

The Pregnant Mothers' Knowledge About Breastfeeding in Semnan, Iran

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Background: Breastfeeding is accepted as the most desirable method of infant nurturing.

Objectives: This study aimed to investigate pregnant mothers' knowledge about breastfeeding as well as to study its associated factors.

Patients and Methods: This was a cross-sectional study evaluating the knowledge of 400 pregnant mothers who were referred to Semnan Province health centers. Data collection was performed via questionnaires and the scores were calculated. One point was considered for correct answers and zero for incorrect or "do not know" replies. The Relative frequency of correct responses for every person was calculated. Mothers who answered less than 20% of the questions correctly were considered to have a very poor knowledge. Scores between 2.0 and 3.9 were the ones with poor knowledge, those with 4.0 to 5.9, 6.0 to 7.9 and larger than or equal to 8.0 were considered to have an average, good and very good knowledge, respectively.

Results: Overall, 1%, 5%, 43.8%, 42.5% and 7.8% of mothers had very poor, average, good and very good level of knowledge about breastfeeding. There was a significant association between mothers' knowledge and mothers' education, breastfeeding history, and parity; however, no significant association was found with age and the month of pregnancy. The most frequent source of obtaining information was health centers' personnel (34.3%) followed by family and friends. The highest percentage of proper response, i.e. 95.5% and 90.5%, were related to questions on necessity of exclusive breastfeeding and its continuation for six month of life, respectively; the lowest percentage of proper response, i.e. 11.8% and 18%, belonged to questions concerning expressed milk storage time in the refrigerator and freezer, respectively.

Conclusions: A significant number of pregnant mothers had average knowledge that indicating necessity of interventional programs by health system, particularly for pregnant mothers with lower education level.

Keywords: Knowledge; Pregnant Women; Breast Feeding

1. Background

Age of Children, their growth, and development must be considered in childhood nutrition. Breast milk is the most appropriate food for normal infants with healthy mothers (1). The First two years of life are very important for a baby's wellbeing and sufficient nutrition during infancy is vital and essential to child's development and growth (2). Most women are able to feed their baby with their own breast milk. Women who breastfeed may have lower rates of certain breast and ovarian cancers (3). The benefits and advantages of breastfeeding for mothers and infants have been widely studied (4). According to the benefits of breastfeeding, the World Health Organization and the American Dietetic Association recommend "exclusive breastfeeding of infants for the first six months and continued breastfeeding with complementary foods up to 12 months of age" (4). Digestion of breast milk is easy and contains antibodies that protect infants against many infectious diseases (3). Formula-fed infants and babies who discontinue breastfeeding early are at higher risk of obesity, diabetes, respiratory and ear infections, and sudden infant death syndrome (5). After few days of

lactation, milk composition modifies to transitional and then mature milk. The time of the day and the stage of a feed affects the milk composition. The composition of human milk, i.e. proteins, carbohydrates, fat, enzymes, and hormones, has made it as an appropriate food for infants and children. Colostrum, the milk of the first days after birth, is low in volume and high in proteins (1).

Protecting, promoting, and supporting breastfeeding, as the goal of the Centers for Disease Control and Prevention, are the key strategies for improving the health of mothers and their children (6). Breastfeeding rates have increased by 2% in breastfeeding initiation as well as breastfeeding at six and 12 months. Breastfeeding initiation increased from 74.6% in 2008 to 76.9% in 2009, from 44.3% to 47.2% at six months, and from 23.8% to 25.5% at 12 months (6). In comparison to many European Union countries, Iran showed a favorable situation in terms of breastfeeding rates and promotion of breastfeeding; however, there is still a need for increasing the rate of exclusive breastfeeding during the first six months in Iran. At a national level, 90% and 57% of infants were breastfed

during their first and second years of life, respectively. The mean exclusive breastfeeding rates within the country at four and six months of age were 56.8% and 27.7%, respectively. The rates at four and six months of age were respectively 58% and 29% in rural areas and were respectively 56% and 27% in urban areas (7).

A woman's decision to breastfeed could be affected by many demographic factors including maternal age, marital status, education, race, socioeconomic status, cultural factors, gravidity or parity, number of children at home, occupation, and social support (4). Indeed, the knowledge of mothers about breast feeding is also very important. During the pregnancy, a mother should get ready to breastfeed her baby and this is a critical time to acquire information and to increase knowledge about breastfeeding. Authorities, physicians, and other sections of health care department are responsible for providing information for pregnant mothers about all aspects of breastfeeding and preparing them to make decision about the most important event during the first two years of a child life, namely, the nurturing.

2. Objectives

The purpose of this study was to assess knowledge of pregnant mothers about breastfeeding.

3. Patients and Methods

In this cross-sectional study, structured questionnaires were used to assess the knowledge of pregnant mothers in their third trimester of pregnancy; mothers were recruited from those attended any of the seven health centers within the city of Semnan, Semnan Province, center of Iran. The questionnaires included demographic information and the questions about mothers' knowledge about breastfeeding. A total of 400 mothers completed the questionnaires. The questionnaire were completed under the supervision of trained health personnel. The validity of the questionnaire was evaluated based on opinions of experts, scholars, and researchers; using Cronbach's alpha, reliability was calculated at 0.78.

To analyze the data in the first stage, one point was considered for every correct answer and zero for any incorrect or "do not know" replies for each of the 27 questions in the questionnaire. Then the relative frequency of correct responses for every person was calculated. Mothers who answered less than 20% of the questions correctly (those with scores less than 0.2) were considered to have a very poor knowledge. Scores between 2.0 and 3.9 were considered poor knowledge, those with 4.0 to 5.9, 6.0 to 7.9, and equal to or larger than 8.0 were considered to have an average, good, and very good knowledge, respectively. Statistical analyses were performed using Chi square test and partial correlation coefficient. All statistical analyses were performed using SPSS 16.00 (SPSS Inc., Chicago, IL, USA). In all tests, $P < 0.05$ was consid-

ered statistically significant.

4. Results

This study showed that 1%, 5%, 43.8%, 42.5%, and 7.8% of pregnant mothers had respectively very poor, poor, average, good, and very good knowledge about breast feeding. The evaluation of association between some demographic factors including education level, age, gravidity, lactation history, and month of pregnancy with knowledge about breastfeeding indicated that 20%, 45.3%, 38.1%, 50.5%, and 65.9% of the respectively illiterate mothers, mothers with primary, secondary, high school, and academic education had good or very good knowledge on breastfeeding. The association between maternal education level and knowledge of breastfeeding was significant ($r = 0.374$ and $P < 0.001$) (Table 1).

Overall, 39.1% the younger than 20 years of age respondents, 48.6% of those between 20 to 29 years, and 58.6% of those aged 30 years or older had good or very good knowledge on breastfeeding. The association between mothers' age and their knowledge about breastfeeding was not significant ($r = 0.0104$ and $P = 0.837$) (Table 1). According to our results, 38.8% of the primigravida mothers, 60.4% of the mothers with the second, 61.7% of those with the third, and 63.6% the mothers with the fourth pregnancy had good or very good knowledge about breastfeeding. There was a significant association between mothers' gravidity and their knowledge about breastfeeding ($r = 0.1827$ and $P < 0.001$) (Table 1).

Moreover, 42.3% of mothers without any lactation history and 60.7% of mothers with lactation history had good or very good knowledge about breastfeeding. There was a significant association between lactation history and the knowledge about breastfeeding ($P = 0.002$) (Table 1).

According to Table 1, 46.6% of mothers in the seventh, 56% of mothers in the eighth, and 50% of mothers in the ninth months of pregnancy had good or very good knowledge about breastfeeding; however, there was no significant association between month of pregnancy and the knowledge about breastfeeding ($r = 0.409$ and $P = 0.416$).

Most of the mothers (34.3%) obtained information about breastfeeding from health center personnel and 32.5% of them acquired the information from family members and friends. Other sources included books, poster, or pamphlets (19%) and mass media, eg, television and radio programs (16.5%). They also gained knowledge from doctors or pediatrician (13.5%).

The evaluation of the questionnaires showed that the highest percentage of proper responses, i.e. 95.5% and 90.5%, concerned necessity of exclusive breast feeding and its continuation for six months, respectively. On the other hand, the lowest percentage of proper responses, ie, 11.8% and 18%, concerned the possible time of storing the expressed milk in refrigerator and freezer, respectively (Tables 2 and 3).

Table 1. Pregnant Mother's Knowledge About Breast Feeding

Characteristic	Cases, No.	Knowledge Level, %					Regression	P Value
		Very Good	Good	Average	Poor	Very Poor		
Education level							0.3739	< 0.001
Illiterate	10	0	20	50	30	0		
Primary	53	3.8	41.5	45.3	7.5	1.9		
Secondary school	63	3.2	34.9	46	12.7	3.2		
High school	192	9.9	40.6	46.9	2.1	0.5		
Academic	82	9.8	56.1	32.9	1.2	0		
Age, y							0.0104	0.837
< 20	23	13	26.1	47.8	8.7	3.4		
29-20	290	6.9	41.7	45.2	5.2	1		
> 30	0	9.2	49.4	37.9	3.4	0		
Gravidity							0.1827	P < 0.001
1	193	4.1	34.7	51.3	7.8	2.1		
2	149	14.1	46.3	37.6	2	0		
3	47	4.3	57.4	34	4.3	0		
4	11	0	63.6	36.4	0	0		
Lactation history								< 0.002
Yes	173	11	49.7	35.8	3.5	0		
No	227	5.3	37	49.8	6.2	1.8		
Gestational age, mo							0.409	0.416
7	176	9.1	37.5	47.2	4.5	1.7		
8	116	6	50	39.7	4.3	0		
9	108	7.4	42.6	42.6	6.5	0.9		

Table 2. Frequency of the Correct Responses of Pregnant Mothers to Questions About Breastfeeding

Question	Cases, No.	Correct Responses, %
In your opinion, how long after the birth should the baby delivered to you?	290	72.5
How is the correct method of breastfeeding?	224	56
How much is the frequency of breastfeeding at 24 hours?	211	52.8
How long is the duration of any breastfeeding?	243	60.8
To what age infants should be exclusively breastfed?	362	90.5
Which method is better for breast feeding?	74	18.5
Does Infant need other food (except breast milk) in the first months of infancy?	382	95.5
What is your opinion about the use of pacifier and bottle?	228	57
How to keep clean breast?	276	69
What is the way to prevent nipple cracking?	225	56.3
How can we know that breast milk is enough for a baby?	171	42.8
In which cases, breastfeeding is discontinued?		
Common cold	344	86
Pharyngitis	313	78.3
Pneumonia	234	58.5
Vomiting and diarrhea.	296	74
Breast infection	354	88.5
Breast swelling and pain	164	41
How long the expressed breast milk can be used?		
Room temperature	136	34
Refrigerator	47	11.8
Freezer	72	18

Table 3. Frequency of the Correct Responses of Pregnant Mothers to Questions About Breastfeeding

Question	Cases, No.	Correct Responses, %
Should a baby feed Colostrum?	310	77.5
May exclusive breastfeeding help one to prevent to become pregnant?	55	13.8
Could colostrum have a role in causing or worsening jaundiced baby?	205	51.3
Because of minerals and vitamins is added to formula milk, is it better than breast milk?		94
Does breast feeding versus formula reduce the incidence of infectious diseases such as diarrhea, respiratory, and ear infections?	376	67.5
Does breastfeeding versus formula feeding may lead to better development?	270	78.5
Do the children who were breastfed in infancy have higher IQ than those that were fed with formula milk?	314	87.3

5. Discussion

In our study, 1%, 5%, 43.8%, 42.5%, and 7.8% of pregnant mothers had respectively very poor, poor, average, good, and very good knowledge about breastfeeding. When we compare the results of this study with that of other parts of Iran, our findings are approximately similar to the study of Sari (8) and Lorestan (9); in other words, 36.7%, 57.2%, and 5.1% of mothers in Sari had good, average, and poor knowledge, respectively. In addition, in Lorestan study, 55%, 39%, and 6% of mothers had high, average, and poor knowledge about breastfeeding (9). In Lahijan, 50.8% of mothers had poor knowledge about breastfeeding (10) that shows a less favorable situation in comparison with our study. In the studies in Kermanshah, 17.5%, 27.2%, and 55.3% of mothers had good, partially good, and poor information about breastfeeding (11). Our study shows a more desirable situation.

In another study, the Finish pregnant women’s mean breastfeeding knowledge score was 15.85 points. Six women had a low level of knowledge, 56 women had a medium level, and 60 women had a high level of knowledge (12). In a study in Malaysia, 74.8% of respondents were knowledgeable about breastfeeding with total score of more than 70% (13). Knowledge about breastfeeding was surprisingly poor among Chinese female physicians and nurses (14). The results of our study, similar to the results in Lorestan (9) and Booshehr (15), showed a significant association between knowledge of mothers and their education level.

In the current study, the association between mothers’ knowledge and gravidity as well as lactation history was significant. Therefore, mothers with higher gravidity and lactation history had more knowledge about breastfeeding. There was no significant association between knowledge and the month of pregnancy, as with the increase in the months of pregnancy and approaching to the delivery, maternal education was not continued more coherent and continuously, or it may be due to the limitations of the study period, ie, the third trimester of pregnancy, and lack of comparison with the first few months of pregnancy in our study. Some study done in Finland (16)

showed that respondents answered 68% of the items related to breastfeeding knowledge correctly. The most usual lack of knowledge was related to the methods of increasing lactation, sufficiency of breast milk in hot weather, sufficiency of breast milk for four months after birth, and the need to milk the breasts after alcohol consumption. In the mentioned study, 24% of the participants had excellent knowledge about breastfeeding (score, 19-22; classified as A); moreover, according to their scores, 38%, 29%, 8%, and 1% of participants were classified as B (score, 14-18), C (score, 10-13), D (score 5-9), and E (score 0-4), respectively. Among their patients, 80% answered more than half of the items correctly and 58% agreed that it was needed to give water to all infant, even to exclusively breastfed infants, especially on hot days. In the Finish study, gender, age, gravidity, education level, smoking, time of pregnancy, living with spouse, and breastfeeding history were associated with the knowledge about breastfeeding. Those who had children had better scores than participants without children. Participants who had longer than or equal to 32 gestation weeks had better breastfeeding-knowledge scores than the participants who had shorter than 32 gestation weeks. As mentioned before, we did not observe any significant association between mothers’ knowledge and month of pregnancy in our study.

Most of the mothers in our study were in their twenties and the association between age and their knowledge about breastfeeding was not significant whereas in the Finish study, the age had effect on breastfeeding-knowledge scores. Participants who were 25 years old or younger had lower scores than the participants who were 31 to 35 years old and those who were 36 years or older (16). The overall younger age in the target population might be a reason for lack of association between age and breastfeeding knowledge in our study. In current study, 65.9% of mothers with academic and 50.5% with high school education had good or very good knowledge about breastfeeding. The association between maternal education level and knowledge about breastfeeding was significant. With increasing the educational level, the knowledge

about breastfeeding increases. Breastfeeding-knowledge scores of the Finish study were lower among participants with vocational qualifications than participants with academic degrees or higher vocational diplomas (16).

The analysis of mothers' responses to the questions revealed that their knowledge is average and close to poor about proper techniques of breastfeeding, the frequency of breastfeeding in 24 hours, recognizing the sufficient amount of milk for the baby, stopping or continuing breastfeeding in conditions such as inflammation and pain in the breast or pneumonia, helping effect of exclusive breastfeeding on preventing of conception, importance of colostrum and its impact on neonatal jaundice, the reduction of infectious diseases such as diarrhea as an advantage of breast feeding over formula, respiratory and ear infections, the use of pacifier and bottle, and the proper duration for using the expressed breast milk. Intervention, especially educational one, is required in mentioned cases. Involvement of gravidity, breastfeeding knowledge, and attitudes of the Finish pregnant women affected on the breastfeeding confidence scores (12). There was an association between breastfeeding knowledge and parity; in other words, 67% of multiparous and 29% of primiparous had a high level of knowledge (11). Malaysian pregnant mothers acknowledge the colostrum and breast milk as the best food for infants. They knew that colostrum helps to resist against diseases and allergy, filling up stomach easily, teeth development, maternal recovery after birth, and increased bonding. The two main wrong understanding of Malaysian mothers were discontinuation of breastfeeding when baby and/or mother were sick and administrating of clear fluid in exclusively breastfed infants. Social and cultural beliefs could affect these misconceptions (13).

The review of studies reveals that various reasons could cause the differences in results of researches including using different criteria for classification of knowledge in different studies, sources of information, the condition of mothers' participation in courses related to breastfeeding, quality of education, emphasis on educational materials, maternal education, and the time of research. The possibility of breastfeeding is higher when mother is aware of different health advantages. Mothers should know the advantages and disadvantages of breastfeeding versus formula feeding so that they can choose the best method for feeding the baby (17). Mothers who work out of the house must have access to the educations about all aspects of breastfeeding, most importantly milk expression and storage, which encourage them to breastfeed their babies.

Mass media had important role in disseminating information in urban society in the Malaysian study. In Malaysian mothers, 34.9% obtained information concerning breastfeeding from television, magazine, newspaper, and internet; it indicates that the public education about breastfeeding could be effective through the mass media. In the Malaysian study, 32.1% of the participant stated that the main source of information was the antenatal class

organized by midwives and nurses in the hospitals and healthcare centers (12). Most mothers in our study (34.3%) obtained information from health center personnel and 32.5% of them obtained this knowledge from family and friends. Other sources included books, posters, or pamphlets (19%) and mass media, eg, television and radio programs (16.5%). They also gained knowledge from doctors or Pediatrician (13.5%). Thus, we emphasize again on the role of health center personnel, family, and friends in training mothers. The results of current and similar studies can be used to design the content of breastfeeding counseling and training. Therefore, human milk is the best food for infants. Healthy people 2020, a comprehensive set of health objectives for the United State, offers for supporting the breast milk among mothers. All mothers should be encouraged to breastfeed their infant immediately after birth and be prepared for breast feeding in the last few month or weeks of pregnancy (18).

A significant number of pregnant mothers had average knowledge about breastfeeding. Mothers' knowledge about breastfeeding needs to be increased, especially in some aspects of breastfeeding such as storage of expressed breast milk, the frequency of breastfeeding at 24 hours or correct method of breastfeeding, recognizing the sufficient amount of milk for the baby, and stopping or continuing breast feeding in some conditions. Health system should include all mothers into educational interventional programs, especially pregnant mothers with lower education.

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Authors' Contributions

Batool Karimi: study conception, design, and writing the article. Melika Zarei Sani: study design, data collection, and writing the article. Raheb Ghorbani: data analysis. Navid Danai: study conception.

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