Original Research Article

Infant and young child feeding practices among mothers attending an Urban Health Training Centre (UHTC): a cross-sectional (mixed methodology) study in Berhampur, South Odisha, India

Nivedita Karmee, Sushree Priyadarsini Satapathy*,
Radha Madhav Tripathy

Department of Community Medicine, MKCG Medical College and Hospital, Berhampur, Odisha, India

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*Correspondence:

Dr. Sushree Priyadarsini Satapathy,
E-mail: sssatapathy22@rediffmail.com

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ABSTRACT

Background: Adequate nutrition during infancy and early childhood is essential to ensure the health, growth and development of children. The objective of this study was to assess infant and young child feeding practice among mothers with 0-24 months children as per WHO criteria.

Methods: It was a cross sectional study, involving mixed methodology (quantitative method supplemented by qualitative method in-depth interview) among 374 respondents from 1st May 2017 to 31st August 2017.

Results: In quantitative method: 49 (81.6%) reported to have started breast feeding within first hour after delivery. 47 (78.3%) respondents exclusively breast fed their infants. In qualitative method: 69.78% mother were of age group 18-29 years. 52.14% respondents were educated up to primary/middle school. In multiple logistic regression analysis educational status of mother, occupational status of mother, birth place, ANC follow up, EBF education at ANC, type of delivery was found to be significant.

Conclusions: IYCF practice was poor. Therefore, there is a need for emphasizing upon the promotion of IYCF practice by health care providers.

Keywords: EBF practices, IYCF practices, Minimum meal frequency, Pre-lacteal feed

INTRODUCTION

The optimal infant and young child feeding practices during the first 2 years of life is of paramount importance as this period is the “critical window” for the promotion of health, good growth, behavioural and cognitive development.¹ Breast-feeding strengthens emotional security and affection creating a strong bond between the mother and the child, which in turn promotes psychosocial development of a child. To ensure good nutrition status of the infant as well as the mother, maternal nutrition plays a vital role. Breast-feeding is nature’s way of nurturing the child. It provides learning and development opportunities to the infant. Breast milk

also leads to increased intelligence quotients and better visual acuity due to the presence of special fatty acids in it.²

Every year 10.9 million of under-five children die worldwide, among which 2.4 million are from India alone. Poor feeding and repeated infections resulted in 30% of stunted under-five children world-wide.³ Malnutrition alone is responsible for 67% of child death in India.⁴ In all settings that includes irrespective of place of delivery, rich and poor, urban and rural area breastfeeding had positive effects on the health of infants and mothers. In India, while the infant mortality rate (IMR) has declined to 40 (SRS September 2014), but

there still remains the need to accelerate improvements in infant and neonatal survival to achieve twelfth Plan goal, to reduce IMR to 25 by 2017.^{5,6} Infants aged 0-5 months who are not breastfed have 7-fold and 5-fold increased risks of death from diarrhoea and pneumonia, respectively, compared with infants who are exclusively breastfed.⁷ At the same age, non-exclusive rather than exclusive breastfeeding results in more than 2-fold increased risks of dying from diarrhoea or pneumonia.⁸

Optimal infant and young child feeding practices help ensure young children the best possible start of life. Breastfeeding is not only important for young child survival, health, nutrition, the development of the baby's trust and sense of security but also enhances brain development and learning readiness as well.⁹

Almost one-fifth of overall under-five mortality can be averted if 90% of infants are covered with a package of intervention to protect, promote, and support the optimal Infant and young child feeding (IYCF) practices.

Global strategy for infant- and young child-feeding has been devised by the World Health Organization (WHO) and United Nations Children Fund. Based on these guiding principles, the Government of India, in collaboration with international agencies, has adopted the culturally acceptable IYCF guidelines, which were incorporated in the Integrated Management of Neonatal and Childhood Illness Programme.^{9,10}

These guidelines recognize appropriate infant feeding practices to be crucial for improving nutrition status and decreasing infant mortality in all countries. WHO offers three recommendations for IYCF practices for children aged 6-23 months: continued breast-feeding or feeding with appropriate calcium-rich foods if not breast-fed; feeding solid or semisolid food for a minimum number of times per day according to age and breast-feeding status; and including foods from a minimum number of food groups per day according to breast-feeding status. So, this study is undertaken to assess the:

- Sociodemographic characteristics of the respondents.
- To assess IYCF practices among respondents as per WHO criteria.
- To find association of Socio-economic and demographic characteristics with the exclusive breast-feeding practices among respondents.
- To assess the relative contribution of socio-demographic characteristics of respondents' likelihood of practices of exclusive breast feeding

METHODS

The study was conducted in urban health training centre (UHTC), Ankuli of the Department of Community Medicine of MKCG Medical college, Berhampur.

It was a cross sectional study, involving mixed methodology (quantitative method supplemented by qualitative method in-depth interview).

Study population included married women of reproductive age with children in age group 0-24 months attending Immunization clinic of UHTC. The study was approved by Institute's ethical committee and an informed verbal consent was taken from every respondent before conducting the interview.

The study was conducted for a period of 4 months i.e. 1st May 2017 to 31st August 2017.

The sample size was calculated using the formula, $N = 4pq/l^2$

Quantitative

NFHS 4 (2015-2016) from Odisha finds that 64.3% had exclusive breastfeed under 6 months of age.¹¹ So taking 64.3% as the prevalence (P) and 5% as the absolute allowable error (L), we calculated a sample size of 367 mothers. Considering 2% drop-outs, a total of $367 \approx 374$ mothers were interviewed for the quantitative study.

Qualitative

30 mothers each from child age of 0-1 year and from child aged 1-2 years. So total of 60 mothers purposively selected and asked to participate in the in-depth interview. Qualitative was used to explore values, attitudes, feelings and behaviours of mothers toward EBF.

Sampling technique

This cross-sectional study was conducted at the Immunization clinic for children at UHTC, Ankuli. This UHTC provides both primary and promotive healthcare. The study was conducted for a duration of 4 months. During this period all the mothers of children aged 0-24 months coming for immunization were included in the study. If more than one child less than 24 months was accompanying the mother, the information was collected for all the children. Immunisation clinic is held every Wednesday at this UHTC. From past records it was revealed that the number of immunizations done every Wednesday ranged from 20 to 30, it was decided to collect data from a minimum of 20-25 mothers per immunization session; The total number of children whose data was collected was 374 during the 4 months of data collection, that is, May to August 2017. In-depth interview of 60 mothers was conducted to collect qualitative data.

Data collection tools

After taking informed consent, data was collected by interviewing the mothers using pre-designed, pre-tested,

and semi-structured questionnaire based on the standard questionnaire on IYCF practices given by WHO. For determining the status of IYCF practices seven core indicators (out of the 8 core indicators and 7 optional indicators as suggested by WHO) were used. This is a set of simple, valid and reliable indicators to assess IYCF practices amenable to population-level measurement. These questions provide the information needed to calculate the indicators of IYCF.

The questions focused on the following domains:

Socio-demographic characteristics

Age of mother, age of child, sex of child, educational status of mother, occupation status of mother, education status of father, birth order, place of delivery, socio-economic status, type of delivery, family type, ANC follow up, EBF education obtained at ANC.

IYCF practices

Time of initiation of breast feeding after delivery of baby, any pre-lacteal feeds given, continued breast feeding among children aged 12-24 months, exclusive breast feed less than 6-month, minimum meal frequency, minimum dietary diversity, minimum acceptable diet among children in age group 6-24 months.

Data processing analysis procedure

For quantitative

The data was checked for completeness, inconsistencies, then coded, entered, cleaned and analysed in SPSS for windows version 16.0. Descriptive statistics were computed by percentages for socio-demographic characteristics and to determine the various indicators of IYCF practices. Binary logistic regression analysis was made to obtain odds ratio and the confidence interval of statistical associations. The strength of statistical association was measured by adjusted odds ratios and 95% confidence intervals. Statistical significance was declared at $P < 0.05$.

For qualitative

Thematic analysis of the transcript of the in-depth interview was performed. The data was transcribed verbatim. Finally, overall interpretation was performed by relating thematic areas to one another and explaining how the various concepts related to the study objectives.

Operational definition

Exclusive breast feeding

Proportion of infants 0-6 months of age who are fed exclusively with breast milk.

MAD (Minimum dietary diversity)

Proportion of children 6-23 months of age who receive foods from 4 or more food groups from a total of 7 food groups, namely, dairy products, legumes and nuts, flesh foods, eggs, vitamin A rich fruits and vegetables, cereals and tubers, and other fruits and vegetables. This indicator reveals whether the child is receiving a complete and balanced diet or not.

Minimum meal frequency (MMF) indicator

Proportion of breastfed and non-breastfed children aged 6-23 months who receive solid, semi-solid, or soft foods (but also including milk feeds for non-breastfed children) the minimum number of times or more. For breastfed children the minimum number of times varies with age (two times if 6-8 months and three times if 9-23 months). For non-breastfed children, the minimum number of times does not vary by age (four times for all children aged 6-23 months).

Minimum acceptable diet (MAD) indicator

Proportion of children aged 6-23 months who receive at least the MDD as well as at least the MMF according to the definitions mentioned above.

RESULTS

Qualitative analysis

Out of 374, in-depth interview of only 60 mothers was conducted. Information collected was about the initiation of breast feeding, exclusive breast feeding, continued feeding and about complementary feeding.

Majority of the mother 49 (81.6%) reported to have started breast feeding within first hour after delivery. When asked “when you started breast feeding your child”. The mothers replied that the baby needed to cry before being put to the breast. “After delivery, if my baby has not cried, then I don’t breastfeed. But if she/he cries, then only I breastfeed”.

16 (26.7%) respondents mother gave pre-lacteal feeds. The common pre-lacteal given was honey. The reason for giving pre-lacteal feed was they thought this would prevent their child from infections and also colostrum should not be given.

47 (78.3%) respondents exclusively breast fed their infants. The mothers were generally aware of the concept of exclusive breastfeeding (EBF) and most of them had a positive perception about it.

The main reason given in favour of EBF was that the intestines of the infant were too immature and small to handle other foods and the baby would get sick and have stomach pains if given other foods. “We breastfeed our

baby every half an hour once, even if baby is sleeping we wake up the baby to breast feed”.

35 (58.3%) respondents continued breast feeding and they reported to be breastfeeding during the day and night.

Duration of breastfeeding for those who had stopped breastfeeding ranged from one to twenty-two months.

The majority stopped breastfeeding because they believed breast milk was not enough or that the child had lost interest in breastfeeding.

Table 1: Socio demographic characteristics of respondents (n = 374).

Characteristics	Number	Percentage
Age of mother		
18-29 years	261	69.78%
≥30 years	113	30.21%
Socioeconomic status		
Upper	2	0.53%
Upper middle	19	5.08%
Lower middle	91	24.33%
Upper lower	199	53.2%
Lower	63	16.84%
Family type		
Nuclear	216	57.75%
Joint	103	27.54%
3 rd Generation	55	14.70%
Educational status of mother		
Illiterate	152	40.64%
Primary/Middle	195	52.14%
Secondary	27	7.21%
Occupational status of mother		
Home maker	313	83.69%
Working lady	61	16.31%
Educational status of father		
Illiterate	91	24.33%
Primary/middle	222	59.36%
Secondary	61	16.31%
ANC follow up		
Yes done	216	57.75%
No	158	42.25%
EBF educational obtained at ANC		
Yes	189	50.53%
No	185	49.46%

Quantitative analysis

Table 1 depicts that 69.78% mothers were of age group 18-29 years. 53.2% belonged to upper-lower socioeconomic status.

52.14% respondents were educated up to primary/middle school. 83.69% were home maker by profession.

Table 2 depicts that 67.64% index child were in age group of <1 year and 53.20% among them were females.

Table 3 depicts that 37.16% respondents had initiated breast feeding within first hour after delivery.

44.35% of respondents' mother exclusively breast feed their children and continuation of breastfeeding among children (12-23 months) were seen in 72.36% only.

Table 2: Characteristics of index child.

Characteristics	Frequency	Percentage
Age of child		
<1 year	253	67.64%
1-2 year	121	32.35%
Sex of child		
Male	175	46.79%
Female	199	53.20%
Birth order		
1	97	25.93%
2-3	221	59.09%
≥4	56	14.97%
Place of birth		
House	154	41.17%
Hospital	220	58.82%
Type of delivery		
Caesarean section	71	18.98%
Normal	303	81.01%

Table 3: WHO criteria to assess IYCF practices among respondents.

Variables	Frequency	(%)
Early initiation of Breast Feeding (<24 hours): (N=374)		
Yes	139	37.16%
No	235	62.83%
Pre-lacteal feeding among Children (<24 hours): N=374		
Given	142	37.97%
Not Given	232	62.03%
Exclusive breast feeding among children <6 months: (N=239)		
Given	106	44.35%
Not Given	133	55.64%
Continued breast feeding among children (12-23 months): (N=123)		
Yes	89	72.36%
No	34	27.64%

Figure 1, 2 and 3 illustrates that 52.03% respondents had provided adequate MMF, 66.97% provided adequate MDD and 78.73% provided adequate MAD.

Figure 1: Minimum meal frequency given by respondents: (N=221).

Figure 2: Minimum dietary diversity given by respondents: (N=221).

Figure 3: Minimum acceptable diet given by respondents (N=221).

Table 5 depicts that by adjusting all the confounders and on multiple logistic regression we found that educational

status of mother, occupational status of mother, birth place and type of delivery, ANC F/U along with the EBF education given on follow up were found to be significant with AOR respectively [3.637 (C.I = 1.831-7.225), 5.469 (C.I = 2.254-13.269), 0.281 (C.I = 0.092-0.863), 0.903 (C.I = 0.364-2.237), 0.166 (C.I = 0.062-0.441), 0.284 (C.I = 0.145-0.557)]

Table 4: Association of socio-economic and demographic characteristics with the exclusive breast-feeding practices among respondents.

Variables	Exclusive breast feeding (N=239)		Group difference
	Yes (106)	No (133)	X ² (P value)
Age of mother			
18-29 year	77 (32.2%)	98 (41.1%)	X ² =0.033 (P=0.856)
≥30 years	29 (12.1%)	35 (14.6%)	
Age of child			
1 year	39 (16.3%)	100 (41.8%)	X ² =35.736 (P=0.000)*
1-2 years	67 (28%)	33 (13.8%)	
Sex of child			
Male	43 (18%)	63 (26.4%)	X ² =1.106 (p=0.293)*
Female	63 (26.4%)	70 (29.3%)	
Birth order			
1	23 (9.6%)	46 (19.2%)	X ² =5.351 (P=0.069)
2-3	73 (30.5%)	73 (30.55)	
4	10 (4.2%)	14 (5.9%)	
Place of birth			
House	14 (5.9%)	39 (16.3%)	X ² =8.877 (p=0.003)*
Hospital	92 (38.5%)	94 (39.3%)	
Type of delivery			
Caesarean section	17 (7.1%)	43 (18%)	X ² =8.328 P=0.004*
Normal	89 (37.2%)	90 (37.7%)	
Educational status of mother			
Illiterate	52 (21.8%)	36 (15.1%)	X ² =13.063 P=0.001*
Primary/Middle	47 (19.7%)	89 (37.2%)	
Secondary	7 (2.9%)	8(3.3%)	
Occupational status of mother			
Home maker	62 (25.9%)	103 (43.1%)	X ² =9.913 P=0.002*
Working Lady	44 (18.4%)	30(12.6%)	
Educational status of father			
Illiterate	3 (1.3%)	56 (23.4%)	X ² =64.157 P=0.001*
Primary/middle	72 (30.1%)	72 (30.1%)	
Secondary	31 (13%)	5 (2.1%)	
ANC Follow up			
Yes	100 (41.81%)	82 (34.3%)	X ² =34.699 P=0.000*
No	6 (2.5%)	51 (21.31%)	
EBF education obtained at ANC			
Yes	57 (23.8%)	42 (17.6%)	X ² =11.975 P=0.000*
No	49 (20.5%)	91 (38.1%)	

*Indicates there is group difference between the variables and the difference is significant as P value is <0.05

Table 5: Regression analysis of likelihood of practices of exclusive breast feeding and respondents socio-demographic characteristics.

Variables	Likelihood of practices of EBF among respondents	
	Unadjusted (COR)	Adjusted (AOR)
	95% CI	95% CI
Educational status of mother		
Illiterate	Reference (1)	Reference (1)
Primary/middle	2.735 (1.574-4.754)*	3.637 (1.831-7.225)**
Secondary	1.651 (0.550-4.958)	2.078 (0.473-9.127)
Occupational status of mother		
Working lady	Reference (1)	Reference (1)
Home maker	2.437 (1.391-4.269)*	5.469 (2.254-13.269)**
Birth place		
Home	Reference (1)	Reference (1)
Hospital	0.367 (0.187-0.720)*	0.281 (0.092-0.863)**
ANC follow up		
Yes	Reference (1)	Reference (1)
No	0.096 (0.039-0.236)*	0.166 (0.062-0.441)**
EBF education obtained at ANC		
No	Reference (1)	Reference (1)
Yes	0.0397 (0.234-0.673)*	0.284 (0.145-0.557)**
Type of delivery		
Caesarean section	Reference (1)	Reference (1)
Normal	0.400 (0.212-0.753)*	0.903 (0.364-2.237)**

*Indicates crude odds ratio is significant (P value<0.05);

**Indicates adjusted odds ratio is significant (P value <0.05)

DISCUSSION

The importance of early initiation of breast feeding has been stressed upon since long. Early initiation of breastfeeding was associated with a reduced risk of neonatal mortality. Initiating breastfeeding after the first hour doubled the risk of neonatal mortality.¹² In the present study only 37.16% respondents had initiated breast feeding within first hour after delivery. Breastfeeding within the first hour of life is recognized as one of the most important actions for infant survival. Yet in India, only 41.6 % infants start breastfeeding within one hour of life.¹³ Increasing delay in breastfeeding initiation time was associated with an increasing risk of neonatal mortality. Infants who initiated breastfeeding 2-23 hours after birth had a 33% greater risk of neonatal mortality (95% CI: 13-56%), and infants who initiated breastfeeding ≥ 24 hours after birth were more than twice as likely to die during the neonatal period (pooled RR 2.19, 95% CI: 1.73-2.77) when compared to those who initiated breastfeeding within one hour of birth.¹⁴

Pre-lacteal feeding was given to 37.9% new borns which was similar to the findings of the study by Kumar et al where pre-lacteal feeding was seen in 40% infants.¹⁵ In the report of nationwide study by Breast Feeding Promotion Network of India (BPNI), the prevalence of pre-lacteal feed was found to be 49%.⁴

In the present study 44.35% of respondents' mother exclusively breast fed their children. According to NFHS 4 data, EBF in India was seen in 52.1% infants in urban areas.¹⁶ The recent rapid survey on children (Ministry of Women and Child Development, 2015) shows that only 45% infants are now being breastfed within an hour of birth in India and just 65% are being exclusively breastfed as per WHO recommendations.¹⁷ However in studies by Patel et al and Kulkarni et al it was 55.9% and 70.2% respectively.^{18,19} This difference in exclusive breast feeding among infants can be explained by the various cultural practices, customs and traditions prevalent in different geographical areas.

Infants should be exclusively breastfed for the first six months of life to achieve optimal growth, development and health. Thereafter, to meet their evolving nutritional requirements, infants should receive nutritionally adequate and safe complementary foods, while continuing to breastfeed for up to two years or beyond.²⁰

Protection is maximized during the first six months of life for the exclusively breastfed infant, who is thereby spared introduction of pathogens through contaminated foods or fluids. Moreover, breastfeeding's protective effect extends into the second and third years of life even if, by then, children are usually receiving most of their nutrition from other sources.²¹ Continuation of breastfeeding among children (12-23 months) were seen in 72.36% only in the present study.

66.97% children had received food from four or more groups which implies that they are receiving a complete and balanced diet. 52.03% babies were provided with solid, semi solid or soft food the minimum number of times and 78.73% babies received a minimum acceptable diet. MAD provides a useful way to track progress at simultaneously improving the key quality and quantity dimensions of children's diets.²²

Age of child, place of delivery, educational status of parents and occupation of mother were significantly associated with EBF. ANC follow up along with counselling regarding EBF were also associated with EBF. The multiple logistic regression analysis showed that educational status of mother was a predictor of exclusive breastfeeding practice. Infants with mothers who were educated up to primary/middle were 4 times more likely to be exclusively breast fed compared to babies with illiterate mothers. Ignorance about the importance of exclusive breast feeding and its benefits in reducing neonatal morbidity and mortality might be the cause.

EBF was practiced more by mothers who were homemakers compared to working women. This was also evident in a study by Senarath et al.²³ The reason might be because these mothers are with their babies throughout the day and can feed their baby as and when needed without any constraint and Working mothers have to return to work early which affects EBF. However, in another study by Chandhiok et al EBF was more in working mothers and the explanation given by them was more interaction among women in their workplace.²⁴

Babies who were delivered in hospitals were less likely to be exclusive breast fed which could be due to lack of privacy in hospitals for breastfeeding. Pregnancy related morbidity might also be a cause of these babies being less likely to be exclusively breast fed.

Mothers who had regular ANC practiced better exclusive breast feeding compared to women with no ANC follow up which was also reported by Ekanem et al. The reasons cited by them were attendance of ante-natal clinic enhances mothers' understanding and appreciation of the demands and benefits of EBF, and empowers them to resist external interferences and pressures.²⁵ Repeated and regular counselling by health workers and ASHA during ante natal check-up in clinics may be a factor for this.

CONCLUSION

The infant and young child feeding practices in the present study were sub optimal. Nearly half of the respondents showed inadequate and inappropriate IYCF practices. Although the IYCF programme which stresses upon infant and child feeding to reduce mortality and morbidity associated with infections in infants and children was implemented in 2006, faulty IYCF practices are still prevalent. Hence, there is a need for promoting the IYCF practices by health care providers especially the first line health care providers by counselling and communication during antenatal and postnatal care of women. Emphasis on exclusive breast-feeding practices and complementary feeding practices by mass media especially for mothers with lower literacy level can have a positive impact on feeding practices.

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