

A study of assessment of infant feeding practices in urban slum of Bhopal, Madhya Pradesh, India

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Abstract

Background and Objective: Optimal breastfeeding and complementary feeding practices could reduce childhood morbidity and mortality dramatically in most cost-effective and efficacious way. Proper assessment of mothers knowledge regarding feeding practices and identifying the influencing factors that lead to faulty feeding practices is the need of the hour. Breastfeeding is of extreme importance for safeguarding health and welfare of growing infant and this practice must be preserved, protected and promoted by all means. with this background, this study was conducted to assess the infant feeding practices in urban slums and to determine the factors influencing it. **Materials and Methods:** A community based, cross sectional study conducted in urban slums in Bhopal. Madhya Pradesh for a period of 3 months A predesigned semi structured questionnaire using open and close ended questions were used to collect the information. **Results:** Out of the 170 mothers enrolled in the study, 53(31.17%) mothers had started feeding within 1 hour of delivery. Prolactal feed and colostrums was given to 82 (48.23%) and 61.76% respectively. Exclusive breastfeeding up to 6 months of age was 88 (51.76%). Significant association was observed between maternal literacy and practice of EBF. and giving prolactal feeds. 51.76% infants started receiving complementary feeding at right time. 60(35.29%) breast feeding knowledge and awareness was obtained by health personnel. **Conclusion:** This study shows that inappropriate feeding practices like giving prolactals, discarding colostrums, delayed initiation of breastfeeding are prevalent in urban slums. Prevalence of exclusive breast feeding up to 6 months is less than the national level data. Awareness of mothers regarding correct feeding practices should be done at primary health care level.

Keywords: Breastfeeding, Infant feeding practices, Exclusive breastfeeding, Complementary feeding.

Introduction

Breastfeeding and complementary feeding practices have long been validated to have significant implications for maternal and child health. Healthy breastfeeding and complementary feeding practices reduce child mortality and morbidity besides being essential for their optimal growth and development [1].

WHO/UNICEF have emphasized the first 1000 days of life i.e, the 270 days in-utero and the first two years after birth as the critical window period for nutritional interventions. As the maximal brain growth occurs, malnutrition in this critical period can lead to stunting and suboptimal developmental outcome [2, 3].

According to the National Family Health Survey 3 data, about 20 million children are not able to receive exclusive breastfeeding (EBF) for the first six months, and about 13 million do not get good, timely and appropriate complementary feeding along with continued breastfeeding [4].

The National Family Health Survey (NFHS-4) has provided useful national- and state-level information on the IYCF practices. Available data showed a gross inter-state variation [5].

NFHS-4 data at the national level & also at Madhya Pradesh showed that only 41.6% & 34.4% children under 3 year were put on breast-feeding within one hour of birth respectively. NFHS-4 data from Madhya

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Pradesh have reported that 58.2% children under 6 months are exclusively breastfed while only 38.1% children age 6-8 month receiving solid or semisolid food & breast milk [5].

Overall, only 21% of breastfeeding and non-breast-feeding children were fed in accordance with the infant and young child feeding (IYCF) recommendation [3]. 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 [6] Exclusive breastfeeding up to six months of age and breastfeeding up to 12 months established as top most preventative child survival interventions for their effectiveness in preventing under-five mortality followed by nutritionally-adequate, safe, age-appropriate complementary feeding starting at six months [6, 7]. These two interventions alone were estimated to prevent almost one-fifth of under-five mortality in developing countries [8].

Infant and Young child feeding which includes breastfeeding and complementary feeding practices, is comprised of various dimensions, namely, the type, the quality, the texture, the nutrient density, the frequency of feeding, and the diversity of the diet. Also the safety of food fed and the manner in which it is fed to the child are added dimensions to the whole spectrum of IYCF [9].

Early nutritional status, especially during the 1st year of life, has been shown to have a significant effect on child and adult health and development. Optimal infant feeding practices are crucial for nutritional status, growth, development, health, and ultimately the survival of infants and young children [8, 10].

Knowledge regarding time, consistency and quantity of complementary feeds depends on socio-economic conditions, literacy status of mother, traditions and belief [11] The infant feeding practices vary among the different regions and communities in India.

Frequent monitoring of changing trends in these practices is therefore necessary in societies in highly dynamic states of development.

Looking to the importance of infant feeding practices and with this background the present study was conducted with the objective to assess the Infant and feeding practices among infants less than one year of age in the slum areas.

Objectives

To know about the knowledge of mothers regarding breast feeding and complementary feeding.

To study about the infant feeding practice and the factors influencing incorrect practices

Materials and Methods

It is a cross sectional observational study conducted in the urban slum areas present in outskirts of city of Bhopal between December 2017 to March 2018. It has a population around 8000.

Data was collected from Anganwadi centers located in urban slum. 20% of the mothers of infants in the age group of 0-12 months attending the immunization session were selected and interviewed by the investigator personally and the relevant information was recorded using a pre-designed proforma semi structured questionnaire having open and close ended questions.

Questionnaire included child's age, order of birth, number of children in the family, place of delivery. Time of initiation, prelacteal feeds, number of times of feeding per day and duration of exclusive breastfeeding was noted.

Positioning of the baby and signs of attachment was observed and noted as per IMNCI guidelines. Timing of initiation of complementary feeding, mode of feeding the child, advice received from health worker, problem faced when introduced complementary feeding were noted.

Method of collection of Data

Sample size: Considering the exclusive breastfeeding rate of 54.9% (according to NFHS 4) the sample size was calculated using the formula pq/L^2 where (p is the prevalence of EBF = 54.9q is (1-p) is 45.1, (L is the allowable error of 20%) a sample size of 85 was calculated, As the sample size was less for the study. sample size was doubled to make the study more significant.

So, sample size is increased to 170. 170 mothers having infants under 12 months of age were selected by simple random sampling from 4 Anganwadis in the urban slums.

Inclusion criteria: Mothers of infants (less than one year) in the urban slum

Exclusion criteria

1. Mother unwilling to give consent
2. Any illness of the infant affecting feeding as diagnosed by the attending pediatrician
3. Contraindications to breastfeeding.

Statistical analysis- The necessary tables and graphs were prepared, the data was analyzed manually in the initial stages, and later computerized analysis was done using Percentage and chi square test.

Results**Table-1: Baseline data of mother and infants.**

Variable	Number (n=170)	Percentage
Age Group		
≤ 20 years	34	20
21 - 25 years	78	45.88
26-30 years	36	21.17
>30 years	22	12.94
Religion		
Hindu	149	87.6
Muslim	15	8.8
Others	6	3.5
Literacy		
Illiterate	68	40
Literate	102	60
Place of Delivery		
Institutional	146	85.88
Home	24	14.11
Working status of mother		
Working	59	34.7
Non-working	111	65.29
Infants Age		
0-6 months	56	32.94
7 -9 months	46	27.05
9 - 12 months	68	40
Gender		
Male	86	50.58
Female	84	49.41
Birth order		
First	72	42.35
Second	86	50.58
Third and above	12	7.05

General profile: In the present study number of mothers of infants upto 1 yr of age were 170. Maximum were in age group of 21-25yrs 78 (45.8%) Out of 170 infants, boys were 86 (50.58%) and girls were 84 (49.41.%) with a ratio of 1:0.95. Infants under 6 months were 56(32.94%),7-9 months were 46(27.05%) First born were 42.35%

Socio-demographic profile- Among 170 mothers 149 (87.6%) were Hindus. Nearly 40% of mothers were illiterate, 60% were literate. Nearly 146 (85.88%) deliveries were institutional and about 24 (14.11%) were home deliveries attended by trained dais. Working mothers were 59(34.7%) and non-working were 111(65.29%)

Table-2: Various feeding practices observed in study.

Feeding practice	Number	Percentage
Use of Pre-lacteals	82	48.23
Cow milk	48	58.5
Formula milk	11	13.4
Sugar, honey, boiled water	23	28
Initiation of feeding within 1 hour	53 (n=170)	31.17
Regarding Colostrum feeding	105	61.76
Exclusive Breastfeeding up to 6 months	88	51.76
BF during illness	130	76.47
Bottle feed	78	45.88

Breastfeeding practices: In the present study all 170 (100%) infants were breastfed. Pre lacteal feeds were given to 82 (48.23%) infants, out of which 58.5% were given cow's milk. Sugar honey and water was given to 28% infants as prelacteal feed. Formula milk was given in 11 (13.4%). 45.88% used bottle feeding.

Among 54 (34.2%) illiterate mothers 44(81.5%) mothers were administering pre lacteal feeds showing a positive significant association between illiteracy among mothers and administration of pre lacteals ($X^2=20.12$, $P<0.0001$) (Table-6).

Breastfeeding was initiated within 1 hour of birth in 53(31.17%). The reasons of delayed initiation of breast feeding after delivery were that majority of mother 36(34.28%) had undergone surgery or had a delayed initiation of lactation 20(19.04%). Baby admitted in NICU was the reason in 18 (17.14%) Nearly 9.02% of mothers were not aware of early initiation of breastfeeding. Colostrum was given to 105(61.76%) infant. (Table-3) Exclusive breastfeeding for 6 months is seen in 88 (51.76%). Among 55 (32.35%) illiterate mothers, majority of them 46 (86.63%) have not practiced exclusive breastfeeding for 6 months and is found to be statistically significant ($P<0.0001$). (Table -6). In the majority of mothers 60(35.29%) breastfeeding knowledge and awareness was obtained by health personnel during regular antenatal and immunization visits in anganwadis and health centers. From family 42(24.70%). 8(4.7%) mothers had no knowledge regarding early initiation of breast feeding. (Table 4)

Table-3: Reasons for late initiation of breastfeeding.

Reason	Number (n=105)	Percentage%
Milk not produced immediately	20	19.04
Delivery Complication**	21	20
Baby was in NICU	18	17.14
Caesarian section	36	34.28
Not aware of early Initiation	10	9.52

Table-4: Source of breast-feeding related knowledge in mothers (n=170)

Source	Numbers (%)
School	34(20)
Health personnel	60 (35.29)
Family	42 (24.70)
Media	26(15.29)
No knowledge	8 (4.7)

Table-5: Complementary Feeding Practices.

Practices	Number (n =170)	Percentage %
Appropriate time of initiation		
0-4 months	12	7.05
4-6 months	51	30
6-9 months	88	51.76
9-12 months	19	11.17
Appropriate consistency	55	32.35
Appropriate amount	89	52.35
Adequate frequency	82	48.23

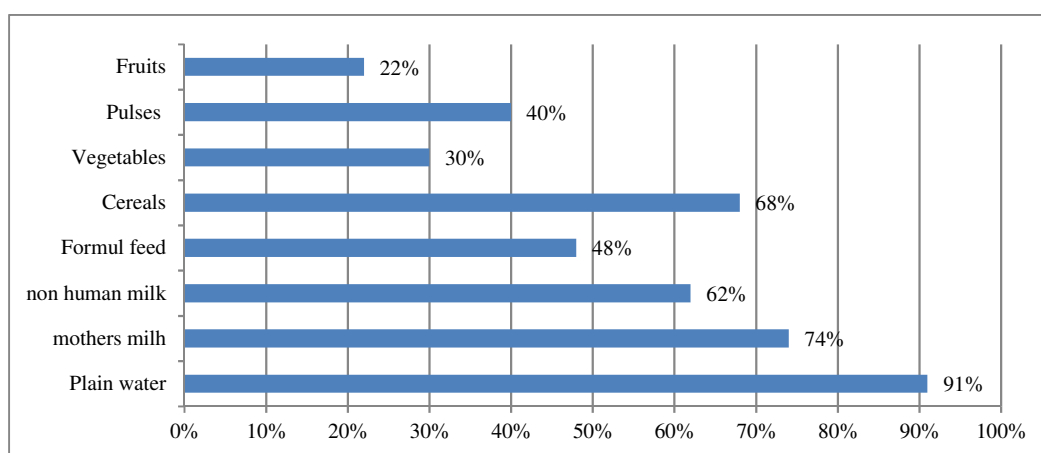


Figure-1: Complementary feeding practices age 6-12 months

Complementary feeding was introduced before 6 months of age in 63 (37.05%) of infants and at 6 months in 88 (51.76%). In 19(11.17%) of infants complementary was started late between 9-12 months. Continuation of breastfeeding was seen in 74% infants. In Spite of higher cost of formula feed 50% of mothers are giving formula feeds which should be discouraged. 48% mother gave cereals, vegetables and pulses were given to 30% and 40% infants as a complementary feeding (Figure 1) 32.35% of infants were given feeding inappropriate consistency. Complementary feeding was given in appropriate amount and frequency in 89 (52.35%) and 82 (48.23%) respectively.

Table-6: Association of exclusive breastfeeding and Pre lacteal feeds with literacy status of mother

	Exclusive Breast Feeding		Total
	Yes	No	
Illiterate	15 (27.27%)	40(72.72%)	55
Literate	73(63.47%)	42(36.53%)	115
Total	88	82	170
The chi-square statistic is 19.5327. The p-value is .00001. This result is significant at $p < 0.05$.			
-Prelacteals			
	Yes	No	
Illiterate	46	9	55
Literate	36	79	115
	83	87	
The chi-square statistic is 18.1623. The p-value is 0.00002. This result is significant at $p < 0.05$.			

Among 55 (34.2%) illiterate mothers 46(81.5%) mothers were administering pre lacteal feeds showing positive significance ($X^2 = 18.1623$ ($P < 0.0001$)). Exclusive breastfeeding for 6 months is seen in 88 (51.76%) Among 55 (32.35%) illiterate mothers, majority of them 40(72.27%) have not practiced exclusive breastfeeding for 6 months and is found to be statistically significant. ($P < 0.0001$)

Discussion

Two practices together – ensuring optimal breastfeeding in the first year and complementary feeding practices – could prevent almost one fifth of deaths of children under 5 years of age [12-14].

The urban population is rapidly expanding because of the large-scale migration of people to the cities and it is projected that more than half of the Indian population will live in urban areas by 2020 and that nearly one third of this urban population would have been slum dwellers previously [15]. The ongoing process of rapid urbanization has deleterious repercussions on the health and nutrition, especially in children. Inappropriate infant feeding practices is one of the important causes of malnutrition as has been reported by a study [16].

The present study revealed that initiation of breast-feeding within 1 h of birth was seen in 31.17% which is less than the corresponding both national (41.6%) and Madhya Pradesh (34.4%) NFHS-4% [5]. statistics. We also found lower percentage initiation of breastfeeding was reported by other studies from urban slum areas i.e. A Dasgupta et.al (31.4%), (34.1%) Raval D et al. while a higher 66% was reported in Swati et al, this difference may be due to local culture beliefs and practices that existed in particular regions [17, 18, 19]. Ghana study which clearly showed for the first time in the world, that ensuring initiation of breastfeeding within 1 hour could cut 22% of all neonatal mortality [20]. That means in India, if all mothers were enabled to initiate breastfeeding within the 1st hour, about 2.5 lac deaths occurring during 1st month could be saved [21].

Some studies have identified cesarean section as a hindering factor in this regard [17, 18]. In the present study caesarian section was seen as the main reason (34.28%) for late initiation of breastfeeding.

In the present study it was observed that the prevalence pre-lacteal feed was (48.23%) other reported (31.4%), Nagpur slum (78.61%), and a study at Gujarat (61.9%), Garhwal region (33.6%) [17, 18, 22, 23]. In the present study most common prenatal feed was cow's milk (61.53%). Colostrum was given to 61.76% of the babies. Variable results are seen in other studies (36.9%) by Dewang et al, Aparajita Dasgupta et.al (70.9%) [17, 18].

Among 55 (34.2%) illiterate mothers 46(81.5%) mothers were administering pre lacteal feeds showing a positive significant association ($X^2 = 18.1623$ ($P < 0.0001$)). Association between maternal illiteracy and use of prelacteal. Similar result was seen in studies [18, 22].

This indicates that prelacteal feeding is still prevalent across the nation due to cultural prejudice, maternal illiteracy and false belief even after health promotion. All efforts must be made both at institution and domiciliary level to remove this unhealthy practice.

Exclusive breastfeeding among children less than 6 months: Exclusive breastfeeding under 6 months of age was found in 51.76% in the present study which is less than NFHS-4 data at national level (54.9%) and at state level Madhya Pradesh (58.2%) and also from other studies like in Kolkata (66.7%), Garhwal region (52.8%) [5, 17, 24]. Study in urban slums in Nagpur (36.84%) and Karnataka (Rajesh et al) (22%) showed less percentage of mother practicing exclusive breast feeding [22].

Data from urban slums repeatedly documented that although breastfeeding was common, exclusively breast feeding was practiced only in 30-40% of infants younger than 4 months of age.[24]

A statically significant association was seen between EBF and maternal literacy in present study. Similar significant association of exclusive breastfeeding and maternal literacy is seen in other studies. In a. Similar study at Nagpur, Bagul et al noted 84% of literate mothers had practiced EBF and only 24% of illiterate mothers had done EBF practice to babies [22]. Complementary feeding was introduced before 6 months of age in 63 (30.07%) of infants and at the appropriate age in 88 (51.76%). In 19 (11.17%) of infants complementary was started late between 9-12 months.

According to NFHS Madhya Pradesh data children under 6-8 months receiving solid or semisolid food and breast milk were 38.1% Aparajita et al reported complementary feeding was found to be started 21.2% both at less than 6 months and at 6 months and 17.6% at

more than 6 months of age [4, 5, 17]. Health personnel (35.29%) and family members were the main source of information regarding feeding practices for our mothers. Similar observation noted by Roy et al. in a study at Kolkata [17, 23]. 34.22% of respondents were informed about infant feeding practices by health personnel in their study. so, adherence to the correct feeding practices can be increased by promoting education to mothers and by imparting health education.

Limitations of the study: In the study the subjects were from the population attending health centers (Anganwadis) and hence it may not be a representative of the general population. The small sample size for proportion for children for various age groups limits its representativeness. A study with more sample size and with better statistical tools needs to be done.

Conclusion

The conclusion of the study is that undesirable practices related to infant feeding such as late initiation of breastfeeding, discarding colostrum, use of prelacteal feeding, and inappropriate complementary feeding practices are still prevalent. Low rates of exclusive breastfeeding found in the study which is below national and state statistics. is an area of concern.

Maternal illiteracy and lack of awareness regarding correct feeding practices were the limiting factors for faulty feeding practices. Various parameters are improving but still much remains to be done at primary care level.

A comprehensive and effective plan and activities needs to be prepared to promote, maternal counseling, development of lactation clinics, and training of health workers and relevant programs at community level. Awareness among mothers regarding the importance and advantages of colostrum feeding, early initiation of breast feeding, exclusive breast feeding for 6 months, introduction of complementary feeding at 6 months, harmful effects of prelacteal feeding should be created to improve the health of children in early years of life

What this study adds to existing knowledge?

This study shows that most indicators showed improvement compared to the previous but the faulty feeding practices are still prevalent and are not reasonable and need to be corrected. the finding in the study clearly highlight the importance of mother's education on infant feeding practices.

Author's contribution

1. **Dr. Astha Tiwari:** The concept and design of the study, Statistical analysis of data analysis, manuscript preparation, editing, and review. and final approval of the version to be submitted.

2. **Dr. Umesh Patel, Dr. Deepti Singh, Dr. Sunita Lakhwani, Dr. Kirti Vishwakarma:** Acquisition of data, search of literature and interpretation of data.

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