural population based on various factors.<sup>8</sup> As there are very few studies on CF used in this region, the present study was undertaken to find the weaning age, type and mode of giving CF in 6-12 months infants in urban and rural population.

## MATERIALS AND METHODS

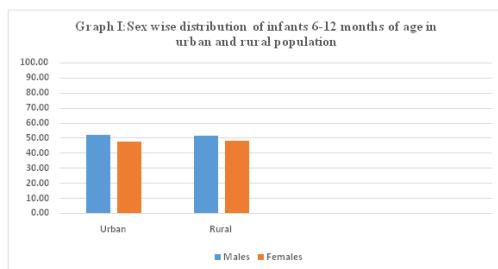
This cross-sectional study was conducted at D.Y. Patil Medical College and Hospital, Department of Pediatrics

## RESULTS

In this study 900 literate mothers/care givers of infants from the age group of 6-12 months from 464(51.55%) urban and 436 (48.44%) rural population were questioned by recall method. 242(52.15%) male and 222(47.85%) female infants were from urban and 225(51.60%) male and 211(48.40%) female infants were from rural population. [Graph 1] Age wise distribution of infants from urban and rural population was shown in [Table1].

**Table 1:** Age wise distribution of infants in urban and rural population

Age in Months	Urban		Rural		Total	
	No	%	No	%	No	%
>6-9	239	51.5	215	49.3	454	50.45
>9-12	225	48.5	221	50.7	446	49.55
Total	464	100	436	100	900	100



in Out Patient Department during the period of 1st September 2017 to 31st August 2018. The study was approved by Institutional Ethical committee. Informed consent from mother/care giver of infant was also obtained. 900 literate mothers /care giver (member of family) of infants between 6-12 months of age attending the Outpatient Department either for immunization, well baby clinic for growth and development monitoring or minor illnesses in infants, coming from both urban and rural residential area were included in this study. Infants born prematurely, Low birth weight, who required Neonatal intensive care unit admissions and those who were put on infant feeding formula by health professionals were excluded from this study. The subjects were selected for study by the order of arrival to the outpatient department during the study period. Infant's detailed history including age, sex, present residential address, chief complaints if present along with growth parameters were recorded. Age was calculated for completed months on the date of interview. Information regarding infant feeding practices such as initiation of breast feeding, frequency and duration of breast feeding, age of initiation of complementary feeding, types and preferences of CF(Homemade or commercially available pre packed ) and mode of giving CF( Katori/Wati and spoon or bottle) by recall method by using questionnaire from mothers . The data was analysed statistically using chi square test where  $p < 0.05$  was significant.

Out of 900 infants, 512(56.88%) received CF appropriate for age at 6 months, means these infants received exclusive breast feeding up to 6 months of age. 206(44.4%) were from urban and 306(70.18%) infants were from rural population. 284(31.56%) infants received CF in between 3-6 months of age out of which 196(42.24%) were from urban and 88(20.18%) from rural population. In infants less than 3 months, CF received by 104(11.56%) infants, out of which 62(13.36%) from urban and 42(9.64%) rural population. Exclusive breast feeding up to 6 months and start of CF at 6 months of age which is recommendation by WHO was done significantly by rural mothers than urban.(p <0.05) [Table 2]

**Table 2:** Age of CF started in infants 6-12 months of age between urban and rural population.

Age of CF started in months	Urban		Rural		Total		P value
	No	%	No	%	No	%	
<3	62	13.36	42	9.64	104	11.56	>0.05
>3-6	196	42.24	88	20.18	284	31.56	>0.05
6	206	44.4	306	70.18	512	56.88	<0.05
Total	464	100	436	100	900	100	

(P &lt;0.05 Significant; p &gt; 0.05 Nonsignificant)

339(56.65%) infants received homemade preparation as CF out of which 92(19.83%) urban while 247(56.65%) rural population. Commercially available CF was given to 190(40.94%) from urban and 56(12.84%) infants. 182(39.23%) urban and 133(30.51%) rural infants received both mixed homemade and commercial preparation. It was observed that rural infants significantly received homemade preparation than Urban infants as CF. (<0.05) [Table 3]

**Table 3:** Type of CF in infants 6-12 months of age in Urban and rural population

Type of Complementary food	URBAN		RURAL		TOTAL		P value
	No	%	No	%	No	%	
Homemade	92	19.83	247	56.65	339	37.6	<0.05
Commercial	190	40.94	56	12.84	246	27.4	<0.05
Mixed	182	39.23	133	30.51	315	35	>0.05
Total	464	100	436	100	900	100	

(p&lt; 0.05 Significant; p &gt; 0.05 Nonsignificant)

About 1/3 of population 305(33.88%) infants receiving bottle for CF despite various efforts being done to stop bottle feeding practice.202(43.53%) belonged to urban and 103(23.62%) to rural area. Also amongst 595(66.12%) infants being fed by Katori/Wati and spoon 262(56.47%) belonged to urban and 333(76.38%) to rural. There is significant difference in mode of giving CF in urban and rural population as urban infants were significantly fed by bottle than rural while rural infants were significantly fed by Katori/wati and spoon.(<0.05) [Table 4]

**Table 4:** Mode of CF in infants 6-12 months of age in Urban and rural population

Mode of Complementary food	URBAN		RURAL		TOTAL		P Value
	No	%	No	%	No	%	
Bottle	202	43.53	103	23.62	305	33.88	<0.05
Katori /wati and spoon	262	56.47	333	76.38	595	66.12	<0.05
Total	464	100	436	100	900	100	

(P &lt;0.05 Significant; p &gt;0.05 Non Significant)

## DISCUSSION

Appropriate breast feeding and CF practices are essential for optimal infant nutrition and is directly related to healthy children. In the present study 56.88% infants received CF at the recommended age and 43.12% prematurely. Appropriate age of initiation of CF was significantly higher 70.18% for rural than urban 44.4% infants. Aggarwal *et al*<sup>7</sup> showed that only 17.5% of mothers started CF at the recommended time. A national Family Health Survey(NHFS3) for Karnataka state India showed ,72.5% of infants aged 6-9 months were receiving CF and breast milk<sup>9</sup>Javalkar SR *et al* <sup>10</sup>found 69.3% rural and 30.6% urban mothers started CF at 6 months a finding similar to our study. Yadav *et al*<sup>11</sup>from Bihar

found that 17.7% urban and 13.10% rural mothers started CF before 6 months of age. The reason for early weaning as mothers think that their breast milk is insufficient either because of their perception of inadequate growth of infant or perceived cause of child crying too often.<sup>12</sup> The early introduction of CF before the age of six months can lead to displacement of breast milk and increased risk of infections such as diarrhoea, which further contributes to weight loss and malnutrition.<sup>13</sup> Besides this, it is thought that babies are also not physiologically ready to receive CF under six months due to immaturity of the gastrointestinal and neuro developmental systems and kidneys .Studies have demonstrated that early introduction of CF does not result in improved growth

velocities or food acceptance.<sup>14</sup> In our study we had not found late initiation of CF as some studies had found commonest reason was unsuccessful attempt at feeding.<sup>15</sup> 19.83% urban, 56.65% rural and 40.94% urban, 12.84% rural infants received homemade and commercial preparation respectively in our study. Javalkar SR<sup>10</sup> found 45.5% urban and 54.5% rural mothers were using commercial preparation. The use of commercial preparation as CF was ranged from 5.9% to 80% in various Indian studies.<sup>7,11</sup> WHO/UNICEF advice that home prepared CF are socioeconomically more acceptable for families and communities because it eliminates the importation of expensive commercially prepared weaning foods. WHO /UNICEF also advocate that mothers should be encouraged to feed their infants with home prepared foods which contain calories, proteins, minerals and vitamins.<sup>16</sup> The reason for preference for commercial CF could be mother's feel that it saves time, convenient and has better taste.<sup>17</sup> In our study 33.88% infants received bottle feeding that included 43.53% urban and 23.62% rural. Javalkar SR *et al*<sup>10</sup> found 44.4% mother practiced bottle feeding out of which 50% urban and 42% rural. Use of bottles is not recommended since, it is a source of infection, reduces breast sucking time, interfering with breast feeding on demand and may alter the dynamics of oral feeding.<sup>18,19</sup> The increased use of bottle feeding may be due to influence of marketing strategies and commercialization of baby foods.<sup>10</sup> The reasons behind poor practices of CF by urban mothers than rural could be most of the urban mothers live as an isolated family and no other family member like Grandmother who guides the mother whereas most of the rural mothers live in joint family where other family members are there to guide her and take care of the baby. Secondly most of the urban mothers are working mothers while rural mothers are mostly house wife. House wife mothers were found to be about 9.5times more likely to practice appropriate CF practice in comparison to working mothers.<sup>20</sup> CF education should be given to mothers during their visits to clinic especially during immunization of infants. The present study had some limitations. Firstly, data collected by questioning with mothers and recall, there could be possible bias and may affect validity of result. Secondly similar to other cross-sectional studies, it limits the present study to draw any causality. Thirdly we had not included children above 12 months of age and illiterate mothers in our study.

## CONCLUSION

CF practices were poor both in urban and rural infants. Early start less than 6 months of age, use of commercial preparation and bottle feeds for CF was significantly higher for urban than rural infants. CF education should

be given to mothers during their visits to clinic especially during immunization of infants.

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