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Awareness regarding feeding practices among mothers attending an immunization center: An institutional study

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ABSTRACT

Introduction: Infant feeding practices include exclusive breastfeeding for 6 months added with timely and appropriate introduction of complementary feeding to children after around 6 completed months of age. This study was aimed to assess the awareness regarding feeding practices among mothers. **Methodology:** A cross-sectional study was done at Rajendra Institute of Medical Sciences, Ranchi, India on mothers visiting the immunization center selected by consecutive sampling. A pretested semi-structured questionnaire was prepared and given to all the mothers. The sample size consisted of 103 mothers. **Results:** Most of the mothers (91.3%, *n* = 94) claimed to be aware regarding initiation of breastfeeding. Nearly 56% (*n* = 38) of mothers from urban locality and 61.1% (*n* = 22) mothers from rural locality believed that breastfeeding should be started within 30 minutes to 1 hour after a normal delivery; while 40% (*n* = 27) of mothers from urban locality and 47.2% (*n* = 17) mothers from rural locality knew that breastfeeding should be initiated after 4 hours of cesarean delivery (*P* = 0.025). Multivariable regression model demonstrated that mothers belonging to Hindu (OR 0.13; 95% CI, 0.03–0.52; *P* = 0.004) and Muslim (OR 0.12; 95% CI, 0.02–0.85; *P* = 0.034) religion were associated with lower odds for practicing bottle feeding as compared to mothers from other religions. **Conclusion:** There are differences in feeding practices among different locality, religion, and other demographic factors.

Key Words: Infant, breastfeeding, bottle feeding

Introduction

Infant feeding practices include exclusive breastfeeding for 6 months added with timely and appropriate introduction of complementary feeding to children after around 6 completed months of age. It also includes continued breastfeeding alongside other foods for children until 2 years of age and beyond, and is an essential part of infant and young child health [1].

Breastfeeding is the ideal form of infant feeding and is crucial for lifelong health and well-being. It provides unique nutritional, immunological, psychological, and child spacing benefits. Artificial feeding exposes infants to infections and results in over a million deaths annually worldwide [2]. As per National Family and Health Survey 3 (NFHS 3) in India, only 46.3% children aged <6 months are exclusively breastfed and only 23.4% children received breastfeeding within 1 hour (h) of birth [3]. According to Annual Health Survey factsheet 2010–2011, in Jharkhand, a highly populated state in eastern India, a total of 37.9% children are breastfed within 1 h of birth (37% in rural and 40.6% in urban), and in Ranchi, the capital of Jharkhand, a total of 46.5% are breastfed within 1 h of birth (46.8% in rural and 46% in urban) [4].

The Government of India has enacted "The Infant Milk Substitutes, Feeding Bottles and Infant Foods (Regulation of Production, Supply and Distribution) Amendment Act 2003". According to this act, use of bottle feeding, infant milk substitutes, etc., are completely prohibited up till 6 months of age [5]. Complementary feeding implies giving the child other nutritious food in addition to breast milk. About 6 months of age, there is a gap in between the total energy needs and the energy provided by breast milk. To overcome this gap, complementary foods are introduced which should be culturally acceptable, adequate in providing all nutritional demands, locally available and inexpensive, and easily prepared at home [2].

This study was intended to assess the awareness regarding feeding practices among mothers visiting an immunization center.

Methodology

A cross-sectional study was done at the Immunization Centre of Rajendra Institute of Medical Sciences (RIMS), Ranchi which is a tertiary level medical center of state Jharkhand, India. Data were collected during the period of September-October

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2013. Our study population consisted of mothers visiting the immunization center selected by consecutive sampling. A pretested semi-structured questionnaire was prepared and given to all the mothers after procuring written informed consent from them. A total of 110 mothers were approached, of which 7 did not give consent for the study. The final sample size consisted of 103 mothers.

The variables were defined as demographic and knowledge assessment. The demographic variables included age (continuous variable); marital status categorized as married or widowed; education level as illiterate, primary (up to 5th), secondary (up to 10th), and higher (up to 12th); religion being Hindu, Muslim, Sikh, Christian, or Saran; occupation being unemployed or employed; tribal or nontribal ethnicity; joint or nuclear family; contraceptive use history; nulliparous or multiparous; delivery occurring at hospital, primary health care (PHC) or home; history of addiction including both smoking and alcohol consumption; and being a below poverty line (BPL) card holder or not. The knowledge assessment variables included questions regarding awareness about when to initiate breastfeeding, when to start it after normal delivery and also after cesarean delivery, awareness about exclusive breastfeeding (EBF), for how long should the child be breastfed, awareness about importance of colostrum, awareness regarding breastfeeding during illness such as urinary tract infection (UTI), human immunodeficiency virus (HIV) infection, diarrhea in infants, and hepatitis. It also included questions regarding bottle feeding practices, prelacteal feeding, awareness about complementary feeding, and source of awareness.

Data were analyzed using the software, SPSS 23 (IBM, Armonk, NY, USA). Exploratory and descriptive analysis was performed, and results were expressed in counts, percentage for categorical values, and means and standard deviation (SD) for normal continuous variables. Differences in proportions across categorical variables between mothers belonging to urban versus rural location was determined using Pearson's Chi-square test or Fisher's exact test as appropriate. Likewise, differences in continuous variables across the 2 groups was assessed using independent samples *t*-test. Unadjusted and adjusted models were formed using regression studies to obtain odd ratios (ORs) and corresponding 95% confidence intervals (CIs) to demonstrate factors associated with knowledge assessment of mother for bottle feeding practices controlling for age, education, religion, locality, occupation, ethnicity, family type, being BPL card holder, history of addiction, and type of delivery. All statistical tests were 2-sided, and Type I error set at 5% was considered statistically significant.

Results

Table 1 shows the sociodemographic characteristics of mothers attending immunization center at our hospital. The mean age of mothers from urban and rural areas were 25.6±3.69 years and 24.47±3.70 years respectively. Among mothers coming from urban area, most had higher education (40%, $n = 27$) ($P = 0.014$) whereas mothers (36.1%, $n = 13$) from rural area were educated up to primary level ($P = 0.002$). Most women were of Hindu religion from both urban (71.6%, $n = 48$) and rural (80.6%, $n = 29$) region. A greater proportion of mothers (61.2%, $n = 41$) from urban region were nontribal, whereas lesser proportion of mothers from rural region were nontribal (44.4%, $n = 16$). Nearly 85 ($n = 57$) mothers from urban region and 66.7% ($n = 24$) mothers from rural region had hospital delivery ($P = 0.030$), whereas 6.0% ($n = 4$) mothers from urban region and 19.4% ($n = 7$) mothers from rural region had home delivery ($P = 0.047$).

The findings pertaining to the knowledge assessment of mothers regarding feeding practices is detailed in Table 2. Most of the mothers (91.3%, $n = 94$) claimed to be aware regarding initiation of breastfeeding. Nearly 56% ($n = 38$) of mothers from urban locality and 61.1% ($n = 22$) mothers from rural locality believed that breastfeeding should be started within 30 minutes to 1 h after a normal delivery. Almost 40% ($n = 27$) mothers from urban locality and 47.2% ($n = 17$) mothers from rural locality knew that breastfeeding should be initiated after 4 h of cesarean delivery ($P = 0.025$). About 99% ($n = 102$) mothers claimed to be aware regarding EBF. Greater proportion of mother from urban locality (56.7%, $n = 38$) said that a child should be breastfed for >2 years, whereas greater proportion of mothers from rural locality (38.0%, $n = 14$) believed that the child should be breastfed only up till 1 year ($P = 0.001$). Most of the mothers among both urban (98%, $n = 66$) and rural (83.3%, $n = 30$) area were aware about the importance of colostrum ($P = 0.007$). A great proportion of mothers held the opinion that breastfeeding should be continued when mother suffers from UTI (79.6%) or when the infant has diarrhea (75.7%), whereas still higher proportion of mothers presumed that breastfeeding should be discontinued during HIV infection (97.1%) and hepatitis (96.1%). A high proportion of mothers did not practice bottle feeding (75.7%, $n = 78$). Majority of the mothers (97.1%, $n = 100$) also did not opt for prelacteal feed. Most of the mothers (93.2%, $n = 96$) started complementary feeding after 6 months. Mothers mostly received information on infant feeding from doctors, sahiyya (community health volunteer), nurses, TV, and family members (also see Table 2).

Tables 3 and 4 show the unadjusted and adjusted models indicating the association of various demographic factors with knowledge assessment for bottle feeding practices among mothers attending immunization center. After adjustment for various predictors, we found that mothers belonging to Hindu religion had lesser odds for practicing bottle feeding (OR 0.13; 95% CI, 0.032–0.518) ($P = 0.004$) as well as mothers belonging to Muslim religion (OR 0.12; 95% CI, 0.017–0.848) ($P = 0.034$) compared to other religions.

Table 1: Sociodemographic characteristics of mothers attending immunization center at Rajendra Institute of Medical Sciences, Ranchi, and their knowledge assessment regarding breastfeeding practices (*n*=103)

Characteristics	Urban (*n*=67)	Rural (*n*=36)	Overall (*n*=103)	*P*
Age (years)				
Mean±SD	25.6±3.69	24.47±3.70		0.144
Range	20-40	18-35	18-40	
Education, *n* (%)*				
Illiterate	11 (16.4)	10 (27.8)	21 (20.4)	0.172
Primary (up to 5th)	7 (10.4)	13 (36.1)	20 (19.4)	0.002
Secondary (up to 10th)	22 (32.8)	7 (19.4)	29 (28.2)	0.150
Higher (up to 12th)	27 (40.3)	6 (16.7)	33 (32.0)	0.014
Religion, *n* (%)*				
Hindu	48 (71.6)	29 (80.6)	77 (74.8)	0.321
Muslim	10 (14.9)	2 (5.6)	12 (11.7)	0.158‖
Sikh	2 (3.0)	0 (0.0)	2 (1.9)	0.541‖
Christian	6 (9.0)	3 (8.3)	9 (8.7)	0.915‖
Sarna	1 (1.5)	2 (5.6)	3 (2.9)	0.279‖
Unemployed, *n* (%)*	56 (83.6)	27 (75.02)	83 (80.6)	0.294
Ethnicity, *n* (%)				
Tribal	26 (38.8)	20 (55.6)	46 (44.7)	0.103
Nontribal	41 (61.2)	16 (44.4)	57 (55.3)	
Family type, *n* (%)				
Joint	38 (56.7)	28 (77.8)	66 (64.1)	0.034
Nuclear	29 (43.3)	8 (22.2)	37 (35.9)	
Contraceptive use, *n* (%)				
Yes	12 (26.9)	2 (5.6)	20 (19.4)	0.009‖
No	49 (73.1)	34 (94.4)	83 (80.6)	
Type of delivery, *n* (%)				
Hospital delivery	57 (85.1)	24 (66.7)	81 (78.6)	0.030
Delivery at PHC	6 (9.0)	5 (13.9)	11 (10.7)	0.440
Delivery at home	4 (6.0)	7 (19.4)	11 (10.7)	0.047‖
No history of addiction (smoking/alcohol), *n* (%)	64 (95.5)	34 (94.4)	98 (95.1)	0.574‖
BPL card holder, *n* (%)	37 (55.2)	26 (72.2)	63 (61.2)	0.091

*Values based on excluding missing patients for inpatient mortality (0.005%), unfavorable discharge (0.002%), ‖*P* values computed based upon Fisher's exact test. SD: Standard deviation, PHC: Primary health-care center, BPL: Below poverty line

Discussion

In general, the mothers of infants attending the immunization center at RIMS had a very positive information and practice regarding infant feeding including EBF and complementary feeding. Majority of the mothers were aware of the importance of EBF and that the duration of EBF should be up to 6 months. They were also well aware of the importance of colostrum.

However, to our concern, in spite of the positive claims regarding initiation of breastfeeding from most of the mothers (91.3%), they showed a lack of correct knowledge regarding initiation post normal delivery and cesarean section. Only 17.5% of mothers knew it correctly that breastfeeding should be initiated as soon as possible right after normal delivery of the child. Breast feeding after a cesarean section should be initiated as soon as the intervention is over in the operation theatre itself, if possible. Only 5.8% (n = 6) mothers were correctly aware about it. This indicates a lack of correct awareness among mothers which can mislead them and cause a negative impact on health of children. The study done by Madhu et. al. at a PHC that was attached to a rural health-care training center in Kengeri, rural Bangalore, showed that only 44% of mothers initiated breastfeeding within 30 min of normal delivery [6].

The difference in knowledge regarding the duration of breastfeeding among mothers from urban and rural region might show the inadequacy of knowledge spread in the rural regions and lack of appropriate measures that need to be taken for proper awareness.

Table 2: Knowledge assessment of mothers attending immunization center and their knowledge assessment regarding breastfeeding practices (*n*=103)

Knowledge assessment	Urban (*n*=67)	Rural (*n*=36)	Overall (*n*=103)	*P*
Aware about when to initiate breast feeding, *n* (%)	62 (92.5)	32 (88.9)	94 (91.3)	0.716‖
When to start after normal delivery? *n* (%)				
Don't know	5 (7.5)	4 (11.1)	9 (8.7)	0.759
<30 min	12 (17.9)	6 (16.7)	18 (17.5)	
30 min-1 h	38 (56.7)	22 (61.1)	60 (58.3)	
1-2 h	9 (13.4)	2 (5.6)	11 (10.7)	
2-6 h	3 (4.5)	2 (5.6)	5 (4.9)	
When to start after cesarean delivery? *n* (%)				
Don't know	6 (9.0)	2 (5.6)	8 (7.8)	0.025
<2 h	2 (3.0)	4 (11.1)	6 (5.8)	
2-3 h	6 (9.0)	8 (22.2)	14 (13.6)	
3-4 h	26 (38.8)	5 (13.9)	31 (30.1)	
>4 h	27 (40.3)	17 (47.2)	44 (42.7)	
Aware about EBF, *n* (%)	67 (100)	35 (97.2)	102 (99)	0.350‖
For how long the child should be breastfed? *n* (%)				
Up till 9 months	1 (1.5)	1 (2.8)	2 (1.9)	0.001
Up till 1 year	5 (7.5)	14 (38.9)	19 (18.4)	
>1 year	23 (34.3)	10 (27.8)	33 (32.0)	
>2 years	38 (56.7)	11 (30.6)	49 (47.6)	
Aware about importance of colostrum, *n* (%)	66 (98.5)	30 (83.3)	96 (93.2)	0.007‖
Aware about breastfeeding during illness, *n* (%)	49 (73.1)	24 (66.7)	73 (70.9)	0.491
When should it be done or not? *n* (%)				
UTI-yes	52 (77.6)	30 (83.3)	82 (79.6)	0.492
HIV-No	65 (97.0)	35 (97.2)	100 (97.1)	0.721‖
Diarrhea in infants-yes	52 (77.6)	26 (72.2)	78 (75.7)	0.543
Hepatitis-no	64 (95.5)	35 (97.2)	99 (96.1)	0.563‖
Did not practice bottle feeding, *n* (%)	48 (71.6)	30 (83.3)	78 (75.7)	0.187
Did not practice prelacteal feed, *n* (%)	66 (98.5)	34 (94.4)	100 (97.1)	0.279‖
Aware about complementary feeding, *n* (%)	65 (97.0)	35 (97.2)	100 (97.1)	0.721‖
Started CF after 6 months, *n* (%)	63 (94.0)	33 (91.7)	96 (93.2)	0.693‖
Who/what made you aware about importance of infant feeding? *n* (%)				
Doctors	42 (62.7)	21 (58.3)	63 (61.2)	0.666
Sahiyya	49 (73.1)	26 (72.2)	75 (72.8)	0.921
Nurses	42 (62.7)	20 (55.6)	62 (60.2)	0.481
TV	37 (55.2)	9 (25.0)	57 (55.3)	0.003
Family members	46 (68.7)	24 (66.7)	70 (68.0)	0.836
Magazines	24 (35.8)	10 (27.8)	34 (33.0)	0.408

‖*P* values computed based upon Fisher's exact test. EBF: Exclusive breastfeeding, UTI: Urinary tract infection, HIV: Human immunodeficiency virus, CF: Complementary feeding, TV: Television

Study done by Roy et. al. on 120 children in a slum of Kolkata showed that 29.16% (*n* = 35) of children received prelacteal feed in the form of water, infant milk formula, cow milk, and honey. Mothers of 41.66% (*n* = 50) of the children were aware of EBF. Ninety-two (76.67%) children received breast milk within 24 h. Thirty-four children (28.33%) received EBF for 6 months. Inadequate milk production was the most common reason for not giving EBF. Rest was due to lack of information, prematurity, illness of mother, and the summer season. About 71.66% (*n* = 86) were given complementary feeding at 6 months [7].

Our study showed that mothers from urban locality were less likely to practice bottle feeding indicating better awareness in urban region reflecting that these regions have better strategies for delivering knowledge to mothers. It was seen that working mothers were more likely to practice bottle feeding indicating the

Table 3: Unadjusted analysis demonstrating factors associated with knowledge assessment of mothers attending immunization center

Factors	OR	95% CI		*P*
		Lower	Upper	
Age	1.06	0.952	1.187	0.277
Education				
Primary	0.29	0.063	1.299	0.105
Secondary	0.73	0.224	2.382	0.603
Higher	1.06	0.343	3.250	0.924
Religion				
Hindu	0.19	0.058	0.651	**0.008**
Muslim	0.28	0.055	1.409	0.122
Locality				
Urban	0.74	0.303	1.786	0.498
Occupation				
Nonworking	0.89	0.308	2.568	0.828
Ethnicity				
Tribal	1.37	0.592	3.183	0.461
Family type				
Joint	1.51	0.642	3.529	0.346
BPL card holder				
Yes	1.25	0.536	2.899	0.608
History of addiction				
Yes	0.69	0.110	4.366	0.697
Type of delivery				
Hospital delivery	0.79	0.194	3.238	0.747
Deliver at PHC	1.21	0.325	4.498	0.777

OR: Odds ratio, CI: Confidence interval, BPL: Below poverty line, PHC: Primary health care

Table 4: Adjusted analysis demonstrating factors associated with knowledge assessment of mothers attending immunization center

Factors	OR	95% CI		*P*
		Lower	Upper	
Age	1.08	0.944	1.241	0.258
Education				
Illiterate	0.66	0.196	2.233	0.506
Religion				
Hindu	0.13	0.032	0.518	**0.004**
Muslim	0.12	0.017	0.848	**0.034**
Locality				
Urban	0.95	0.334	2.722	0.929
Occupation				
Nonworking	0.54	0.142	2.059	0.315
Ethnicity				
Tribal	2.28	0.706	7.346	0.168
Family type				
Joint	1.38	0.498	3.815	0.536
BPL card holder				
Yes	1.16	0.389	3.438	0.794
History of addiction				
Yes	0.75	0.093	6.123	0.792
Type of delivery				
Hospital delivery	1.01	0.188	5.380	0.994
Deliver at PHC	0.90	0.193	4.164	0.890

OR: Odds ratio, CI: Confidence interval, BPL: Below poverty line, PHC: Primary health care

effect of work stress and lack of attention toward correct feeding practices. The study also showed that mothers with a history of smoking or alcohol abuse were less likely to practice bottle feed. This can be explained by the fact that the mothers with such history tend to have more frequent visit to medical practitioners and hence better counseling for feeding practices along with other important awareness points regarding pregnancy and childbirth.

In our study, 99% mothers were aware of EBF which was higher when compared to the study of rural Bangalore done by Madhu et. al. that showed 40% of mothers practiced EBF until 6 months [6]. In another study done by Roy et. al., it was observed that only 41.66% of mothers were aware of EBF [7]. In our study, 93.2% of mothers initiated complementary feeding after 6 months. Roy et. al. reported that 77.50% of mothers in their study believed that complementary feeding should be started at 6 months or more [7]. The source of information about infant feeding to the mothers was given by doctors (61.2%) which was comparable to 42% mothers in the study of rural Bangalore [6]. The other sources were ASHA, nurses, mass media, and family. Madhu et. al. suggested that the information regarding the advantages and duration of breastfeeding needs to be provided to the community as a whole. Practices such as discarding the colostrum and early or late weaning should be discouraged. Training for the traditional birth attendants and maintaining aseptic precautions with the use of clean delivery kits and community-based health education programs are needed [6].

Our study was limited to mothers attending the immunization center at RIMS and not the mothers in other units such as the pediatric ward, so the results there may vary among different samples. Awareness regarding infant feeding is greatly influenced by what people know, think, believe, and what they are being informed.

Conclusion

There are differences in practices among different locality, religion, and other demographic factors. We can also notice a misleading trend developing among women in which they claim to be aware of feeding practices, but when inquired, we see that they are incorrectly informed about many practices. It is necessary to practice more unified approach toward bringing about correct awareness among mothers.

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Authors' Contributions

UG, PT and SS worked on study conception and formulated the experimental design. Acquisition of data was done by TM and HM. Analysis and interpretation of data was done by UG and SS. Drafting of manuscript was done by UG, PT and SS; and reviewed by all the authors.

Competing Interests

The authors declare that they have no competing interests.

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