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Factors influencing weaning practices among working mothers of East Delhi

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Abstract

The present study examines the factors that influence infant (6-24 months) weaning practices among working mothers of East Delhi. A descriptive cross-sectional study using purposive sampling was conducted at paediatrics outpatient department of urban health centres in East Delhi. Three hundred mothers of infants (aged 6-24 months of age) attending the paediatric outpatient departments of the health centres for growth monitoring, immunisation and minor illnesses such as upper respiratory tract infections were selected for the study. Mothers were interviewed using self-constructed semi-structured questionnaire for weaning practices which included socio-demographic information, weaning practices, family environment and support in child rearing. Data were analysed using descriptive and inferential statistics. Results indicated that majority of mothers (88 percent) were full-time workers. More than half (60.34 percent) mothers were cohabitating in a joint family system which had mixed response in terms of support for child feeding practices. Only half of them (50%) reported having a satisfying family environment. However, most mothers (95.33%) did indicate having supportive spouses. Timely introduction of complementary feeds was initiated in 49% of the children. Only 6.7% weaned their children between 5-6 months; 90% weaned their children gradually, 80% used home-made food and 59% were providing ready-made food. Factors influencing complementary and weaning practices was found to be maternal age, family size and relationship between family members. Continuous health education on appropriate weaning practices should be imparted at every contact point to the mothers. Counselling them about weaning practices during antenatal check-ups and postnatal visits will go a long way in improving feeding practices.

Keywords: Infant, weaning, complementary feeding, family environment, East Delhi

Introduction

Adequate nutrition is essential for achieving Sustainable Development Goal (SDG). To improve child survival and healthy growth, infant and young child feeding practices are important, especially in the first two years of life. WHO emphasizes the importance of focusing on feeding practices the child's first two years because optimal nutrition during this period can reduce morbidity and mortality and it has potential to save the lives of 1.5 million children under the age of 5 every year (WHO, 2008).

The global strategy for Infant and young child feeding, as well as the National guidelines on IYCF in India, recommend early initiation of breastfeeding within one hour and exclusive breastfeeding for the first 6 months of life to achieve optimum growth, development and health. Exclusive breastfeeding for the first six months followed by complementary feeding along with breastfeeding until the child reaches two years of age or beyond is crucial for proper growth and development of a child (WHO, 2008). Introducing solid foods into an infant's diet is recommended at about 6 months because at that age breast milk is no longer adequate in meeting a child's nutritional needs (energy, protein and micronutrient) to promote optimal growth (BPNI, 2012). WHO also emphasizes the importance of early initiation of breastfeeding, as early as within one hour after birth (WHO, 2001^[15], 2003). Breastfeeding is the optimal way of providing infants with the nutrients they need for normal physical and psychological development. This is one of the most effective ways to ensure a child's health and survival (WHO, 2008).

Initiating complementary feeds too early or too late can lead to malnutrition (Aggarwal, Verma, Faridi & Dayachand, 2008)^[1]. Early introduction of complementary feeds before the age of six months can lead to the cessation of breast milk and increased risk of infections such as diarrhoea, which further contributes to weight loss and malnutrition (BPNI, 2014).

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Besides this, it is thought that babies are also not physiologically ready to receive complementary feeds under six months due to the rawness of the gastrointestinal and neurodevelopment system and the kidneys.

The World Health Organization (WHO) recommends exclusive breastfeeding for the first six months of life, with addition of complementary feeds at six months along with continued breastfeeds until at least the age of two (WHO, 2003; 2001^[15]). Complementary feeding, if not done properly, can result in diarrhoea, growth retardation, recurrent and persistent infections (WHO, 2001)^[15]. Inadequate food/nutrient intake leads to underweight infants and stunting (Kapoor, Sharma, Agarwal, 2005)^[5]. Appropriate complementary feeding depends on accurate information and skilled support from the family, community and healthcare system. Inadequate knowledge about appropriate food and feeding practices is often a greater determinant of malnutrition than the lack of food. Knowledge of mothers about these factors will be of help in planning intervention to improve feeding practices. It has been shown in many studies that mothers in India are unable to start complementary feeding at the right time (Agarwal, Verma, Faridi & Dayachand, 2008^[1]; Sethi, Kashyap & Seth, 2003)^[12]. As there is a paucity of literature on the complementary feeding practices carried out by working mothers in this region, the present study was undertaken to find out the practices and factors affecting complementary feeding among the children aged six months to two years.

Methodology

This hospital-based cross-sectional study was conducted at the Paediatric Department of Urban Health Centre in East Delhi. Inclusion criteria for the study were the mothers in the age group of 18 to 35 years and those with children between six months to two years attending paediatric outpatient departments of the above-mentioned health centres for growth monitoring, immunisation and minor illnesses such as upper respiratory tract infections. Infants with severe illness requiring hospitalization, low birth weight and preterm babies and all the children with a known reason for failure to thrive were excluded. The age group of infants and young children were selected based on the WHO recommendation on complementary feeding (WHO, 2001)^[15]. The subjects were selected for the study by the order of arrival to the outpatient department during the study period.

Data was collected using a semi-structured questionnaire administered to the mothers after getting written informed consent. The questionnaire elicited information about the demographic profile, breastfeeding, initiation and adequacy of complementary feeding. The questionnaire was pretested and was revised to enhance its clarity and comprehension. The quantity of food was assessed by showing a standard 150 ml katori to get the near exact dietary details of the child (Agarwal, Verma, Faridi & Dayachand, 2008)^[1]. Three operational definitions (according to WHO) were considered

while conducting the study.

Complementary feeding

Complementary feeding is defined as the process starting when breast milk alone is no longer sufficient to meet the nutritional requirements of infants, and therefore other foods and liquids are needed along with breast milk.

Recommended time of initiation of complementary feed

Introduction of complementary food at six months of age (180 days) while continuing to breastfeed.

Amount of complementary food needed

Starting at six months of age with small amounts of food and increasing the quantity as the child gets older, while maintaining frequent breastfeeding. The energy needed from complementary foods for infants of developing countries are approximately 200 kcal per day at 6-8 months of age, 300 kcal per day at 9-11 months of age, and 550 kcal per day at 12-24 months of age.

Recommended meal frequency

The appropriate number of meals of complementary foods should be provided 2-3 times per day at 6-8 months of age and 3-4 times per day at 9-11 and 12-24 months of age.

Time of initiation of complementary feed by the mother was compared with the recommended time of six months to decide if the feed in the child was early, at recommended times or delayed. Adequacy of the feed was interpreted based on the amount of complementary feed the child received and the meal frequency. The data was analyzed using simple classification (percentage, mean and standard deviation) and chi-square to find out the association of various demographic factors with initiation and adequacy of complementary feeding. *P* Value < 0.05 was taken as statistically significant.

Results

350 mothers attending paediatric department of the urban health centre were approached. Out of these, 300 mothers consented for voluntary participation in the study. The response rate of the participants was 94%. Some of the reasons provided by the mothers for not participating in the study were lack of time, not interested in revealing details to the interviewer and objections by the family members to participate in the study of the 300, 86 percent mothers were in the age group of 18 to 30 years. Most mothers (95%) were literate and had completed at-least primary schooling up to post-graduation. More than half of them 181 (60.34%) belonged to nuclear families.

More than half of them (62%) were having children belonging to 6-12 months' age group. Gender of the children was equally distributed; 158 (53%) were boys and 142 (47%) were girls. Most mothers (88%) had taken up full-time job to support the family. Table 1 shows the demographic profile of the study population.

Table 1: Socio-demographic profile of the working mothers (N-300)

Variables	N (%)
Age of mother 18-35 (Years)	
18-25	97 (32.5)
26-30	161 (53.5)
31-35	42 (14)
Education qualification	
Primary	24 (8)
Intermediate	48 (16)

Undergraduate	119 (39.67)
Postgraduate	95 (31.67)
Illiterate	14 (4.66)
Gender of the child	
Male	158 (52.67)
Female	142 (47.33)
Age of child (in months)	
6-9	90 (30)
9-12	96 (32)
12-18	67 (22.34)
18-24	47 (15.66)
Family set up	
Nuclear	181 (60.34)
Joint	119 (39.66)
Employment status	
Part Time	36 (12)
Full time	264 (88)
Monthly Family Income	
Less than Rs. 5,000	0 (0)
Rs 5,000-10,000	59 (19.67)
Rs 10,001-30,000	160 (53.33)
Rs 30,001 - 60,000	65 (21.67)
Rs 60,001 - 1,00,000	16 (5.33)
Greater than Rs. 1,00,000	0 (0)

In the study population, 271(90%) mothers had started complementary feeding whereas 45 (15%) mothers were breastfeeding their children at the time of interview. Around 108 (36%) mothers provided complementary feeding before 5 months of child's age. Nearly half of mothers started complementary feeding between 5 to 6 months of their child's age. The most common reason given for the early introduction of complementary feed were advice from mother-in-law, child's frequent crying and concerns related to child's growth.

Some mothers commonly believed that early complementary feeding improved child's health. 90% mothers reported to be giving weaning food to their children. Nearly 183 mothers (61%) had fed their children 3-4 times in a day. 241 (80%) mothers had initiated weaning with home-made food and around 178 (59%) of mothers also used ready-made feeds for their children. Ragi, wheat and rice were the most common home-made complementary foods used. Table 2 shows the details of weaning practices.

Table 2: Weaning practices reported by respondents

Whether Weaning Food / Complementary food given	N (%)
Yes	271(90.33)
No	29 (9.67)
Age at the commencement of complementary feeds	
2-3 Months	16(5.34)
4-5 Months	92(30.66)
5-6 Months	147(49.00)
NYI (Not Yet Introduced)	45(15.00)
Frequency of giving complementary feeds (Per day)	
1-2 Times	37(12.34)
3-4 Times	183(61.00)
5-6 Times	35(11.66)
NYI (Not Yet Introduced)	45(15.00)
Giving Home-made weaning food (N=300)	
Yes	241(80.34)
No	59(19.66)
Giving Readymade weaning food (N=300)	
Yes	178(59.34)
No	122(40.66)

Most mothers 286 (95%) reported that their husbands were supportive, but more than one fourth (30%) of them reported unfavourable relationship among family members. When mothers were away from home for work, family members (36%) and husband (25%) took care of their children. More

than quarter (31%) mothers left children with maids while 7% had kept their children at day-care centres. Surprisingly, family environment of subjects belonging to nuclear (65%) and joint families (68%) was reported unsatisfactory.

Table 3: Family environments as reported by the respondents (N=300)

Supportive Husband	N (%)
Yes	286 (95.33)
No	14 (4.67)
Relationship between family members	
Very Favourable	156(52.00)
Favourable	54(18.00)
Not Favourable	90(30.00)
When mother away for work, who takes care of the baby	
Family members	109 (36.34)
Spouse	76(25.34)
Caretaker/Maid	94(31.34)
Crèches/Day cares centres	21(7.00)
Family not Supportive of take care of female child	
Yes	68(22.66)
No	232(77.34)
Arguments among parents about child care	
Yes	201(67.00)
No	99(33.00)
Working mothers' family environment: Nuclear family (N=181)	
Good	63(34.81)
Not-good	118(65.19)
Working mothers family environment: Joint family (N=119)	
Good	38(31.93)
Not-good	81(68.07)

Relationships between Socio demographic variables and initiation of weaning practices

Only 6.7% of the mothers with infants between 6-9 months of age commenced weaning at appropriate time. Half of mothers (53%) started weaning practices late. Univariate analysis using chi-square was computed to understand relationships between socio demographic variables (mothers' age, child's

age, mothers' education, employment type, and economic status) and initiation weaning practices. The result indicates significant relationship between mothers' age and initiation of weaning practices ($p = 0.018$). Other variables were not associated significantly with initiation of weaning practices. Table 4 provides chi-square results.

Table 4: Relationships between Socio demographic variables and initiation of weaning practices

Variables	Initiation of weaning practices			X ² (chi-square)	P Value
	Early (%)	Appropriate Time (%)	Late (%)		
Mothers' age (in years)					
≤25	78(60.9)	13(50)	64(43.8)	8.0178	0.018*
> 25	50(39.1)	13(50)	82(56.2)		
Child's age (months)					
6-9	21(15.8)	02(6.7)	18(13)	5.5188	0.47
9-12	28(21)	07(23.3)	20(14.6)		
12-18	24(18)	08(26.7)	26(19)		
18-24	60(45.2)	13(43.3)	73(53.4)		
Mothers' Education					
Undergraduate- Postgraduate	59(67.8)	24(72.7)	131(72.8)	1.1493	0.886
Primary – Intermediate	24(27.6)	08(24.2)	40(22.2)		
Illiterate	04(4.6)	01(3.1)	09(5)		
Employment status					
Permanent	18(25.7)	02(10)	48(22.9)	2.2057	0.3319
Contractual	52(74.3)	18(90)	162(77.1)		
Economic status					
Income Group A < Rs. 30,000	55(66.3)	10(71.4)	147(72.4)	1.077	0.5836
Income Group B ≥ Rs. 30,000	28(33.7)	04(28.6)	56(27.6)		

* $p < 0.05$, Where Income Group A means < Rs. 30,000 and Income Group B means ≥ Rs. 30,000

While applying chi-square to know relationships between family size, family members, caretaker of children while mother is away and economic status, family size emerged as

significant ($X^2 = 6.851, p = 0.008$) variable affecting family environment. Table 5 presents the data.

Table 5: Relationships between some variables and family environment

Variables	Family Environment		X ² (chi-square)	P Value
	Yes (%)	No (%)		
Family Size				
Nuclear	107(67.3)	74(52.5)	6.851	.008*
Joint	52(32.7)	67(47.5)		

Relationship between family members				
Supportive	168(67.7)	32(61.5)	0.7461	0.38
Helpful	80(32.3)	20(38.5)		
When mother away for work who takes care of the baby				
Family members / Care Taker (203)	180(66.4)	23(79.3)	2.3318	0.311
Spouse (76)	72(26.6)	04(13.8)		
Maid/Creches/Day care (21)	19(7)	02(6.9)		
Supportive Husband				
Help in infant care	70(42.7)	67(49.3)		
Economic status				
Income Group A (212)	154(71.3)	58(69)	0.1472	0.7012
Income Group B (88)	62(28.7)	26(31)		

*p < 0.05

The study found that maternal age was associated significantly with timely introduction of complementary feeds (OR = 0.026; 95% C.I = 1.128-3.874; p = 0.026). Parity also

found to be significantly associated with initiation of weaning practices (OR = 0.243; 95% CI = 0.068-0.892; P = 0.038). Table 6 presents the data.

Table 6: Determinants socio-demographic variables and Initiation of weaning practices

Variables	Initiation of weaning practices			B	P Value	OR	95% C.I
	Early (%)	Appropriate Time (%)	Late (%)				
Mothers' age (in years)							
≤ 25	78	13	64	0.784	0.026*	2.104	1.128-3.874
> 25	50	13	82				
Mothers' Education							
Undergraduate- Postgraduate	59	24	131	-0.042	0.738	0.892	0.326-3.079
Primary – Intermediate	24	08	40				
Illiterate	04	01	09				
Parity							
Home-made	11	03	23	-1.324	0.038*	0.243	0.068-0.892
Readymade	105	17	94				
Employment status							
Permanent	18	02	48	-1.239	0.041	0.229	0.084-0.869
Contractual	52	18	162				
Economic status							
Income Group A	55	10	147	0.186	0.456	1.116	0.539-2.146
Income Group B	28	04	46				

Family size and relationship between families was found to be the main determinants of timely introduction of complementary feeding. It was found that mothers who were in a joint family setting were more likely to practice timely

introduction of complementary feeding (OR = 0.862; 95%CI = 0.872-0.896; P = 0.03). Table 7 presents findings of statistical analysis.

Table 7: Determinants of family environment

Variables	Family Environment		P Value	OR	95%	C.I
	Yes (%)	No (%)				
Family Size						
Nuclear	107	74	0.036*	0.862	0.872-0.896	
Joint	52	67				
Relationship between family members						
Supportive	52	67	0.036*	0.862	0.872-0.896	
Helpful	107	74				
When mother away for work, who take care of the baby						
Family members/ Care Taker (203)	180	23				
Husband (76)	72	04	0.163	0.853	0.856-1.025	
Creches/Maid (21)	19	02				
Working Time						
Full Time (264)	128	136	0.143	0.805	0.802-10186	
Part Time(36)	29	07				
Economic status						
Income Group A (212)	154	58	0.179	0.932	0.863-1.361	
Income Group B (88)	62	26				

Discussion

Evidence has shown that complementary foods, if offered before 6 months of age tend to displace breast milk and at the same time do not confer any growth advantage over exclusive

breastfeeding (Dewey, 2001; Okafoagu, Oche, Raji, Onankpa, & Raji, 2017) [7]. In this study, more than half of the mothers practiced timely introduction of complementary foods to their children. This observation is in consonance with the two

studies in review of literature stating 66% and 61.29% respectively. In the present study, 49% of mothers had started complementary feeding at the recommended time i.e., at six months. In an interventional study of 35 parents in East Delhi, 16.5% of mothers had started complementary feeding at the recommended time, which is less when compared to the present study (Sethi, Kashyap & Seth, 2008). A prospective interview study of 200 parents showed that only 17.5% of mothers had started complementary feeding at the recommended time (Agarwal, Verma, Faridi & Dayachand, 2008) [1].

High rates of initiation of complementary feeds at the recommended time of six months in the present study could be related to high female literacy rates and high institutional deliveries in the study population. Higher literate mothers were starting the complementary feeds at the recommended time compared to illiterate mothers. However, the association of the practice of a giving adequate quantity of complementary feed is not clear. A prospective interview study of 200 parents from Delhi also showed that knowledge about the correct timing of complementary feeding significantly correlated to maternal education and father's education but knowledge about quantity of complementary feeds was not affected by the educational status of parents (Agarwal, Verma, Faridi & Dayachand, 2008) [1].

In this study, early weaning at less than 6 months was noted to be low (35%) while normal weaning (at 6 months) was also noted to be even far lower than expected (49%). Weaning practices depended on family size and relationship between families were associated with the initiation of weaning practices. The association of initiation of weaning practices was statistically significant with the age of mothers and parity. In the present study, 35% of children were weaned prematurely. Premature weaning is also reported in other studies (Aggarwal, Verma, Faridi & Dayachand, 2008 [1]; Caetana, Ortiz, DaSilva, D'Souza & Sarni, 2010 [4]; Tarrant, Younger, Dheridan, White & Kearney, 2010) [13]. A study from Delhi (Aggarwal, Verma, Faridi, & Dayachand, 2008) [1] reported very early weaning in merely 5.5% children. This is much lesser than the data (36%) as reported in the present study. Here, even though the majority had initiated complementary feeding at the recommended time, 11% of mothers were giving an adequate quantity of complementary feeds which is reasonably comparable to the study from Allahabad (Kumar, Goel, Mittal & Misra, 2006) [6], where 38.7% of children received proper complementary feeding. This necessitates the need to impart proper information/awareness on the appropriate time, quality and quantity of complementary feeds recommended by the child according to the age.

Conclusion

The complementary feeding and weaning practices were suboptimal in reference to recommendations of the World Health Organization. In the present study, timely introduction of complementary feeding was 49%; therefore, the benefits of timely introduction of complementary feeds should be continually reiterated for women attending ante-natal care with follow-up in the post-natal period through counselling. Only 6.7% commenced weaning at 6 months; continuous health education on appropriate weaning practice should be carried out at every contact point with mothers of infants.

It was also evident from this study that complementary and weaning practices were influenced by mothers' age, family size and relationship between family members. It is therefore

important to develop interventions aimed at bridging the gap between these practices in urban settings as per WHO recommendations. Counselling mothers about weaning practices during antenatal check-ups and postnatal visits might improve feeding practices.

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