

Socioeconomic determinants of breastfeeding practices in South India - A hospital-based cross-sectional study

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ABSTRACT

Background: Breastfeeding is an unparalleled universally recommended intervention for the promotion of health and nutrition of children and reduction of mortality. In spite of the WHO recommendations and baby-friendly hospital initiative, breastfeeding practices are inappropriate due to maternal, infant, socioeconomic, and cultural factors. **Objective:** The objective of this study was to determine the socioeconomic factors associated with inappropriate breastfeeding practices. Secondary objective was to determine the knowledge level of mothers on ideal breastfeeding recommendations. **Materials and Methods:** This cross-sectional study was conducted in pediatric wards of a tertiary care teaching institution from January 2017 to July 2017. Mothers having children aged 7–60 months were included in the study. A sample size of one thousand was planned. After obtaining informed consent from mother, detailed feeding history including the timing of initiation of breastfeeding following childbirth, duration of exclusive breastfeeding, and age at which breastfeeding was discontinued was noted. Possible determinants considered were gender of the child, place of residence, maternal age, maternal education, maternal employment, number of children at home, type of family, whether mother was counseled during antenatal period, mode of delivery, and hospitalization in newborn period. Knowledge of mother on breastfeeding was probed and the response recorded. Univariate analysis followed by regression was performed to determine the significant factors. **Results:** 59% (95% confidence interval 55.9–62.1) of mothers initiated breastfeeding within 1 h of childbirth. 70.2% (95% CI - 67.3–73) exclusively breastfed their babies for 6 months and above. 43.6% (95% CI - 39.2–48.1) of mothers with children of age 25–60 months breastfed their babies up to 2 years and beyond. On univariate analysis, female gender, maternal employment, operative delivery, and hospitalization in the newborn period were identified as risk factors for inappropriate breastfeeding practices, which were confirmed by regression. Overall, only 26.6% (95% CI - 23.9–29.5) of mothers had appropriate knowledge about ideal breastfeeding recommendations. **Conclusion:** Female gender, maternal employment, operative delivery, and hospitalization in newborn period are significant independent risk factors for inappropriate breastfeeding practices. Only a quarter of mothers had adequate knowledge of breastfeeding recommendations.

Key words: Breastfeeding, Socioeconomic Determinants, Knowledge

The WHO/UNICEF have emphasized the first 1000 days of life, i.e., the 270 days *in utero* and the first 2 years after birth as the critical window period for nutritional interventions [1]. As the maximal brain growth occurs in this period, malnutrition in this critical period can lead to stunting and suboptimal developmental outcome.

Breastfeeding plays a major role in decreasing the infant mortality rate and the prevalence of malnutrition [2]. Evidence supports that intelligence is better among those persons who have been breastfed as infants [3]. The WHO and UNICEF launched baby-friendly hospital initiative in 1992 and India adopted it in 1993. The WHO recommends initiation of breastfeeding within one hour of birth, exclusive breastfeeding up to 6 months, and to continue breastfeeding up to a minimum of 2 years of age [4]. According to the NFHS-4 data, initiation of breastfeeding

within one hour of birth in India is only 41.6% and exclusive breastfeeding rates among infants <6 months of age is mere 54.9% [5]. Further, total duration of breastfeeding which too is an important parameter is not reported in most surveys. There are many factors which may affect breastfeeding practices in our country. The primary objective of this study was to determine the socioeconomic factors associated with inappropriate breastfeeding practices. Secondary objective was to determine the knowledge level of mothers on ideal breastfeeding recommendations.

MATERIALS AND METHODS

This cross-sectional study was done in pediatric wards of a tertiary care teaching institution from January 2017 to July 2017. The study was commenced after obtaining approval from the

Institutional Ethical Committee. All mothers having children aged 7–60 months, whose child was admitted in the general pediatric ward, were included in the study. Mothers who did not understand the local language, who did not consent, and whose children were critically ill were excluded from the study. For studying ten social factors, with a NFHS-4 reported rate of 48.3% exclusive breastfeeding up to 6 months of life in the state, a minimum number of 200 mothers with children more than 6 months of age were needed [6]. We included 500 mothers with children of age 7–24 months and another 500 mothers with children of age 25–60 months in the study. The latter group was included to get data on total duration of breastfeeding, i.e., whether breastfeeding was continued till 2 years of age.

After obtaining informed consent from mother, detailed feeding history including timing of initiation of breastfeeding following childbirth, duration of exclusive breastfeeding, and age at which breastfeeding was discontinued was noted. Mothers with children of age 7–24 months were interviewed on timing of initiation of breastfeeding after childbirth and duration of exclusive breastfeeding. Mothers with children between 25 months and 60 months of age were interviewed in addition, on timing of discontinuation of breastfeeding. The reason for inappropriate feeding practices was noted among given options. The sociodemographic factors considered were gender of the child, place of residence, maternal age, maternal education, and maternal employment. Number of children at home, type of family, whether mother was counseled during antenatal period, mode of delivery, and hospitalization in the newborn period were also noted. These factors considered as possible determinants of breastfeeding practices. Knowledge of mother on timing of initiation of breastfeeding after childbirth, duration of exclusive breastfeeding, and timing of cessation of breastfeeding was probed as open-ended question and the response recorded.

Appropriate breastfeeding practices were defined as per the WHO recommendations, namely, breastfeeding initiated within first hour of birth, exclusive breastfeeding for first 6 months of life, and breastfeeding continued along with appropriate complementary foods up to 2 years of age or beyond. Inappropriate breastfeeding practices were defined as not adhering to the above-mentioned WHO recommendations. Knowledge of above recommendations was defined as appropriate knowledge. Data were analyzed using statistical software SPSS version 21. Breastfeeding practices and knowledge are expressed as a proportion with 95% confidence limits. Each factor was compared in mothers with appropriate and inappropriate breastfeeding practices using univariate analysis, and factors found to be significantly associated were subjected to logistic regression analysis [7]. The significance level was fixed at 5%.

RESULTS

One thousand mothers with children of age 7–60 months were included in the study. Mean (standard deviation) age of children was 26.75 (14.85) months. Of 500 children aged <2 years, 213 were female and 287 were male, and of 500 children from 2 to 5 years, 227 were female and 273 were male. Overall sex ratio

was 1.27:1 favoring males. Majority of the mothers (85%) were aged 20–30 years, while only 1% was teenaged and the rest (14%) were more than 30 years of age. A mere 5% of mothers were illiterate, whereas the rest (95%) had done a minimum of primary schooling. Most of the mothers had dropped out at the middle school level. Only 47% of mothers had completed high school, while only 10% had done graduation. As much as 85% mothers were unemployed and 15% were employed, of which 6% were laborers and the rest 9% were office-goers. 52.8% belonged to lower socioeconomic class, 46.9% belonged to middle class, and 0.3% belonged to upper class as per modified Kuppaswamy scale. 60% were from urban and 40% were from rural area. Only 8% had more than two children. 55% lived in a nuclear family while 45% were a part of joint family. 77% of mothers received counseling on breastfeeding in the antenatal period. 44% delivered through operative delivery. 24% of the mothers had their newborn hospitalized during newborn period for some illness.

59% (95% confidence interval [CI] 55.9–62.1) of mothers initiated breastfeeding within one hour of childbirth. 70.2% (95% CI 67.3–73) exclusively breastfed their babies for 6 months and above. 43.6% (95% CI 39.2–48.1) of mothers, with children of age 25–60 months, breastfed their babies up to 2 years and beyond. On the whole, only as many as 25.8% (95% CI 23.1–28.6) mothers had appropriate breastfeeding practices. The rest had one or more inappropriate practice(s).

The common reasons cited by the mother for delayed initiation of breastfeeds were illness in child (19%), followed by operative delivery (9%), health systems factor like cleaning the baby/mother (6%), illness in mother (2%), and breast problems (2%). The common reasons cited by mothers for not exclusively breastfeeding the child till first 6 months of life were perception of insufficient breast milk (16%) and perception that formula is healthier (7%). Common reasons for stopping breastfeeding before 2 years were perception that it was insufficient (19%), perception that it was enough (9%), baby not sucking well (5%), subsequent conception (5%), and illness in mother/child (5%). On univariate analysis, female gender, maternal employment, operative delivery, and hospitalization in newborn period were identified as risk factors for inappropriate breastfeeding practices (Table 1) regression analysis confirmed the findings of univariate analysis and the four factors stated above emerged as significant independent risk factors for inappropriate breastfeeding practices (Table 2).

49% of mothers had appropriate knowledge on timing of initiation of breastfeeding, 74% on duration of exclusive breastfeeding, and 57% on total duration of breastfeeding. Overall, only 26.6% (95% CI 23.9–29.5) of mothers had appropriate knowledge about ideal breastfeeding recommendations. The knowledge and breastfeeding practices are depicted in Fig. 1.

DISCUSSION

This study shows that only about a quarter of mothers had appropriate breastfeeding practices. Female gender, maternal employment, operative delivery, and hospitalization in newborn period are

Table 1: Univariate analysis of determinants of breastfeeding

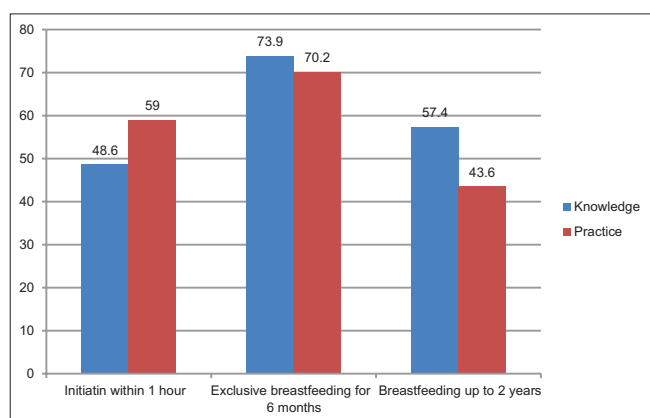
Factor	Category	Inappropriate practices n (%)	Appropriate practices n (%)	X ²	p	Odds ratio
Gender	Female	340 (77.3)	100 (22.7)	3.875	0.05	1.33(1.01–1.78)
	Male	402 (71.8)	158 (28.2)			
Maternal age	Extremes	119 (77.8)	34 (22.2)	1.208	0.315	1.25(0.83–1.90)
	21–30	623 (73.6)	224 (26.4)			
Maternal education	<10 th standard	403 (76)	127 (24)	1.989	0.169	1.22(0.92–1.62)
	≥10 th standard	339 (72)	131 (28)			
Maternal employment	Employed	125 (82.8)	26 (17.2)	6.842	0.009	1.8 (1.15–2.83)
	Unemployed	617 (72.7)	232 (27.3)			
Residence	Urban	450 (74.9)	151 (25.1)	0.735	0.692	1.09(0.81–1.46)
	Rural	292 (73.1)	107 (26.9)			
Number of children	More than 2	61 (74.4)	21 (25.6)	0.002	1.0	1.01(0.60–1.70)
	2 and less	681 (74.2)	237 (25.8)			
Type of family	Nuclear	422 (76.7)	128 (23.3)	4.361	0.113	1.34(0.98–1.78)
	Joint	320 (71.1)	130 (28.9)			
Antenatal counseling	No	182.9 (77.4)	53 (22.6)	1.692	0.202	1.25(0.89–1.78)
	Yes	560 (73.2)	205 (26.8)			
Type of delivery	Operative	349 (79.7)	113 (20.3)	12.227	<0.001	1.64(1.26–2.26)
	Vaginal	393 (69.9)	169 (30.1)			
NICU admission	Yes	223 (91.8)	20 (8.2)	51.76	<0.001	5.11(3.16–8.28)
	No	519 (68.6)	238 (31.4)			

NICU: Neonatal intensive care unit

Table 2: Regression analysis of factors affecting breastfeeding

Factor	Crude odds ratio	Adjusted odds ratio	95% CI	p
Gender (female vs. male)	1.33	1.40	1.035–1.887	0.029
Maternal employment (yes vs. no)	1.8	1.99	1.256–3.149	0.003
Type of delivery (Operative vs. vaginal)	1.64	1.605	1.184–2.178	0.002
NICU admission (yes vs. no)	5.11	5.129	3.155–8.34	<0.001

CI: Confidence interval, NICU: Neonatal intensive care unit

**Figure 1: Appropriate knowledge and breastfeeding practices**

factors which place the infant under the risk of inappropriate breastfeeding practices. Only as much as a quarter of mothers had adequate knowledge of ideal breastfeeding recommendations.

The proportion of mothers who initiated breastfeeding within one hour of birth in our study is comparable with NFHS-4 data of the state and another study done in the state [6,8]. Similar rate has been reported in another study performed in Gujarat [9]. Exclusive breastfeeding rate of the study is well above the NFHS-4 reported rate but similar to that reported by another study performed in the state [10]. The higher rates could probably be attributed to the lesser female children in the study and lesser number of mothers employed as laborers. This study found that less than half of mothers breastfed their children for 2 years or beyond. These data are not available in NFHS-4 as well as in other published literature.

Among the reasons cited for late initiation of breastfeeding after birth, 15% was due to operative delivery and health system factors such as cleaning and late rooming in which shows non-adherence to baby-friendly hospital initiative policy. This can be remedied by continuing medical education programs for health personnel, in-hospital audit of deliveries to identify the lacunae, and personal

and institutional incentives when the recommendations are followed. Although the exclusive breastfeeding rates are higher than that reported by NFHS-4, as much as 23% of mothers did not do so due to incorrect perception. Similarly, incorrect perception was the reason for 28% of mothers to stop breastfeeding before 2 years. This misconception and incorrect perception can be addressed by appropriate and repeated counseling. Every hospital visit of the mother for antenatal care and immunization should be used as an opportunity to reinforce the benefits of exclusive and continued breastfeeding.

Gender bias, placing female children under the risk of inappropriate feeding practices, has been reported by the previous study [11]. Gender bias cannot be rectified by counseling alone as it has deep-rooted social, economic, and cultural reasons. It can be rectified only when the attitude of the society changes at large. Operative delivery as a risk factor for late initiation of breastfeeding has been reported by a previous study [8]. Adequate post-operative analgesia and nursing assistance by para-medical personnel can ensure timely initiation and sustenance of breastfeeding despite operative delivery. Hospitalization of a newborn obviously leads to delay in initiation of breastfeeding due to underlying illness in the newborn and the physical separation of the mother-newborn dyad. Maternal employment acts as a risk factor due to physical separation and has been reported as a risk factor in previous studies [12]. Creation of breastfeeding conducive workplace is the need of the hour. Lack of maternal education has been identified as a risk factor of inappropriate breastfeeding practices in previous studies but not in this study [11,13]. This could be probably due to the high literacy rate prevalent in the state.

Among the breastfeeding recommendations, the knowledge of mothers on exclusive breastfeeding was highest paralleling high exclusive breastfeeding rates. Although about three-quarters of mothers have reported to have received some counseling on breastfeeding during antenatal period, only about a quarter of mothers had adequate knowledge on all breastfeeding recommendations. This means that the counseling did not result in knowledge transfer. Hence, the quality of counseling needs substantial improvement. Limitations of the study are that it is a hospital-based study and the participants were limited to lower and lower-middle socioeconomic strata; the upper middle and upper class were unrepresented. These limitations were compensated by a large sample size and robust statistical methods which are the positive highlights of the study.

CONCLUSION

Female gender, maternal employment, operative delivery, and hospitalization in newborn period are significant independent

risk factors for inappropriate breastfeeding practices. Only a quarter of mothers had adequate knowledge of breastfeeding recommendations.

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