

## SHORT ARTICLE

# Multifaceted Determinants of Breastfeeding Practices in Udaipur, Rajasthan

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### ARTICLE CYCLE

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### ABSTRACT

**Background:** Breastfeeding is crucial for child health and development, yet its practices and their implications on children's nutritional status vary. **Aim & Objectives:** This study aimed to explore the determinants of breastfeeding practices and their effects on the nutritional status of children in an Indian population. **Methodology:** This study is conducted in four villages of Udaipur district, Rajasthan, among 120 mother-child pairs. The data is collected on anthropometric measurements, socio-economic factors, and child health parameters. **Results:** We found that only 37.5% of children were exclusively breastfed. Significant associations were observed with birth month ( $P < 0.001$ ) and nearly significant associations with mode of delivery ( $P = 0.06$ ) and undernutrition ( $P = 0.07$ ). **Conclusion:** These findings highlight the need for larger-scale research to further investigate these associations and enhance breastfeeding practices to improve child health outcomes.

### KEYWORDS

Breastfeeding Practices; Undernutrition; Maternal and Child Health; Udaipur

### INTRODUCTION

According to the World Health Organisation (WHO), infants should be exclusively breastfed for the first six months of life, starting ideally within an hour(1). Breastmilk's unique properties support healthy infant development, allowing children to reach their full potential between 12 to 36 months(2). The Sustainable Development Goal (SDG) 3.2 aims to reduce neonatal mortality, crucial in India where neonatal mortality rate was 23.5 per 1000 live births in 2017(3,4). Breastfeeding can reduce malnutrition, infectious, and early childhood mortality. In Southern Asia, the

exclusive breastfeeding (EBF) rate is 57.2%, with India at 55%, after Sri Lanka(5). Non-exclusive breastfeeding is linked to undernutrition, stunting and wasting, prevalent in India(6). Globally, only 42% of infants are breastfed within an hour of birth, and just 41% continue for six months(5). In India, 55% of children are exclusively breastfed under six months of life, despite a huge rise of 78.9% in institutional deliveries, and only 41.5% of breastmilk is consumed within an hour of birth(7). The study aims to explore the determinants of breastfeeding practices and

their influences on the nutritional status of children and objectives are as follows:

- To assess the prevalence of exclusive breastfeeding.
- To study the association between breastfeeding practices and with biological and social-demographic determinants.
- To evaluate the influence of breastfeeding practices on the nutritional status of children, specifically focusing on undernutrition and underweight.

## MATERIAL & METHODS

**Study setting:** This population-based study was conducted in four villages-*Dheenkli, Merta, Debari, and Gundali*, in the Udaipur district of Rajasthan, India.

**Study type & study design:** These villages were selected using a multi-stage random sampling method.

**Strategy for data collection:** In the first stage, Udaipur district was chosen purposively due to its diverse demographic profile. In the second stage four villages within the district were selected through random sampling to ensure representation of local population.

**Sample size:** The sample size was 240 participants, consisting of 120 mother-child pairs, with children aged one to five years. The sample size was not estimated and it was determined based on the feasibility of data collection in the selected villages. Participants were recruited from 98 households using a stratified random sampling method to ensure proportional representation from each village.

### Inclusion Criteria:

1. Children aged 1-5 years residing in the selected villages.
2. Mothers of these children who were available and consented to participate.
3. Households where the child and mother had lived for at least six months, ensuring stable residency.

### Exclusion Criteria:

1. Children with chronic illnesses or congenital conditions affecting growth.
2. Mothers unable to provide reliable information due to language barriers.

### Strategy for data collection:

Data were collected using a self-designed, pre-structured questionnaire, which was divided into four sections: socio-demographic profile, children's health profile, mother's health profile, and anthropometric measurements. While the validity and reliability of the questionnaire were not formally tested, experts in public health research were consulted during its development to ensure its relevance and appropriateness for the study's objectives.

**Data analysis:** Children's body length and weight were measured using standard anthropometric tools and techniques. The height-for-age (HAZ), weight-for-age (WAZ), and weight-for-height (WHZ) indices were calculated using WHO Anthro software version 3.2.2.1 to assess nutritional status. Children were classified as stunted, wasted, or underweight if their Z-scores were below -2 SD from the WHO reference median (WHO Child Growth standards, 2006). Data analysis was performed using SPSS version 20.

**Ethical issues & informed consent:** The University of Delhi authorized this study, and the ethics committee of the Department of Anthropology, University of Delhi. The data was collected after taking informed written consent from the study participants.

## RESULTS

The study included 240 participants comprising 120 mothers-child pairs, with 69 boys and 51 girls. The mean age of mothers was 27.9 years (SD:  $\pm 5.5$  years) and the mean age of children was 2.7 years (SD:  $\pm 1.2$  years). The average birth weight of the children was 2314.2 grams (SD:  $\pm 574.1$  grams), and the average duration of exclusive breastfeeding was 3.8 months (SD:  $\pm 1.9$ ) in Udaipur population (Table 1).

In our study population, only 37.5% infants were exclusively breastfed for at least six months, while 62.5% received complementary feedings during the same period. Gender disparity was observed in Exclusive Breastfeeding (EBF) practices, with male infants being more likely to be exclusively

breastfed (64.4%) compared to female infants (35.56%). EBF was also more prevalent among children from low socioeconomic status

(77.7%) compared to those from middle (15.5%) and upper (6.6%) socioeconomic groups (Table 1 & 2).

**Table 1 Distribution of socio-demographic characteristics of the study population**

Variables	Categories	Respondents		
		(N=120) Count (%)	Mean ( $\pm$ SD)	
SES	Lower	94(78.3)	-	
	Middle	16(13.3)		
	Upper	10(8.3)		
Sex of children	Male	69(57.5)	-	
	Female	51(42.5)		
Father's education status	Illiterate	25(20.8)	-	
	<10 class	56(46.6)		
	$\geq$ 10 class	39(32.5)		
Mother's education status	Illiterate	41(34.1)	-	
	<10class	55(45.8)		
	$\geq$ 10 class	24(20)		
Birth order	>2	42(35)	-	
	$\leq$ 2	78(65)		
Gestation Period	<9months	17(14.1)	8.8 ( $\pm$ 0.5)	
	$\geq$ 9 months	103(85.8)		
Birth weight	<2500 (g)	63(52.5)	2314.2 ( $\pm$ 574.1)	
	$\geq$ 2500 (g)	57(47.5)		
Disease & Infection status of child	<median (6)	80(66.6)	-	
	$\geq$ median (6)	40(33.3)		
Total family member	>median (6)	66(55)	-	
	$\leq$ median (6)	54(45)		
The lifestyle of Fathers	Drinkers	69(57.5)	-	
	Smokers	70(58.3)		
	Tobacco chewers	20(16.6)		
The lifestyle of mothers	Drinkers	0(0)	-	
	Smokers	23(19.1)		
	Tobacco chewers	8(6.6)		
Time of breastfeeding (Hours Per day)	<median (3hrs.)	64(53.3)	-	
	$\geq$ median (3hrs.)	56(46.6)		
Mode of Delivery	Normal	103(85.8)	-	
	Caesarean	17(14.1)		
Complication during pregnancy	Yes	57(47.5)	-	
	No	63(52.5)		
Total time spent with parent	<median (5hrs.)	73(60.8)	-	
	$\geq$ median (5hrs.)	47(39.1)		
Family structure	Joint	34(28.3)	-	
	Nuclear	86(71.6)		
Supplement intake time	<6months	75(62.5)	3.8 $\pm$ 1.9	
	$\geq$ 6 months	45(37.5)		
Source of medication	Government	100(83.3)	-	
	Private	20(16.6)		
Nutritional Status of Children			Gender wise prevalence of children	
Weight for Height	NW (>-2 to $\geq$ +2)	58(48.34)	Male (N=69)	Female (N=51)
	MUW ( $\leq$ -2 to >-3)	26(21.67)	30(43.47)	28(54.90)
	SUW (<-3)	36(30)	14(20.28)	12(23.52)
Height for Age	NHA (>-2 to $\geq$ +2)	81(67.5)	24(34.78)	12(23.52)
			45(65.21)	36(70.58)

Variables	Categories	Respondents (N=120) Count (%)	Mean (± SD)	
<b>Weight for Age</b>	MLHA ( $\leq -2$ to $> -3$ )	12(10)	7(10.15)	5(9.80)
	SLHA ( $< -3$ )	27(22.5)	16(23.18)	11(21.56)
	NWA ( $> -2$ to $\geq +2$ )	62(51.67)	37(53.62)	25(49.01)
	MLWA ( $\leq -2$ to $> -3$ )	22(18.34)	9(13)	13(25.49)
	SLWA ( $< -3$ )	36(30)	22(31.89)	14(27.45)

\*SES-Socioeconomic Status; NUW- Normal Weight; MUW- Moderate Under Weight; SUW- Severe Under Weight; NWA- Normal Weight for Age; MLWA-Moderate Weight for Age; SLWA- Severe low Weight for Age; NHA- Normal Height for Age; MLHA- Moderate Low Height for Age; SLHA- Severely Low Height for Age

**Table 2 Bio-Social Determinants of Breastfeeding Practices**

Variables	Categories		P- value (X2 – Test)
	Exclusively Breastfeeding 6 Months (N=45) Count (%)	Food Supplement + Breastfeeding <6 Months (N=75) Count (%)	
<b>SES</b>			
Lower	35(77.78)	59(78.67)	0.775
Middle	7(15.56)	9(12)	
Upper	3(6.67)	7(9.34)	
<b>sex of Infant</b>			
Male	29(64.45)	40(53.34)	0.233
Female	16(35.56)	35(46.67)	
<b>Birth Weight</b>			
LBW	22(48.49)	41(54.67)	0.539
NBW	23(51.12)	34(45.34)	
<b>Birth Order</b>			
$\leq 2$	28(62.28)	50(66.67)	0.242
$> 2$	17(37.78)	25(33.34)	
<b>Birth month</b>			
$< 9$ months	2(4.45)	15(20)	$< 0.00001$
$\geq 9$ months	43(95.5)	60(80)	
<b>Mode of Delivery</b>			
Normal	42(93.34)	61(81.34)	0.067
Cesarean	3(6.67)	14(18.67)	
<b>Time spent with parents</b>			
$< 5$ hours.	25(55.56)	48(64)	0.35
$\geq 5$ hours.	20(44.45)	27(36)	
<b>Total family member</b>			
$< 6$ members	23(51.12)	44(58.67)	0.4197
$\geq 6$ members	22(48.89)	31(41.33)	
<b>Education of father</b>			
Illiterate	8(17.78)	17(22.67)	0.8129
$< 10$ class	22(48.49)	34(45.34)	
$\geq 10$ class	15(33.34)	24(32)	
<b>Education of Mother</b>			
Illiterate	11(24.45)	28(37.34)	0.519
$< 10$ class	21(46.67)	34(45.34)	
$\geq 10$ class	13(28.89)	13(17.34)	
<b>Family structure</b>			
Joint	17(37.78)	17(22.67)	0.07
Nuclear	28(62.23)	58(77.34)	

Variables	Categories		P- value (X2 – Test)
	Exclusively Breastfeeding 6 Months (N=45) Count (%)	Food Supplement + Breastfeeding <6 Months (N=75) Count (%)	
<b>The lifestyle of the father</b>			
Drinkers	23(51.12)	51(68)	0.065
Smokers	12(26.67)	47(62.67)	0.1398
Tobacco chewers	8(17.78)	12(16)	0.8
<b>The lifestyle of the mother</b>			
Drinkers	0(0)	2(2.67)	0.9
Smokers	1(2.23)	3(4)	0.8
Tobacco chewers	2(4.45)	3(4)	0.5
<b>Nutritional Status of Children</b>			
<b>Weight for Height</b>			
Normal (>-2 to ≥+2)	23(51.12)	35(46.45)	0.6648
Moderate (≤-2 to >-3)	13(28.89)	13(17.34)	
Severe (<-3)	9(20)	27(36)	
<b>Weight for Age</b>			
Normal (>-2 to ≥+2)	27(60)	35(46.67)	0.0762
Moderate (≤-2 to >-3)	10(22.23)	12(16)	
Severe (<-3)	8(17.78)	28(37.34)	
<b>Height for Age</b>			
Normal (>-2 to ≥+2)	33(73.34)	48(64)	0.3687
Moderate (≤-2 to >-3)	5(11.12)	7(9.3)	
Severe (<-3)	7(15.56)	20(26.67)	
<b>BMI for Age</b>			
Normal (>-2 to ≥+2)	25(55.56)	35(46.67)	0.4311
Moderate (≤-2 to >-3)	11(24.45)	17(22.67)	
Severe (<-3)	9(20)	23(30.67)	

\*SES-Socioeconomic Status; LBW-Low Birth Weight; NBW- Normal Birth

Although, no significant gender differences were found in the overall nutritional status of children. However, moderate wasting was slightly higher in girls (23.5%) than boys (20.8%), while severe wasting were more prevalent among boys (37.78%) than girls (23.52%). The incidence of moderate underweight was higher in girls (25.4%) than in boys (13%), whereas severe underweight was more common in boys (31.8%) than in girls (27.4%). Similarly, boys showed higher rates of moderate (10.1%) and severe stunting (23.1%) compared to girls (9.8% and 21.5%, respectively). (Table 2)

Children who received early supplementary feeding within their first six months had a higher prevalence of severe wasting (36%) compared to those who were exclusively breastfed (20%). We have found that EBF was associated with a lower risk of underweight and stunting. Non-exclusively breastfed

children were more likely to be severely underweight (37.3%) and severely stunted (26.6%) compared to those who were exclusively breastfed. (Table 2)

Breastfeeding practices were strongly associated with gestational age ( $P < 0.001$ ). The mode of delivery was weakly associated ( $P = 0.06$ ) with EBF and it was observed that the caesarean-born infants were less likely to be exclusively breastfed (6.6%) compared to vaginally born infants (93.3%). (Table 2). Family structure played a significant role in the study population wherein EBF being more common in nuclear families (62.3%) compared to joint families (37.7%). Children from nuclear families also had lower rates of early supplementation (22.6%) than those from joint families (77.3%).

The father's lifestyle showed a boarder-line association with breastfeeding practices ( $P = 0.06$ ), with 68% of children who started

early supplementation having fathers who drank alcohol regularly. Additionally, fathers' drinking and smoking habits significantly reduced the amount of time spent with their children ( $P=0.012$  and  $P=0.011$ , respectively). (Table 2).

## DISCUSSION

Worldwide, 3 out of 5 infants do not receive exclusive breastfeeding in the first hour of life and only 44% breastfed exclusively up to the first six months(1). The current study found that 37.5% of infants were exclusively breastfed for the first six months aligns with a meta-analysis reporting a median EBF rate of 37%(2). The concerning trend of low prevalence of EBF shows in the studied population is similar to the trends observed in previous studies conducted in low- and middle-income countries(9). Despite Rajasthan's 58.2% of EPF prevalence(7), there are significant district-level disparities, which highlight the need for targeted interventions to meet Global Nutrition Targets(5).

Breastfeeding offers substantial health benefits, including reduced infections, allergies, and obesity(10). However, only 53.78% of lactating mothers in this study understand these benefits, and about 33% did not intend to practice EBF(11, 9). The current study observed that 62.5% of children received supplementary feeding during their first six months, which is linked to poorer health outcomes and increased risk of obesity in those receiving formula milk(10). Therefore, educational interventions are crucial to enhance the understanding and practice of EBF, consistent with WHO guidelines, for six months of EBF followed by complementary feeding.

Children who received non-exclusive breastfeeding had a higher prevalence of severe wasting (36%) and were severely underweight (37.3%). These findings are similar to previous research linking non-exclusively breastfeeding with increased risk of wasting(11). EBF significantly reduces the risk of underweight and severe stunting(12),

strengthening the importance of promoting EBF.

The study found that socioeconomic status (SES) did not significantly impact breastfeeding practices, contrary to other studies showing a negative association between SES and breastfeeding. This difference may be due to cultural factors and social norms(9).

Breastfeeding practices were more prevalent in the nuclear families compared to joint families(9). Factors like maternal education and social support may influence these practices. Gestational age and mode of delivery also impacted breastfeeding, with full term infants and vaginal deliveries being associated with higher EBF rates(13).

Father's habit of alcohol consumption associated with breastfeeding practices; children exposed to father's alcohol intake being more likely to receive supplementary feeding. This finding suggests that parental lifestyle can affect breastfeeding practices(14). To improve breastfeeding rates, India needs strategic interventions, including targeted programs like "Mother's Absolute Affection" (MAA) and effective planning to address factors such as gestational length, family structure, and socioeconomic status to enhance breastfeeding practices effectively(15).

## CONCLUSION

This study found that children with suboptimal breastfeeding in the first six months are more likely to be underweight and undernourished compared to those exclusively breastfed. Parental behaviours, particularly the father's smoking and drinking habits, were associated to child health outcomes, and breastfeeding practices were influenced by birth month and delivery mode. Due to the limited sample size of 120 mother-child pairs, further research is needed to confirm these findings. To enhance child health, promoting exclusive breastfeeding, supporting families with paternal risk factors, and considering birth timing and delivery methods in breastfeeding education are recommended.

## RECOMMENDATION

This study recommends the need of further research in order to obtain a greater understanding of the factors influencing exclusive breastfeeding practices and their impact on the nutrition of children. In order to improve overall child health outcomes, maternal and child health initiatives in India should incorporate strategies to promote exclusive breastfeeding, taking into account important aspects including birth timing and delivery practices.

## LIMITATION OF THE STUDY

The limited sample size of this study is a significant drawback that might restrict how far the findings can be implemented. More precise results are expected with a larger sample size. The longitudinal strategy should be explored in future research to gain additional insight into understanding the long-term impacts and relationships between the variables.

## RELEVANCE OF THE STUDY

The study provides insights into breastfeeding practices in rural India and how they relate to sociodemographic variables and the health of babies. It will enable policymakers to develop targeted programs that promote exclusive breastfeeding.

## AUTHORS CONTRIBUTION

All authors have contributed equally.

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## CONFLICT OF INTEREST

There are no conflicts of interest.

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## DECLARATION OF GENERATIVE AI AND AI ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

The authors haven't used any generative AI/AI assisted technologies in the writing process.

## REFERENCES

1. World Health Organization. Breastfeeding. [Internet]. Available from: [https://www.who.int/health-topics/breastfeeding#tab=tab\\_1](https://www.who.int/health-topics/breastfeeding#tab=tab_1) . Accessed 25/08/2024.
2. Victora CG, Horta BL, de Mola CL, Quevedo L, Pinheiro RT, Gigante DP, et al. Association between breastfeeding and intelligence, educational attainment, and income at 30 years of age: a prospective birth cohort study from Brazil. *Lancet Global Health*. 2015;3(4): e199-205
3. GBD 2015 SDG Collaborators. Measuring the health-related Sustainable Development Goals in 188 countries: a baseline analysis from the Global Burden of Disease Study 2015. *Lancet*. 2016;388(10053):1813-1850.
4. India State-Level Disease Burden Initiative Child Mortality Collaborators. Nations within a nation: variations in epidemiological transition across the States of India, 1990–2016 in the global burden of disease study. *Lancet*. 2017. doi: 10.1016/S0140-6736(17)32804-0.
5. World Health Organization, UNICEF. Global Breastfeeding Scorecard, 2018. Enabling Women to Breastfeed Through Better Policies and Programmes. *WHO/UNICEF*. 2019. Available from: <http://www.who.int/nutrition/publications/infantfeeding/global-bf-scorecard2018/en/%0Ahttps://www.who.int/nutrition/publications/infantfeeding/global-bf-scorecard-2018.pdf?ua=1> (Accessed on 25, Aug 2024)
6. Meshram II, Rao KM, Balakrishna N, Harikumar R, Arlappa N, Sreeramakrishna K, et al. Infant and young child feeding practices, sociodemographic factors and their association with nutritional status of children aged <3 years in India: findings of the National Nutrition Monitoring Bureau survey, 2011-2012. *Public Health Nutrition*. 2019;22(1):104-114.
7. Ministry of Health and Family Welfare; Government of India. Rajasthan National Family Health Survey - 4 State Factsheet. [Internet]. Available from: [http://rchiips.org/nfhs/pdf/NFHS4/RJ\\_FactSheet.pdf](http://rchiips.org/nfhs/pdf/NFHS4/RJ_FactSheet.pdf) . Accessed on 25, Aug 2024.
8. World Health Organization. WHO Child Growth Standards: Length/Height-for-Age, Weight-for-Age, Weight-for-Length, Weight-for-Height and Body Mass Index-for-Age: Methods and Development. Geneva: World Health Organization; 2006.
9. Randhawa A, Chaudhary N, Gill BS, Kumar S, Kaur P, Bhangu M, et al. A population-based cross-sectional study to determine the practices of breastfeeding among the lactating mothers of Patiala city. *J Family Med Prim Care*. 2019;8(10):3207-3213.
10. Menon P, Bamezai A, Subandoro A, Ayoya MA, Aguayo V. Age-appropriate infant and young child

- feeding practices are associated with child nutrition in India: insights from nationally representative data. *Matern Child Nutr.* 2015;11(1):73-87.
11. Parasher V, Dadhich G, Khatri R, Sharma A, Jain D, Jain G, et al. Study of nutritional and immunization status in children 6 months to 3 years attending outpatient department at a tertiary care hospital in rural South Rajasthan, India. *Int J Contemp Pediatr.* 2018;6(1):15.
  12. Hadi H, Fatimatasari F, Irwanti W, Supriasa ID, Kartika DU, Muasyaroh N, et al. Exclusive breastfeeding protects young children from stunting in a low-income population: a study from Eastern Indonesia. *Nutrients.* 2021;13(12):4264.
  13. Hobbs AJ, Mannion CA, McDonald SW, Brockway M, Tough SC. The impact of caesarean section on breastfeeding initiation, duration and difficulties in the first four months postpartum. *BMC Pregnancy Childbirth.* 2016; 16:90.
  14. Young MF, Nguyen P, Kachwaha S, Tran Mai L, Ghosh S, Agrawal R, Escobar-Alegria J, Menon P, Avula R. It takes a village: An empirical analysis of how husbands, mothers-in-law, health workers, and mothers influence breastfeeding practices in Uttar Pradesh, India. *Matern Child Nutr.* 2020;16(2):e12892.
  15. MAA (Mothers' Absolute Affection) Programme for Infant and Young Child Feeding. National Health Portal, India. [Internet]. Available from: [https://www.nhp.gov.in/maa-\(mothers%E2%80%99-absolute-affection\)-programme-for-infant-and-young-child-feeding\\_pg](https://www.nhp.gov.in/maa-(mothers%E2%80%99-absolute-affection)-programme-for-infant-and-young-child-feeding_pg). Accessed 25/08/2024.