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Exclusive Breastfeeding

Barrier analysis among Omani mothers

Samia Al-Ghannami,[1] Salima Al-Mamari,[1] Danielle Chekaraou,[2] Caroline Abla,[3] Ibtisam Al-Ghmmari,[1] Amna Al-Ajmi,[1] Saleh Al-Shammkhi,[1] Ruqaiya M. Al-Balushi,[4] Fatma Al-Mamari,[1] *Ruth M. Mabry[5]

[1]Department of Nutrition, Ministry of Health, Muscat, Oman; [2]RDC International Public Health Solutions, Phoenix, Arizona, USA; [3]Independent Public Health Consultant, Arlington, Texas, USA; [4]Department of Food Science and Nutrition, College of Agricultural and Marine Sciences, Sultan Qaboos University, Muscat, Oman; [5]Independent Public Health Consultant, Muscat, Oman.

**Corresponding author: rmmabry@gmail.com*

Abstract

Objectives: Less than a quarter of Omani infants < 6 months are exclusively breastfed. Therefore, this study aimed to examine individual barriers and supports to exclusive breastfeeding and identify potential policy and programmatic interventions in Oman.

Methods: A cross-sectional Barrier Analysis was carried out among a purposive sample of Omani women - 45 "Doers" (who exclusively breastfed their infants) and 52 "Non-Doers" (who do not) – who were selected and interviewed by trained enumerators in health clinics in various parts of the country. A barrier analysis tool, adapted for the Omani context, covered 12 common determinants of behavior adoption using open-ended questions regarding participants' perceptions about exclusive breastfeeding including positive and negative consequences, self-efficacy and social norms. Qualitative analysis involved coding and tabulating as well as thematic analysis. ***Results:*** Mothers report that motivation for exclusive breastfeeding include the perception that it leads to healthier children, is easy, readily available and therefore convenient and that mothers report an elevated level of family support

for breastfeeding. Barriers included perceived milk insufficiency and mother's employment. ***Conclusion:*** To achieve the 2025 exclusive breastfeeding target of 50%, public health action should focus on emphasizing the benefits and convenience of exclusive breastfeeding and building women's confidence in their ability to produce sufficient milk. These efforts will require increasing the knowledge and skills of community and health care workers and establishing monitoring mechanisms. Expanding paid maternity leave and supportive workplace policies are necessary to encourage working women to exclusively breastfeed.
Keywords: Breastfeeding, Breastfeeding barriers, Breastfeeding support, Exclusive breastfeeding, Nutrition policy, Oman, Health Promotion.

Advances in Knowledge

- Incentives to exclusively breastfeed for Omani women include the perception that it leads to healthier children, that it is easy to do, readily available and therefore convenient.
- Barriers to exclusively breastfeeding include perceived mother's milk insufficiency, mother's employment, and limited familial support.
- Creating an enabling environment for exclusively breastfeeding in Oman involves scaling up existing programs that vigilantly seek to remove the identified barriers and shaping messages that emphasize the benefits of breastfeeding to both infant and mother, the convenience, and the ability of women to produce sufficient mother's milk for their infants.

Application to Patient Care

- Key messages for promoting exclusive breastfeed include that it is easy to do, readily available and convenient, affirm women's ability to produce sufficient milk for their infants and should target both mothers of young infants as well as their families.
- Existing programmes such as the Community Support Group and the WHO Baby Friendly Hospital initiatives should continue to engage in individual and group counseling, immediate breastfeeding support following delivery, and lactation management; renewed efforts to increase knowledge and skills of health professionals and community volunteers would ensure their sustainability.

Introduction

Exclusive breastfeeding, where infants are given only mother's milk during the first 6 months of life and no other food or water, is a key intervention that has a major impact on child mortality and morbidity.[1] Mother's milk contains all the needed nutrients for an infant's first 6 months of life, provides immunity to disease through maternal antibodies, increases intelligence and likely reduces overweight and diabetes.[1] For women, breastfeeding protects against breast cancer, improves birth spacing and may protect against ovarian cancer and type 2 diabetes.[1-2] An estimated 823,000 child deaths and 20 000 deaths due to breast cancer could be averted annually if all infants were breastfed, including initiation within one-hour of birth, exclusively breastfeed for the full 6-month period and continued breastfeeding.[1]

Less than a quarter of Omani infants < 6 months are exclusively breastfed,[3] markedly less than the World Health Organization (WHO)/United Nations Children Fund (UNICEF) global target for 2025 of at least 50%.[4] The low prevalence of exclusive breastfeeding during the first four months of life (31.9%) in Oman has not changed in the past 20 years; however, the prevalence of continued breastfeeding beyond 12 months increased from 66.8% in 2000 to 80.0% in 2017. However, the decline in early initiation (within one hour of birth) - 87.1% and 82.0% - and the current low rate of exclusive breastfeeding for the first six months (23.2%) is concerning[3] not only in Oman but also in the region as a whole.[5-6]

A wide range of factors, including social and cultural attitudes, marketing of infant formula, health systems and workplace, community settings and individual attitudes affect whether or not women initiate breastfeeding early, and maintain exclusive and continued breastfeeding for up to 2 years.[2] Barrier analysis, based on the Health Belief Model[7] and the Theory of Reasoned Action[8] has identified 12 determinants of behavior: perceived self-efficacy, perceived social norms, perceived positive consequences, perceived negative consequences, perceived action efficacy, access, perceived susceptibility/risk, perceived severity, cues for action, policy, culture and perceived divine will.[9] High self-efficacy is a strong predictor of breastfeeding.[10] Social norms and positive or negative consequences, like support and advice from family and the health system, influence mothers' confidence in breastfeeding.[2] While, marketing of infant formula, working status including short maternity leaves, and inadequate support to mothers of young infants influence mothers' perceptions of sufficiency of maternal milk for breastfeeding and their ability to breastfeed and are some of the numerous reasons for low levels of exclusive breastfeeding around the world.[2] Although similar evidence is emerging from several countries of the Arabian Gulf,[11-14] greater understanding is needed to

better guide policy-makers in addressing the low prevalence of exclusive breastfeeding.[3] Thus, this study aimed to examine individual barriers and supports to exclusive breastfeeding and identify potential policy and programmatic interventions in Oman.

Methods

Research Design

Descriptive qualitative study design was used to identify the factors that prevent and facilitate a target group from adopting a preferred behavior,[15] in this case exclusively breastfeed infants aged 0 – 6 months. Using the Barrier Analysis (BA) methodology, this study explores twelve determinants of behavior which influence a desired behavior: perceived self-efficacy, perceived social norms, perceived positive consequences, perceived negative consequences, perceived action efficacy, access, perceived susceptibility/risk, perceived severity, cues for action, policy, culture and perceived divine will.[9] Since defining the behavior to be assessed is an essential step in a BA study, the behavior defined was Mothers of children 0 to 6 months feed them only mother's milk.

Setting and Relevant Context

Despite a socio-cultural environment supportive of breastfeeding, exclusive breastfeeding remains low in Oman.[16] Employment, marketing of breastmilk substitutes, inadequate health care support and insufficient mother's milk are some of the key barriers identified by women in the Arabian Gulf.[11-14] Although policies and strategies are in place to encourage exclusively breastfeeding, further work is needed if Oman is to achievement the UNICEF/WHO global target of 50% exclusive breastfeeding. Face-to-face interviews, based on a barrier analysis assessment tool, were conducted in Ministry of Health primary health care clinics in five governorates from 10 – 14 March 2019. A 5-day training covered change theory, effective interviewing techniques, a thorough review of the data collection tool, a pre-test, and data entry was completed prior to the field work to ensure high quality results.

Sampling Strategy

To assess exclusive breastfeeding, purposive sampling methods were used to recruit Omani mothers with infants aged 4 to 9 months to participate; 4-months was identified as the lower age limit to capture as many 'Doers' as possible; the 9-months upper limit was identified to minimize recall bias. In order to identify a sufficient number of Doers, the BA methodology allows for researchers to 'relax a behavior'; thus, the tool defined "Doers" as mothers who

exclusively breastfed their infants for the first 4 months of life rather than the recommended 6 months of exclusive breastfeeding.[4] Recruitment was monitored using an excel sheet until the recommended number of respondents was reached.

Research Team

The enumerators, identified by the health management team in each region, were health care workers with qualitative research experience. Prior to conducting the survey, 22 enumerators including 19 women and three men from five governorates (Muscat, Al Dakhilyah, Dhofar, North Ash Sharqiya, South Al Batinah) and the MoH nutrition team (six people) were trained in Muscat for five days on the BA methodology and interviewing skills. The training took place from 3 to 7 March 2019. All enumerators were required to exhibit key qualifications with a 90% or greater on the Quality Improvement Verification Checklist average scores during training prior to the field work.

Tool

The BA questionnaire contained two sections: items to screen/classify respondents as Doers or Non-Doers and items to assess barriers and supports based on their classification. The barrier analysis included six open-ended questions, one question for perceived positive and negative consequences and two questions each for perceived self-efficacy and perceived social norms (Table 1). Questions on perceived access, cues for action, susceptibility/risk, severity, efficacy, perception of Divine Will, culture and policy had discrete responses; respondents were encouraged to provide details for the last two areas (culture and policy). Questions varied slightly between Doers and Non-Doers. A question addressing universal motivators, looking at what mothers want more than anything in life, was included since this information is useful when designing promotional campaigns.

The questionnaire was developed and contextualized to the Omani context in English following the standard BA questionnaire design guidelines and translated into Arabic. It was then validated by the Ministry of Health (MoH) nutrition team and enumerators during training by pilot testing with 27 doers and non-doers to ensure clarity for each question in the local Arabic dialect. The research protocol was approved by the UNICEF Ethical Review Board.

Data collection

22 trained enumerators approached each potential participant at a health clinic, found a semi-private place to conduct a face-to-face interview, introduced the study and obtained informed consent. Eligible women who consented to be part of the study were then screened to determine their status as Doer or Non-Doer before proceeding with the survey interview. During the interview, enumerators were encouraged to probe participants to prompt them for further details, if needed (Table 1).

Data Analysis

Completed questionnaires were scanned and sent via email to the MoH nutrition team in Muscat. Qualitative analysis involved coding, tabulating, and thematic analysis of the data by the central nutrition team. Once responses were coded and tabulated, they were entered into a barrier analysis tabulation sheet [9] to calculate estimated relative risk and odds ratios to identify significant differences between Doers and Non-Doers. For barrier analysis, an estimated relative risk (RR) is the preferred approach to presenting findings as it provides more accurate estimates of association.[9] Significance was determined by p-value of less than 0.05, with a confidence interval of 95%.

Results

The team interviewed 97 women (45 Doers and 52 Non-Doers) in the five governorates. As shown in Table 2, the thematic determinants that emerged during the interviews varied significant between Doers and Non-Doers across six areas studied: perceived self-efficacy, perceived social norms, perceived positive and negative consequences, perceived action efficacy, universal motivator.

Perceived Self-Efficacy (What makes it easy or difficult)

The reasons about the importance of exclusive breastfeeding were statistically similar between Doer and Non-Doer mothers. Mother's availability to breastfeed, not having difficulties breastfeeding and the benefits to a child's health including the immune system and growth and development were the most common reasons. To examine belief in ability to do a particular behavior respondents were asked, "What makes it (or what would make it) easier or more difficult" for you to exclusively breastfeed your baby for the first 6 months of life. Doers were 5.4 times (P=0.018) more likely than Non-Doers to say, "It is easy because I think it is important" and 2.8 times (P=0.011) more likely to say, "It is easy because it is available and ready for the child and it requires no preparation" than Non-Doers. Non-Doers

were significantly 4.2 times (P=0.014) more likely to say, “It is difficult (to exclusively breastfeed) because I work outside the home” than Doers. In addition, Non-Doers were 3.5 times (P=0.010) more likely than Doers to say, “It is difficult when there is not enough milk, especially in the beginning”.

Perceived Consequences (positive and negative)

The most common perceived positive consequence of exclusive breastfeeding among all respondents was related to the child’s health and well-being. Other common responses among both groups included delays in pregnancy and mother’s health. Doers were 10.8 times (P=0.043) more likely to say, “I can save money and time because it is free, easy, and takes no time to prepare” than Non-Doers and 3.1 times (P=0.023) more likely to say, “It helps the mother lose the weight gained with the pregnancy” than Non-doers. Nearly 20% of Non-doers mentioned “The baby does not get enough milk and is not satisfied and then loses weight”; a concern not expressed by Doers.

Social Norms/Access

The social norms determinant refers to an individual’s perception of the approval or disapproval of exclusively breastfeeding by people considered to be important in an individual’s life. Respondents were asked who approves or disapproves of them exclusively breastfeeding their child for the first six months of life Doers were 2.7 times (P=0.034) more likely to say, “My husband approves of me only giving breastmilk to my baby for the first 6 months” and 2 times (P=0.065) more likely to say, “My mother approves of me only giving breastmilk to my baby for the first 6 months” than Non-Doers. On the other hand, the access determinant has many different facets, it includes the degree of availability of the needed products or services required to adopt a behavior. Respondents were asked how difficult is it (or would it be) to get the support needed to exclusively breastfeed? Non-Doers were 2.6 times (P=0.034) more likely to say, “It is somewhat difficult to get the support I need to give only breast milk to my baby for the first 6 months” than Doers.

Perceived Action Efficacy

To examine the belief that a behavior will avoid a certain problem, respondents were asked about the likelihood of an infant becoming malnourished if exclusively breastfeed. Non-Doers were 2.6 times (P=0.027) more likely to say, “It is somewhat likely that my child will become malnourished if I give him only breastmilk to 6 months of age” than Doers

demonstrating that Non-doers express doubt of the benefit of exclusive breastfeeding to protect children from malnourishment.

Universal Motivators

Respondents were asked what they wanted more than anything in life to identify key factors motivate most people, irrespective of other variables. Family health and children's education were common universal motivators among both doers and non-doers. Non-doers were 2.9 times (P=0.027) more likely to say, "I want happiness and peace more than anything from life" than Doers.

Discussion

This study identified barriers and supports for exclusive breastfeeding in Oman. Incentives to exclusively breastfeed include the perception that exclusive breastfeeding leads to healthier children, is easy, readily available and therefore convenient. Support from husbands and mothers is also noted as necessary for successful breastfeeding. Barriers to exclusive breastfeeding included perceived milk insufficiency, mother's employment, and limited family support. Despite high knowledge about the benefits of breastfeeding to both the mother and child, the barriers identify reasons for the low exclusive breastfeeding rates in Oman. Similar barriers have been described globally[17-18] and in neighboring countries.[11-14]

Individual experiences play a major role in determining whether or not a mother exclusively breastfeeds her infant. The perception of insufficient milk supply mentioned by participants in this study as well as research in this region. is an important reason why women stopped exclusively breastfeeding during their infant's first six months and/or introduce formula or weaning food.[12-14, 18-19] For example, more than half of study participants in Saudi Arabia and one-in-three study participants in Qatar discontinued breastfeeding due to their perception of lack of sufficiency mother's milk.[14, 19] Breastfeeding difficulties and perceptions that infant crying is perceived hunger in the early weeks undermine mothers' confidence making her assume that she has insufficient milk and thus, introduce infant formula.[2] Encouraging new mothers to exclusively breastfeed requires building confidence in their ability to produce sufficient milk for their infants.

The participants from this barrier analysis study highlighted the importance of family support in promoting infant feeding practices: Doers were almost four times as likely to believe that it

was not difficult to get support compared to the Non-doers Although traditional culture is supportive of breastfeeding, older women family members have a great influence on mothers' breastfeeding practices, especially new mothers unfamiliar with breastfeeding.[12-13] Researchers from the region have shown that some grandmothers and fathers are supportive of exclusive breastfeeding, while others may advise introducing water, formula, or other food.[11-13] Although infant formula were not frequently mentioned in our study, their marketing is ubiquitous in the region and are undermining efforts to improve breastfeeding including women's own ability to breastfeed.[2, 13-14, 19-21] Although stronger regulations were enacted in May 2021[22] and includes stronger regulations aligned to the Code for marketing infant formula[23-24] further research would be useful to examine their influence on exclusive breastfeeding in Oman, especially on new mothers and their circle of family support.

Oman has introduced several interventions to promote breastfeeding including the Community Support Group Program,[25] lactation counselors for the WHO Multicentre Growth Reference Study[26] and the WHO Baby Friendly Hospital Initiative.[20] Strengthening these programs through the inclusion of individual and group counseling, immediate breastfeeding support following delivery, and lactation management, will require renewed efforts to increase knowledge and skills of health professionals and community volunteers, strengthening monitoring and ensuring their sustainability.[2, 5] These programs should address the key barriers identified in this barrier analysis by emphasizing the benefits and convenience of exclusive breastfeeding to both the infant and mother and building women's confidence in producing sufficient milk for their infants and how exclusive breastfeeding can contribute to a happy and peaceful life.

Mother's employment is major barrier to exclusive breastfeeding in Oman. Globally, it a critical factor that influences women's decisions to initiate breastfeeding, exclusively breastfeed, and continue breastfeeding into the second year.[2] About one quarter of the Omani workforce are women and it is expected in increase.[27-28] Although Oman has maternity leave protection,[28] it does not meet the International Labor Organization's 14-week minimal standard.[29] Mothers are unable to adhere to exclusive breastfeeding due to the short leave, the lack of child care and the challenges of expressing milk[2] and is widely reported in the region Two-thirds of the participants in a study in the United Arab Emirates did not exclusively breastfeed their infants for six months due to short maternity leave.[13] Al Nuaimi, et al[20] highlights employment as a key factor for low breastfeeding rates in the Arabian Gulf.

Reducing barriers for working mothers by expanding maternity leave, providing lactation rooms and nursing breaks can improve breastfeeding rates and improve workforce performance.[2, 11, 13, 20]

The results of this research is being used to strengthen the breastfeeding promotion programme within the Ministry of Health including determining the key messages for a nation-wide exclusive breast feeding campaign, sharing findings with staff working in the maternal and child health and health education programmes so that they can strengthen EBF promotion within their own programmes and using the findings as part of the training of lactation consultants currently working in secondary hospitals. The findings are also being used to advocate for strengthening family-friendly policies to be more supportive of exclusive breastfeeding, a key barrier identified in this study.

This study used a verified methodology[9] and included respondents from the governorates where a majority of the Omani population reside. More Non-doers were recruited from the southern-most governorate due to the extremely low level of breastfeeding in one governorate while additional Doers were recruited from the other four governorates. It provides a broad overview of the most common determinants of breastfeeding in the country. However, a more focused study on the southern province would be useful to identify more focused interventions. Although the enumerators were rigorously trained and conducted the field work, coding was carried out by the Nutrition Core Team which may have led to some margin of error of interpretation. Although the sample size is small and participants were from various regions of the country, the results may not be generable to the whole population.

Conclusion

Women in Oman experience similar barriers to breastfeeding as women around the world. Scaling up existing interventions, policies and programs requires not only continuing to emphasize the benefits and convenience of exclusive breastfeeding but also building women's confidence in their ability to produce sufficient milk. These expansions will require increasing the knowledge and skills of community and health care workers. National campaigns could highlight how exclusive breastfeeding contributes to a happy and peaceful life and encourage support from family members. Expanding paid maternity leave and other policies that encourage working women to exclusively breastfeed is also needed.

Conflict of Interest

The authors declare no conflicts of interest.

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Authors' Contribution

SA-G, SA-M, DC and CA conceptualized the study. SA-G, DC and CA worked on the methodology utilized in the study. DC and CA authored the research tools. IA-G, AA-A, SA-S, RMA-B and FA-M collected the data. All authors were involved in data analysis. SA-M, DC, CA and RMM interpreted the results. SA-M and RMM drafted the manuscript. All authors approved the final version of the manuscript.

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439 **Table 1: Barrier analysis assessment tool**

Doers	**Non-doers**
Perceived Self-Efficacy	
1a. What makes it **easy** for you to give only breast milk to your baby from birth to 6 months? *[Probe]*	**1b.** What would make it **easier** for you to give only breast milk to your baby from birth to 6 months? *[Probe]*
2a. What makes it ***difficult*** for you to give only breast milk to your baby from birth to 6 months? *[Probe]*	**2b.** What would make it ***difficult*** for you to give only breast milk to your baby from birth to 6 months? *[Probe]*
Perceived positive and negative consequences	
3a. What are the ***advantages*** of only giving breast milk to your baby from birth to 6 months? *[Probe]*	**3b.** What would be the **advantages** of only giving breast milk to your baby from birth to 6 months? *[Probe]*
4a. What are the ***disadvantages*** of only giving breast milk to your baby from birth to 6 months? *[Probe]*	**4b.** What would be the ***disadvantages*** of only giving breast milk to your baby from birth to 6 months? *[Probe]*
Perceived Social Norms	
5a. Who are all of the people that ***approve*** of you only giving breast milk to your baby from birth to 6 months? *[Probe]*	**5b.** Who are all of the people that would ***approve*** of you only giving breast milk to your baby from birth to 6 months? *[Probe]*
6a. Who are all of the people that ***disapprove*** of you only giving breast milk to your baby from birth to 6 months? *[Probe]*	**6b.** Who are all of the people that would ***disapprove*** of you only giving breast milk to your baby from birth to 6 months? *[Probe]*
Perceived Access	
7a. How difficult is it for you to get the support you need to give only breastmilk to your baby from birth to six months old? Would	**7b.** How difficult would it be to get the support your need to give only breast milk to your baby from birth to 6 months? Would you

you say that it is very difficult, somewhat difficult, or not difficult at all? A. Very difficult B. Somewhat difficult C. Not difficult at all	say that it would be very difficult, somewhat difficult, or not difficult at all? A. Very difficult B. Somewhat difficult C. Not difficult at all
Perceived Cues for Action / Reminders	
8a. How difficult is it to remember to give only breast milk to your baby from birth to 6 months? Would you say that it is very difficult, somewhat difficult, or not difficult at all? A. Very difficult B. Somewhat difficult C. Not difficult at all	**8b.** How difficult would it be to remember to give only breast milk to your baby from birth to 6 months? Would you say that it would be very difficult, somewhat difficult, or not difficult at all? A. Very difficult B. Somewhat difficult C. Not difficult at all
Perceived Susceptibility / Risk	
9. How likely is it that your baby will become malnourished in the next year? Would you say that is it very likely, somewhat likely, or not likely at all? A. Very difficult B. Somewhat difficult C. Not difficult at all	
Perceived Severity	

10. How serious would it be if your baby became malnourished? Would you say that it would be a very serious, somewhat serious, or not serious at all?

A. Very difficult

B. Somewhat difficult

C. Not difficult at all

Action Efficacy

11. How likely is it that your baby will become malnourished *if you give only breast milk* to your baby for the first 6 months? Would you say that it is very likely, somewhat likely or not likely at all?

A. Very difficult

B. Somewhat difficult

C. Not difficult at all

Perception of Divine Will

12. Does Islam approve of mothers giving only breastmilk to their babies for the first six months?

A. Very difficult

B. Somewhat difficult

C. Not difficult at all

Culture

13. Are there any cultural rules or taboos against only giving breast milk to your baby from birth to 6 months?

A. Yes

B. Maybe / I don't know

C. No

If yes, briefly explain:

Policy

14. Are there any teachings, recommendations, policies, laws or regulations that make it more likely that you give only breast milk to your baby from birth to 6 months?

A. Yes

B. Maybe / I don't know

C. No

If yes, briefly explain:

Universal Motivators

15. Now I'm going to ask you a question not at all related to what we have been discussing. What do you want more than anything from life? *[Probe]*

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441 **Table 2: Determinants of Exclusive Breastfeeding among Omani Women (N=97)**

Emerging Thematic Determinants	% Doers (#) n=45	% Non-doers (#) n=52	Difference between doers and non-doers (% points)	Odds Ratio (Confidence Interval)	Estimate Relative Risk	p-value
1. Self-Efficacy: What makes it easier?						
Breastmilk is available, ready and requires no preparation	38 (17)	15 (8)	22	3.34 (1.27, 8.76)	2.84	0.011
I think it is important (not specified)	16 (7)	2 (1)	14	9.39 (1.11, 79.61)	5.42	0.018
If I deliver the baby easily and have good health	0	12 (6)	12	0.00	0.00	0.021
I do not have any problems with breastfeeding or positioning the baby for feeding.	13 (6)	21 (11)	8	0.57 (0.19, 1.70)	0.60	0.230
It helps with the baby's growth and development	13 (6)	12 (6)	2	1.18 (0.35, 3.95)	1.16	0.514
I know that it improves my baby's immune system, keeps him from getting illnesses.	16 (7)	15 (8)	1	1.01 (0.34, 3.05)	1.01	0.600

I am available and free to breastfeed my child any time.	27 (12)	27 (14)	0	0.99 (0.40, 2.43)	0.99	0.581
2. Self - Efficacy: What makes it difficult?						
It is not difficult	40 (18)	4 (2)	36	16.67 (3.59, 77.28)	8.27	<0.001
There is not enough milk, especially in the beginning.	11 (5)	33 (17)	22	0.26 (0.09, 0.77)	0.28	0.010
I work outside of the home.	7 (3)	25 (13)	18	0.21 (0.06, 0.81)	0.24	0.014
I have to be away from home and there is no place to breastfeed.	24 (11)	8 (4)	17	3.88 (1.14, 13.23)	3.13	0.023
Sometimes the baby does not want to nurse or take my breastmilk from a bottle.	16 (7)	27 (14)	11	0.50 (0.18, 1.38)	0.53	0.134
I have problems with my breasts or nipples (painful, swollen, cracked or inverted nipples)	22 (10)	27 (14)	5	0.78 (0.31, 1.97)	0.79	0.384
I have too many things to do so I get busy and tired.	16 (7)	12 (6)	4	1.41 (0.44, 4.56)	1.36	0.388
3. Perceived positive consequences: What are the advantages?						

Helps the mother lose the weight gained with the pregnancy.	24 (11)	8 (4)	17	3.88 (1.14, 13.23)	3.13	0.023
Safe for the child to drink and doesn't cause side effects or allergies.	20 (9)	8 (4)	12	3.00 (0.86, 10.52)	2.55	0.070
It helps with brain development of the child and makes him intelligent.	13 (6)	21 (11)	8	0.57 (0.19, 1.70)	0.60	0.230
Improves the health of the mother and protects from illnesses.	20 (9)	13 (7)	7	1.61 (0.55, 4.74)	1.52	0.277
Decreases the chance that the mother will get cancer.	9 (4)	13 (7)	5	0.63 (0.17, 2.30)	0.65	0.352
Delays pregnancy; good for birth spacing.	20 (9)	17 (9)	3	1.19 (0.43, 3.33)	1.17	0.467
It improves weight and the immunity of the baby and keeps him healthy.	96 (43)	94 (49)	1	1.32 (0.21, 8.25)	1.28	0.569
Increases the bonding between mother and child.	16 (7)	15 (8)	0	1.01 (0.34, 3.05)	1.01	0.600
4. Perceived negative consequences: What are the disadvantages?						
The baby does not get enough milk and is not satisfied and then loses weight.	0	17 (9)	17	0.00	0.00	0.003
There are no disadvantages / I don't know.	64 (29)	58 (3)	7	1.33 (0.58, 3.02)	1.29	0.319

The child becomes too attached to me and then I cannot leave him to go do other things I need to do.	13 (6)	10 (5)	4	1.45 (0.41, 5.10)	1.39	0.398
5. Perceived social norms: Who approves?						
Husband	87 (39)	69 (36)	17	2.89 1.02, 8.19)	2.66	0.034
Mother	78 (35)	62 (32)	16	2.19 (0.89, 5.37)	2.04	0.065
Sister	42 (19)	56 (29)	14	0.58 (0.26, 1.30)	0.61	0.130
Mother-in-law	31 (14)	23 (12)	8	1.51 (0.61, 3.71)	1.44	0.254
Sisters-in-law	16 (7)	21 (11)	6	0.69 (0.24, 1.95)	0.71	0.330
Doctors, nurses and health workers	13 (6)	17 (9)	4	0.74 (0.24, 2.25)	0.76	0.400
6. Perceived social norms: Who disapproves?						
My mother	7 (3)	13 (7)	7	0.46 (0.11, 1.89)	0.49	0.225
My sisters	16 (7)	10 (5)	6	1.73 (0.51, 5.89)	1.62	0.281

No one	44 (20)	38 (20)	6	1.28 (0.57, 2.88)	1.25	0.348
My sisters-in-law	13 (6)	17 (9)	4	0.74 (0.24, 2.25)	0.76	0.400
My friends	11 (5)	15 (8)	4	0.69 (0.21, 2.27)	0.71	0.378
7. Perceived access: How difficult is it to get the support you need to EBF?						
Very Difficult	0	8 (4)	8	0.00	0.00	0.078
Somewhat difficult	13 (6)	31 (16)	17	0.35 (0.12, 0.98)	0.38	0.034
Not difficult at all	87 (39)	62 (32)	25	4.06 (1.46, 11.32)	3.65	0.005
8. Perceived cues for action: How difficult is it to remember to give your baby only breastmilk?						
Very difficult	2 (1)	2 (1)	0	1.16 (0.07, 19.08)	1.14	0.715
Somewhat difficult	9 (4)	17 (9)	8	0.47 (0.13, 1.63)	0.49	0.181
Not difficult at all	89 (40)	81 (42)	8	1.90 (0.60, 6.06)	1.81	0.207
9. Perceived susceptibility/risk: How likely is it that your baby will become malnourished in the coming year?						
Very likely	7 (3)	0	7		10.64	0.096

Somewhat likely	24 (11)	40 (21)	16	0.48 (0.20, 1.15)	0.51	0.073
Not likely at all	69 (31)	58 (30)	11	1.62 (0.70, 3.75)	1.55	0.177
10. Perceived severity: How serious would it be if your child became malnourished?						
Very serious	40 (18)	48 (25)	8	0.72 (0.32, 1.61)	0.74	0.277
Somewhat serious	49 (22)	42 (22)	7	1.30 (0.58, 2.91)	1.27	0.328
Not serious at all	11 (5)	10 (5)	1	1.18 (0.32, 4.35)	1.16	0.534
11. Action Efficacy: How likely is it that your child will become malnourished if you feed him only breastmilk to 6 months?						
A. Very likely	2 (1)	8 (4)	5	0.27 (0.03, 2.53)	0.30	0.229
B. Somewhat likely	16 (7)	35 (18)	19	0.35 (0.13, 0.93)	0.38	0.027
C. Not likely at all	82 (37)	58 (30)	25	3.39 (1.32, 8.70)	3.06	0.008
12. Perception of Divine Will: Does Islam approve of giving only breastmilk?						
A. Yes	89 (40)	83 (43)	6	1.67 (0.52, 5.42)	1.60	0.284

B. Maybe	2 (1)	8 (4)	5	0.27 (0.03, 2.53)	0.30	0.229
C No	9 (4)	10 (5)	1	0.92 (0.23, 3.64)	0.92	0.592
13. Culture: Are there any taboos or myths that prevent women from practicing the behaviour?						
A. Yes	18 (8)	13 (7)	4	1.39 (0.46, 4.19)	1.34	0.379
B. Maybe	0	0	0			1.000
C. No	82 (37)	87 (45)	4	0.72 (0.24, 2.17)	0.75	0.379
14. Policy: Are there any laws or regulations that make it more likely women will exclusively breastfeed?						
A. Yes	67 (30)	58 (30)	9	1.47 (0.64, 3.36)	1.41	0.243
B. Maybe	7 (3)	6 (3)	1	1.17 (0.22, 6.09)	1.15	0.590
C. No	27 (12)	37 (19)	10	0.63 (0.26, 1.51)	0.66	0.206
15. Universal Motivators						
Happiness and peace	11 (5)	29 (15)	18	0.31 (0.10, 0.93)	0.34	0.027

To be a good mother and raise good children.	27 (12)	10 (5)	17	3.42 (1.10, 10.63)	2.85	0.026
To please God	16 (7)	12 (6)	4	1.41 (0.44, 4.56)	1.36	0.388
Money and financial stability / a good job or source of income	24 (11)	21 (11)	3	1.21 (0.47, 3.12)	1.18	0.442
Health for myself and my family	64 (29)	65 (34)	1	0.96 (0.42, 2.21)	0.96	0.546
A good education and future for my children	24 (11)	25 (13)	1	0.97 (0.38, 2.45)	0.97	0.570
A house	13 (6)	13 (7)	0	0.99 (0.31, 3.19)	0.99	0.612

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