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Research Article

Colostrum feeding practices and its determinants among urban and rural mothers in Kamrup, Assam, India

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ABSTRACT

Background: Colostrum is the first breast milk produced after birth and is important for promotion of health and prevention of infections of the newborn immediately after birth. Though the breastfeeding practices are well known to mothers but the necessity of colostrum feeding is still poorly understood especially by the mothers in rural areas due to various factors. The objective of the study was to find out the prevalence of colostrum feeding practices and its determinants among the urban and rural mothers of Assam, India.
Methods: A cross sectional study was conducted from February-July 2014. The study was conducted by interviewing of 400 mothers having children of 0-23 months of age in both in rural and urban areas.
Results: 21% of mothers in urban areas had discarded colostrum whereas in rural areas it was 29.5% .The association between colostrum feeding practices and age of the mothers ($P<0.05$), religion ($P<0.05$), type of families ($P<0.05$), educational status of the mothers ($P<0.05$), socioeconomic status ($P<0.05$), place of delivery ($P<0.05$), mode of delivery ($P<0.05$) were found to be significant.
Conclusions: Colostrum feeding practices were lowers among rural mothers , low educational status, who had delivered at home and reasons behind the discard of colostrum were found to be eleder's/relative advice, child could not digest and ignorance . Educating the mothers and the communities about the value of colostrum would help in ensuring that colostrum is not wasted but fed to the child.

Keywords: Colostrum, Feeding practices, Determinants, Rural, Urban

INTRODUCTION

The milk secreted after the child birth for the first few days is called 'Colostrum'. It is yellowish in colour and sticky, highly nutritious and contains anti-infective substances. It is very rich in vitamin A and protein. It has less fat and the carbohydrate lactose than the mature milk. Feeding colostrum to the baby helps in building stores of nutrients and anti-infective substances (antibodies) in the baby's body.

The anti-infective substances protect the baby from infectious diseases such as diarrhoea, to which the child might be exposed during the first few weeks after birth. Colostrum is basically the first immunisation a child receives from the mother. Some of mothers consider this first milk as something dirty and indigestible due to its difference in colour and consistency.

Delayed initiation of breastfeeding is a common practice in the country and this deprives the new borns from the concentrated source of anti-infective properties, vitamin A and protein available in colostrum and these faulty feeding practices were more prevalent in rural areas as compared to urban areas due to various factors like lower level education, lack of knowledge, religious beliefs, customs, elder's and relatives advice. In some communities breastfeeding is started as late as the fifth day for various superstitions and ignorance. In India only 15.8% of the new borns are started with breastfeeding

within one hour of birth and only 37.1% within a day of birth. Late initiation of breastfeeding not only deprives the child of the valuable colostrum, but becomes a reason for introduction of pre-lacteal feeds like glucose water, honey, ghutti, animal or powder milk which are potentially harmful and invariably contribute to diarrhoea in the new born.[1]

According to NFHS-3 Fact sheet Assam, 50.9% of mothers in urban areas were initiated breastfeeding within one hour of birth as compared to 50.5% in rural areas and 64.9% of mothers were exclusively breastfed their babies in urban areas as compared to 44.4% in rural areas. Due to the discrepancies in feeding practices in rural and urban areas the prevalance of underweight were also different among rural and urban children i.e., 42% of children were underweight in rural areas whereas 34.1% in urban areas of Assam, India.[2]

Similarly in Muslim culture, honey with castor oil or a date dipped in honey was given to facilitate the discharge of meconium. Since the colostrum feeding has significant effects for immediate and future health of newborn infants especially in developing country like India which has high rates of malnutrition, infectious diseases and under five mortality.[3-4]

These faulty feeding practices were responsible for malnutrition and infections in newborn and infants and ultimtely leads to high infant mortality. The objective of the study was to assess the exising colostrum feeding practices and its determinants in rural and urban areas of Kamrup, Assam, India.

METHODS

It is a community based cross sectional study on colostrum feeding practices and its determinants among mothers having children of 0-23 months of age in rural areas (Villages under Rani Community Development Block) and urban areas (Wards under Guwahati Municipal Corporation), Kamrup district, Assam, India. The block consists of population of 94,728 as per Census 2011.[5]

In Rural areas child sex ratio estimated to be 1.15. The population pattern of Block is mixed one accounting 48% of tribal, which again comprises of the Bodos, the Rabhas and the Garos. About 80% of the population is Hindu while rest of the population is Muslim and Christians.

The second part (Urban areas) of the study has been undertaken in the Guwahati city, Kamrup district, Assam. The Guwahati city is often referred to as "Gateway of North East" region of India.

The Guwahati city's population was 963,429 (in the Census 2011) and in them males constituted 50,2255 and females constituted 46,1174 . The city has an average literacy rate of 91.11% with male literacy rate of 92.89% and female literacy rate at 89.16%. The major religion followed is Hinduism. Study was conducted during February – July 2014.

Inclusion criteria

Infants and young children (0 -23 months) ,both males and females residing in selected villages under the Rani Community Development Block and selected wards under the Guwahati Municipal Corporation, Guwahati, Kamrup district, Assam were interviewed.

Exclusion criteria

Infants and children with congenital anomalies and metabolic disorders influencing growth, and those children whose parents did not give consent for the study.

The study population consisted of infants and young children of 0-23 months of age residing in the households of randomly selected villages under the Rani Community Development Block and randomly selected wards under the Guwahati Municipal Corporation, Kamrup district, Assam.

The sample size was calculated by taking the prevalence of infant breast feeding within one hour of birth (which is considered as the prevalence of colostrum feeding) in Kamrup district of Assam which is (p) 76.4 % (According to Annual Health Survey 2010-2011 Fact Sheet, Assam with 95% confidence interval with the absolute errors (L) of 6% by using the formula $n=4pq/L^2$. Thus, the size of the sample came around 200.[6] Since I have done the cluster random sampling so as to get the required sample size we have to multiply sample size (N) with design effect of 2. Therefore, minimum sample size was required was 400.

Permission to conduct the study was obtained from the Institutional Ethics Committee, Gauhati Medical College, Assam. As per Census 2011, Rani Community Development Block consists of 26 Sub-centres and Guwahati Municipal Corporation consists of 31 wards.

Out of 26 Sub-centres, 10 Sub-centres were selected randomly and out of 10 Sub-centres 20 villages (2 villages from each sub-centre) and Out of 31 wards 20 wards were selected through cluster random sampling using the method of probability proportional to size.

From each cluster 10 infants or young children were selected to get the sample size of 400 i.e. 20x10=200 from the selected villages and 20x10= 200 from the selected wards using cluster sampling method who have fulfilled our inclusion criteria.

If, the required number of sample units were not met in that villages or wards, then the adjacent village or ward was taken to get the remaining sample units. The study is conducted in each village and ward by house to house

visits. If one house is found locked the adjacent house was approached and in case of families with more than one infants only younger one was selected as our study population. Age of child was ascertained from birth certificate, hospital discharge certificate, mother and child protection card (MCPC) and local event calendar prepared for this purpose.

The data were collected with the help of both open ended and closed ended proforma, dietary history of the infant. Parents/Guardians especially mothers were interviewed and all the information's were recorded.

Permission to conduct the study was obtained from the Institutional Ethics Committee, Gauhati Medical College, Assam. All the mothers were briefed about the objective, purpose and nature of the study as well as contents of the proforma in local language and active help and cooperation were sought from them. Data were analyzed and presented in suitable tables; chi-square test was applied to test statistical significance where ever necessary. Data were collected and entered in Microsoft Office Excel and analyzed by using SPSS- Version 18.

Criteria of significance used in the study were $p< 0.05$.

RESULTS

As shown in Table 1, A total 400 mothers (200 mothers from the villages under Rani Community Development Block and 200 mothers from the wards under the Guwahati Municipal Corporation, Kamrup district) were studied for colostrum feeding practices and its determinants.

In urban areas, most of the mothers (42.5%) were in the age group of 15-25 years followed by 37.5% were in the age group of 25-35 years whereas in rural areas 45% were in the age group of 25-35 years followed by 30% were in the age group of 15-25 years.

In urban areas, 59% were Hindu followed by 36% were Muslims whereas in rural areas 70% were Hindu followed by 27.5% were Muslim. In urban areas 67% were belonged to nuclear families whereas 55% were belonged to joint families.

In urban areas, 30% mothers were graduate followed by 19.5% had attended the higher secondary school, 15% had attended upto high school and 12.5% of mothers were illiterate whereas in rural areas 5% were graduate, 25% had attended upto middle school, 37% had attended higher secondary school and 37% were illiterate.

34.5% of mothers from the upper middle class followed by 30% from the higher families in urban areas whereas in rural areas, 36% of mothers from the lower middle class families and 27.5% from the upper middle class families.

Table 1: Sociodemographic profile of study population.

Sociodemographic profile	Urban (N=200)	Rural (N=200)
	No. of children	No. of children
Age of the mothers (years)		
<15	21 (10.5%)	28 (14%)
15-25	85 (42.5%)	60 (30%)
25-35	75 (37.5%)	90 (45%)
>35	19 (9.5%)	22 (11%)
Religion		
Hindu	118 (59%)	140 (70%)
Muslim	72 (36%)	55 (27.5%)
Others	10 (5%)	05 (2.5%)
Castes		
General	61 (30.5%)	30 (15%)
OBC	99 (49.5%)	63(31.5%)
SC	18 (9%)	22 (11%)
ST	22 (11%)	85 (42.5%)
Type of Family		
Nuclear	134 (67%)	110 (55%)
Joint	66 (33%)	90 (45%)
Educational status of mothers		
Illiterate	25 (12.5%)	74 (37%)
Primary school	28 (14%)	23 (11.5%)
Middle school	18 (9%)	50 (25%)
High school	30 (15%)	17 (8.5%)
Higher secondary	39 (19.5%))	26 (13%)
Graduate	60 (30%)	10 (5%)
Occupational status of mothers		
Housewife	101 (50.5%)	136 (68%)
Cultivator	10 (5%)	20 (10%)
Daily wage earner	18 (9%)	13 (6.5%)
Service	38 (19%)	12 (6%)
Shop-keeper	33 (16.5%)	19 (9.5%)
Socioeconomic status (Per capita income in Rs.)		
Upper high (≥6186)	38 (19%)	10 (5%)
High (3093-6185)	60 (30%)	20 (10%)
Upper middle (1856-3092)	69 (34.5%)	55 (27.5%)
Lower middle (928-1855)	20 (10%)	72 (36%)
Poor(<927)	13 (6.5%)	43 (21.5%)
Place of delivery		
Govt. institution	176 (88%)	156 (78%)
Private institution	22 (11%)	16 (8%)
Home	2 (1%)	28 (14%)
Mode of delivery		
Normal	152 (76%)	168 (84%)
CS	31 (15.5%)	21 (10.5%)
Others	17 (8.5%)	11 (5.5%)
Parity		
<2	132 (66%)	109 (54.5%)
>2	68 (34%)	91 (45.5%)
Sex of the infants		
Male	105 (52.5%)	111 (55.5%)
Female	95 (47.5%)	89 (44.5%)

In urban areas 50.5% of mothers were housewives by occupation followed by 16.5% were service holders whereas in rural areas, 68% were housewives followed by 10% were cultivators and 9.5% of mothers were shop-keepers. In urban areas, 88% of children were delivered at Govt. institution whereas in rural areas 78% of children were delivered at Govt. institution.

Table 2: Distribution of study population in rural and urban areas according to the practices, whether colostrum given or discarded.

Colostrum	Urban (N=200)		Rural (N=200)		P value
	No. of children	%	No. of children	%	
Given	161	79	141	70.5	0.02
Discar-ded	39	21	59	29.5	
Total	200	100	200	100	

In urban areas, 76% of children were delivered by normal delivery followed by 15.5% by CS whereas in rural areas, 84% were delivered by normal delivery followed by 10.5% by CS. 52.5% of children were males and 47.5% were females in urban areas whereas in rural areas, 55.5% were males followed by 44.5% were females.

Table 3: Reasons given for discard of colostrum.

Reasons given for discard of colostrums	Urban (N=39)		Rural (N=59)	
	No. of children	%	No.of children	%
Ignorance	05	12.8	10	17
lder's/Relatives advice	09	23	22	37.2
Bad milk	05	12.8	11	18.6
Child could not digest	08	20.5	12	20.3
Others	12	30.7	04	6.7
Total	39	100	59	100

Notes: Others include flat or inverted nipple, retracted nipple, severe weakness of the mothers following delivery.

As shown in Table 2, out of 200 mothers in urban areas, 21% had discarded colosrum whereas in rural areas, 29.5% mothers had discarded colostrum and association were found to be significant.

Table 3, Due to some problems (retracted nipple, cracked nipple, severe weakness of mothers following delivery) colostrum were discarded by 30.7% of mothers followed by 20.5% believed that child could not digest and 12.8% of mothers had discarded colostrum due to ignorance in urban areas whereas in rural areas, 37.2% of mothers reason given for discard of colostrum was elder's/relatives advice followed by 20.3% child could not digest and 17% of mothers reason given for discard of colostrum were ignorance. As shown in Table 4, the association between colostrum feeding practices and age of the mothers (P<0.05), religion (P<0.05),type of families (P<0.05), educational status of the mothers (P<0.05),socioeconomic status (P<0.05), place of delivery (P<0.05) , mode of delivery (P<0.05) and parity (P<0.05) were statistically significant.

Table 4: Sociodemographic profile and colostrum feeding practices.

Socio-demo-graphic profile	Colostrum feeding practices		P value
	Given (N=302)	Discarded (N=98)	
Age of the mothers (years)			
<15 (49)	31 (63.2%)	18 (36.8%)	0.001
15-25 (145)	100 (69%)	45 (31%)	
>25 (206)	171 (83%)	35 (17%)	
Religion			
Hindu (258)	207 (80.2%)	51 (19.8%)	0.01
Muslim (127)	85 (67%)	42 (33%)	
Others(15)	10 (66.6%)	5 (33.4%)	
Type of Family			
Nuclear (244)	200 (82%)	44 (18%)	0.0002
Joint (156)	102 (65.3%)	54 (34.7%)	
Educational status of mothers			
Illiterate (99)	40 (40.4%)	59 (59.6%)	<0.0001
Literate (301)	262 (87%)	39 (13%)	
Socioeconomic status			
Upper high (48)	40 (83.3%)	08 (16.7%)	<0.0001
High (80)	65 (81.2%)	15 (18.8%)	
Middle (216)	170 (78.7%)	46 (11.3%)	
Poor (56)	27 (48.2%)	29 (51.8%)	
Place of delivery			
Govt. Institution (332)	286 (86)	46 (14%)	<0.0001
Private Institution (38)	09 (23.6%)	29 (76.4%)	
Home (30)	07 (23.3%)	23 (76.7%)	
Mode of delivery			
Normal (320)	275 (86%)	45 (14%)	<0.0001
CS (52)	15 (28.8%)	37 (71.2%)	
Others (28)	12(42.8%)	16 (57.2%)	
Parity			
<2 (241)	170 (70.5%)	71 (29.5%)	0.004
>2 (159)	132 (83%)	27 (17%)	

DISCUSSION

The present study was conducted among urban and rural mothers on colostrum feeding practices and its determinants in Kamrup district, Assam.

The study population comprised of Hindu (59%) and Muslim (36%) in urban areas whereas in rural areas 70% of mothers were Hindu and 27.5% were Muslim. Baruah R in a similar study found that majority (96.5%) belongs

to Hindus.[7] Kalita D in his study in Kamrup district, Assam found that majority of mothers were Hindus (69.7%) followed by Muslims (18.87%) and Christians (11.94%).[8]

In urban areas 49.5% of mothers were from OBC followed by 30.5% from General whereas in rural areas, 42.5% of mothers were from ST followed by 31.5% were from OBC. According to 2001 Census, Assam state has registered 12.4% of the total population as Scheduled Tribes and Kamrup district accounted 7.6% of tribal population of the total state's ST population.[9]

In urban areas, 30% mothers were graduate followed by 19.5% had attended the higher secondary school, 15% had attended upto high school and 12.5% of mothers were illiterate whereas in rural areas 5% were graduate, 25% had attended upto middle school, 37% had attended higher secondary school and 37% were illiterate. Census 2011 literacy rate in Assam has seen upward trend and is 72.19%. Of that male literacy stands at 77.85% and female literacy is at 63%. As per Census 2011, female literacy rate in rural area in Assam stands at 60.05%; whereas in urban area is at 79.8%. In urban areas 50.5% of mothers were housewives by occupation followed by 16.5% were service holders whereas in rural areas, 68% were housewives followed by 10% were cultivators and 9.5% of mothers were shop-keepers.

Contrary to the above, Kalita D has reported 95% of mothers were house wives. In the present study in urban areas, 88% of children were delivered at Govt. institution whereas in rural areas 78% of children were delivered at Govt. institution. In urban areas as per NFHS 3 Assam, 59% mothers from urban had institutional delivery whereas 18% mothers from mothers from rural area had institutional delivery.[10] As per Annual Health Survey 2011-12 Fact Sheet Assam, 57.6% mothers from rural area had institutional delivery (50% had delivered at Govt. Institution and 7.6% had delivered at Private Institution) whereas 81.5% mothers from urban area had delivered at institution (52.8% had delivered at Govt. Institution and 28.5% had delivered in Private Institution.

In the present study, out of 200 mothers in urban areas, 21% had discarded colosrum whereas in rural areas, 29.5% mothers had discarded colostrum and association were found to be significant. In a similar study carried out by Yadav and Singh in Bihar found that 62.5% urban a and 66.4% rural mothers discarded colostrum.[11] Gupta P et al in their study found that 43.5% of mothers gave Colostrum to their baby. Kumar D found that 54.8% of mothers discarded colostrums.[12,13] Dasgupta A found that 70.9% of mothers gave colostrums to their baby.[14]

In the present study, due to some problems (retracted nipple, cracked nipple, severe weakness of mothers following delivery) colostrum had discarded by 30.7% of mothers followed by 20.5% believed that child could not digest and 12.8% of mothers had discarded colostrum due to ignorance in urban areas whereas in rural areas, 37.2% of mothers reason given for discard of colostrum was elder's/relatives advice followed by 20.3% child could not digest and 17% of mothers reason given for discard of colostrum were ignorance. This observation is supported by Aswini S in a similar study found that 38.7% mothers from urban area had discarded colostrum after delivery due to their physical inability like pain or tiredness; whereas in rural area it was because of the elders advised (46.9%).[15]

Pandey in his study found that small percentage of mothers had discarded due to ignorance.[16] In the presesnt study, the association between colostrum feeding practices and age of the mothers ($P<0.05$), religion ($P<0.05$), type of families ($P<0.05$), educational status of the mothers ($P<0.05$), socioeconomic status ($P<0.05$), place of delivery ($P<0.05$), mode of delivery ($P<0.05$) and parity ($P<0.05$) were statistically significant whereas Subbulakshmi G in her study found that Socio-economic factors such as better income ($p<0.001$), general awareness of mothers, joint family system ($p<0.001$) and hospital delivery were noted to have positive influence on colostrum feeding.[17] Religion did not seem to affect the practice of colostrum feeding.

CONCLUSION

The current study revealed that the colostrum feeding practices were lower among rural mothers ,mothers with lower educational status, mothers from joint families,, who had delivered their children at home , low parity and the reasons behind the discard of colostrum were eleder's/relative advice, child could not digest and ignorance in both rural and urban areas. Health workers, Midwives and Nurses must increases the awareness among the rural and urban mothers regarding the importance and advantages of the colostrum for the newborn.

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REFERENCES

1. National Guideline on IYCF; MOWCD (Food & Nutrition Board GOI 2006).
2. National Family Health Survey-3 (NFHS-3) Fact Sheet, Assam. Provisional Data; Key indicators for Assam from NFHS-3.
3. Silva P. Environmental Factors and Children's Malnutrition in Ethiopia: Policy Research. Working Paper Series No. 3489. The World Bank, Washington DC. 2005.
4. Alemayehu T, Haidar, J, Habte, D. Determinants of Exclusive Breastfeeding Practices in Ethiopia. Ethiopian. J Health Development. 2009;23:12-8.

5. Census 2011, Office of Registrar General of India available at http://www.censusindia.gov.in. Last accessed on July 2015.
6. Annual health Survey 2011-12 Fact Sheet, Assam. Registrar General and Census Commissioner of India, New Delhi.
7. Baruah R. A study on pregnancy pregnancy wastage in rural area of Assam (Rani Block of Kamrup District. Thesis submitted to Gauhati University for MD degree in Community Medicine. 1992.
8. Kalita D. Child care practices of mothers having 1 -5 years children in Sonapur, Kamrup District, Assam. Thesis submitted to Gauhati University for MD degree of Community Medicine. 2007.
9. Census 2001, Office of Registrar General of India available at http://www.censusindia.gov.in/ Census_Data_2001/States_at_glance/State_Links/18 _asm.pdf last accessed on August 2015.
10. National Family Health Survey-3 (NFHS-3) Fact Sheet, Assam. Provisional Data; Key indicators for Assam from NFHS-3.
11. Yadav RJ, Singh P. Knowledge, Attitude and Practices of mothers about Breastfeeding in Bihar. Indian Journal of Community Medicine. 2004;29(3).
12. Gupta P, Srivastava VK, Kumar V, Jain S, Masood J, Ahmad N, et al. Newborn Care Practices in Urban Slums of Lucknow City, Uttar Pradesh. Indian J Community Medicine. 2010;35(1):82-5.
13. Kumar D, Goel NK, Mittal PC, Misra P. Influence of infant-feeding practices on nutritional status of under-five children. Indian J Paediatrics. 2006;73(5):417-21.
14. Dasgupta A, Naiya S, Ray S, Ghosal A, Pravakar R, Ram PS. Assessment of Infant and Young Child Feeding Practices among the Mothers in a Slum Area of Kolkata: A Cross Sectional Study. Int J Biol Med. Res. 2014;5(1):3855-61.
15. Ashwini S, Kaitti SM, Mallapur MD. Comparison of breast feeding practices among urban and rural mothers in field practice areas of the department of Community Medicine, JNM College, Belgaun: A cross-sectional study. 2014;4(1):120-4.
16. Pandey R. Breast feeding and the Working Women in India. Allahabad: Chugh Publications. 1990;8.
17. Subbulakshhmi G, Udipi SA, Nirmalama N. Feeding of colostrum in urban and rural areas. Indian J Paediatr. 1990;50:191-6.

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