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Predictors of exclusive breastfeeding intention among rural pregnant women in India: a study using theory of planned behaviour

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ABSTRACT

Introduction: Documentation on prenatal intention for exclusive breastfeeding in rural India is scarce. The objective of this study was to examine exclusive breastfeeding intention and its predictors among rural pregnant women in Odisha state of India.

Methods: A cross-sectional survey was conducted involving 218 pregnant rural women in Odisha. A structured data collection tool was developed to measure knowledge, attitude, subjective norm, perceived control and intention for exclusive breastfeeding using continuous assessment scales. Bivariate and multivariate regression analysis was carried out.

Results: Only 29.8% of pregnant women reported a high intention for exclusive breastfeeding. Higher age (odds ratio (OR) 3.84, 95% confidence interval (CI) 1.48, 9.96), being literate (OR 1.46, 95% CI 1.06, 3.54), lower caste category (OR 6.85, 95% CI 1.88, 24.91) and receipt of breastfeeding education (OR 2.68, 95% CI 1.27, 5.65) had a significant relationship with exclusive breastfeeding intention. Breastfeeding education was positively associated with knowledge, attitude and subjective norm, but inversely related with perceived control (all $p<0.05$). High knowledge (OR 116.87, 95% CI 35.24, 387.56), positive attitude (OR 3.18, 95% CI 1.46, 6.62), supportive norm (OR 2.61, 95% CI 1.54, 4.77) and greater perceived control (OR 5.37, 95% CI 1.22, 16.61) among pregnant women had potential effects on their exclusive breastfeeding intention.

Conclusions: The study implies that appropriate breastfeeding education sessions need to be tailor-made for prenatal stage to improve exclusive breastfeeding intention and practice in rural Odisha.

Key words: attitude, exclusive breastfeeding, India, intention, knowledge, perceived control, prenatal education, subjective norm, theory of planned behaviour.

Introduction

WHO recommends the practice of exclusive breastfeeding as an essential component of infant nourishment, which is defined as giving no food or liquid other than mother's breast milk during the first 6 months after birth[1]. However, after many years of continuous efforts by various government and non-government agencies across the world, approximately 1.3 million lives are lost annually because of inadequate exclusive breastfeeding[2]. In India, only 46.4% of children are exclusively breastfed and the country still struggles to achieve a reasonable level of optimal infant and child-feeding practices[3].

Odisha state of India has recorded a high infant mortality rate (59 per 1000 live births)[4,5]. This figure is especially higher in rural Odisha (62) than in urban areas (41). Rural children in Odisha are also more likely to be undernourished than urban children with a total of around 41% of 0–5 year children being underweight[3]. Regardless of the universal breastfeeding norm, in Odisha incorrect and suboptimal breastfeeding practices are widespread. In the state, only 27% of infants receive exclusive breastfeeding for 6 months[4,5]. Further, pre-lacteal feeding after birth is a common practice in rural Odisha with about 42% of children being fed a liquid other than breast milk after birth[3]. The breastfeeding practices are further influenced by various cultural and community beliefs in rural regions[6]. Thus, it is essential to understand the factors underlying rural women's breastfeeding behaviour.

Previous researchers have identified maternal intention as an important determinant of breastfeeding behavior[7-9]. Further, prenatal intention has been emphasised by many authors as one of the strongest factors for breastfeeding intensity and duration[10-13]. In addition, a woman's clear vision about breastfeeding before pregnancy or during the early stage of pregnancy increases her likelihood of optimal breastfeeding[14,15].

The framework of theory of planned behaviour has given insights into the effect of breastfeeding intention on the actual behaviour and related determinants[10,16-18]. The key factor in this theory is the intention of the individual to execute a behaviour that is determined by its three constructs – the individual's attitude towards that behaviour, subjective norms (perception of social pressure from significant others to perform a particular behaviour) in the society about that behaviour and the perceived control (perception of the ease or difficulty of performing a particular behaviour) to be able to practice that behaviour[16,17]. This theory has been used by numerous researchers on breastfeeding intention, who have found that the three constructs, attitude, subjective norm and perceived behavioural control, have significant effect on breastfeeding intention[19-24].

Most researches on maternal breastfeeding intention have been conducted in developed countries[11,13] with limited existing data from India and none from Odisha state. Moreover, only a few studies have specifically focused on prenatal intention for exclusive breastfeeding[6,25,26] and rural women's breastfeeding intention has been much less examined. Thus, the aim of this study was to assess the exclusive breastfeeding intention of rural pregnant mothers in Odisha state of India and its relationship with their knowledge, attitude, subjective norm and perceived control for exclusive breastfeeding.

Methods

Study area

A cross-sectional survey was conducted between March and June 2012 in rural areas of Angul district of Odisha. This district was chosen because it had one of the lowest exclusive breastfeeding rates in the state. This selection was done with the aim of identifying possible predictors of low exclusive breastfeeding in Odisha. Only 11.1% children were exclusively breastfed for 6 months in Angul district, which is less than other rural areas (10.6%)[27].

Odisha state has a majority of rural areas with an overall population density of 269 per square kilometre[4,5] as compared to the defined limit for rural areas in India of 400 per square kilometre[28]. Angul district has an even lower population density of

200 per square kilometre[27] with an estimated total population of 1.27 million, 84% of whom live in rural areas[29]. All four subdistricts in Angul district are denoted as rural except for two small urban municipalities Angul town and Talcher[30]. The average literacy rate is 77.5%[29] while 52% live below the poverty line[30]. About 0.29 million women are within the age group of 15–49 years. Agriculture is the main occupation along with jobs in mining and other industries[30].

Sampling

The sample for this study was selected from pregnant women living only in rural areas of Angul district, using a multi-stage sampling method. First, one subdistrict among a total of four subdistricts in Angul district was randomly chosen. In that subdistrict, there were three community health centres (CHCs) and under each CHC, there were more than one subcentre. Of those, one subcentre was randomly selected under each CHC. Then, a total of 283 registered pregnant women at these three selected subcentres were included in the study. Finally, data were collected from 218 pregnant women through face-to-face interviews. Sixty-five women could not be reached.

Data collection

A structured interview schedule was developed and field-tested for accuracy. This was used as the data collection tool. All questions were prepared in English, then translated to the local Odia language and pretested in a similar area. The content validity of the interview schedule was ensured through prior review by two medical doctors and two nurses working in the area as well as two public health specialists at Tata Institute of Social Sciences (TISS), Mumbai.

Measures

Data were collected about the respondent's intention, knowledge, attitude, subjective norm and perceived control about exclusive breastfeeding, together with details about their demographic and socio-economic status and questions about the breastfeeding education received from health personnel. Exclusive breastfeeding intention, knowledge, attitude, subjective norm and perceived control were measured using three questions each on a scale of 1–3. The highest score of 3 was given to optimal responses while the lowest score 1 was given to suboptimal responses. A middle score of 2 was assigned for responses as 'not sure' (Table 1).

Reliability analysis of the scales measurements were computed using Cronbach's alpha statistic, which was greater than 0.7 (intention 0.78, knowledge 0.83, attitude 0.71, subjective norm 0.73, perceive control 0.71). The overall index score for each of these variables was calculated by adding the scores of all questions for that variable. These variables (range 3–9) were further categorised into two groups. A total score of 9 was denoted as 'high', whereas any score from 3 to 8 was denoted as 'low'. This grouping criteria was used with a view of the importance of all three optimal responses (no pre-lacteal feeding, exclusive breastfeeding for 6 months and no feeding of water during exclusive breastfeeding) so as to ensure optimal exclusive breastfeeding.

Data analysis

Data were analyzed using Statistical Package for Social Sciences v18 (SPSS Inc; www.spss.com). Descriptive statistics included computation of means, frequencies and standard deviations (SD) for all variables. Sociodemographic factors affecting knowledge, attitude, subjective norm and perceived control for exclusive breastfeeding were examined through logistic regression tests. For this, respondent's age, education, caste category and receipt of breastfeeding education from health personnel were included as potential confounders in categorical form. All dependent variables were used as dichotomous variables with high (score of 9) and low (score of less than 9) categories.

In addition, logistic regression analysis was used to assess the associations between the respondent's knowledge, attitude, subjective norm and perceived control with their intention for exclusive breastfeeding. All variables were included dichotomous variables with high (score of 9) and low (score of less than 9) categories. Computation of odds ratios (ORs) and confidence intervals (CIs) were done and $p<0.05$ denoted statistical significance.

Table 1: Variable assessment scales, their optimal and suboptimal responses and assigned scores

Variable	Optimal response (score 3)	Suboptimal response (score 1)
Breastfeeding intention		
1 Do you intend to give any prelacteal fluid to your baby after birth?	No	Yes
2 Until how long do you intend to exclusively breastfeed (only mother's milk) your baby?	6 months	<6 months
3 Do you intend to give water to your baby during exclusive breastfeeding?	No	Yes
Breastfeeding knowledge		
1 Should any prelacteal fluid be given to the baby after birth?	No	Yes
2 At what age should external food be introduced to the baby?	6 months	<6 months
3 Should the baby be given external water during the period of exclusive breastfeeding?	No	Yes
Breastfeeding attitude		
1 As part of tradition, prelacteal fluid must be fed to the newborn before breastfeeding.	Disagree	Agree
2 Exclusive breastfeeding to babies for 6 months is not a good practice.	Disagree	Agree
3 Mother's milk is not sufficient till 6 months of age. The baby needs water and other external food.	Disagree	Agree
Subjective norms for breastfeeding		
1 Your family members expect you to feed prelacteal fluid to your baby.	Disagree	Agree
2 Your family members expect you to feed exclusive breast milk to your baby for first 6 months.	Agree	Disagree
3 Your family members expect you to feed water to your baby during the first 6 months.	Disagree	Agree
Perceived behavioural control for breastfeeding		
1 All decisions regarding your child's feeding depend only on you.	Agree	Disagree
2 You are confident that you would be able to exclusively breastfeed your baby for 6 months.	Agree	Disagree
3 You would be able to breastfeed your baby adequately so that water or any other food will not be needed for 6 months.	Agree	Disagree

Ethics approval

The study was approved by the Board of Research Studies, School of Health System Studies, Tata Institute of Social Sciences (TISS), Mumbai. Written informed consent prepared in Odia language was taken from all respondents for maintenance of anonymity and the confidentiality.

Results

The mean age of sampled pregnant women was 23.6 years (SD 3.4; range 18–35 years). About 56% of women had previously given birth and 79% were in their second or third trimester of pregnancy. The respondents had a mean of 6.14 years of education with about 24.3% being illiterate. One-third of the women had a per-capita monthly income of less than US$15 (median US$20). The average family size was 5.8 (SD 2.62). A majority of interviewed women belonged to other backward castes (OBCs) followed by scheduled castes (SCs) and scheduled tribes (STs). Breastfeeding education was reported to be received by 67% of respondents from the health personnel working in that area (Table 2).

There were 65 (29.8%) women who reported having high intention for exclusive breastfeeding, which includes a combination of intention for no prelacteal fluid, only mother's milk without any water or other food for first 6 months. Older women (48.1%) had higher exclusive breastfeeding intention than younger women (21.7%; $p<0.05$) and literate women (32.2%) had higher intention than illiterate women (22.4%; $p<0.05$). Respondents belonging to backward castes (OBCs 41.4%, SCs 27.3%, STs 25.8%) reported stronger intention than general caste women (8.8%; $p<0.05$). Those women (18.1%) who had received breastfeeding education from health personnel possessed higher intention than those who had not (35.6%; $p<0.05$) (Table 2).

The mean score for breastfeeding knowledge was 6.7 (SD 1.6), mean attitude score was 7.0 (SD 1.8), mean subjective norm score was 7.2 (SD 1.5) and mean perceived control score was 7.1 (SD 1.7). Age of respondents had a positive association with knowledge, subjective norm and perceived control but not with attitude. Literacy status was positively associated with only knowledge whereas OBC women had significantly higher breastfeeding knowledge and more supportive subjective norm for exclusive breastfeeding than general caste women. Breastfeeding education had a significant positive relationship with knowledge, attitude, subjective norm and perceived control. Furthermore, higher age, being literate, lower caste category and receipt of breastfeeding education from health personnel had a significant relationship with exclusive breastfeeding intention (Table 3).

Higher breastfeeding knowledge was found to be significantly associated (OR 5.84; 95% CI 3.62, 9.42) with stronger exclusive breastfeeding intention. Similarly, positive attitude towards exclusive breastfeeding (OR 2.99; 95% CI 1.53, 6.17), supportive subjective norm (OR 1.45; 95% CI 1.09, 3.94) and greater perceived control (OR 1.39; 95% CI 1.03, 2.89) had a significant effect on the respondent's higher intention for exclusive breastfeeding. These associations appeared to be unaffected after adjusting for respondent age, literacy, caste category and receipt of breastfeeding education from health personnel (Table 4).

Discussion

Despite continuous efforts to address the pressing challenge of malnutrition and premature deaths among rural Indian children in the form of various health and nutrition programs, optimal exclusive breastfeeding rates have not been achieved yet[3]. With a high level of infant mortality and under-nutrition status in rural Odisha[3], a persisting low exclusive breastfeeding rate further exacerbates the situation. The present study found that only a small percentage (29.8%) of pregnant women in rural Odisha possessed a strong intention for exclusive breastfeeding for 6 months. Further, it also indicated that feeding prelacteal fluid at birth and water or other liquid and solid diet during the first 6 months is commonly intended in Odisha, which is consistent with the previously identified norm among rural Odia society[3]. In addition, most previous studies conducted on exclusive breastfeeding intention were carried out in developed countries; not many studies have been made in rural India. Thus, the findings of this study would result in better understanding about rural Indian women's breastfeeding intention so that appropriate intervention strategies can be designed to achieve optimal exclusive breastfeeding rates.

This study demonstrated that older women had a stronger intention for exclusive breastfeeding possibly because of better knowledge and higher perceived control. Similarly, women belonging to lower castes had a higher breastfeeding intention, which is similar to the findings of other studies in India[31,32]. Higher receipt of breastfeeding education from health personnel could be a possible reason for this. Odisha's Village Health and Nutrition Days (VHND) participation statistics suggested that higher percentages of OBC, SC and ST than general caste women attend the VHND sessions, which are organised every month to spread awareness about health and nutrition, including optimal breastfeeding guidelines[33].

Moreover, these research findings supported the interrelationships between the constructs of theory of planned behavior, which hypothesises that exclusive breastfeeding intention is affected by the attitude, subjective norm and perceived behavioural control for exclusive breastfeeding. The positive association of breastfeeding knowledge and attitude with exclusive breastfeeding intention in the current study is consistent with the findings of other studies[20,34-36]. Further, this study identified that support extended by significant others as well as perceived control among mothers had a huge influence on breastfeeding intention[20,21,24,35]. Therefore, efforts must be made to create a supportive environment in the family and community to enhance exclusive breastfeeding behaviour among rural mothers.

Table 2: Sociodemographic information about study respondents, by their exclusive breastfeeding intention

Characteristic	Respondents per subcategories (%) *n*=218	Exclusive breastfeeding intention (%) among subcategories	*p* value
Age of respondent (years)			
≤20	21.1	21.7	0.004
21–25	55.0	25	
≥26	23.9	48.1	
Gestational age			
First trimester	20.6	28.9	0.88
Second trimester	40.4	28.4	
Third trimester	39.0	31.8	
Previous births			
0	43.6	25.3	0.42
1	40.4	34.1	
>1	16.0	31.4	
Literate			
No	24.3	22.4	0.023
Yes	75.7	32.2	
Caste category			
General	15.6	8.8	0.004
Other backward caste	39.9	41.4	
Scheduled caste	30.3	27.3	
Scheduled tribe	14.2	25.8	
Household size			
2–4	29.8	27.7	0.58
5–7	48.6	33.0	
≥8	21.6	25.5	
Per-capita monthly household income (quintiles)			
1 (poorest)	20.0	32.1	0.15
2	20.0	36.1	
3	20.0	20.5	
4	20.0	38.8	
5 (least poor)	20.0	18.4	
Received breastfeeding education			
No	33.0	18.1	0.008
Yes	67.0	35.6	
Total	100	29.8	

The effectiveness of structured counselling sessions on exclusive breastfeeding practice is well known[37,38]. The findings of the current study also supported this point, which revealed that breastfeeding education from health personnel such as medical staff and community health workers potentially contributed to a higher exclusive breastfeeding intention, as well as respondent's knowledge, attitude and subjective norm towards breastfeeding. This argues that more rigorous educational mechanisms on optimal breastfeeding benefits during prenatal stages can be useful to promote knowledge and intention of pregnant women towards exclusive breastfeeding.

Table 3: Sociodemographic predictors of exclusive breastfeeding knowledge, attitude, subjective norm, perceived control and intention of 218 pregnant women in Angul district of Odisha, India

	Knowledge		Attitude		Subjective norm		Perceived control		Intention	
	OR†	95% CI	OR†	95% CI	OR†	95% CI	OR†	95% CI	OR†	95% CI
Age of respondent (years)										
≤20	–		–		–		–		–	
21–25	1.42	0.54, 3.76	1.36	0.64, 2.89	2.06	0.97, 4.38	1.12	0.54, 2.33	1.27	0.54, 2.98
≥26	6.22	2.15, 18.04	2.37	0.93, 6.04	3.98	1.61, 9.89	3.36	1.31, 8.64	3.84	1.48, 9.96
Literate										
No	–		–		–		–		–	
Yes	2.65	1.16, 5.56	0.79	0.34, 1.86	1.30	0.57, 2.97	1.24	0.55, 2.81	1.46	1.06, 3.54
Caste category										
General	–		–		–		–		–	
OBC	2.75	1.89, 8.44	1.47	0.61, 3.55	3.31	1.36, 8.05	0.97	0.39, 2.43	6.85	1.88, 24.91
SC	1.78	0.53, 6.02	0.81	0.31, 2.06	2.26	0.87, 5.88	0.46	0.18, 1.20	4.11	1.05, 16.10
ST	1.13	0.23, 5.44	1.13	0.31, 4.16	2.03	0.58, 7.15	0.31	0.10, 1.29	3.07	0.61, 15.63
Received breastfeeding education										
No	–		–		–		–		–	
Yes	4.85	1.99, 11.79	3.86	2.06, 7.23	3.65	1.93, 6.88	2.33	1.24, 4.38	2.68	1.27, 5.65

CI, confidence interval; OBC, other backward caste; OR, odds ratio; SC, scheduled caste; ST, scheduled tribe.
†Multiple logistic regression model was carried out for exclusive breastfeeding intention.

Table 4: Associations between exclusive breastfeeding intention of respondents and their knowledge, attitude, subjective norm and perceived control.†

	Crude OR¶	95% CI	Adjusted OR§	95% CI
Knowledge	107.83	37.01, 314.22	116.87	35.24, 387.56
Attitude	3.95	1.40, 8.76	3.18	1.46, 5.62
Subjective norm	3.54	1.45, 7.28	2.61	1.54, 4.77
Perceived control	4.73	1.36, 10.67	5.37	1.22, 16.61

CI, confidence interval; OR, odds ratio.
†All associations are calculated as the probability of having a higher intention (score 9) than that of low intention (score <9) due to change in scores of knowledge, attitude, subjective norm and perceived control from low (score <9) to high (score 9) category.
¶Simple logistic regression coefficient.
§Multiple logistic regression coefficient adjusted for respondent age, literacy, caste category and receipt of breastfeeding education from health personnel.

However, the study respondents who received breastfeeding education demonstrated a lower level of perceived control. Incorporating motivational elements into breastfeeding education sessions could be used to boost the ability and confidence of women to take correct decisions about feeding their baby and practising them. Previously, motivational interviewing techniques have been successfully used to produce higher breastfeeding self-efficacy[21,39]. Therefore, instead of imparting only information about correct breastfeeding practice, trained health workers may be engaged to persuade women for optimal exclusive breastfeeding behaviour.

Conclusions

This study implies that inadequate knowledge, restrictive attitude, faulty norms and weak perceived control are the major predictors of a low intention for exclusive

breastfeeding among pregnant women in rural Odisha. Educational interventions focusing on the importance of exclusive breastfeeding could be stressed by all levels of health personnel in order to attain universal exclusive breastfeeding intention and practice in rural areas. Considering greater bonding and dependence in rural societies, inclusion of husbands and important family members of pregnant women during educational sessions could be crucial to eradicate restrictive societal attitudes and faulty norms related to exclusive breastfeeding.

Limitations

This study's results may have overestimated the level of breastfeeding intention due to potential social desirability bias as the data were collected from the respondents through face-to-face interviews. However, the data collection tool was designed with a mix of direct and reverse questions so as to reveal accurate information.

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