

Original Research Article

Prevalence and pattern of breastfeeding among mothers in Al-Qassim region

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ABSTRACT

Background: The objective of this study was to explore the prevalence of breastfeeding (BF) among the mothers living in the Al-Qassim region of Saudi Arabia. This study also aimed to evaluate the factors causing delayed initiation of BF.

Method: This cross-sectional study was conducted between November and December 2022 in which mothers who were living in the Al-Qassim region were eligible to participate. A self-administered questionnaire was used for collecting the data which was sent electronically.

Results: Out of 265 mothers participated in the study, 38.9% were 30-40 years old and over 70% were having at least bachelor's degree. Findings revealed that 82.5% timely initiated the BF while 25.3% had exclusive BF in the initial first six months. Mothers who had cesarean delivery and those who did not complete gestational age were in significantly less in proportion of receive education about BF after delivery ($p=0.034$ and $p=0.015$ respectively). In addition, mothers having cesarean delivery had 4.13 times higher odds of delayed initiation of BF ($p=0.000$) and mothers who had preterm delivery had 7.76 times more likely to delay initiation of BF ($p=0.027$).

Conclusions: Prevalence of exclusive BF for initial six months were found to be among quarter of the mothers participated in the study. It was required to increase mothers' knowledge and to educate them before and after delivery which facilitate to increase the prevalence of BF. Delivery method and gestational age were the factors causing delayed initiation of BF hence healthcare providers are required to counter the situation to increase the prevalence.

Keywords: BF, Prevalence, Qassim, Saudi Arabia

INTRODUCTION

Breastfeeding (BF) has many short- and long-term health benefits for child growth and development.¹ The risk of getting communicable disease such as gastroenteritis, otitis media, respiratory illness, sudden infant death syndrome, and necrotizing enterocolitis has been reduced due to BF.² In addition, many studies reported that the BF reduces mortality by between 4- and 10- fold in low-income settings.³⁻⁵ In long term, BF reduces the risk of obesity and hypertension which ultimately leads to reduce the burden on health care system.⁶

To achieve optimal development and growth, new-born should be kept on exclusive BF for the first 6 months,

according to world health organization (WHO) and the American academy of paediatrics (AAP) recommendations.⁷ BF is recommended to be continued for up to 2 years of age after the initial 6 months, along with other nutrition to meet nutritional requirements.⁸

Because of the numerous advantages of BF for child, healthcare providers keep motivating the mothers and families to increase the BF. In addition, researchers have also continuously assessed the prevalence of BF and its trend over the years. A meta-analysis was conducted in Iran reported the prevalence of BF in Iran was 53%.⁹ Studies conducted in different cities of Saudi Arabia and reported the prevalence of BF and other associated factors. A nationwide survey conducted in 2004-2005 in which

5339 Saudi children were included and results showed that the 91.6% received BF however initiation of BF was delayed more than 6 hours in 28.1% of the infants.¹⁰ Another study published in 2018 from Al-Qassim Saudi Arabia reported a BF rate of 15% among Saudi mothers and 30% among non-Saudi mothers.⁷ In another study published from Mecca, Saudi Arabia showed that the early initiation of BF was found among 38.1% of the mothers while 42.7% delayed (>1 hour) the initiation of BF.¹¹ In the study published by Alaqeel from Saudi Arabia, it was found that the insufficient milk, followed by health issues and child rejection were the most common factors affecting the BF.⁷ In another study published from Saudi Arabia in which female schoolteachers were included reported that the insufficient milk and work-related problems were the cause of BF cessation.¹²

Researchers were also interested to study the patterns and factors influenced the mother to keep her child on BF. Many studies reported that the adherence to BF was found to be related to the level of knowledge about BF and counselling received about BF.¹²⁻¹⁴ In addition, many studies reported the prevalence of BF however timely initiation and duration of BF was not commonly focused among the studies published from Saudi Arabia. In addition, factors caused delay in initiation of the BF were also less studied. Therefore, this study was designed to assess the current prevalence of BF among the mothers living in the Al-Qassim region of Saudi Arabia. The factors associated with the delayed initiation of BF and causes of cessation of BF were also the part of the study objectives.

METHOD

This cross-sectional study was conducted between November and December 2022 in the Al-Qassim region of Saudi Arabia. Ethical approval to conduct the study was given by committee of research ethics, deanship of scientific research, Qassim university. This study was only considered the population living in Al-Qassim region. Hence, all the mothers who were living in Al-Qassim region were eligible to participate in the study. Therefore, the inclusion criteria were (1) Participant must be the resident of Al-Qassim region and (2) participant can only be Saudi Arabian national. The study had only one exclusion criteria, single women or married women but not having any child could not be eligible to participate in the study. To compute the sample size for the study, an online calculator was used. According to statistics published by General Authority of Statistics, Kingdom of Saudi Arabia, the population of females in Al-Qassim region was 498,506 by the mid-2017.¹⁵ With a 5% margin of error and a 50% chance of inclusion, a sample of 218 mothers was needed.

The survey questionnaire which was used to collect participants' responses was obtained from previously published study by Alaqeel in 2018.⁷ Permission and questionnaire were taken from the author and used for data

collection purpose. The obtained questionnaire was already translated into Arabic hence translation and validation of the questionnaire was not required. Thereafter, an electronic version of the questionnaire by using Google Forms was prepared and link of the survey was sent to all the contacts of the study authors. The survey link was also provided to the medical sciences students of Qassim university to disseminate to their contacts. Because the survey was conducted electronically hence the randomization of study participants was not possible. Therefore, convenient sampling technique was used.

The questionnaire was consisted of four parts, first part was about the demographics while second part was about the children and delivery of the last child, third part was about the BF and last part was about the causes of BF cessation. In the first part, participants were asked about age, education level, employment status. Second part was consisted of the questions about the number of children, method of delivery for last child and type of hospital for delivery. The last section was about knowledge and practice of BF. In that section, participants were about their knowledge regarding BF, getting any education about BF during and after delivery, duration of BF, initiation of BF, weaning time and future plan for next baby. In the last part of the questionnaire, participants were about the causes of cessation. Participants were allowed to select multiple causes of cessation.

As the responses from the study participant started collecting the excel sheet was started generating automatically. Hence, after reaching to required sample size, the excel file was extracted and used for analysis. The variables number of children and initiation of BF were regrouped before starting data analysis. Number of children was grouped into two (1) 1 to 2 children and (2) more than 2 children. The variable initiation of BF was regrouped as (1) "timely initiation" which contained all responses stating less than 24 hours and (2) "delayed" which contained response stating more than 24 hours. Statistical package for social sciences (IBM SPSS v. 23) was used for statistical analysis. For the descriptive analysis of the data, frequency distribution, bar and pie charts were constructed. For the inferential analysis of the data, chi-square test was used to study the association between two categorical variables. A multivariate regression analysis was performed to predict the delay in the initiation of BF by using the independent factors like number of children, method of delivery, gestational age of the last baby and BF duration. All p values less than 0.05 were considered statistically significant.

RESULTS

A total of 265 mothers who were living in Al-Qassim region participated in the study and filled the questionnaire. Most of the participants were 30-40 years old (n=103, 38.9%). More than the half (54%) were unemployed however over 70% (n=188) were having at least bachelor's degree (Table 1). Over 63% of the mothers

used public hospitals for the delivery and around 69% of the mothers had normal vaginal delivery for the last baby and over 96% said they completed the gestational age (Table 1).

When mothers were asked about the initiation of BF, 208 (82.5%) timely started the BF while 44 (17.5%) were either delayed started or not gave the BF to their babies at all. In addition, regarding the duration of BF, 38 (15.1%) gave BF for less than a month, 63 (24.9%) gave up to three months, 68 (27.1%) have up to 6 months while 33 (13.1%) gave BF for 1 year and 50 (19.8%) gave the BF up to 2 years. Regarding the initiation of formula milk, 68 (27%) mothers started from the first day, 39 (15.5%) started from first week, 41 (16.3%) started from first month, 40 (15.9%) started between 2-5 months and 64 (25.3%) started after the 6 months. When mothers were asked about the weaning time, 157 (62.3%) said less than 5 months while 95 (37.7%) said more than 5 months.

Table 1: Demographics of the study participants.

Variables	Frequency	Percent (%)
Mother age (Year)		
Less than 20	7	2.6
20-30	70	26.4
30-40	103	38.9
More than 40	85	32.1
Employment status		
Employed	122	46.0
Unemployed	143	54.0
Education level		
Illiterate	2	0.8
Elementary	5	1.9
Intermediate	9	3.4
Secondary	61	23.0
Bachelor's degree or higher	188	70.9
Hospital type		
Private	97	36.6
Public	168	63.4
Number of children		
1-2	96	36.2
More than 2	169	63.8
Delivery method		
Vaginal	182	68.7
Cesarean	83	31.3
Gestational age (weeks)		
Term	255	96.2
Preterm	10	3.8

Figure 1 illustrated the knowledge about BF among the mothers as well as having education about BF before and after delivery. The graph showed that the 93.7% replied affirmatively when they were asked about knowledge of BF. Similarly, 76.6% and 77.8% were educated about BF before and after delivery respectively. Regarding the plan for the BF feeding for the next baby, most of the mothers (37.7%) were found themselves undecided followed by

36.5% of the mothers who said to give both BF and formula milk (Figure 2). In addition, Figure 3 demonstrated the reasons of cessation of BF in which insufficient milk (39.2%) was the most common cause followed work (25.7%) and child rejection (25.7%).

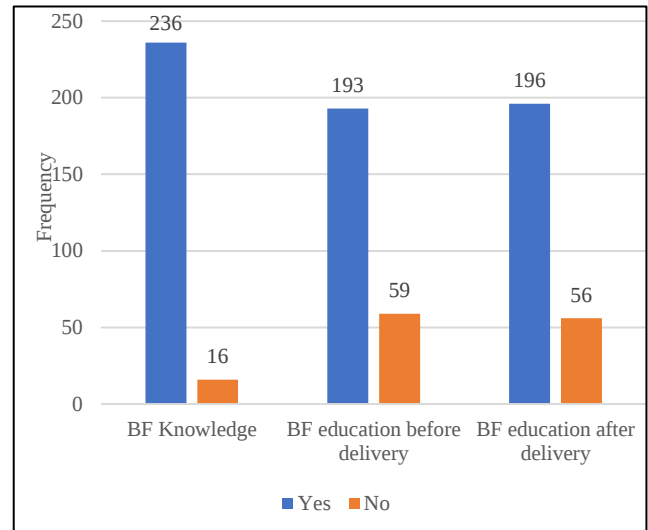


Figure 1: Mothers' knowledge and education about BF.

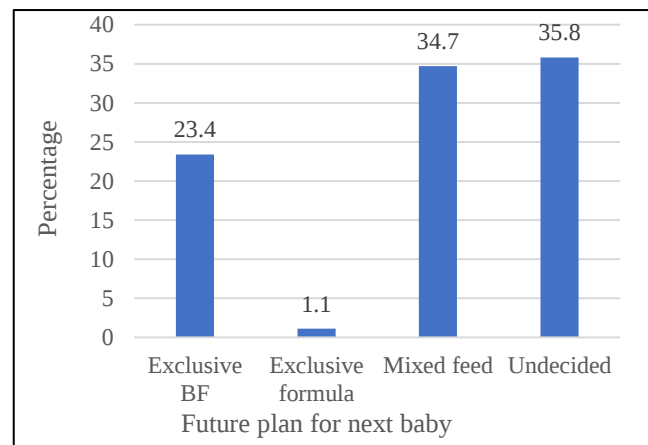


Figure 2: Mothers' BF plan for next baby.

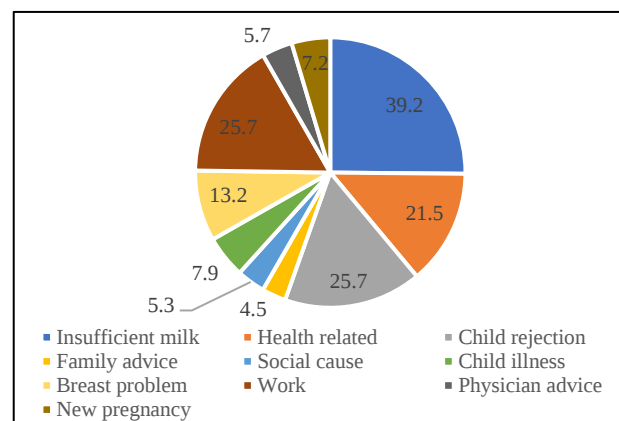


Figure 3: Causes of BF cessation.

Table 2: Association between BF education and knowledge with other variables.

Variables	BF education before delivery, n (%)		P value
	Yes	No	
Employment status			
Employed	96 (84.2)	18 (15.8)	0.011*
Unemployed	97 (70.3)	41 (29.7)	
Gestational age of last baby (Weeks)			
Term	190 (77.9)	54 (22.1)	0.019*
Preterm	3 (37.5)	5 (62.5)	
Hospital type			
Private	77 (85.6)	13 (14.4)	0.028*
Public	119 (73.5)	43 (26.5)	
Delivery method			
Vaginal	142 (81.6)	32 (18.4)	0.034*
Cesarean	54 (69.2)	24 (30.8)	
Gestational age of last baby (Weeks)			
Term	193 (79.1)	51 (20.9)	0.015*
Preterm	3 (37.5)	5 (62.5)	
No. of children			
BF knowledge			
1-2	79 (86.8)	12 (13.2)	0.002*
More than 2	157 (97.5)	4 (2.5)	

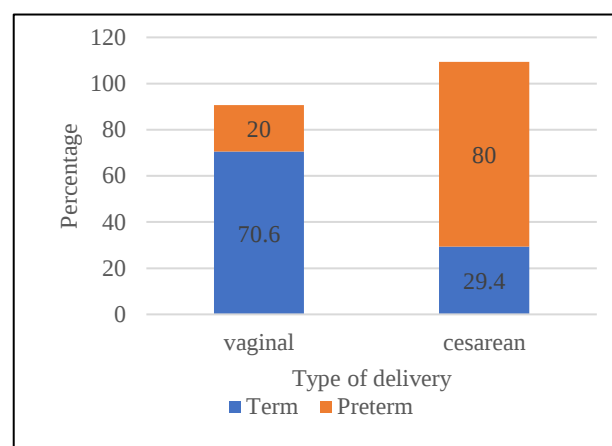
*Statistically significant at 0.05 level of significance

Significantly higher proportion of the mothers (84.2%) who were employed received the education about BF before delivery compared to the unemployed (70.3%) ($p=0.011$). Similarly, those completed gestational age were in high (77.9%) proportion to get BF education before delivery compared to preterm (37.5%) ($p=0.019$). In addition, hospital type, delivery method and gestational age were found significantly associated with mothers' BF education after delivery, those who went to private hospitals, those who had vaginal delivery and those who completed gestational age were in significantly higher proportion to get BF education after delivery ($p=0.028$, $p=0.034$ and $p=0.015$ respectively). Knowledge about BF were found significantly depending upon the number of children, mothers having more than 2 children had BF knowledge compared to those having 2 or less children ($p=0.002$) (Table 2). Delay in BF initiation was found significantly associated with delivery method and gestational age. Those who had cesarean delivery and those who did not complete the gestational age were in significantly higher in proportion to delay starting the BF ($p<0.001$ and $p=0.005$ respectively) (Table 3).

Table 3: Variables causing delay in BF initiation.

Variables	BF Initiation, n (%)		P value
	Timely	Delayed	
Delivery method			
Vaginal	158 (90.8)	16 (9.2)	<0.001
Cesarean	50 (64.1)	28 (35.9)	
Gestational age of last baby (Weeks)			
Term	205 (84.0)	39 (16.0)	0.005
Preterm	3 (37.5)	5 (62.5)	

Figure 4 presented the comparison between type of delivery and gestational age. I was found that the completion of gestational age was significantly associated with type of delivery. Those who completed the gestational age had significantly higher rate of vaginal delivery (70.6%) ($p=0.002$). significantly high proportion of unemployed mothers breastfeed their child up to 2 years compared to employed mothers ($p=0.016$). Similarly, those who had up to 2 children were agreed to give (34.1%) exclusive BF to next child compared to those having more than 2 children (19.3%) ($p=0.022$).

**Figure 4: Comparison of delivery type with gestational age.****Table 4: Effect of employment status and number of children on BF plan and duration.**

Variables	Employment status, n (%)		P value
	Employed	Unemployed	
BF duration			
Less than a month	12 (10.5)	26 (18.8)	0.016
1 month	12 (10.5)	12 (8.7)	
2 months	12 (10.5)	8 (8.5)	
3 months	8 (7.0)	11 (8.0)	
4 months	16 (14.0)	6 (4.3)	
6 months	24 (21.1)	22 (15.9)	
1 Year	15 (13.2)	18 (13.0)	
2 Years	15 (13.2)	35 (25.4)	
BF plan for next baby	No. of children		0.022
	1-2	More than 2	
Exclusive BF	31 (34.1)	31 (19.3)	
Exclusive formula	2 (2.2)	1 (0.6)	
Mixed feed	32 (35.2)	60 (37.2)	
Undecided	26 (28.6)	69 (42.9)	

Multivariate logistic regression analysis was performed to predict the factors causing delaying in the initiation of BF (Table 5). It was found that the delay in BF initiation was significantly associated with the method of delivery. Mothers who had cesarean delivery had significantly higher odds of delaying in BF initiation (OR 4.13; 95% CI:

1.97-8.67). Similarly, delay in BF initiation was also significantly associated with gestational age. Those who did not complete the gestational age had significantly high odd of delay in BF initiation (OR 7.76; 95% CI: 1.26-47.63). In addition, those who had delay in starting the BF had significantly less odds of BF duration for 6 months up to 2 years (Table 5).

Table 5: Multivariate logistic regression parameters estimate of delayed initiation of BF.

Variables	Categories	OR (95%CI)	P value
Number of children	1-2	0	0.069
	More than 2	2.12 (0.942-5.08)	
Delivery method for last baby	Vaginal	0	0.000
	Cesarean	4.13 (1.97-8.67)	
Gestational age for last baby (Weeks)	Term	0	0.027*
	Preterm	7.76 (1.26-47.63)	
BF duration	Less than a month	0	0.116*
	1 month	0.331 (0.08-1.31)	
	2 months	0.355 (0.083-1.52)	
	3 months	0.109 (0.012-0.993)	
	4 months	0.687 (0.192-2.46)	
	6 months	0.186 (0.05-0.691)	
	1 year	0.244 (0.069-0.865)	
	2 years	0.244 (0.073-0.811)	

*Statistically significant at 0.05 level of significance.

First category in each variable is a reference category.

DISCUSSION

Due to the importance of BF in the child's development and growth, researchers keep studying the populations to assess its prevalence rate. By identifying and minimizing the factors which caused delayed initiation or early cessation of BF helps to increase the prevalence of BF. Therefore, the current study was designed to assess the prevalence of BF among the mothers living in the Al-Qassim region of Saudi Arabia. Study findings provided that the current prevalence of exclusive BF was 25.3% among the Saudi mothers. In the study conducted by Al-Aqeel in 2016 in the Al-Qassim region, the prevalence of exclusive BF among the Saudi mothers was 15.2%.⁷ In another study published from Tabuk, Saudi Arabia reported the prevalence of exclusive BF for the six months were 31.4%.¹⁶ However, varied prevalence of exclusive

BF prevalence was reported from Middle Eastern countries; in the United Arab Emirates (1.9%), Egypt (9.7%), Qatar (18.9%), Turkey (54%) and Iran (66.4%¹⁷⁻²¹). In another study published from Spain reported the prevalence of exclusive BF up to six months was 28.2%.²²

Regarding the timely initiation of the BF, 82.5% of the mothers timely initiated the BF. By analyzing the factors with the timely or delayed initiation of BF, it was found that cesarian delivery method caused significant delay in the timely initiation of the BF. In addition, if the delivery was preterm that also caused significant delay in the BF initiation. Taha et al. published a study from United Arab Emirates, reported that the mothers who had vaginal delivery were 4.5 times more likely to timely initiate the BF compared to mothers who had cesarian delivery.²³ In many other studies, cesarian delivery was reported as a key risk factor for delayed initiation of BF.^{24,25} Contrarily, vaginal delivery was found highly associated with timely initiation of BF.^{26,27} Present study found the similar pattern that mothers who had cesarean delivery were 4.13 times more likely to have delayed initiation of BF.

Receiving education about the BF before or after delivery was found significantly associated with the gestational age. Those who completed the term were received the education more than those who had preterm. Educating mothers about the benefits of BF and its' continuation up to minimum recommended period showed encouraging results.²⁸ This fact highlights the importance of mothers' education about BF especially for less experienced mothers.^{29,30} Studies reported that the early initiation of BF was found to be related to the level of knowledge and counseling received.²² However, the present study did not find any significant association between timely initiation of BF with the level of knowledge or education received about BF.

It is recommended to continue BF for up to 2 years to meet the nutritional requirements. It was found from the results that unemployed mothers were found to be in high proportion to continue the BF up to 2 years compared to employed mothers. Shorter BF duration among the working mothers was also identified in the previously published studies. The study published from Al-Qassim region in 2018 reported the same behavior.⁷ This finding is also in agreement with other studies published from Lebanon and Malaysia.¹⁶

Most common reasons of cessation given by the mothers were insufficient milk and child rejection. Both reasons were seemed to be more associated with the mother's knowledge about BF. Study results provided that over 23% and 22% of the mothers did not receive BF education before and after delivery. The false perception of insufficient breast milk causes to early start of formula milk. Therefore, mothers should be educated that mother's milk is sufficient to meet child's nutritional needs. In addition, they can also be guided about the diet and posture during BF which can help to increase BF. Insufficient

breast milk was one of most common cause of BF cessation reported in many previously published studies.^{31,14} Child rejection and work-related problems were also the cause of BF cessation reported in the literature.^{7,12}

The sample size of the study was not large enough to generalize the study findings and it was one of the study limitations. The data was only collected from one region of Saudi Arabia. Inclusion of other regions perhaps showed a different scenario. The mothers' knowledge about BF, its benefits and harms could be caused by early cessation were not assessed in detail.

CONCLUSION

Although the prevalence of BF among the mothers living in Al-Qassim region was found higher than what reported previously however it is still required to increase. Delivery method and gestational age was found to be significant cause of delay initiation of BF. Therefore, it is required to educate mothers and found ways to provide BF to the child in case if the child spent its initial time away from mother. Providing extracted BF to the child could be one of the possible ways. Educating mothers about the importance of BF and by giving them certain diet plan would help to increase BF, that would help to reduce the highest cause of BF cessation which was insufficient BF. In the Saudi Arabia, usually mothers visited the primary health care centers (PHCCs) more frequently after the delivery for the childhood vaccination and other health related concerns. Therefore, it can be suggested to introduce awareness programs at PHCCs to increase public awareness about the benefits of exclusive BF and its importance to the babies for at least initial six months.

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