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Infant and Young Child Feeding Practices in Peri-Urban Area of North Indian City

Medical Science

KEYWORDS : Breastfeeding, Infant and young child feeding, Complimentary Feeding, Peri-Urban

Abedi Ali Jafar	Assistant Professor, Dept. Of Community Medicine, JN Medical College, Aligarh Muslim University, Aligarh
Mehnaz Saira	Associate Professor, Dept. Of Community Medicine, JN Medical College, Aligarh Muslim University, Aligarh
Safvi Sadia Rehman	Senior Resident, Dept. Of Community Medicine, JN Medical College, Aligarh Muslim University, Aligarh
Ansari Mohammed Athar	Professor, Dept. Of Community Medicine, JN Medical College, Aligarh Muslim University, Aligarh
Khan Zulfia	Professor, Dept. Of Community Medicine, JN Medical College, Aligarh Muslim University, Aligarh

ABSTRACT

Background: *Infant and young child feeding practices directly affect the nutritional status of children under two years of age and, ultimately, impact child survival.*

Objective of this study was to assess the WHO infant and child feeding indicators and its determinants in a periurban area of Aligarh, Uttar Pradesh, India. Methods: A community based cross sectional study was conducted, the data was obtained from mothers of 310 living children 0-23 months of age group and information on WHO infant and young child feeding indicators was collected using WHO questionnaire. Rates (%) and Odds Ratio (OR) with 95% CI were calculated wherever required.

Results: *Only 42.1% of infants younger than 6 months were exclusively breastfed. Breastfeeding was continued till 2 year of age in 40.0% of the children. Introduction of solid, semi-solid and soft foods at complete 6 months of age was followed in 43.1% of the children. Minimum meal frequency was present in 87.4% of the study subjects, 70.6% were found to have minimum dietary diversity. Minimum meal frequency was practiced in 67.0% of the study subjects while only 23.7% were being given iron rich or fortified diets. Education of parents and SLI had positive association with breast feeding practices (OR: 3) while there was no association with complimentary feeding.*

Conclusion: *The gaps with regards to information on infant and young child feeding practices in different age groups are to be filled and further study should be planned to know factors that motivate current practices or act as constraints to improving practices.*

INTRODUCTION:

Early initiation of breastfeeding, exclusive breastfeeding (EBF) for the first six months of life followed by continued breastfeeding for up to two years and beyond with adequate complementary foods (CF) after completion of 6 months of age is the most appropriate feeding strategy for infants and young children.[1] Of all proven preventive health and nutrition interventions, IYCF has the single greatest potential impact on child survival. The Lancet Child Survival Series analyzed the top 15 preventative child survival interventions for their effectiveness in preventing under-five mortality. EBF up to six months of age and breastfeeding (BF) up to 12 months was ranked number one, with CF starting at six months number three. These two interventions alone were estimated to prevent almost one-fifth of under-five mortality in developing countries.[2] Thus IYCF practices directly affect the nutritional status of children under two years of age and, ultimately, impact child survival. Improving infant and young child feeding practices in children 0–23 months of age is therefore critical to improved nutrition, health and development of children.

Although breastfeeding is almost universal in India, these breastfeeding rates are far from desirable. According to National Family Health Survey-3 data, about 20 million children are not able to receive EBF for the first six months of life and about 13 million do not get good, timely and appropriate complementary feeding after six months along with continued breast feeding.[3]

Indicators that can be used in population-based surveys to measure IYCF practices have focused mostly on breastfeeding practices. Recently a set of simple, valid and reliable indicators to assess infant and young child feeding practices which focus on selected food-related aspects of child feeding, amenable to population-level measurement have also been formulated.[4] However, very few studies have been conducted using WHO-IYCF indicators. The present study was undertaken to assess the IYCF practices of mothers having children 0-23 months and also the influence of some socio-demographic variables on their practices.

METHODS:

A cross-sectional community based field study was conducted from July to November 2014, in peri-urban area of District Aligarh, Uttar Pradesh, India.

Aligarh is a typically growing city with large peri-urban population, mix of early and late migrants predominantly of low and middle income groups.

The respondents were mothers of children 0-23 months. 310 children were included in the study ,assuming exclusive breastfeeding to be 50% at a precision of 7.5 % , confidence interval of 99% and non response of 10% .

A simple random sampling was used as the complete, up-to-date record on every household was available. A household wise complete list of eligible sampling unit i.e. children 0-23 months of age, was prepared separately for all villages and mohallas. Serial numbers were allotted by sequence to household in each of the list. Starting from randomly selected household, desired number of household was selected with the help of random number table. In case of non availability of the child in selected household due

to any reason, next nearest household having eligible child was selected for the survey.

House to house survey was done for the collection of necessary information. Prior to the administration of predesigned pretested oral questionnaire, each respondent was explained the purpose of the study and verbal informed consent was obtained. The confidentiality of the information was assured. Interview was started with general discussion to gain confidence and it slowly extended to specific points. During interview, we used questionnaire with direct questions. Questions included information on demographic and socio-economic variables of the mothers and on local maternal and infant service health assistance, in addition to children's feeding practices. The case definitions were applied, consistent with WHO definitions [4]

Descriptive statistics were used to summarize the data. The Odds ratio (OR) and their 95% confidence intervals (CI) were used to assess the strength of association between several factors and the selected feeding practices. All of the predictor variables with p value of < 0.05 in the bivariate analysis were included in the regression model. Logistic regression was performed to get independent predictors for exclusive breastfeeding. A p-value of < 0.05 was taken as significant.

RESULTS:

A total of 310 children were studied. The age of the study subjects ranged from 0 to 23 months whereby the majority of the participants (30.6%) belonged to the age group 0-5 months and 18-23 months of age. Most of them were females (51.6%). Educational status of parents was poor in the study subjects. 51.0% of the mothers as compared to 33.5% of the fathers were illiterate. Most of the study subjects (40.3%) belonged to the families having a medium standard of living index. These results are shown in table 1.

Feeding Practices:

Breast Feeding Practices: The feeding practices as described in Table 2 shows that almost 94.2% of the subjects were ever breastfed by their mothers. 53.9 % were immediately put to breast; almost equally 42.9% of the total children were offered pre-lacteals. The most common pre-lacteal being water (76.1 %). The mean duration of breastfeeding was 8.68 months in the study subjects. Age appropriate breastfeeding was found in 73.2% of the study subjects, predominant breastfeeding under 6 months was done in 57.9% of the subjects while 37.4% received bottle feeds.

Only 42.1% were given exclusive breastfeeding for 6 months. Breastfeeding was continued till 1 year of age in 93.8% of the children and 40.0 % continued till two years.

Complementary feeding practices: Introduction of solid, semi-solid and soft foods at complete 6 months of age was followed in 43.1% of the children. Minimum meal frequency was present in 87.4% of the study subjects, 70.6% were found to have minimum dietary diversity. Minimum meal frequency was practiced in 67.0% of the study subjects while only 23.7% were being given iron rich or fortified diets.

The current study also described the patterns of infant and young child feeding practices in the study area according to the age of the study subjects. The results showed that 45.0% of children in the age group of 0-1 month had been breastfed. The stacked bar chart in figure-3 shows that study subjects receiving exclusive breastfeeding increased gradually from birth till 6 months of age and some of the study subjects were even given exclusively breastfeeding till 11 months of age. The data when disaggregated by age showed that 20-38 % children under six months were non breast feed, semi-solid and solid foods were being given even to newborns, only 26% of the children were been given semi-solid foods at 6months of age.

Factors Influencing breastfeeding practices:

On applying the univariate logistic regression for predicting the factors associated with exclusive breastfeeding **(Table-3**) it was found that the odd's of exclusive breastfeeding increased as the mother's educational status increased. Mothers with minimum education upto junior high school had an odd's of 2.9(95% CI 1.25 – 7.71) and those with education till high school had an odd's of 3.1 (95% CI 1.33 – 6.57).Those mothers who had education till intermediate or above were found to have higher odd's of 6.4 (95% CI 1.93 – 21.73) for having exclusive breastfeeding. Similarly higher education of father was also found to be associated with higher odds of breastfeeding (5.88, 95% CI 1.71 -20.20). Considering the standard of living index, study subjects belonging to high standard of living index were having higher odd's of 2.8 (95% CI 1.55 – 5.30) times for breastfeeding compared to those having to low SLI. On applying Multivariate logistic regression and adjusting for the other socio-demographic factors, higher maternal and paternal educational level and high SLI were found to be significantly associated with exclusive breastfeeding. While only higher education of the father and moderate and high level of SLI were found to be the significant predictors for early initiation of breastfeeding **(Table-3)** on multivariate regression analysis**.**

Factors Influencing feeding practices:

Regression analysis showed that higher education of both the parents and high standard of living index were the significant contributors for the practice of minimum acceptable diet. Mother's education upto high school had an odd's of 1.1 and that upto intermediate was 1.0. Father's education upto high school had an odd's of 10.1 while upto intermediate was 13.0. Multivariate analysis also showed that high SLI was found to have the highest odds of 3.5 for minimum acceptable diet in the study subjects.

While for consumption of iron rich foods the none of the predictors out of parental education, sex of the child or SLI were found to be the significantly associated.

DISCUSSION:

Optimal IYCF is essential for child growth. The period during pregnancy and a child's first two years of life are considered a "critical window of opportunity" for prevention of growth faltering. The current study showed that 53.9% of the children were put to breast within half an hour of delivery after birth. Though 94.2% of the subjects were ever breastfed, exclusive breastfeeding for 6 months was given only to 42.1% of the children while only a 40% were continued on breast milk till 2 years of age, according Unicef Report (2015) 25% of Indian children there was early initiation of BF, 46.4% were exclusively breast fed and 76.8 % were continued on breast milk[5], whereas a study in Bangladesh and Sri Lanka revealed 27.5 % and 56.3% early Initiation, 99.9 % and 99.7% ever breast fed infants and 42.5 % and 60.6% of exclusive breast feeding rates.[6,7] A study conducted in rural Punjab, early initiation was 56.7%, EBF was 33% [8] whereas in urban Meerut 94.5 % were ever BF, early initiation was 15 % and 38.3% of children were EBF. [9] Thus it is seen breast feeding is a norm in the area. Whereas early initiation and exclusive breast feeding rate is a concern. Although EBF rate was constant throughout 0-6 months in

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the present study other studies have shown declining EBF rate 3 months of age.[8, 10] There was appositive association of education and SLI on EBF and was similar to other studies [9,10] except Bangladeshi study in which there was an inverse association.[6] With increased education comes awareness and confidence to continue the desired practices. The women in low socio economic status are working in unorganized sector with minimal support for breast feeding and therefore are unable to continue EBF.

Bottle feeding could be expensive and carries risks of additional illness and death, particularly where the levels of infectious disease are high and access to safe water is poor and if it is accompanied with formula feeds there might be issues of dilution. This all can lead to diarrhoe and is also a determinant of malnutrition. The bottle feeding rate of 37.4 % was comparable with other similar studies and is issue which needs attention. [8, 9]

The feeding practices after six months of age were better than the national averages and Meerut but was inferior to study in Punjab.[3,8 9] The main area of concern being low prevalence of consumption of iron rich diet (23.7%). Since the children are mostly fed milk or milk products the diet is mostly deficient in iron, moreover because of cultural practices, children are usually not offered green leafy vegetables and meat products which are good source of iron.

To assess breastfeeding practices in infants, exclusive breastfeeding under 6 months and early initiation of breastfeeding and to assess feeding practices in children 6 - 23.9 months of age-minimum acceptable diet and consumption of iron-rich or iron-fortified foods were analysed for determinants as there are evidence of their positive association with child survival and/or nutrient intakes. [4]

The stacked bar graph was used in the study against area graph as it is a more accurate method of presenting these data. A stacked bar graph is more accurate because it keeps the discreet nature of data points reported in the result table based on which the graph is generated. The area graph gives the false impression that these data points are continuous. [11]

The study conducted was in a peri-urban area and may not be a true representation of the whole area. The sample size of 310 although adequate to measure most of the indicators used in the study is a bit small to represent enough children in 6-8 and 12-15 months. The findings of the study should not be translated into caregiver messages for improving feeding practices in young children. These should be derived from the guiding principles and adapted to the local situation. While indicator definitions may not correspond exactly to adapted messages, the indicators will nevertheless reflect population-level progress towards optimal feeding practices. The indicators for assessing feeding practices in children 6–23 months of age in particular should not be considered in isolation, because of the multi-dimensional aspects of appropriate feeding at this age.

CONCLUSION:

Despite the fact that 94.6% of the study subjects were ever breastfed, there were poor rates of both early initiation and exclusive breastfeeding, emphasising the dire need to promote awareness of the correct breast feeding practices of the newborn. The advantages of breastfeeding would be lost if it is not followed by timely and adequate complementary feeding. There is delayed introduction of family foods and a lack of variety in the diet. Feeding frequency is inadequate and the amount of food fed to the child at each meal is insufficient. The gaps with regards to information on infant and young child feeding practices in different age groups are to be filled and further study should be planned to know factors that motivate current practices or act as constraints to improving practices.

Table1. Socio-demographic profile of the study population:

SOCIO-DEMOGRAPHIC CHARECTERISTICS		N (%)
AGE	0-5months	95 (30.6)
	6-11months	72 (23.2)
	12-17months	48 (15.5)
	18-23 months	95 (30.6)
SEX	Male	150(48.8)
	Female	160(51.6)
EDUCATION OF FATHER	Illiterate	104(33.5)
	Primary	73(23.5)
	Junior High School	60(19.4)
	High school	24(7.7)
	Intermediate	14(4.5)
	Above	35(11.3)
EDUCATION OF MOTHER	Illiterate	158(51.0)
	Primary	59(19.0)
	Junior High school	22(7.1)
	High school	30(9.7)
	Intermediate	14(4.5)
	Above	27(8.7)
SLI	Low	84(27.1)
	Medium	125(40.3)
	High	101(32.6)

Table: 2 Feeding practices among study subjects

Indicator	Children	Practices (Rate %)
Early initiation of breast feeding (within half an hour)(0-23months)	310	167 (53.9)
Exclusive breastfeeding for 6 months (0-5months)	95	40 (42.1)
Breastfeeding continued till 1 year (12-15 months	32	30(93.8)
Continued Breast Feeding at 2 years (20-23 months)	40	16(40.0)
Semi-solid food introduction at 6 months (6-8 months)	51	22(43.1)
Minimum dietary diversity (6-23months)	215	154 (70.6)
Minimum meal frequency (6-23months)	215	188 (87.4)
Minimal acceptable diet6-23months)	215	144(67.0)
Consumption of iron-rich or iron fortified foods (6-23months)	215	51 (23.7)
Children ever breastfed	310	292(94.2)
Age appropriate breast feeding (0-23months)	310	227(73.2)
Bottle feeding (0-23months)	310	116 (37.4)
Predominant breastfeeding under 6 months (0-5months)	95	55 (57.9)
Mean duration of breast feeding	8.68 months	
Children Offered pre-lacteals	310	133 (42.9)
Plain water given a day before	310	236 (76.1)

Offered formula feeds	310	34 (11)
Milk other than breast milk	310	157 (50.6)
Juices/ drinks containing juices	310	18 (5.8)
Yoghurt	310	08 (2.6)
Porridge	310	74 (23.9)
Clear broth	310	68 (21.9)
Other fluids	310	84(27.1)

Figure 3. Stacked bar graph depicting infant and young child feeding patterns in the study population:

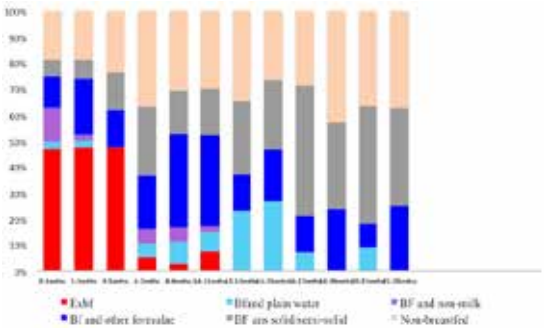

Table 3. Logistic regression analysis of predictors of exclusive breastfeeding and early initiation of breastfeeding in the subjects (0-6months):

Predictor	Category	MINIMAL ACCEPTABLE DIET		CONSUMPTION OF IRON RICH FOODS	
		Crude Odd's Ratio (95%CI)	Adjusted Odd's Ratio (95%CI)	Crude Odd's Ratio (95%CI)	Adjusted Odd's Ratio (95%CI)
Sex of the child	Male Female	(1.00) 1.29 (0.72-2.28)	(1.00) 1.24(0.66-2.24)	(1.00) 0.88(0.45-1.70)	(1.00) 1.09(0.57-2.21)
Education of the Mother	Illiterate Primary Junior School High school Intermediate and above	(1.00) 1.28(0.81 –2.89) 1.97(0.37-2.41) 1.88(1.10-1.78) 3.33(1.30–8.42)	(1.00) 0.21(0.04-1.20) 0.94 (0.10–8.26) 1.10(1.01-1.68) 1.03 (1.00-1.25)	(1.00) 1.64(0.64-4.24) 0.44(0.11-1.65) 2.36(0.63-8.76) 0.29(0.67-3.31)	(1.00) 1.11(0.34-1.97) 0.52(0.61-1.49) 1.34(0.10-3.59) 0.62(0.43-5.81)
Education of the father	Illiterate Primary Junior School High school Intermediate and above	(1.00) 0.53(0.26-1.27) 2.28(0.99-5.21) 3.52(1.25-3.57) 1.92 (1.71-5.15)	(1.00) 1.80(0.62–5.20) 2.84(0.97–8.83) 10.05(2.25–49.07) 13.03 (3.33–23.45)	(1.00) 2.34(0.94-1.75) 3.96(0.56-4.89) 1.47(0.01-1.89) 1.56(0.11-1.50)	(1.00) 0.88(0.41-1.89) 0.55 (0.11-2.72) 0.32(0.06-1.62) 0.17(0.15-1.95)
Standard of living index	Low Moderate High	(1.00) 1.16(0.57–2.33) 1.34(1.16 –1.70)	(1.00) 1.04 (0.38 -2.83) 3.47 (1.36-8.87)	(1.00) 0.76(0.54-1.90) 0.52(0.10-3.34)	(1.00) 0.97(0.02-2.73) 0.71(0.14-2.78)

Table 4. Logistic regression analysis of predictors of minimal acceptable diet and consumption of iron rich foods in the subjects (6-23months):

Predictor	**Category**	**EXCLUSIVE BREASTFEEDING**		**EARLY INITIATION OF BREASTFEEDING**	
		Crude Odd's Ratio (95%CI)	Adjusted Odd's Ratio (95%CI)	Crude Odd's Ratio (95%CI)	Adjusted Odd's Ratio (95%CI)
Sex of the child	Male Female	(1.00) 1.09 (0.69-1.74)	(1.00) 1.11(0.69-1.79)	(1.00) 0.82(0.52-1.28)	(1.00) 0.78(0.49-1.26)
Education of the Mother	Illiterate Primary Junior School High school Intermediate and above	(1.00) 1.54(0.81 – 2.89 2.96(1.25-7.71) 3.10(1.33-6.57) 6.47(1.93–21.73)	(1.00) 1.18(0.36-3.84) 1.68(0.50–6.14) 1.75(1.54-5.23) 3.60(1.85-15.22)	(1.00) 1.28(0.70-2.13) 1.41 (0.15-1.06) 1.26(1.10-1.52) 2.20(1.07-3.5)	(1.00) 0.46(0.12-1.71) 0.32(0.86-1.32) 0.54(0.12-2.21) 0.80(0.20-3.20)
Education of the father	Illiterate Primary Junior School High school Intermediate and above	(1.00) 1.15(0.60-2.19) 1.92(0.99-3.72) 1.41(0.55-3.57) 5.88(1.71-20.20)	(1.00) 1.80(0.62–5.20) 2.84(0.97–8.83) 1.47(0.45–4.72) 3.89(1.99 –15.26)	(1.00) 3.66(1.87-11.63) 4.68(1.14-9.49) 6.43(2.41-17.11) 1.05(0.29-3.81)	(1.00) 0.49(0.14-1.65) 0.48(0.15-1.55) 2.27(1.06-3.74) 1.26(1.30-5.22)
Standard of living index	Low Moderate High	(1.00) 1.05(0.57–1.93) 2.87(1.55 – 5.30)	(1.00) 1.41 (0.19 -1.89) 1.42(1.22-4.81)	(1.00) 1.60(0.34-1.06) 1.17(1.09-1.32)	(1.00) 1.44(1.10-1.54) 1.37(1.19-1.73)

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