



## DETERMINANTS OF COMPLEMENTARY FEEDING PRACTICES: A COMMUNITY BASED STUDY

**Dr. Sunidhi Karol\***

Junior Resident, Department Of Community Medicine, PGIMS, Rohtak \*Corresponding Author

**Dr. Pardeep Khanna**

Senior Professor & Head, Department Of Community Medicine, PGIMS, Rohtak

**Dr. Mohit Karol**

Senior Resident, Department of Pediatrics, IGMC, Shimla

### ABSTRACT

**Background:** The transition from exclusive breast-feeding to the family pot is the most critical period in an infant's life. Inappropriate choice of complementary foods or the timing of their introduction may affect the child's health and development.

**Material and Methods:** a community based study was conducted in Community Development Block, Beri, District Jhajjar, Haryana. In the present study 400 mothers of children aged 6-23 months were selected with multistage random sampling method and interviewed using structured questionnaire for Infant and Young Child Feeding (IYCF) indicators (minimum dietary diversity (MDD), minimum meal frequency (MMF), and minimum acceptable diet (MAD). Data were analyzed with using SPSS-20.0, Chi-square, bivariate and multivariate logistic regression tests.

**Results:** Findings showed that age appropriate complementary feeding, MDD, MMF and MAD were adequate in 50.7%, 47.3%, 61.7% and 40.8%, respectively. MDD and MAD was significantly associated with mothers literacy and socioeconomic status ( $P < 0.001$ ); MMF was significantly associated with education status of mother, socioeconomic status and age of the child ( $P < 0.001$ ).

**Conclusion:** majority of mothers practiced inadequate complementary feeding below WHO recommendations. The feeding practices were found to be significantly associated with various socio- demographic factors like mothers' education status and socioeconomic status.

**KEYWORDS :** Complementary feeding, Minimum dietary diversity, Minimum meal frequency, Minimum acceptable diet.

### INTRODUCTION

Complementary feeding means complementing solid/semi-solid food with breast milk after child attains the age of six months. After the age of 6 months, breast milk is no longer sufficient to meet the nutritional requirements of infants. However, infants are vulnerable during the transition, from exclusive breast milk to the introduction of complementary feeding, over and above the breast milk. For ensuring that the nutritional needs of a young child are met breastfeeding must continue along with appropriate complementary feeding. The complementary feeding should be timely, meaning that all infants should start receiving foods in addition to breast milk from 6 months onwards. It should be adequate, meaning that the complementary foods should be given in amounts, frequency and consistency and using a variety of foods to cover the nutritional needs of the growing child while maintaining breastfeeding. Foods should be prepared and given in a safe manner, meaning that measures are taken to minimize the risk of contamination with pathogens. And they should be given in a way that is appropriate, meaning that foods are of appropriate texture for the age of the child and applying responsive feeding following the principles of psycho-social care.<sup>1</sup> Exclusive breastfeeding prevents 13% of estimated under-five mortality and complementary feeding prevents another 6% of same.

### MATERIAL AND METHODS

A community based cross-sectional study was conducted in Community Development Block, Beri, district Jhajjar, Haryana over the period of year from April 2016 to March 2017 by house to house visit. Mothers having children aged 6-23 months were included in the study. Mothers who did not consented, mentally unsound, migrants residing for less than one year in study area during the data collection period were excluded from the study. Sample size was calculated, considering prevalence of timely complementary feeding to be 50%, using formula  $4PQ/L^2$  taking precision to be 5% and level of confidence to be 95%. Thus, total 400 mothers were studied using random sampling technique. A predesigned, pretested semi-structured schedule mainly based on the standard IYCF indicators given by WHO was used for data collection. The pre-test was done in similar settings but not included in the main study of 5% of the sample size. As per WHO recommendations,

information was collected about the child's diet in the previous 24 hours by Recall Method. For carrying out this study, optimal feeding practices were assessed based on the compliance to WHO recommended practice for each indicator and other variables like parity, mode of delivery, place of delivery, literacy, religion, working status, income, and family support were included. Data was analyzed by using Statistical Package for Social Sciences (SPSS) version 20.0

### Operational definitions<sup>2</sup>

**1. Introduction of Solid, Semi-solid or Soft foods:** Proportion of infants 6–23 months of age who received timely solid, semi-solid or soft foods.

**2. Minimum Dietary Diversity:** Proportion of children 6–23 months of age who receive foods from 4 or more food groups.

**3. Minimum Meal Frequency:** Proportion of breastfed and non-breastfed children 6–23 months of age, who receive solid, semi-solid, or soft foods (but also including milk feeds for non-breastfed children) the minimum number of times or more.

**4. Consumption of Iron Rich Food:** Proportion of children 6-23 months of age who received iron rich foods.

### RESULTS

The age of mothers ranged from 18 years to 40 years with mean age of  $24.97 \pm 3.41$  years. 98.6% study subjects were Hindus by religion. (Table 1). The mean age for registration of pregnancy was  $2.74 \pm 1.04$  months among study participants, means most of study subjects (86.3%) got themselves registered with in first trimester. Other MCH services availed by study subjects shown in table 1. In 6-12 months slab there were 41.5% infants in which 21.75% were males and 19.75% were females. The majority of infants (93.8%) were born at term gestational age ( $\geq 37$  weeks), 68(17%) of them were of low birth weight weighing less than 2.5 kg, in which 37(9.25%) males and 31(7.75%) females.

### Complementary feeding & associated factors

50.7% mothers started complementary feeding at the

recommended age while 49.3% had delayed complementary feeding with little variation observed among male (26%) and female (25%) children. Mother's educational status was observed to be a significant factor affecting timely introduction of complementary foods. Minimum Meal Frequency was observed to be 61.7% and 48.3% among breastfed and non-breastfed children. Maternal education and age of the child were observed to be significant independent variables affecting MMF among breastfed children while none of the factors was found to be associated with non-breastfed children. Minimum diet diversity was found to be adequate among 47.3% children i.e. who received recommended Minimum Diet Diversity which includes seven food groups recommended by WHO. Mother's educational level and socio-economic status were observed to be major factors influencing MDD. When both, the minimum diversity and the minimum meal frequency are fulfilled, the child is considered to have met the recommended Minimum Acceptable Diet. The practice of MAD in our study area was observed to be adequate among 40.8% with no variation in both sexes. (Table 2,3)

**DISCUSSION**

Timely introduction of complementary foods in the present study area found to be comparable with DLHS-4. Similar observations have been reported from studies done by Gautam et al, Jain et al.<sup>3,4</sup> Less educated mothers were found to have 48% lesser odds for timely introduction of complementary foods than their educated counterparts in current study. Other studies have also suggested significant association of maternal literacy and timely initiation of complementary feeding; Faridi et al & S. Rao.<sup>5,6</sup> Educated mothers have a better understanding of nutrition education than less educated mothers or without formal education. Maternal education and age of the child were observed to be significant independent variables affecting MMF among breastfed children while none of the factors was found to be associated with non-breastfed children. This practice was higher when compared to studies done Khan et al<sup>7</sup>, Padmanabhan et al<sup>8</sup>. But lower when compared with studies done by Kaushiket al showed it as 67.3% and 81.3% among breast fed and non-breastfed children respectively.<sup>4</sup> The children born to mothers who had a secondary level education were found to have 1.15 times higher odds [aOR 1.15; 95 % CI (0.184-7.169)] of feeding diversified foods. The similar positive impact of education on diverse feeding practices is also reported in previous studies in Nepal<sup>9</sup> Ethiopia.<sup>10</sup> This could be due to the fact that the educated mothers are more likely to have proper information (media exposure) and understand the educational messages given by the community health workers. Similarly, babies born in high (upper) socio-economic class were observed to have 2.7 times higher odds [aOR= 2.702, CI= 1.241- 5.883, p= 0.01] to be fed with minimum diverse diet than those who belonged to the lower socio-economic class. The 2011 Ethiopian DHS<sup>11</sup> also reported that children from a family of the highest wealth quintile were more likely to be fed on four or more food groups. This could be attributed to the fact that children from a family of higher monthly income might feed on diversified foods as their families could be more likely to afford diversified foods as compared to children from a low household income. Iron rich foods in the form of green leafy vegetables were consumed by 38.47% of children. So, in the present study, the reason for deficient MDD could be attributed to lack of awareness about nutritional requirements for infants and young children, affordability to a food product. MAD was higher than the national & the state figures in the recent data from NFHS-4.<sup>12,13</sup> Our study finding is higher when compared with studies done by Jain et al

**TABLE 3 Complementary Feeding and associated factors**

IYCF PRACTICES	VARIABLES	aOR[95%CI]	P value	
Timely Complementary Feeding	Mother's education	Illiterate	0.842[0.485-1.462]	0.541
		Read & Write	0.480[0.244-0.947]	0.03
		Primary	0.215[0.023-1.987]	0.175
		Middle	0.711[0.367-1.379]	0.313
		Secondary	1.451[0.813-2.592]	0.209
		Graduate & above	Reference	

<sup>14</sup>Khan et al<sup>15</sup>. On the other hand, Khanna et al, reported a higher prevalence of MAD (65.95%) than the present study<sup>8</sup>. Mother's educational status and socio-economic status were found to be significantly associated with providing adequate diet (MAD). Less educated mothers had two times lesser odds [aOR= 0.711, CI= 0.367 -1.379, p= 0.03] to provide adequate diet than their educated counterparts. Similarly, mothers who had education up to primary level had 46.1% (aOR= 0.461, CI= 0.257-0.827, p=0.00) lesser odds than their educated counterparts. This finding is supported by studies done by Shrestha et al and Karman et al<sup>16,17</sup> but in Cs et al, mother's education was negatively associated with minimum acceptable diet.<sup>18</sup> babies born in high socio-economic class were observed to have 2.5 times higher odds [aOR= 2.546, CI= 1.018-6.366, p= 0.04] to receive adequate diet than lower class which is consistent with the study done by Saaka et al<sup>19</sup>

**CONCLUSION**

The study concluded that compliance to Complementary Feeding practices has shown slight improvement in feeding practices since the last NFHS survey in 2015-2016 but still well below the WHO recommended guidelines for Infant and Young Child Feeding. Mother's educational status, mode of delivery, place of delivery and socio-economic status were significant factors associated with IYCF practices. Therefore, these factors need to be addressed to ensure optimal feeding practices among study population.

**TABLE 1**

SOCIODEMOGRAPHIC CHARACTERISTICS		
Prenatal visits	<4	96(24)
	>4	302(76)
Type of delivery	Institutional	386(96.5)
	Home	14(3.5)
Mode of delivery	Normal	342(85.5)
	Caesarean	58(14.5)
Age	≤25 years	194 (48.5)
	>25 years	206(51.5)
Literacy	Illiterate	58(14.5)
	Primary	139(34.7)
	Secondary	97(24.3)
	Graduation and above	106(26.5)
Family type	Nuclear	136(34)
	Joint	264(66)
Employment status	Employed	22(94.5)
	Unemployed	378(5.5)
Socioeconomic status	I. Upper	68(17)
	II. Upper middle	92(23)
	III. Middle	104(26)
	IV. Lower middle	89(22.2)
	V. Lower	47(11.8)

**TABLE 2**

IYCF practices	YES	NO
Timely Complementary Feeding	<b>203(50.7)</b>	<b>197(49.3)</b>
Minimum Meal Frequency breastfed (6-23 months)	<b>192(61.7)</b>	<b>119(38.3)</b>
Minimum Meal Frequency non breastfed (6-23 months)	<b>43(48.3)</b>	<b>46(51.7)</b>
Minimum Diet Diversity	<b>189(47.3)</b>	<b>211(52.7)</b>
Minimum Acceptable Diet	<b>163(40.8)</b>	<b>237(59.2)</b>
Consumption of iron rich foods	<b>155(38.4)</b>	<b>245(61.1)</b>

Minimum Meal Frequency (MMF) for Breastfed Children	Mother's education	Illiterate	Reference	
		Read & Write	0.544[0.255-1.162]	0.116
		Primary	0.187[0.016-2.178]	0.181
		Middle	0.338[0.150-0.759]	0.009
		Secondary	0.635[0.316-1.275]	0.201
	Graduate & above	0.550[0.278-1.089]	0.806	
	Age of child (months)	6-11	Reference	
12-17		3.203[1.665-6.612]	0.00	
18-23		3.229[1.584-6.581]	0.01	
Minimum Diet Diversity	Socio-economic Status	Upper	2.702[ 1.241-5.883]	0.012
		Upper middle	2.540[ 1.241-5.312]	0.013
		Middle	2.489[ 1.206-5.136]	0.014
		Lower middle	1.085[ 0.510-2.307]	0.833
		Lower	Reference	
Minimum Acceptable Diet	Socio-economic Status	Upper	2.546[1.018-6.366]	0.04
		Upper middle	2.345[1.006-5.468]	0.04
		Middle	1.347[1.503-7.453]	0.03
		Lower middle	1.220[0.529-2.816]	0.641
		Lower	Reference	

## REFERENCES

- Guidelines for enhancing optimal Infant and Young child feeding practices. New Delhi: Ministry of Health and Family Welfare (Government of India);2013. 76 p.
- Indicators for assessing infant and young child feeding practices. Geneva: World Health Organization (WHO);2010. 59 p
- Demilew YM, Tafere TM, Abitew DB. Infant and young child feeding practice among mothers with 0–24 months old children in Slum areas of Bahir Dar City, Ethiopia. *International Breastfeeding Journal*. 2017; 12(26): 1-9.
- Kaushik M, Nandi C, Banerjee S. A Study on Infant and Young Child Feeding Practice among the Slum Dwellers of Bardhaman Municipal Area, West Bengal. *IOSR Journal of Dental and Medical Sciences*. 2017 Aug;16(8): 19-22.
- Padmanabhan PS, Mukherjee K. Infant and Young Child Feeding (IYCF): A Gap Analysis between Policy and Practice. *Indian Journal of Nutrition*. 2017 Jun 14;4(3): 165-7.
- Vitta BS, Benjamin M, Pries AM, Champeny M, Zehner E, Huffman SL. Infant and young child feeding practices among children under 2 years of age and maternal exposure to infant and young child feeding messages and promotions in Dar es Salaam, Tanzania. *Matern Child Nutr*. 2016 Apr 15; 12(2): 77–90.
- Khor GL, Tan SY, Tan KL, Chan PS, Amara V. MS. Compliance with WHO IYCF Indicators and Dietary Intake Adequacy in a Sample of Malaysian Infants Aged 6–23 Months. *Nutrients*. 2016 Dec 1; 8(12): 778-89.
- Gupta A, Khanna K. Strengthening Infant and Young Child Feeding in India. New Delhi: Breastfeeding Promotion Network of India (BPNI);2007. 97 p.
- Gautam KP, Adhikari M, Khatri RB, Devkota MD. Determinants of infant and young child feeding practices in Rupandehi, Nepal. *Biomed central*;2016 Mar 02; 9: 135-42.
- Shukla M, Tyagi S, Agarwal M. Infant and young child feeding practices of mothers attending immunisation clinic at a tertiary care hospital of Lucknow. *IAIM*, 2016 Jan; 3(1): 58-66.
- Mesele M, Aemro M, Atenafu A, Birhanu Z. Dietary diversity and meal frequency practices among infant and young children aged 6–23 months in Ethiopia: a secondary analysis of Ethiopian Demographic and Health Survey 2011. *J Nutr Metab*. 2013; 782-931 p.
- India Fact Sheet. National Family Health Survey-4: Mumbai: IIPS; 2015-16. 8p.
- Haryana Fact Sheet. National Family Health Survey-4: Mumbai: International Institute for Population Sciences; 2016. 6p.
- Jain S, Borle A, Agrawal SS, Mishra MK, Gupta SK, Bathma V. Assessment of Infant and Young Child Feeding Practices Among Mothers in Rural Madhya Pradesh. *National Journal of Community Medicine*. 2014 Dec 31; 5(4): 419-23.
- Khan AM, Kayina P, Agrawal P, Gupta A, Kannan AT. A study in infant and young child feeding practices among mother attending urban health centre in east Delhi. *Indian Journal of Public Health*. 2012 Jan 24; 56(4): 301-4.
- Sapkota S, Shrestha S. Complimentary feeding practices among the care takers of the young children at Kathmandu. *J Chitwan Med Coll*. 2014; 3(6): 25–9.
- Ng CS, Dibley MJ, Agho KE. Complementary feeding indicators and determinants of poor feeding practices in Indonesia: a secondary analysis of 2007 Demographic and Health Survey data. *Public health nutrition*. 2012; 15(5): 827-39.
- Saaka M, Wemakor A, Abizari AR, Aryee P. How well do WHO complementary feeding indicators relate to nutritional status of children aged 6–23 months in rural Northern Ghana. *BMC Public Health*. 2015 Nov 23; 15(1): 157-69.