

Original Research Article

An explorative cross-sectional study on breast-feeding practices among children aged 12-23 months residing in a district of northwestern Punjab: an urban-rural comparison

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ABSTRACT

Background: The IYCF guidelines clearly dictates the breastfeeding practices for first six months of life. But, the practical adoption of these recommendations continues to fall short of expectations. Factors like urbanization, infant formula marketing, and maternal employment have contributed to declining exclusive breastfeeding (EBF) rates. Therefore, we planned to conduct this study to assess breastfeeding practices during first 6 months of life and made an urban-rural comparison.

Methods: An explorative cross-sectional study was conducted in 2 villages and 2 urban slums, involving 420 mother-child pairs (210 each from rural and urban). A mother and child duo where child was aged between 12-23 months were interviewed. The information pertaining to breastfeeding during first six months were collected on pre-designed, pretested and validated proforma. Data was compiled and analysed using Epi-info 0.7.

Results: Out of 420 participants 54% were males and 46% were females. Breastmilk was given to 98% of the study participants with no significant urban-rural difference. However, only 5% of urban and 2% of rural infants started breastfeeding within the first hour after birth. Overall, 46% of infants began breastfeeding two days after birth, with a significantly higher proportion in rural areas (53%) compared to urban areas (39%). 74% were exclusively breastfed. Prolactal feeding was significantly more common in rural areas (87%) than in urban areas (76%).

Conclusions: While exclusive breastfeeding rates were relatively good. Significant differences were observed in early breastfeeding initiation and prolactal feeding in rural and urban area.

Keywords: Breastfeeding, Breastmilk, Colostrum, Mother, Prolactal feeds

INTRODUCTION

The future of any nation, depends upon healthy children. The first 2 years of life are often referred to as the “critical window of opportunity”.¹ From the beginning, adopting correct feeding habits will foster the optimal growth and development of the child. They are the remarkable challenges in achieving and maintaining good health.² Breast milk is ideal for newborns, providing complete nutrition and supporting sensory, cognitive, and immune system development. Breastmilk is a natural, renewable and sustainable resource which does not generate waste nor pollution. According to the Infant and

Young Child Feeding practices (IYCF) guidelines breastfeeding should begin within the first hour after birth.² The National Family Health Survey-5 (NFHS-5) reveals disparities in breastfeeding practices across India. Nationally, only 41.8% of infants are breastfed within the recommended timeframe, with urban areas (44.7%) slightly outperforming rural areas (40.7%). Punjab exceeds the national average at 53.1%.³ The initial milk, colostrum, is particularly nutrient-dense and offers crucial protection against infections and diseases.⁴ Colostrum is the most suitable food for the new born during this early period, because it contains a high concentration of proteins and other nutrients. The use of colostrum and

avoidance of pre-lacteal feeds are the cornerstone in early neonate nutrition and may be prerequisite for the establishment of future of breast feeding. Exclusive breastfeeding practices (EBF) is defined as the child takes only breast milk and no additional food, water, or other liquid (except medicine and vitamins if needed) till six months of age.² Exclusive breastfeeding for 6 months is the optimal way of feeding infants.⁵ How soon after birth breastfeeding begins, how long it continues, and time of start of other foods, all affect the extent of breastfeeding's advantages. It has been observed that infants aged 0-5 months who are not breastfed have seven-fold and fivefold increased risks of death from diarrhoea and pneumonia. Global and Indian breastfeeding rates are declining, especially in urban areas, due to urbanization, formula marketing, and mothers working outside the home. Exclusive breastfeeding for infants under six months stands at 63.7% nationally, with rural areas (65%) surpassing urban areas (59.6%). However, Punjab lags behind the national average, with only 55.5% of infants exclusively breastfed. The rural-urban divide persists in Punjab, with 57% of rural infants and 52.6% of urban infants receiving exclusive breastfeeding.³ These figures highlight regional variations and the need for targeted interventions to improve breastfeeding practices across India. So the present study was planned to assess the breastfeeding practices and various socio-demographic factors associated with these practices in rural area and urban slum of district Amritsar.

METHODS

The present cross-sectional study was conducted in the rural area and urban slum under the department of community medicine, Government Medical College, Amritsar over a period of one year (1st January 2023 to 31st December 2023). The study was commenced only after taking due approvals from the institutional research committee and institutional ethical committee. Mother and child duo where the child was in the age group of 12-23 months formulated the study population. Sample size was calculated using the formula for single proportion where prevalence of EBF was taken as proportion of interest (EBF of Punjab as per NFHS-5 was 55.5%) and a total of 420 mother and child duo (where child is aged between 12-23 months) was taken.³ Two villages and two urban slums were randomly selected from the list of urban slums and villages of Majitha block of Amritsar and a line list of households with children in the age group of 12-23 months in these selected areas formulated the sampling frame. From this line list, systematic random sampling technique was used to select the required sample size i.e. 210 each from urban and rural areas. The sample interval was calculated by dividing the total number of eligible households in the line list with the required sample size. The first household was selected by randomly selecting any number less than sampling interval. The subsequent houses were selected by adding up the sampling interval to the number of the first household. If the selected household was found to be

locked or the mother child duo was unavailable on the day of the visit, repeated attempts were made to contact them, but if still not accessible, immediately next household in the list was selected to complete the sample size. Data was collected using a pre-designed, pre-tested and validated, semi-structured questionnaire after obtaining written informed consent. The study gathered information on sociodemographic profiles and breastfeeding practices. Data was compiled using Microsoft excel and analyzed using Epi-info 0.7, with results presented in tables and charts. The frequency and percentages of various responses were obtained and results are given in percentage. To find the association, EBF was taken as variable as it was universally acceptable and relevant tests of significance were applied, i.e., chi-square for categorical/nominal/ordinal variables.

RESULTS

Socio-demographic profile

The study population comprised 54% males and 46% females, predominantly from scheduled caste (66%). Sikhism was the main religion (71%), more prevalent in rural areas (81%) than urban (60%). Hinduism was more common in urban areas (38%) compared to rural (3%). Most participants (66%) lived in joint families. Nearly half the mothers (47%) had 6th-11th grade education, and 93% were housewives. Fathers' education was similar, with 46% having 6th-11th grade education and 40% having 12th grade or higher. Occupationally, 56% of rural fathers were laborers, while 51% of urban fathers held salaried positions.

Almost half of the study participants i.e. 49% belonged to middle class according to B. G. Prasad scale which was used for assessment of socio-economic status. This was followed by upper middle class (26%), lower middle class (19%), upper class (5%) and only 1% belonged to lower class. As far as urban-rural distribution of socio-economic status was concerned, 53% and 44% of those residing in the rural area and urban area belonged to the middle class, respectively. Whereas 23% of the urban population and 15% of those residing in the rural area belonged to lower middle class. 5% each of urban and rural study participants belonged to the upper class.

Breastfeeding practices

Breastfeeding was initiated among 98% of the study participants with not much urban-rural variation. A statistically significant difference was found in the early initiation of breastfeeding, where 5% of the urban dwellers and 2% of the rural participants-initiated breastfeeding within the first hour and a higher proportion i.e. 53% of rural study participants initiated breastfeeding after 2 days of birth as compared to 39% of the urban study participants. No significant difference was found among EBF rates, colostrum feeding and mixed milk feeding in urban and rural study participants (Table 1A).

Table 1A: Association of place of residence with the breastfeeding practices.

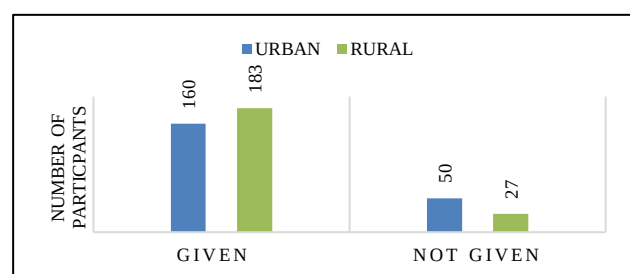
Variable	Urban (n=210)	Rural (n=210)	Total (n=420)	χ^2 (p value; df)
Ever breastfed				
Yes	207 (99)	204 (97)	411 (98)	1.02 (0.312;1)
No	3 (1)	6 (3)	9 (2)	
Initiation of breastfeeding	(n=207)	(n=204)	(n=411)	10.04 (0.018; 3)*
Within 1 hour	10 (5)	4 (2)	14 (3)	
2-24 hour	53 (25)	38 (19)	91 (22)	
24-48 hour	64 (31)	54 (26)	118 (29)	
More than 48 hours	80 (39)	108 (53)	188 (46)	
Colostrum given				
Yes	156 (75)	142 (70)	298 (73)	1.70 (0.191; 1)
No	51 (25)	62 (30)	113 (27)	
Mixed milk feed (breastmilk and top milk)				
Yes	55 (27)	52 (25)	107(26)	0.06 (0.803; 1)
No	152 (73)	152 (75)	304(74)	
Exclusive breastfeeding (n=304)				
Yes	152 (73)	152 (75)	304 (74)	0.06 (0.803; 1)
No	55 (27)	52 (25)	107 (26)	
Type of EBF	(n=152)	(n=152)	(n=304)	0.08 (0.776;1)
On demand feeding	145 (95)	146 (96)	291 (96)	
As per schedule	7 (5)	6 (4)	13 (4)	

(Figures in parenthesis are percentages). *p<0.05 is considered to be statistically significant

Table 1B: Distribution of study participants according to their breastfeeding practices.

Variables	Urban (n=210)	Rural (n=210)	Total (n=420)	χ^2 (p value; df)
Cleaning of breast				
Yes	40 (19)	20 (10)	60 (15)	7.46 (0.006;1)*
No	167 (81)	184 (90)	351 (85)	
Emptying of one breast before shifting to another breast				
Yes	79 (38)	83 (41)	162 (39)	0.27 (0.600;1)
No	128 (62)	121 (59)	249 (61)	
Both breasts used for feeding				
Yes	182 (88)	184 (90)	366 (89)	0.54 (0.460;1)
No	25 (12)	20 (10)	45 (11)	

*p<0.05 is considered to be statistically significant

**Figure 1: Distribution of study participants according to their history of prelacteal feeds (n=420).**

(χ^2 , p value; df = 8.412, 0.03, 1).

As far as cleaning of breast and nipples before feeding was concerned, a statistically significant difference was found, where 19% of the urban participants' mothers reported cleaning of breast and nipples as compared to 10% of the rural mothers (Table 2).

Overall, 82% of the study participants were given prelacteal feeds with a significant difference in rural (87%) and urban (76%) dwellers (Figure 1).

Most of the study participants both from rural (81%) and urban (86%) were given prelacteal feeds as a customary ritual. 9% of the urban and 10% of rural participants reported delayed breastmilk secretion as a reason for giving prelacteal feeds (Figure 2).

EBF was highest among the SC/ST category (76%) and was found to be slightly higher among those residing in nuclear families (78%). Exclusive breastfeeding rates varied from 77% among individuals from class III to 52% among those from class I, but this variation did not show statistical significance (Table 2).

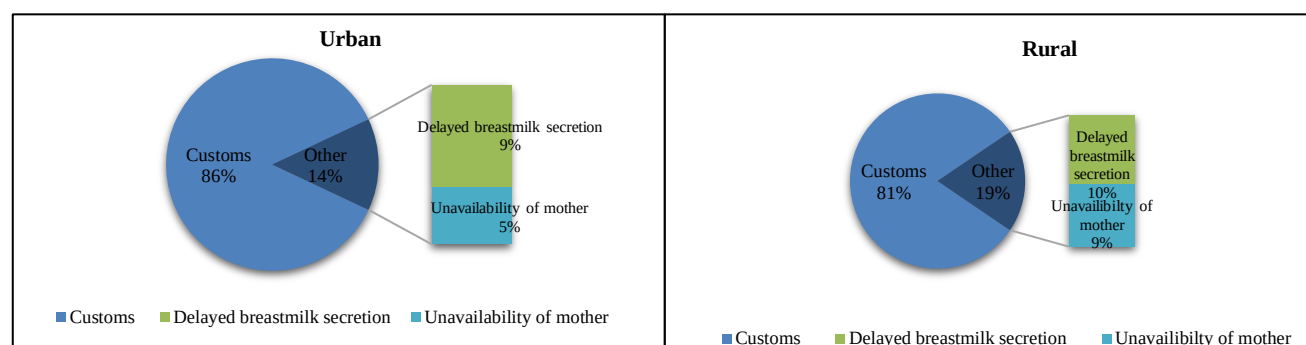


Figure 2: Distribution of study participants according to the reasons for giving prelacteal feeds (n=343).

Table 2: Association of socio demographic profile with breastfeeding practices (n=411).

Variables	EBF (n=304)	Non-EBF (n=107)	χ^2 (p value; df)
Sex			
Male	164 (75)	55 (25)	0.206 (0.650; 1)
Female	140 (73)	52 (27)	
Caste			
General	44 (69)	20 (31)	2.382 (0.304; 2)
SC/ST	204 (76)	63 (24)	
BC/OBC	56 (70)	24 (30)	
Religion			
Sikh	210 (72)	80 (28)	2.262 (0.304; 2)
Hindu	63 (75)	21 (25)	
Christian/others	31 (84)	6 (16)	
Type of family			
Nuclear	109 (78)	30 (22)	2.61 (0.142; 1)
Joint	195 (72)	77 (28)	
Socioeconomic status			
Class I	11 (52)	10 (48)	6.465 (0.167; 4)
Class II	79 (71)	31 (29)	
Class III	154 (77)	45 (23)	
Class IV	57 (71)	20 (29)	
Class V	3 (75)	1 (25)	

Table 3: Association of educational and occupational status of the parents with breastfeeding practices (n=411)

Variables	EBF (n=304)	Non-EBF (n=107)	χ^2 (p value; df)
Education of mother			
Up to primary	58 (77)	17 (23)	0.739 (0.690; 1)
6 th -11 th	146 (74)	51 (26)	
Secondary and above	100 (72)	39 (28)	
Occupation of mother			
Housewife	285 (75)	97 (25)	1.157 (0.282; 1)
Working	19 (66)	10 (34)	
Education of father			
Up to primary	46 (79)	12 (21)	4.9171 (0.085; 1)
6 th -11 th	147 (77)	43 (23)	
Secondary and above	111 (68)	52 (32)	
Occupation of father			
Laborer	146 (77)	44 (23)	5.9917 (0.049; 2)*
Salaried	126 (75)	42 (25)	
Self-employed/farmer	32 (60)	21 (40)	

*p<0.05 is considered to be statistically significant

Father's occupation significantly influenced EBF, with 77% of labourers' children exclusively breastfed as compared to 60% of those whose fathers were self-employed or farmers. Although not statistically significant, a decreasing trend in EBF was observed with increase in education of both the parents. EBF rates (75%) were higher among housewives (Table 3).

DISCUSSION

The World Health Organization recommends that breastfeeding should be initiated within 1 hour of birth. Early initiation of breastfeeding (within 1 hour) provides benefits for both the baby and the mother.⁶ The baby friendly hospital initiative (BFHI) was designed to promote early initiation of breast feeding, preferably immediately after birth and it is one of the ten steps of successful breastfeeding. Despite these recommendations, the study revealed a critical issue in breastfeeding practices, with only 3% of mothers began within the first hour after birth, significantly lower than national (41.8%) and state (53.1%) averages reported in NFHS-5.³ Delayed milk production, caesarean sections, and insufficient counselling were key factors. An urban-rural disparity was observed, with rural areas showing a higher tendency for delayed initiation beyond 24 hours. These findings align with the NFHS-5 findings where the initiation of breastfeeding was higher among the urban children as compared to rural children.³ Possible reasons include a higher prevalence of births in private hospitals and inadequate education on early breastfeeding in rural settings. In West Bengal, Sinha babu et al. found that only 13% of newborns were breastfed within the first hour of life.⁷ However, research in a peri-urban area of Aligarh reported that 16% of babies-initiated breastfeeding within the first 24 hours.⁸ Another study comparing urban and rural areas of Ahmedabad revealed a stark contrast with 92.5% of urban newborns were breastfed within the first hour after birth, while in rural areas, 42% did not initiate breastfeeding within this crucial timeframe.⁹ Early contact and initiation of breast feeding is crucial for prevention of childhood malnutrition and promote healthy child development it is also important for psychological bonding with mother and child.⁵

The foundation of early infant nutrition lies in the use of colostrum and the avoidance of any food or liquid before breastfeeding begins. These practices are crucial and may set the stage for successful long-term breastfeeding. Pre-lacteal feeding, which refers to giving an infant any substance before the first breastfeeding session, is discouraged in favour of immediate colostrum feeding.⁵ The study found that 82% of participants received pre-lacteal feeds, with a significant difference between rural (87%) and urban (76%) areas. Main reasons for pre-lacteal feeding were customs and beliefs, delayed milk secretion, and the unavailability of the mother. Higher percentage i.e. (80%) of pre-lacteal feeding was reported by a study in the peri urban area of Aligarh.⁸ Findings in the present study were much higher to the study

conducted in urban slums of Kolkata by Roy et al where, 29% of the participants received Prelacteal feeds.¹⁰ The study in Saudi Arabia reported a 50% rate of prelacteal feeding, highlighting that this practice varies across different countries and cultures.¹¹

Exclusive breastfeeding rates were promising i.e. 74% surpasses the state average of 55.5%.³ EBF was found to be statistically associated with the occupation of the father, where 77% of the study participants whose fathers were laborers were exclusively breastfed, where as 60% of those whose fathers were self-employed or farmers were exclusively breastfed. This could be due to differences in affordability of milk substitutes. Interestingly, EBF rates showed an inverse relationship with parental education and socioeconomic status. This counterintuitive trend, also observed in studies from South India, Nepal, and Bangladesh, suggests that educated mothers may be more exposed to and influenced by breastmilk substitutes.¹²⁻¹⁴ These findings highlight the intricate interplay of socioeconomic factors, education, and cultural beliefs in shaping breastfeeding practices. In the present study feeding on demand was found in the majority (96%) of mothers. Similarly, 84.1% of mothers fed their babies on demand in a study in West Bengal.⁷ Another study was done in the urban areas of Meerut, Uttar Pradesh, where 72.6% of mothers fed their babies on demand reflecting regional variations.¹⁵

A positive trend was seen in the current study with 73% of participants feeding colostrum to their newborns. This colostrum feeding rates were comparable to those in a semi-urban community in Gujarat.¹⁶ A community-based study in a peri-urban area of Aligarh reported a lower rate, with only 41% of babies receiving colostrum.⁸

CONCLUSION

This study revealed significant gaps in breastfeeding practices in urban slums and rural areas, with very low rates of early initiation and high prelacteal feeding. To address these issues, there must be strict implementation of baby friendly hospital initiative (BFHI) and breast promotion network of India (BPNI) guidelines in healthcare facilities. Key interventions include promoting immediate skin-to-skin contact, encouraging breastfeeding within the first hour, providing comprehensive staff training, prohibiting breast milk substitute promotion, and educating about prelacteal feeding risks and the benefits of exclusive breastfeeding. The study also suggests establishing support groups, enhancing counselling services, ensuring regular BFHI compliance monitoring, and using visual aids in maternity areas to overcome language and literacy barriers. These comprehensive measures aim to significantly improve timely breastfeeding initiation and overall breastfeeding practices.

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Ethical approval: The study was approved by the Institutional Ethics Committee (vide letter no 10760/D-26/2021 batch.)

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