

# Breastfeeding practices and infant feeding pattern of a tribal population region of eastern India

Deblina Sarkar<sup>1</sup>, Chanchal Kumar Dalai<sup>2</sup>, Kingsuk Sarkar<sup>3</sup>,  
Shubra S. Das<sup>4</sup>, Saugat Banerjee<sup>1</sup>

<sup>1</sup>Assistant Professor, Community Medicine, College of Medicine and JNM Hospital, WBUHS, Kalyani,

<sup>2</sup>Associate Professor, Pharmacology, College of Medicine and JNM Hospital, WBUHS, Kalyani, <sup>3</sup>Associate Professor, Community Medicine, College of Medicine and JNM Hospital, WBUHS, Kalyani, <sup>4</sup>MBBS, Ex Student, College of Medicine and JNM Hospital, WBUHS, Kalyani, India

## ABSTRACT

**Background:** Regular vigilance over infant feeding practices in the community is necessary for assessment of optimal growth and development and the intervention if needed. **Objective:** To illustrate infant feeding practices, and socio-demographically correlated time like when weaning starts, the challenges met by mothers, and the types of complementary feeding adopted. **Methods:** A structured pretested and predesigned questionnaire was used to collect information regarding sociodemographic, detail information regarding initiation and duration of breastfeeding, age of complementary feeding and type of food given during complementary feeding, minimum dietary diversity and minimum meal frequency, and also advice given during child feeding session. **Results:** The study revealed that it was a predominantly Hindu tribal community where majority of infant were female and belong to joint families. Most of the mother had completed high secondary school and were housewives and belong to upper lower social class. Majority of women had more than two children, and rate of delivery at government institution was more than private institution and home delivery. Exclusive breastfeeding was practiced among 78% of infants, 46% had started breastfeeding within 1 h of birth. In total, 48% of infants were given prelacteal feed, and colostrum feeding was practiced among 62% of infants. Complementary feeding was given by 82% of infants and minimum dietary diversity, and minimum meal frequency was found among 77 and 85%, respectively. **Conclusion:** This community-based study carried out among tribal population of Kalyani showed that exclusive breastfeeding and other domains like complementary feeding and minimum dietary diversity are almost satisfactory.

**Keywords:** Breastfeeding, complementary feeding, infant feeding

## Introduction

The most important determinant of child survival, birth spacing, and prevention of childhood infections is breast feeding.<sup>[1,2]</sup> The importance of exclusive breastfeeding and immunological and nutritional values of breast milk have been well demonstrated.<sup>[3,4]</sup> The beneficial effects of breastfeeding depend on the initiation

of breastfeeding, its duration, and the age of weaning. The World Health Organization (WHO) recommended that exclusive breastfeeding should be continued for the first 6 months of life with early initiation and may be continued 2 years or more. But nutritionally adequate, safe and age-appropriate complementary feeding should be started at 6 months of life.<sup>[5,6]</sup> WHO and United Nations Children Fund forwarded a global strategy for infant- and young child-feeding. The Government of India, in collaboration with international agencies, has adopted the culturally acceptable infant and young child feeding (IYCF) guidelines based on these guiding principles.<sup>[7]</sup>

**Address for correspondence:** Dr. Deblina Sarkar, Assistant Professor, Community Medicine, College of Medicine and JNM Hospital, WBUHS, Kalyani - 741-235, India. Email: dr.deblina@gmail.com

Received: 16-04-2020

Revised: 10-06-2020

Accepted: 01-07-2020

Published: 30-09-2020

### Access this article online

#### Quick Response Code:



**Website:**  
www.jfmpc.com

**DOI:**  
10.4103/jfmpc.jfmpc\_631\_20

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

**For reprints contact:** WKHLRPMedknow\_reprints@wolterskluwer.com

**How to cite this article:** Sarkar D, Dalai CK, Sarkar K, Das SS, Banerjee S. Breastfeeding practices and infant feeding pattern of a tribal population region of eastern India. J Family Med Prim Care 2020;9:4570-5.

**Table 1: Distribution of exclusive breastfeeding practices among infant (n=100)**

Parameters		Exclusive breastfeeding (n=78) (78%)	Chi square
Gender	Male, n=41	36 (46.15%)	Chi sq. 3.89 p=0.048
	Female, n=59	42 (53.8%)	
Education of mother	No formal, n=18	12 (15.3%)	Chi sq. 14.43 p=0.025
	Less than primary, n=9	4 (5.12%)	
	Primary school, n=17	14 (17.98%)	
	Secondary school, n=15	12 (15.3%)	
	High school, n=39	35 (44.87%)	
Type of family	Nuclear, n=47	33 (42.3%)	Chi sq. 3.13 p=0.07
	Joint, n=53	45 (57.6%)	
Social class	Class II, n=8	7 (8.97%)	Chi sq. 7.31 p=.120
	Class III, n=37	32 (41.02%)	
	Class IV, n=43	30 (38.46%)	
	Class V, n=11	9 (11.53%)	
Place of delivery	Government, n=72	57 (73.07%)	Chi sq. 4.31 p=.806
	Private, n=18	14 (17.94%)	
	Domicary, n=10	7 (8.97%)	

**Table 2: Distribution of colostrum practices among infant (n=100)**

Parameters		Colostrum practice (n=62) (62%)	Chi square
Gender	Male, n=41	20 (32.25%)	Chi sq. 5.15 p=0.023
	Female, n=59	42 (67.74%)	
Education of mother	No formal, n=18	9 (14.51%)	Chi sq. 8.54 p=0.201
	Less than primary, n=9	7 (11.29%)	
	Primary school, n=17	7 (11.29%)	
	Secondary school, n=15	12 (19.35%)	
	High school, n=39	25 (40.3%)	
Social class	Class II, n=8	5 (8.06%)	Chi sq. 9.21 p=0.056
	Class III, n=37	29 (46.7%)	
	Class IV, n=43	20 (32.2%)	
	Class V, n=11	7 (11.2%)	
Place of delivery	Government, n=72	45 (72.5%)	Chi sq. .031 p=0.985
	Private, n=18	11 (17.7%)	
	Domicary, n=10	6 (9.6%)	

**Table 3: IYFC status among study population**

Early initiation of breastfeeding among infant	Within 1 h	n=46 (46%)
	After 1 h	n=54 (54%)
Prelacteal feeding among infant	No	n=52 (52%)
	Yes	n=48 (48%)
Colostrum given to children	No	n=38 (38%)
	Yes	n=62 (62%)
Minimum dietary diversity	Inadequate	n=33 (33%)
	Adequate	n=77 (77%)
Minimum meal frequency	Inadequate	n=15 (15%)
	Adequate	n=85 (85%)

The Third National Family Health Survey (NFHS-4) of India reported that overall 41.6% of children aged under 3 years were breastfed within 1 h of birth, 54.9% of the children between 0 and 5 months were exclusively breastfed, and 42.7% of the children aged between 6 and 9 months are received solid or semisolid food along with breast milk.<sup>[8]</sup> The practice of breastfeeding among Indian mothers is universal, but initiation of breastfeeding is quite late and the colostrum is usually discarded. In rural areas,

breastfeeding practices are depended by their beliefs; the beliefs are influenced by social, cultural, and economic factors.

In the above scenario, this study was conducted to illustrate breastfeeding practices, in terms of initiation, exclusivity, and its termination, and the factors influencing them and to determine the time when complementary feeding starts, the challenges met by mothers, and the type of complementary feeding adopted.

## Methods

This community-based study was carried out in the tribal area of Kalyani in West Bengal to find out the pattern of infant feeding and factors influencing it and to assess the knowledge of mothers, who had delivered in the last 1 year from March 2014 to April 2015.

### Ethical consideration

Ethical approval was obtained from the Institutional Ethics

Committee of College of Medicine & JNM Hospital, Kalyani, and informed consent was obtained from each participant before the interview.

### Study instrument

A structured, pretested, and predesigned questionnaire was used to collect information of the socio-demographic profiles (age, gender, religion, caste, type of family, parent's education, occupation, income, and birth order), details on the initiation, and duration of breastfeeding, artificial feeding and weaning practices, delivery details (type and place of delivery), antenatal practices (number of antenatal visits), and new-born care practices (the birth weight was measured and explained to mother, child's weight was plotted on the growth chart, and advice on child feeding was given). By initial translation, back translation, retranslation followed by the pilot study; the questionnaire will be custom-made for the study. The pilot study was carried out at the institute among general subjects following which some of the questions from the interview schedule were modified and infant and IYCF guidelines proforma was also used. Modified Kuppuswamy classification was applied to measure the individual's socioeconomic status.

### Inclusion criteria

All the infants up to 1 year of age from March 2014 to April 2015.

### Exclusion criteria

Those infants whose mother or caregivers did not give their consent.

### Operational definition

#### Exclusive breastfeeding

Breastfeeding exclusively for the first 6 months of a child's life. Exclusive breastfeeding was defined as per the WHO.<sup>[6]</sup>

Place of delivery was categorized into institutional delivery or home delivery.

### Data collection procedure

Informed verbal consent was obtained from all participants. All of the participants were explained about the purpose of the study and will ensure strict confidentiality, and then informed consent will be taken from each of them before the total procedure. The participants were having the options not to participate in the study if they want. Data regarding family and personal characteristics were recorded by personal interview.

### Statistical analysis

The data collected were thoroughly cleaned and entered into MS Excel spreadsheets, and analysis was carried out. The statistical analyses were done using SPSS-22 version software. The proportion of infant feeding will be presented as percentage, and Chi square tests were used in this study to analyze epidemiological variables.  $P < 0.05$  was used as the definition of statistical significance.

## Result

A total of 100 mother child pair was considered for analysis. Among which 41% were males and 59% were females. Most of the families were joint 53% followed by nuclear family 47%. In this study, illiterate mothers were 18%, most of the mothers were housewives and belong to social class IV (Upper lower), i.e., 79 and 43%. Majority of women was having children more than two (50%), and 19% of women had history of complication during pregnancy. Among 100 infants, 23% were born low birth weight (birth weight less than 2.5 kg). Among 100 infants, only 46% had started breastfeeding within 1 h of birth and initiation of breastfeeding within 1 h was more in hospital delivery (67%). In total, 78% of children practiced exclusive breastfeeding. Both exclusive breastfeeding and prelacteal feeding were more practiced among joint family, i.e., 57.6 and 56.25%. Among 100 infants, complementary feeding at the age of 6 months was given by 82% and feeding was altered during illness in 97% of population [Tables 1-3].

## Discussion

A community-based study on breastfeeding practices in rural area of Uttarakhand of Vyas *et al.* revealed that among 500 under 6-month children majority of them were breastfed (93.6%). Initiation of breastfeeding within an hour was practiced by only few mothers (21.37%). Only 5.13% babies were found exclusively breastfed in first 6 months. Prelacteal feeds and colostrum was given to most of them, i.e., 66.03 and 87.18%.<sup>[9]</sup>

A study on IYCF practices among mothers attending on urban health centre in East Delhi of Khan *et al.* shows among 156 subjects exclusive breastfeeding was done by 57.1% of under six children. In total, 72.7% were given complementary feeding among 66 children between 6 and 9 months. Minimum dietary diversity, minimum meal frequency, and minimum acceptable diet were adequate 32.6, 48.6, and 19.7% among children between 6 months and 2 years of age.<sup>[10]</sup>

A study of breast feeding practices among infant living in slums of Bhavnagar city, Gujarat of Raval Devang, Jankar V, Singh M.P shows that among 84 infant 61.9% of newborn received pre lacteal feed. 85.2% illiterate mother practices more pre lacteal than illiterate mother 50.9%. 38.1% of newborn received breastfeeding within 1 hour. 49.1% & 14.8% literate & illiterate mother respectively had started breastfeeding within 1 hour. 36.9% of newborn received colostrum.<sup>[11]</sup>

Assessment of IYCF practices among the mothers in slum area of Kolkata of Dasgupta *et al.* shows that among 86 children less than 2 years 66.7% of under 6-month children were given exclusive breastfeed, 68.6% of children had late initiation of breast feeding, and 31.4% had prelacteal feeding. Adequate minimum dietary diversity among children 6–23 months was 46%.<sup>[12]</sup>

In a study on feeding practices of infants in the field practicing area of rural health training center, Santhiram Medical College, Nandyal of Bharathi Kaipu, Afsar Fatima, M.A. Mushtaq Pasha, 150 infants were selected in which colostrum was not given in 90.7% infants, 40.7% weaning was started at 9–12 months. In total, 96.7% of mother told breastfeeding is best for baby, 36% of mothers do not know weaning started at 6 months. Only 36% of infant received breastfeeding within 1 h.<sup>[13]</sup>

Banapurmath *et al.* study on breastfeeding practices in village of Central Karnataka revealed that among 1050 infants, only three babies were offered breastfeeding within 1 h of birth, prelacteal feeds were routinely given to all babies and nearly one-third of mother discarded colostrum, exclusive breastfeeding was noted 94% of infants at 1 months, 83.5% at 2 months, 72.5% at 3 months, 61.2% at 4 months, 43.4% at 5 months, and 26.8% at 6 months.<sup>[14]</sup>

A study on IYCF practices with special emphasis on breastfeeding in an urban area of Meerut of Singhal *P et al.* shows among 400 subjects 38.3% practiced exclusive breastfeeding but with prelacteal feeds and 5.3% practiced exclusive breastfeeding without prelacteal feeds up to 6 months of age. In total, 52.8% of infants had late initiation of breastfeeding due to social customs and belief and 65.8% of mother used bottle to feed their child. Minimum meal frequency was adequate in 43.4%, and minimum acceptable diet was adequate in 37.7%.<sup>[15]</sup>

This study shows that 78% of children out of 100 were exclusively breastfeed. Exclusive breastfeeding was significantly associated with gender and education of mother. This was better than figure reported at NFHS-3 (48.3%)<sup>[8]</sup> and also comparable to another study conducted at urban health centre of East Delhi (57%).<sup>[10]</sup>

According to IYFC (2006) guideline, Government of India recommended that initiation of breastfeeding should begin immediately after birth, preferably within 1 h.<sup>[16]</sup> In my study, 46% of infants are breastfeed within 1 h and it was more among Government delivery. In another study, Raval Devang living in slum showed that 38.1% of infants were breastfeed within 1 h of birth; reason for late initiation was family restriction (36.5%) and caesarean section (23%).<sup>[11]</sup> Another study of Kaipu Bharathi showed (36%) that infants were breastfeed within 1 h, which is also lower as compared to my study.<sup>[13]</sup> In my study, colostrum was given to 62% of infants and it was significantly associated with gender and social class, whereas another study that was conducted among infants living in slum of Gujarat shows that 36.2% of infants received colostrum and was significantly associated with type of family.<sup>[11]</sup>

As per NFHS-3 data, 57.2% of infants received prelacteal feed<sup>[8]</sup> and East Delhi study shows (38%)<sup>[10]</sup>, whereas in my study, prelacteal feed was given to 48% of infants that was much lower compared to the national level but higher than East Delhi data. Minimum dietary diversity indicator is the proportion of

children of 6–12 months of age who receive foods from four or more food groups from a total of seven food groups, namely dairy products, legumes and nuts, flesh food, egg, vitamin A rich foods and vegetables, cereals and tuber, and other fruits & vegetables. This indicator shows that whether child is receiving adequate balanced diet between 6 and 12 months. MDD was found to be 77%, whereas NFHS-3 observed that only 44% of breastfeed children were feed at least minimum number of times recommended and only half of them consumed food from three or more groups.<sup>[8]</sup> Minimum meal frequency indicator is the proportion of breastfeed children between 6 and 12 months who receive semisolid, solid, or soft foods. For breastfeed children, minimum meal frequency varies (two times for 6–8 months and three times for 9–12 months). Minimum meal frequency was found in 85% of children.

A study on breastfeeding initiation, duration, and supplementation among Mexican origin women in Texas shows that women born and educated in Mexico initiated and continued breastfeeding in higher proportions than women born and educated in the United States. Early supplementation with formula and solid foods was similar across groups, and early supplementation with formula negatively impacted duration across all groups.<sup>[17]</sup> In comparison, I found both exclusive breastfeeding and prelacteal feeding were more practiced among joint family, i.e., 57.6 and 56.25%.

The cross-sectional survey conducted at the Tamale Teaching hospital, Tamale West Hospital, Seventh Day Adventist Hospital, and Central Reproductive and Child Health Center among mothers with twins of 6–23 months found that exclusively breastfeeding rate was 17% among mothers with twins. They also found that mass media could help by putting the issue of breastfeeding on policy agendas and also framing breastfeeding as healthy and normative for baby and mother. About 61% of mothers in this study who were not confident of producing adequate breast milk to satisfy their infants till they turned 6 months introduced other foods and liquids particularly formula and porridge before 6 months.<sup>[18]</sup>

A study was conducted to examine the trends and factors associated with early initiation of breastfeeding, exclusive breastfeeding, and duration of breastfeeding in Ethiopia among 5122 children found that about 81.8% of the children initiated breastfeeding within 1 h of birth and during the day before an interview; 47% were exclusively breastfed during the first 6 months.<sup>[19]</sup> On the contrary, in my study, I found among 100 infants, only 46% had started breastfeeding within 1 h of birth and initiation of breastfeeding within 1 h was more in hospital delivery (67%). Also, 78% of children practiced exclusive breastfeeding.

### Strength of the study

Although we know about the infant feeding in urban and rural population, we have very little knowledge about infant feeding

and its correlates among tribal. This study will help us to know the feeding practices among the tribal population. This information will be useful to policy makers for the formulation of interventional programs in the future.

A primary health care physician is the captain of health team at the primary health care system of India. So at grass root level, he does the supervision of field work done by health workers. He also has an important role in planning and implementation of different health schemes and health services going throughout the year.

Primary care physician and allied health workers have an important role in implementation of Baby Friendly Hospital Initiative led by the Government of India. Under these initiatives, proper breast feeding practices and exclusive breast feeding practices are started from the time of birth. Also, national guidelines on IYCF help to address the vulnerability of young infant who are at risk of introduction of unnecessary infant milk substitute and its resultant comorbidities.

The tribal population is the weakest section of society, and they can easily fall to prey to the improper feeding practices. Under this study, we learn the infant feeding practices, socio-demographic practice, introduction of complementary feeding, and its relation to tribal people poor socio-demographic status.

### Limitation of the study

The study was conducted in urban field practice area of Kalyani among the tribal population so the sample size was not very large.

Breastfeeding including infant feeding is considered as the most important factor for child survival and morbidities of child health, but there is a significant lag between the program and guidelines led down by the Ministry of Health, Government of India and the reality at field level. Tribal means the most vulnerable section of the Indian society. So studying their knowledge and practice, infant feeding, and timely complementary feeding plays a crucial role in unmasking their real health situation.

A study was conducted out at tribal community among their infant in Kalyani municipality reveals following interesting findings:

- It was found that one-fourth of infant were born low birth weight
- Breastfeeding was initiated within 1 h of birth
- Overwhelming majority (almost 80%) practices exclusive breast feeding, but surprisingly exclusive breast feeding and prelacteal feeding are more among joint family members compared to nuclear family.
- Colostrum feeding was also quite common among the majority (nearly two-third of infants)
- Complementary feeding was also initiated at proper timing (6

months), more than 80% of study population.

Incorporated baby friendly hospital initiative was taken in 2018, and updated national guidelines on IYCF implemented guidance was published in 2018.

### Conclusion

The study shows that exclusive breastfeeding and other domain like complementary feeding and minimum dietary diversity are quite satisfactory. Perception regarding prelacteal practices and colostrum feeding should be improved by various IEC activities and scientific messages.

The children are the pillar of nation so by improving the health of all children we will be able to turn our country into healthy nation.

### Financial support and sponsorship

Nil.

### Conflicts of interest

There are no conflicts of interest.

### References

1. Iskandar MB, Costello C, Nasution Y. Initiation and duration of breast feeding in Indonesia. *Asia Pac Popul J* 1990;5:89-112.
2. Bautista LE. Factors associated with initiation of breast feeding in the Dominican Republic. *Rev Panam Salud Publica* 1997;1:200-7.
3. Arifeen S, Black RE, Antelman G, Baqui A, Caulfield L, Becker S. Exclusive breast-feeding reduces acute respiratory infection and diarrhea deaths among infants in Dhaka slums. *Pediatrics* 2001;108:E67.
4. Dewey KG, Cohen RJ, Brown KH, Rivera LL. Effects of exclusive breast-feeding for four versus six months on maternal nutritional status and infant motor development: Results of two randomized trials in Honduras. *J Nutr* 2001;131:262-7.
5. Victora CG, Smith PG, Vaughan JP, Nobre LC, Lombardi C, Teixeira AM, *et al.* Evidence for protection against infant deaths from infectious diseases in Brazil. *Lancet* 1987;2:319-22.
6. Global Strategy for Infant and Young Child Feeding. Geneva: World Health Organization; 2003. p. 41.
7. Integrated management of neonatal and childhood illness. Training Module of Health Workers. New Delhi: Ministry of Health and Family Welfare, Government of India; 2003. p. 74-5.
8. Ministry of Health and Family Welfare: National Family Health Survey 4, India. Available from: <http://mohfw.nic.in/nfhs3/CD.htm>.
9. Vyas S, Sharma P, Kandpal SD, Semwal J, Srivastava A, Nautiyal V. A community based study on breastfeeding practices in a rural area of Uttarakhand. *National J Community Med* 2012;3:283-7.
10. Khan AM, Kayina P, Agrawal P, Gupta A, Kannan AT. A study on infant and young child feeding practices among mothers

- attending an urban health center in East Delhi. *Indian J Public Health* 2012;56:301-4.
11. Raval D, Jankar DV, Singh MP. A study of breast feeding practices among infants living in slums of Bhavnagar city, Gujarat, India. *Healthline, Journal of Indian Association of Preventive & Social Medicine* 2011;2:78-82.
  12. Dasgupta A, Naiya S, Ray S, Ghosal A, Pravakar R, Ram P. *Int J Biologic Med Res* 2014;5:3855-61.
  13. Bharathi K, Afsar F, Pasha M. A. M. A study on feeding practices of infants in the field practicing area of rural health training centre, Santhiram Medical College, Nandyal. *J Evol Med Dent Sci* 2014;3:5960-3.
  14. Banapurmath CR, Nagaraj MC, Banapurmath S, Kesaree N. Breastfeeding practices in villages of central Karnataka. *Indian Ped J* 1996;33:477-9.
  15. Singhal P, Garg SK, Chopra H, Jain S, Bajpai SK. Status of infant and young child feeding practices with special emphasis on breast feeding in an urban area of Meerut. *J Dental Med Sci* 2013;7:7-11.
  16. Ministry of women and child development (food and nutrition board), Government of India. National guidelines on Infant and Young Child Feeding 2006; 13-4.
  17. Eilers MA, Hendrick CE, Pérez-Escamilla R, Powers DA, Potter JE. Breastfeeding initiation, duration, and supplementation among mexican-origin women in Texas. *Paediatric* 2020;145:e20192742. doi: 10.1542/peds.2019-2742.
  18. Tahiru R, Agbozo F, Garti H, Abubakari A. Exclusive breastfeeding and associated factors among mothers with twins in the tamale metropolis. *Int J Paediatric* 2020;2020:5605437. doi: 10.1155/2020/5605437.
  19. Woldeamanuel BT. Trends and factors associated to early initiation of breastfeeding, exclusive breastfeeding and duration of breastfeeding in Ethiopia: Evidence from the Ethiopia Demographic and Health Survey 2016. *Int Breastfeed J* 2020;15:3.