

Attitudes of the Primiparous Mothers towards Exclusive Breastfeeding: Application of an indirect Measurement

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Abstract

Background: Exclusive breastfeeding is a very important principle in ensuring the health of infants. Its benefits for the infant, mother, family, and community are emphasized by all experts. The aim of this study was to investigate the attitudes of mothers toward exclusive breastfeeding and its related factors.

Methods: This descriptive-analytical study was performed on 420 women referred to comprehensive health service centers in Tehran. The samples were selected through multistage sampling. The data were collected by a questionnaire consisting of two sections: behavioral beliefs and evaluation of behavioral outcomes and were analyzed by t-test and ANOVA using SPSS 16.

Results: The mothers' attitude, behavioral beliefs, and evaluation of behavioral outcomes were significantly correlated with their age, job, place of delivery, and hospitalization of their infants. The mothers' attitudes and behavioral beliefs were also significantly correlated with their husband's education and the status of infants ($P < 0.05$), but their attitude, behavioral beliefs, and evaluation of behavioral outcomes were not significantly associated with the other variables ($P > 0.05$). The findings showed that most of the mothers' beliefs about the outcomes of exclusive breastfeeding (increased emotional bond between the mother and the infant, growth and strength of infant's bones and teeth, and infant's immunity to diseases such as diarrhea) were significant ($P < 0.05$).

Conclusions: When designing interventions, efforts should be made to create and maintain a positive attitude toward exclusive breastfeeding through the promotion of behavioral beliefs and evaluation of behavioral outcomes.

Key Words: Attitude, Behavioral beliefs, Evaluation of behavioral outcomes, Exclusive breastfeeding.

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1- INTRODUCTION

Exclusive breastfeeding means feeding the infant exclusively with breast milk and without the intake of liquid and solid foods, except vitamins, minerals, and medicines (1). UNICEF and WHO recommend that children should be exclusively breastfed for the first 6 months of life to achieve optimal growth, development and health (2). Breastfeeding is one of the most important ways to improve the health of infants in various communities. According to UNICEF's findings, more than 3,000 infants die each day from infectious diseases due to bottle feeding, and 1.5 million infants die each year due to non-breastfeeding (3). There is no doubt that breast milk is the best food for infants under six months of age. It is also a preventive agent in pediatric infectious diseases, allergies, adolescent diabetes, and obesity. One of the goals of the World Health Organization (WHO) for feeding infants is to have at least 50% of infants exclusively breastfed by 2025 (4).

It is recommended that breastfeeding practices be strengthened and intensified in developing countries to relatively reduce infant mortality rates. However, only 42.6% of infants are exclusively breastfed during the first hours of birth and 54.9% during the first 6 months of life (5). Although most mothers start breastfeeding immediately after delivery, unfortunately, this decreases during the first months after delivery (6).

Studies show that the pattern of exclusive breastfeeding in the first 6 months of life varies in different parts of the world. In China, using data from cohort studies, the proportion of infants being breastfed at 4 months increased from 78% in the earlier decade to 83% more recently. A second baby is usually breastfed for longer than the first, considering both "any" and "exclusive breastfeeding (7). Among the infants born in 2015 in the United States, 4 out of 5 (83.2%) started to breastfeed, over

half (57.6%) were breastfed till their 6th month of life, and over one-third (35.9%) were breastfed till their 12th month (8). According to the latest report of Multiple Indicator Demographic and Health Survey (IrMIDHS), exclusive breastfeeding in the country was 53.13% (47.79% in the urban areas and 62.76% in the rural areas). (9). In Tehran province, 50/5% of infants were also exclusively breastfed up to 6 months (10). Breastfeeding behavior is influenced by various physiological and psychological factors in mothers. It should be noted that physiological factors are difficult to change and in some cases impossible; so the psychological and motivational factors should be considered in the design of interventions to promote the above-mentioned behavior (11).

Although breastfeeding education programs have been implemented for many years and its importance has been emphasized as well, different statistics on the duration of breastfeeding raise the questions of what is the attitude of newly delivered mothers and what are the factors associated with their attitude (12).

Attitudes are determined by one's beliefs about the consequences of behavior and the outcomes of behavior (behavioral beliefs) that arise from the evaluation of the outcomes or consequences of those behaviors. Therefore, a person who has strong beliefs about the positive and valuable outcomes of performing a behavior will have a positive attitude toward that behavior. On the contrary, a person who has strong beliefs about the negative outcomes of behavior will have a negative attitude toward it (13). Attitudes are measured both directly and indirectly. Behavioral beliefs and evaluation of behavioral outcomes are two factors shaping attitudes; in indirect measurement, attitude is a result of the advantages of these two constructs. Behavioral beliefs are the beliefs regarding the association of a behavior with (positive or negative) traits

or specific outcomes. The evaluation of behavioral outcomes refers to the value dependent on a behavioral outcome or attribute (14). The purpose of this study was to indirectly measure the attitudes of primiparous mothers toward exclusive breastfeeding.

2- Materials and Methods

This descriptive-analytical (cross-sectional) study was performed on 420 women referred to comprehensive health service centers of Tehran, selected through multistage sampling. Four comprehensive health centers were selected from each of the categories. Then, at each comprehensive health service center, samples were selected from the numbers associated with household health records, by the use of the systematic random sampling.

2-1. Sample size

Based on a previous study (15) and considering an estimation error of 0.05, $p=0.5$, 95% confidence factor ($Z=1.96$), and 10% sample loss, the sample size was calculated as 402 participants.

2-2. Instruments

Data were collected using a researcher-made questionnaire consisting of the following two parts. Part one: Mothers' demographic characteristics including age, education, job status, delivery status, breastfeeding status, and so on. Part two: Questions of attitude including behavioral beliefs and evaluation of behavioral outcomes. The questionnaire used a 5-point Likert scale (strongly agree, agree, no idea, disagree, strongly disagree); and the items 8, 9, and 10 were scored, reversely. The following are examples of the items, respectively, checking the behavioral beliefs and the evaluation of behavioral outcomes: "If I only breastfeed my infant up to the age of six months, he/she is less likely to get diarrhea". "It is

important for me that my baby be safe against diseases".

Both quantitative and qualitative methods were employed to determine the content validity of the questionnaire. In the quantitative analysis, content validity ratio (CVR) and content validity index (CVI) were calculated (16). To determine the content validity ratio, 5 family health experts and 6 pediatricians were asked to evaluate each question with respect to content as essential, beneficial, or non-essential. Then, the responses were calculated based on this formula:

$$CVR = \frac{n_E - N/2}{N/2}$$

Finally, the resulting CVR amounts higher than 59% were accepted based on the Lawshe Table.

To calculate the content validity index, those 11 experts examined each question based on the three criteria of relevance, clarity, and simplicity, using a 4-point Likert scale for each item. CVI is the sum of the number of answers 3 and 4 (the highest score) by the total number of answers:

$$CVI = \sum \frac{\text{Number of answers 3 or 4}}{\text{Total Number of answer}}$$

The resulting amounts higher than 79% were accepted.

To satisfy the qualitative requirements, the questionnaire was prepared according to valid sources and books and other approved questionnaires in this field, and after the approval of the research team, family health experts, and pediatricians, the necessary corrections were made based on their views and with the coordination of experts. No question was removed at this stage.

The scale's reliability was also assessed using a test-retest method. For this purpose, it was completed by a sample of mothers similar to the study participants,

for two times with a two-week interval. Data were analyzed in SPSS 16. The Cronbach's alpha coefficient was used to determine the reliability of the instrument's internal consistency. The correlation between test-retest questions was 0.76 and the Cronbach's alpha coefficient was $\alpha = 0.80$, based on which the reliability of the scale was confirmed.

2-3. Inclusion and Exclusion Criteria

The inclusion criteria consisted of primiparity, having a health record, having an infant under 2 months of age, not breastfeeding. The exclusion criteria were lack of consent to continue participation and lack of responding to at least 20% of questions.

2-4. Data analysis

The data were entered into SPSS 16, and analyzed using descriptive statistics, independent T-Test (to compare the mean of variables in two groups) and analysis of variance (to compare the mean of variables in more than two groups).

3- RESULTS

According to the descriptive results, most of the mothers were in the age group of 25-40 years with a mean and standard deviation of 29.66 ± 3.09 . Among the participants, 104 were employed and 316 were housewives. Also, most of them had a high school diploma and lower educational levels (52.4%). Most mothers completely agreed that breastfeeding causes less infant diseases such as diarrhea (65.2%), growth and strength of the bones and teeth of the infant (71.6%), increased emotional bond between the mother and the infant (73.3%), and they believed about the completeness of breast milk for the infant (70.5%), its fitness (60%), cost-effectiveness for the family (65.2%) and prevention of childhood obesity (53.3%). The majority of mothers also found it appropriate to give their infant water (37.4%), powdered milk (42.6%) and

sugar water (39.3%) before the age of six months (**Table 1**).

The results showed that infant's immunity to diseases (91.2%), bones and teeth strength of the infant (93.8%), fitness (85.7%), emotional bond between the mother and the infant (73.3%), and completeness of breast milk for the infant (70.5%) were of utmost importance to the mothers (**Table 2**).

The findings also revealed significant differences in the mean scores of behavioral beliefs, evaluation of behavioral outcomes, and attitude between the mothers with different ages and jobs (P -value <0.05). In addition, the attitude of mothers and the evaluation of their behavioral outcomes were significantly different between the mothers with Worker, Employed, or Self-employed husbands (P -value < 0.05). However, the husband's jobs did not lead to a significant difference between the mean behavioral beliefs of the mothers (P -value >0.05). Independent t-test showed no significant difference in the behavioral beliefs, evaluation of the behavioral outcomes, and the attitudes between the mothers' with low and high incomes (P -value >0.05). The groups of mothers with low and educational levels showed significantly different behavioral beliefs and attitudes toward exclusive breastfeeding (P -value <0.05). Nonetheless, no significant difference was observed between them in the evaluation of behavioral outcomes (P -value >0.05). However, a significant difference was found between the mean scores of behavioral beliefs, evaluation of behavioral outcomes, and attitudes in the groups of mothers whose husbands had high or low educational levels (P -value <0.05) (**Table 3**).

The gender of infants, type of delivery, and infant-friendly hospital did not lead to any significant difference in the mothers' behavioral beliefs, evaluation of behavioral outcomes, and attitude (P -

value>0.05). But the infants' hospitalization made a significant difference in the mothers' mean scores of behavioral beliefs, evaluation of behavioral outcomes and attitude, and the

status of infants led to differences in the mean scores of behavioral beliefs and attitude of the mothers (P-value<0.05). (**Table 4**).

Table-1: Frequency of the mothers' responses to questions about behavioral beliefs on exclusive breastfeeding

Questions	Strongly agree	Agree	No idea	Disagree	Strongly disagree
	(%) N	(%) N	(%) N	(%) N	(%) N
If I only breastfeed my infant up to the age of six months, he/she is less likely to get diarrhea.	(65.2) 274	(23.6) 99	(9.5) 40	(1.4) 6	(0.2) 1
I believe that using my own milk alone for up to 6 months is effective in growing and strengthening the bones and teeth of my baby.	(71.6) 300	(23.9) 100	(2.9) 12	(1.2) 5	(0.5) 2
If I just give my baby my own milk by the end of the 6 months, it can increase the emotional bond between me and my baby.	(73.3) 308	(24.8) 104	(0.7) 3	(1) 4	(0.2) 1
I believe breast milk is a complete food for my infant up to 6 months of age.	(70.5) 296	(20.7) 87	(3.8) 16	(4.8) 20	(0.2) 1
Exclusive breastfeeding can improve my fitness.	(60) 252	(25.7) 108	(12.4) 52	(1.7) 7	(0.2) 1
Exclusive breastfeeding will prevent my baby from obesity in later years.	(53.3) 224	(21.7) 91	(23.8) 100	(1.2) 5	(0) 0
I believe that exclusive breastfeeding is affordable and does not impose a cost on my family.	(65.2) 274	(30.5) 128	(2.4) 10	(1.9) 8	(0) 0
If I don't give water to my baby before 6 months, my baby will be thirsty.	(24) 101	(37.4) 157	(20.7) 87	(12.6) 53	(5.2) 22
If I give my infant powdered milk or sugar water, besides my own milk, my husband can help me feed my baby.	(15.5) 65	(42.6) 179	(10.7) 45	(26) 109	(5.2) 22
Babies like sugar water better than breast milk.	(21) 88	(39.3) 165	(29.3) 123	(5.2) 22	(5.2) 22

Table-2: Frequency of the mothers' responses to questions about evaluation of behavioral outcomes of exclusive breastfeeding

Questions	Strongly agree	Agree	No idea	Disagree	Strongly disagree
	(%) N	(%) N	(%) N	(%) N	(%) N
It is important for me that my baby be safe against diseases.	(91.4) 383	(7.2) 30	(0.2) 1	(1.0) 4	(0.2) 1
For me, the strength of my baby's bones and teeth is important.	(93.8) 394	(6) 25	(0) 0	(0.2) 1	(0) 0
My emotional bond with my baby is of great importance to me.	(93.6) 393	(6.2) 26	(0.2) 1	(0) 0	(0) 0
It is important for my baby to get full nutrition.	(93.3) 392	(6.7) 28	(0) 0	(0) 0	(0) 0
It is important for me to have a fit body.	(85.7) 360	(13.3) 56	(0.7) 3	(0.2) 1	(0) 0
The proper weight of my baby in later years is important to me.	(85) 357	(14) 59	(0.2) 1	(0.7)3	(0) 0
The cost of feeding my infant (with powdered milk or breast milk) matters to me.	(58.8) 247	(27.9) 117	(7.6) 32	(5.2) 22	(0.5) 2
It is important for me to quench the thirst of my baby before the age of 6 months.	237(56.4)	(33.6) 141	(4.3) 18	(5.7) 24	(0) 0
Getting help from my husband while breastfeeding is important to me.	(66.4) 279	(26.4) 111	(5.2) 22	(1.9) 8	(0) 0
It is important to me that my baby enjoys the food I prepare.	(61.4) 258	(32.6) 137	(2.4) 10	(3.1) 13	(0.5) 2

4- DISCUSSION

The present study was a descriptive-analytical study investigating the attitudes of mothers toward exclusive breastfeeding (17). Most of the studied mothers believed that exclusive breastfeeding up to 6 months of age would increase the emotional relationship between the mother and her infant, the growth and strength of infant's bones and teeth, and the infant's

immunity to diseases such as diarrhea. However, some believed in the usefulness of giving powdered milk, water, and sugar water along with breast milk. Therefore, believing in the positive outcome of exclusive breastfeeding, mothers had a favorable attitude toward breastfeeding their infants. Also, according to the findings, the infant's immunity against diseases, the strength of the bones and teeth of the infant, the fitness, the

emotional bond between the mother and her infant, and the completeness of breast milk for the infant were of the utmost importance to the mothers under study.

Based on this finding, it can be concluded that the outcome of exclusive breastfeeding is of great importance to mothers and can play an important role in influencing the development of favorable attitudes and subsequent exclusive breastfeeding. These results are in line with the results of the study of Tengku Ismail et al (18). Considering the fact that some mothers believed in the usefulness of

giving powdered milk, water, and sugar water to their infants and since in the definition of exclusive breastfeeding, it is stated that infant should only be breastfed up to 6 months, in order to change the behavior of feeding the infant with powdered milk, water, and sugar water before six months of age, it is necessary to design appropriate educational interventions to help the mothers avoid feeding her infant with foods other than the breast milk.

Table-3: Comparison of Means and Standard Deviations of Behavioral Beliefs, Evaluation of Behavioral Outcome and Attitude of the Mothers

Variables	Subgroup	Behavioral beliefs	Evaluation of Behavioral Outcome	Attitude
		Mean (SD)	Mean (SD)	Mean (SD)
Age	15-25 years old	41.39 (5.26)	38.01 (2)	59.81 (8.66)
	26-40 years old	43.21 (4.39)	38.49 (1.74)	63.11 (6.95)
	-	P-value<0.001	P-value =0.008	P-value<0.001
Mother's education	Lower than diploma & Diploma	41.42 (4.82)	38.23 (1.79)	60.16 (7.75)
	Academic	43.45 (4.73)	38.32 (1.97)	63.22 (7.83)
	-	P-value<0.001	P-value =0.62	P-value<0.001
Husband's education	Lower than diploma & Diploma	41.68 (5.11)	38.10 (1.86)	60.29 (8.03)
	Academic	43.07 (4.57)	38.44 (1.88)	62.92 (7.62)
	-	P-value =0.004	P-value =0.07	P-value=0.001
Mother's job	Housekeeper	41.84 (4.86)	38.15 (1.86)	60.73 (8.04)
	Employed	44.04(4.60)	38.63(1.88)	64.32 (6.95)
	-	P-value<0.001	P-value =0.02	P-value<0.001
Husband's job	Worker	41.56 (4.72)	37.87 (2.14)	59.40 (8.19)
	Employed	42.98 (4.29)	38.47(1.92)	62.86 (7.09)
	Self-employment	42.11 (5.38)	38.23 (1.72)	61.24 (8.39)
	-	P-value=0.08	P-value =0.04	P-value=0.009
Income	Middle & Lower	42.27 (5.08)	38.15 (1.94)	61.25 (8.26)
	Good	42.56 (4.57)	38.45 (1.77)	62.19 (7.38)
	-	P-value =0.55	P-value =0.12	P-value=0.24

Table-4: Comparison of Means and Standard Deviations of Behavioral Beliefs, Evaluation of Behavioral Outcome and Attitude of the Mothers

Variables	Subgroup	Behavioral beliefs	Evaluation of Behavioral Outcome	Attitude
		Mean(SD)	Mean(SD)	Mean(SD)
Infant gender	Female	42.34 (4.86)	38.36 (1.79)	61.67 (7.95)
	Male	42.44 (4.92)	38.19 (1.96)	61.57 (7.92)
	-	P-value =0.83	P-value =0.36	P-value =0.89
Type of delivery	NVD	42.36 (4.84)	38.35 (2.09)	61.80 (8.30)
	CS	42.40 (4.92)	38.23 (1.76)	61.54 (7.75)
	-	P-value =0.94	P-value =0.56	P-value =0.75
Infant status	mature	42.56 (4.75)	38.31 (1.85)	61.87 (7.66)
	immature	40.10 (6.04)	37.76 (2.18)	58.26 (10.50)
	-	P-value =0.009	P-value =0.13	P-value =0.02
Place of delivery	Governmental hospital	41.98 (4.88)	38.19 (1.91)	61.05 (8.09)
	private hospital	42.95 (4.84)	38.38 (1.83)	62.40 (7.65)
	-	P-value =0.04	P-value =0.31	P-value =0.09
Infant hospitalized	No	42.59 (4.70)	38.35 (1.85)	62.01 (7.51)
	Yes	40.79 (5.94)	37.62 (1.99)	58.54 (10.22)
	-	P-value =0.02	P-value =0.01	P-value =0.005
Baby friendly hospital	No	42.96 (4.62)	38.33 (2.05)	62.49 (7.57)
	Yes	42.29 (4.93)	38.26 (1.85)	61.48 (7.98)
	-	P-value =0.33	P-value =0.80	P-value =0.37

In this study, the variables of age and job of the mother, the hospitalization of infants, and the fathers' education were found to cause significant differences in the mothers' behavioral beliefs, evaluation of behavioral outcomes, and attitudes towards exclusive breastfeeding. This means that the older mothers who were employed, whose husbands were more educated, and their infants were not hospitalized had stronger attitudes and beliefs in positive and valuable outcomes of exclusive breastfeeding. However, despite the strong beliefs and attitudes of the working mothers, they may not be able to breastfeed their infants, in practice, due to the environmental problems such as cases in which kindergarten is far from the mothers' workplace. These findings are in line with the findings of a study by Saeid et al. in terms of the relationship between

the mothers' attitudes toward exclusive breastfeeding and their age (19). Attitudes are determined by one's beliefs about the consequences of behavior and the outcomes of behavior (behavioral beliefs) that arise from the evaluation of the outcomes or consequences of those behaviors (13). In this study, there was no statistical relationship between income and any of the constructs of behavioral beliefs, evaluation of behavioral outcomes, and attitude. This result is inconsistent with the study of Mohammed et al. in which a significant relationship was found between the mothers' attitudes toward breastfeeding and their income (20). The present study, further, revealed a significant relationship between the fathers' jobs and the mothers' evaluation of behavioral outcomes and attitude, and between the mothers' education and their behavioral beliefs and

attitudes. The outcomes and consequences of exclusive breastfeeding were more valuable to mothers whose husbands were employed and they had a more favorable attitude in this regard as compared to mothers whose husbands were workers; and the mothers whose education was higher had stronger beliefs and more positive attitudes towards exclusive breastfeeding. It can be said that the promotion of maternal education has led to more information and knowledge about the benefits of exclusive breastfeeding and increased maternal desire for it. In the study of Amin et al., there was also a relationship between the mothers' attitudes and their education level (21). That study also showed a significant relationship between the mothers' behavioral beliefs and attitudes is significantly correlated with the status of their infants (full-term/preterm) to the benefit of the full-term infants. This result is consistent with that of the study by Shosha et al., in which a positive and strong relationship was found between the mothers' attitudes and their having full-term infants (22). Another study by Tan in Malaysia found that the mothers with full-term infants were twice as likely to have exclusive breastfeeding as compared with those with preterm infants (23). It seems that the mothers who give birth to preterm infants, compared with those who give birth to full-term infants, believe that feeding a preterm infant with their own milk cannot meet the nutritional needs of their preterm infant and may not have a positive impact on their physical condition. Therefore, educating mothers with preterm infants may have a positive impact on their beliefs about and attitudes toward exclusive breastfeeding. Other results of this study showed a significant relationship between mothers' behavioral beliefs and place of delivery (public hospital/private hospital). Exclusive breastfeeding was more common in mothers who gave birth at a private hospital than in mothers who gave birth at

a public hospital. This may indicate that in a private hospital, nurses were more likely to provide guidance and support to mothers and to give them adequate information about the health benefits of exclusive breastfeeding for the mother and the infant than in a public hospital, and this can strongly reinforce the mothers' beliefs toward exclusive breastfeeding.

4-1. Limitations of the study

Exclusive breastfeeding depends on multiple factors, and it was not possible to investigate all of them in the present study.

5- CONCLUSION

According to the results obtained, it can be stated that the outcome of exclusive breastfeeding is of great value and importance to mothers under study and the variables such as the status of infants, and place of delivery and hospitalization of infants may have a major impact on behavioral beliefs, evaluation of behavioral outcomes, and attitudes. Therefore, it is necessary to consider these variables in breastfeeding educational interventions to enhance behavioral beliefs, evaluation of behavioral outcomes, and attitudes in mothers in order to achieve the global goal of exclusive breastfeeding.

6- ETHICAL CONSIDERATIONS

This research is conducted under the code of ethics of IR.SBMU.PHNS.REC.1396.117 from Shahid Beheshti University of Medical Sciences, Tehran, Iran. The mothers participating in the present study signed an informed consent form. The other ethical considerations of the study included obtaining ethical codes and permits from relevant organizations, voluntary participation of the mothers in the study, the confidentiality of individuals' information, and the use of coding rather than writing the first name and the last name in the questionnaire.

6- ACKNOWLEDGEMENT

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7- CONFLICT OF INTEREST

None

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