ORIGINAL ARTICLE

Knowledge and Factors Affecting Exclusive Breastfeeding Practice among Women in Nawabshah, Sindh, Pakistan

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Abstract

Background: Exclusive breastfeeding refers to giving a mother's milk only to infants up to the age of six months, except for medicines. It is a complete nutritional package for infants, but unfortunately, approximately 37% mothers exclusively breastfeed their infants in Pakistan.

Objective: This study aimed to determine the knowledge and frequency of exclusive breastfeeding and the factors influencing breastfeeding practices among women in Nawabshah city, Sindh, Pakistan.

Methods: This cross-sectional study was conducted among lactating mothers visiting the OPD of the Civil Hospital (PMC) and the Maternal and Child Health (MCH) Center for consultation in Nawabshah during July 2022 to December 2022. The study enrolled 400 lactating mothers. A self-designed tool was used to gather data from participants, comprising the following sections: demographics, breastfeeding-related parameters, colostrum-related parameters, and complementary feeding practices.

Results: This study found a low prevalence of exclusive breastfeeding (35%) and majorty had knowledge of exclusive breastfeeding (82%), exclusive breastfeeding was significantly associated with maternal knowledge (aOR=4.70, 95% CI: 1.44-15.35, p=0.010), information from healthcare providers (aOR=4.55, 95% CI: 1.08-19.20, p=0.048), and positive beliefs regarding infant health (aOR=1.95, 95% CI: 1.18-3.22, p=0.016) and diarrhea prevention (aOR=1.65, 95% CI: 1.07-2.55, p=0.023). No significant association was found with paternal or family-related factors (p>0.05).

Conclusion: The majority of the population knew about the benefits of breastfeeding and its early initiation. However, they had poor knowledge regarding the term exclusive breastfeeding and poor breastfeeding practices.

Keywords: *Exclusive breastfeeding, colostrum, knowledge, women, feeding practices.*

INTRODUCTION

Breast milk is a complete source of nourishment for a newborn, providing all the nutrients the baby needs in an adequate proportion for healthy development [1]. Gastrointestinal infection and pulmonary illnesses like pneumonia are the leading causes of child mortality during the initial months of life, although they are easily avoided if the baby is breastfed. It plays a significant role in a child's maturation. This strategy helps reduce the rates of child malnutrition and infant mortality, all of which are related to a poor nutritional diet. Breastfeeding has been demonstrated to increase a child's IQ and enhance a mother's health and well-being by reducing the likelihood of postpartum hemorrhage, anemia, arthritis, breast and ovarian cancer, and other illnesses [2].

Exclusive breastfeeding can be defined as "giving mother's milk to an infant without the inclusion of water, juice, non-human milk, or any other food (except vitamins, minerals, or medicines if needed) until six months of age" [3]. Infants who are breastfed during the first year of life have a reduced risk of developing diabetes, fewer gastrointestinal illnesses, greater cognitive and physical development, and enhanced learning ability, all of which are benefits of breastfeeding [4]. Breastfeeding is a cost-effective way for mothers in Pakistan to give their children a positive start and reduce healthcare costs [5].

According to a previous study, the risk of newborn death can be reduced by breastfeeding throughout the first six months of life, beginning just an hour after childbirth [6]. Suboptimal breastfeeding is defined as the second most significant risk factor for children under five. It also accounts for 47.5 million disability-adjusted life years (DALYs) lost in 2010, accounting for 11.6% of under-five mortalities [7]. Mothers' rates of exclusive breastfeeding are influenced by a wide range of variables, which include their age, educational status, income, relationship status, race, beliefs about the benefits of breast milk to a mother's professional life, exposure to information in the media and literature, and the support from family [8].

Twenty-nine percent of mothers in a survey said they worried their babies were still hungry even after they started breastfeeding. Twenty-six percent of mothers

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said they were concerned their infant would become dependent on breast milk. 25% said they felt pressured by their mothers-in-law to return to work. Lack of spouse support, incorrect feeding, and disputes with others are other potential roadblocks to exclusive breastfeeding [9]. Bottle-feeding was introduced within the first month of life, as in most Asian nations, and there is a joint family arrangement in which caring for the newborn is everyone's responsibility [10].

Despite the well-documented benefits of breastfeeding, only 37-48.8 % of Pakistani mothers do so exclusively with their newborns [11]. This study was conducted to determine the knowledge and frequency of exclusive breastfeeding and the factors influencing breastfeeding practices among women in Nawabshah city, Sindh, Pakistan.

METHODS

This cross-sectional study was conducted among lactating mothers visiting the OPD of the Civil Hospital (PMC) and the Maternal and Child Health (MCH) Center in Nawabshah for consultation. The study protocol was reviewed and approved by the Ethical Committee of PUMHS (Ref. no.: PUMHSW/SBA/CHS 434) dated 16-07-2022. Data collection took place over six months, from July 2022 to December 2022, following ethical approval. Although the data set was collected 4 years ago, the prevalence of EBF in Pakistan did not change significantly over time; therefore, this data remains relevant.

This study included lactating mothers of infants aged 24 months who were present at the health center and willing to participate. Mothers who fell in this category, having chronic or acute illness, were excluded from the study. Participants provided informed consent to maintain confidentiality throughout the research. The study population comprised lactating mothers with infants aged less than 24 months.

A consecutive sampling technique was utilized to ensure an unbiased representation of the target population. The sample size was calculated by using the following formula, n=sample size, z=degree of accuracy (95%), p=frequency of exclusive breastfeeding (48%) [30], e=margin of error (5%): Formula: $n=z^2\ p\ (1-p)/e^2$, $n=(1.96)^2x0.48\ (1-0.48)/0.05^2$, n=400.

The data were collected through a face-to-face survey, ensuring participants could participate without perceived threats or confidentiality breaches. A study overview was provided to participants before collecting their data and obtaining written informed consent. It was made clear to them that the survey posed no harm and that they had the right to withdraw from the study at any time.

A self-designed tool was used to collect data from participants. It comprised sections on demographics, breastfeeding-related parameters, colostrum-related parameters, and complementary feeding practices. Due to its evaluation by pediatric and public health professionals, the tool was considered valid. The evidence supporting the tool's reliability (Cronbach's alpha > 0.7) was demonstrated through the results of its pilot study; the tool was determined to be reliable. The tables and figures in the study illustrated those different parameters of the tools. The study tool was provided as a supplementary file.

The data were entered and analyzed using the statistical software package SPSS version 25.0. Data were presented as frequencies, percentages, means, and standard deviations. A confidence level of 95% was used for the study, and a p-value of 0.05 will be termed significant. The data was presented in the form of graphs and tables. Univariate Chi-Square analysis and odds ratios with 95% confidence intervals were used to determine the association between EBF and other factors. A multiple logistic regression model was employed to estimate the adjusted odds ratio (aOR) while keeping EBF as a predictor.

RESULTS

As represented in Table **1**, in our study population, the majority of the participant mothers were between the ages of 23-27 (39%), illiterate (65.5%), housewives (89.3%) and belonged to lower socio-economic status (70.8%) in rural areas (93.5%), followed by the mothers between the ages of 28-32 (26.5%) with primary education (18.3%) belonging to the middle socio-economic status (29.3%) and involved in other occupations (farming, tailoring *etc.*). A tiny proportion of mothers were graduates (2.8%) and employed (2.3%), while none were from the upper class (0%).

Table 1: Basic socio-demographic profile of the participants.

Variables	Frequency	Percentage
Age of Mother		
18-22	80	20.0
23-27	156	39.0
28-32	106	26.5
33-37	54	13.5
Above	04	1.0
Residence		
Urban	26	6.5
Rural	374	93.5
Socioeconomic Status		
Lower	283	70.8
Middle	117	29.3
Upper	0	0
Educational Status of Mother		
Illiterate	262	65.5
Primary	73	18.3
Secondary	39	9.8
Higher	15	3.8
Graduate	11	2.8
Occupation of Mother		
Housewife	357	89.3
Government employee	09	2.3
Daily wager	11	2.8
Other	23	5.8

Table 2: Frequency distribution of breastfeeding related parameters.

Breastfeeding Related Parameters	Frequency	Percentage
Does mother breastfeed the child?		
Yes	325	81.3
No	75	18.8
Frequency of exclusive breastfeeding		
Yes	140	35
No	260	65
Feeding of colostrum		
Yes	176	44
No	224	56
Feeding of colostrum		
Yes	176	44.0
No	224	56.0
Number of months of breastfeeding		
1-6 months	186	46.5
7-12 months	144	36
13-18 months	65	16.3
19-24 months	5	1.3
Knowledge of participants about EBF		
Yes	328	82.0
No	72	18.0
Source of information		
Health care provider	149	37.3
Family	170	42.5
Relatives	7	1.8
Social media	6	1.5
None	68	17.0
Breastfeeding initiation		
Immediately	196	49.0
Within 24 hours	116	29.0
After 1-2 days	64	16.0
More than 2 days	24	6.0
Is EBF good for infant health?		
Yes	346	86.5
No	54	13.5
Does EBF prevent diarrhea?		
Yes	312	78.0
No	88	22.0

As illustrated in Table **2**, about 325 (81.3%) of mothers were breastfeeding their child, while only 18.8% were those who were not breastfeeding. Among the 400 study participants, 140 (35%) were exclusively breastfeeding their child, while 260 (65%) were not. Most of the mothers (46.5%) were breastfeeding their child until 6 months of age, while only 1.3% had breastfed their child until 24 months of age. The majority of the studied population, 82.0%, responded "yes" when asked about knowledge of exclusive breastfeeding, while 18% responded "no". The primary source of knowledge about exclusive breastfeeding was family (42.5%), followed by health care providers (37.3%), while social media (1.5%) and relatives (1.8%) played a very minor role.

Out of 400 participants, 196 mothers had started to breastfeed their baby immediately after delivery; 116 mothers began within 24 hours; 64 mothers breastfed their baby after 1-2 days, while a few of them started to breastfeed after 3-4 days. About 346 (86.5%) participant mothers believed that exclusive breastfeeding is suitable for infants' health, while 54 (13.5%) believed that there is no association between a child's good health and exclusive breastfeeding. Among 400 participants, 312 (78%) felt that exclusive breastfeeding prevents diarrhea, while 88 mothers believed that exclusive breastfeeding has nothing to do with avoiding diarrhea.

Table 3: Frequency distribution of complementary feeding.

Any food/thing fed to child along with mother's milk within first 6 months	Frequency	Percentage
Yes	275	68.8
No	125	31.3
Name of food given to baby other than breast milk within initial 6 months		
Animal milk	81	20.2
Packaged milk	78	19.5
Water and Guthi	35	8.7
Guthi	9	2.3
Guthi and other milk	36	9.0
Biscuits/solid foods	1	0.3
Other (fruit, cereals)	35	8.7
Didn't give anything expect breast-milk	125	31.3

Of 400 participants, only 42.5% of mothers knew what colostrum is, while 57.5% either had no knowledge of colostrum or considered it dirty or sour milk. Table **3** shows that in our study population, only 35% of participants had not given anything to babies within the initial 6 months, while the majority had fed other foods or items to infants within the initial 6 months of age. Two hundred seventy-five mothers had initiated feeding other foods in addition to breast milk to their infants within the first 6 months of life. Among those 275 participants, 81 (20.3%) had fed animal milk (goat, cow), 19.5% had given packaged milk (lactogen), and 8.8% of the mothers had given water and guthi. In contrast, 5% had fed other things (gray water, porridge, rice, biscuits, cerelac, *etc.*).

Table **4** illustrates that the majority of mothers who did not breastfeed were between 23 and 27 years of age, 106 (26.5%), followed by the age group of mothers between 28 and 32 years of age, 72 (18%), while the smallest portion was of those mothers who were 38 and above (0.5%). There was a higher percentage of rural mothers who were breastfeeding exclusively (32.3%)

Table 4: Maternal features between who completed and did not complete exclusive breastfeeding.

Mother Demographic Related Parameters	Exclusive Breastfeeding			
	Yes		No	
	Frequency	Percentage	Frequency	Percentage
Age of mother				
18-22 years	31	7.8	49	12.3
23-27 years	50	12.5	106	26.5
28-32 years	34	8.5	72	18
33-37 years	23	5.8	31	7.8
38 years and above	2	0.5	2	0.5

Mother Demographic Related Parameters	Exclusive Breastfeeding			
	Yes		No	
	Frequency	Percentage	Frequency	Percentage
Residency				
Urban	11	2.8	15	3.8
Rural	129	32.3	245	61.3
Educational status of mother				
Illiterate	82	20.5	180	45
Primary	34	8.5	39	9.8
Secondary	12	3.0	27	6.8
Higher	7	1.8	08	2.0
Graduate	5	1.3	06	1.5
Occupation of mother				
Housewife	122	30.5	235	58.8
Government employee	6	1.5	03	0.8
Daily wager	7	1.8	04	1.0
Other	5	1.3	18	4.5

from (n=374) rural mothers than the mothers (n=26) who belonged to the urban areas (2.8%).

Out of 260 participants who did not breastfeed exclusively, the majority of mothers were illiterate, 180 (45%), followed by primarily educated mothers, 39 (9.8%), secondary educated mothers, 27 (6.8%), and high educated mothers, 08 (2.0%), while the least portion was of those mothers who were graduates, 06 (1.5%). Among mothers who had started feeding their babies other foods within 6 months of age and did not breastfeed exclusively, more than half were housewives (58.8%). Of the 260 mothers who were not exclusively breastfeeding, 191 (47.8%) knew EBF, while only 69 (17.3%) did not.

Table **5** summarizes the value of both univariate and AOR assessing predictors of EBF practices. It illustrated key findings on EBF practices and other associated factors. Maternal knowledge about EBF was strongly associated with EBF practices, with 4.70 times the odds of practicing EBF compared with those with no knowledge (aOR=4.70, 95% CI: 1.44-15.35, p=0.010). Additionally, mothers who received information after visiting healthcare providers had significantly higher odds of EBF (aOR=4.55, 95% CI: 1.08-19.20, p=0.048). Moreover, maternal beliefs also contributed to increased EBF for infants' health (aOR=1.95, 95% CI: 1.18-3.22, p=0.016) and to preventing diarrhea (aOR=1.65, 95% CI: 1.07-2.55, p=0.023). Both were significantly associated with the odds of increased EBF practices among the study participants. Family factors showed no statistically significant association with EBF practice after adjustment for confounding factors: fathers' level of education, occupation type, family structure, or number of children (p>0.05).

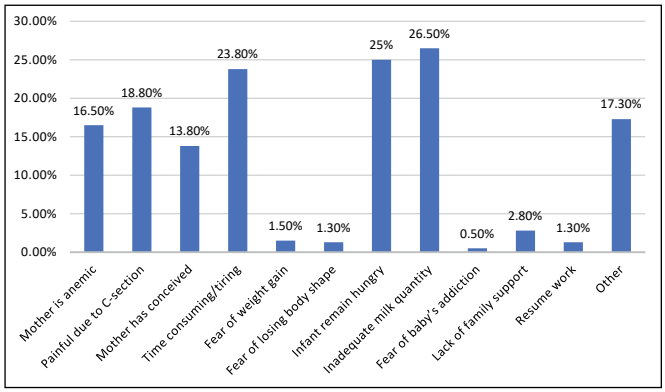

Fig. (1): Barriers for exclusive breastfeeding practice.

As demonstrated in Fig. **(1)**, among the barriers that prevent mothers from practicing exclusive breastfeeding, mother has inadequate milk quantity (26.5%), followed by infants remaining hungry (25%), EBF is tiring and time-consuming (23.8%, C-sections cause difficulty (18.8%), and other beliefs and myths (17.3%), while fear of a baby's addiction (0.5%), weight gain (1.5%), losing body shape (1.3%), and work resume (1.3%) were the least prevalent factors.

DISCUSSION

Findings of this study revealed that although 81.3% of mothers were breastfeeding their child, only 35% were breastfeeding exclusively, which is much lower than the overall prevalence of exclusive breastfeeding in Pakistan, which was 48% as reported by UNICEF [12]. The prevalence of exclusive breastfeeding (35%) in our study was much lower than that reported in previous studies on the same topic conducted in countries such as Iran (Zahedan: 69%), Jordan (77%), Ethiopia (49%), and Brazil (58%) [13]. In comparison, they are higher than Lebanon (10.1%), Nigeria (20%), and some high-income countries, such as the United Kingdom (1%) and Australia (15%) [14, 15].

Table 5: Univariate and adjusted odds ratio between predictor EBF and other parameters.

Predictors	Categories	Univariate Regression		Multivariable Regression	
		Crude OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value
Father's Education	Higher vs Illiterate	1.23 (0.65-2.34)	0.543	1.15 (0.60-2.20)	0.672
Father's Occupation	Govt. Employee *vs* Daily Wager	1.57 (0.74-3.35)	0.119	1.45 (0.68-3.10)	0.347
Number of Children	1-3 Children *vs* 4-6 Children	0.91 (0.60-1.39)	0.061	0.88 (0.57-1.35)	0.560
Family Type	Nuclear *vs* Joint	0.78 (0.49-1.23)	0.312	0.72 (0.45-1.15)	0.174
Socioeconomic Status	Middle Class *vs* Lower class	1.23 (0.81-1.87)	0.328	1.20 (0.78-1.84)	0.401
Mother's Knowledge about EBF	Yes *vs* No	4.86 (1.51-15.77)	*0.002	4.70 (1.44-15.35)	*0.010
Source of Information	Healthcare *vs* None	4.71 (1.12-19.81)	*0.019	4.55 (1.08-19.20)	*0.048
Belief about EBF Improves Infant Health	Yes *vs* No	2.20 (1.23-3.31)	*0.004	1.95 (1.18-3.22)	*0.016
Belief about EBF Prevents Diarrhea	Yes *vs* No	1.72 (1.12-2.64)	*0.001	1.65 (1.07-2.55)	*0.023

CI: Confidence interval, OR: Odds ratio, *Significant at p<0.05

The frequency of exclusive breastfeeding among young mothers was lower than among older mothers, as in Canada [16] and Timor-Leste; this could be because of experience and greater knowledge about EBF, as maternal knowledge was the factor that promoted exclusive breastfeeding [17]. Also, our study showed a direct association between mothers' educational status and the prevalence of exclusive breastfeeding, similar to the survey conducted in Indonesia [16].

Mothers from rural areas were more exclusively breastfeeding than those from urban areas. There was a negative association between a family's socio-economic status and the practice of EBF, as the frequency of exclusive breastfeeding was higher in the lower class than in the middle class, similar to the results of the EAG state [18]. The majority of mothers knew the importance of early initiation of breastfeeding, and 49% had breastfed their child immediately after delivery, unlike the mothers in South Sudan [19] and Bangladesh [20]. In comparison, only 6% had delayed breastfeeding because of C-section, as in Uganda [21], rituals, and some cultural practices or beliefs, such as mothers' purity after delivery, like in India [22].

Despite the much higher proportion of mothers who initiated early breastfeeding, the low prevalence of exclusive breastfeeding contradicts a study conducted in Indonesia that found EBF to be associated with the timely initiation of breastfeeding [23]. The ratio of colostrum feeding in our study is higher (44%) as compared to Islamabad (16%), while because of its yellowish color, density, and a cultural belief that it was dirty or polluted milk and harmful for babies, more than half of mothers discarded it, and instead of colostrum, feed herbal preparations (Guthi) or honey to their infants as they consider it good and healthy for infants. Along with their self-perceptions about colostrum, lack of knowledge also seems to be a factor, as the majority of mothers (57.7%) had no knowledge of the benefits of colostrum for infants' health, unlike mothers in other districts of Sindh [24].

Unlike colostrum, the majority of mothers knew the importance and benefits of exclusive breastfeeding for six months of an infant's life, as it is good for the infant's health, as it increases mental and physical capabilities and helps in brain growth [3], as well as preventing diseases like diarrhea [25].

The primary source of information for mothers was family, followed by health care providers, with social media playing a minor role. Results showed that despite acknowledging the fact that exclusive breastfeeding plays a vital role in infants' good health, mothers were not breastfeeding exclusively because of some cultural practices like giving guthi to infants, as it is considered healthy for infants. Apart from it, mothers had other misconceptions, such as the majority of mothers think that they couldn't breastfeed babies as they are weak (16.5%) and have insufficient breast milk (26.5%), as in Nepal [26, 27], to make a baby complete. Infants remained hungry (25%) after breastfeeding.

An infant would be thirsty in summer as it is too hot, or the infant might become weak if it only sucks mother's milk and nothing else. Some mothers also claimed that because of C-section (18.8%), it is difficult and painful to breastfeed exclusively, and that it is tiring and time-consuming (23.8%). Some mothers said that they had conceived again (13.8%), similar to Saudi Arabia, and that is why they could not continue breastfeeding exclusively. Some mothers were finding it difficult to manage both household and EBF, as they had no family support (2.3%), and others had to resume work (1.3%). Among them, a few were afraid of weight gain, like those in Lebanon, and feared losing their beauty and figure. A past study reported that nursing mothers considered the beauty of their breasts as a considerable point while breastfeeding. Even so, they viewed the long-term pleasures of breastfeeding their children as a positive aspect of emotional well-being [28, 29].

Due to these factors, the majority of mothers had initiated giving other foods along with breast milk in the first 6 months. Mostly animal milk (cow or goat), like in India, and powdered milk were used as replacements for mother's milk, while other foods such as rice, porridge, bananas, biscuits, and other items were also used [30, 31].

The socio-economic status did not show a significant association with exclusive breastfeeding practices in the adjusted analysis. This reinforces the health providers' emphasis on education and counseling as interventions to promote exclusive breastfeeding. These findings were similar to a previous study by Senghore *et al.,* who reported higher EBF rates with greater knowledge of EBF [32].

LIMITATIONS

This study's limitations included its small sample size and the denial and refusal rates before recruiting participants from the targeted population of nursing mothers. It also failed to establish a causal relationship between EBF and other factors that contributed to reduced knowledge of EBF. Moreover, the findings could not be generalized to larger populations at the provincial and national levels due to the above-mentioned reasons, which significantly contributed to their shortcomings.

CONCLUSION

According to the study's results, exclusive breastfeeding (EBF) may not have been practiced at recommended levels—only 35% of mothers practiced EBF. Maternal knowledge, information received from health providers, and perceived beliefs about the health benefits of EBF were the strongest predictors of higher EBF rates. This means that maternal knowledge and beliefs of exclusive breastfeeding were better predictors of the exclusive

breastfeeding practices than family structure and socio-economic status. Barriers that were widely referenced included mothers' perceptions of insufficient milk supply and the demands of breastfeeding. These findings aptly demonstrate the need for educational interventions to counter myths and emphasize EBF. Therefore, strengthening community health programs will provide accurate information and support for mothers to improve infant feeding practices and child health outcomes.

ETHICS APPROVAL

Before the commencement of the research, ethical approval was obtained from the People's University of Medical and Health Sciences Ethics Review Committee (ERC) (Reference Approval Number: PUMHSW/SBA/CHS 434). This study was conducted in full accordance with the ethical principles of the Declaration of Helsinki.

CONSENT FOR PUBLICATION

Written informed consent was obtained from each participant.

AVAILABILITY OF DATA

All the datasets generated and analyzed during this study are not publicly available to avoid data theft. It can be made available from the corresponding author on reasonable request.

FUNDING

None.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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AUTHORS' CONTRIBUTION

Aiman Karim proposed the study concept. Aiman Karim & Mahnoor designed the study, collected data, and wrote the original manuscript. Muhammad Jawad performed the statistical analysis, wrote the original manuscript, and proofread it. Soomal & Shanzae Idrees applied basic stats and did proofreading. Noor Ul Ain wrote the results section, and Faran Khan conducted the formal analysis, critically reviewed and revised the manuscript. All authors read and approved the final manuscript.

GENERATIVE AI AND AI-ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

During the preparation of this work the author(s) limitedly used ChatGPT (GPT-4, OpenAI) to get language suggestions and do minor proofreading in some parts of the manuscript. After using this tool/service, the author(s reviewed and edited the content as needed and take(s) full responsibility for the content of the published article.

SUPPLEMENTARY MATERIAL

Supplementary material is available on the journal's website.

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