Original Research Article

Assessment of Knowledge and Practice About Self Expressed Breast Milk Among Saudi Mothers in Jazan Region, KSA, 2016

Abstract

Aim: To assess mother's knowledge and attitude regarding self-expressed milk in Jazan, Saudi Arabia.

Methodology: **Study Area:** An observational and cross sectional study done in Obstetric Department (Well Baby and immunization Clinics) in King Fahd Central Hospital (KFCH), Jazan, Saudi Arabia and in six PHCCs in Jazan (randomly selected) from December 2016 - March 2017. Pregnant women who delivered babies before and post-partum women in Obstetric departments, Obstetric outpatient clinic, mother's in well baby, and immunization clinics in mentioned areas were included in the study. Stratified multistage sampling techniques were used. N = 499 Saudi mothers calculated according to survey system with confidence level % 95. The questionnaire was self-administering questionnaire (in Arabic language). All data processed via Statistical Package for the Social Sciences (SPSS) version 19. Shapiro-Wilk test. Kruskal-Wallis test used to see the association between level of knowledge and practice with demographic variables that contains more than 2 variables. Mann-Whitney test and Spearman correlation were used.

Results: Total of 499 mothers was participating aged 30±7 years with mean number of kids 2.98 ± 2. Mothers heard about self-expressed breast milks accounts 73.5%, and 236 mothers of them were practice it. Both level of knowledge and practice accuracy were inadequate. Around one third of mothers heard about it from social media. More than third of the women practice it because of work related issues. The higher the educational level was the higher knowledge

(p<0.001). Age and number of kids, has no statistically significant effect on the knowledge level (P= 0.417, 0.285). Working mothers have higher knowledge level than house wife and students (p<0.001), nurses especially who toke breast feeding teaching have higher knowledge level than physicians then teachers (p<0.001). Mothers who toke their knowledge from breast feeding courses have the highest knowledge level followed by medical stuffs other than physicians followed by social media and internet websites then physicians then mothers and last are friends (p<0.001). Mothers with more accurate practice were more knowledgeable than mothers with less accurate practices (p<0.001).

Conclusion: Mothers knowledge and practice regarding self-expressed breast milk needed to be improved in order to give the babies better chance for exclusive breast feeding. Breast feeding courses for mothers give better results in term of accuracy of mother's knowledge and practice of expressed breast milk

Keywords: Breast feeding; self-expressed breast milk; infants feeding; nutrition for infants; knowledge on Breastfeeding; Attitude towards Breastfeeding.

Introduction

Infant health is a major concern in any developed society, as an infant mortality rate is an indicator for the country development, and optimal infant and young child feeding practices rank among the most effective interventions to improve child health.[1]

Human milk is the optimal feeding for infants and exclusive breast feeding is recommended by World Health Organization (WHO) and American Academy of Pediatrics (AAP) until age of 6 months then adds beside it the complementary foods. Exclusive breast feeding means that an infant receives only breast milk from his or her mother or a wet nurse, or expressed breast milk,

and no other liquids or solids, not even water, with the exception of oral rehydration solution, drops or syrups consisting of vitamins, minerals supplements or medicines.[1]

Breast milk feeding should be started early in infant's life especially because of colostrum's benefits on infant's immunity health, growth, and its high contents of vitamins, minerals, and aminoacids according to neonates needs.[2]

However, not all mothers are available all the time or sometimes to feed their babies for different causes, for example worker mothers who spend many hours away from their new babies, mothers with contraindication of feeding from their breasts like breast abscess or congenital nipple disorder, or premature and sick babies who cannot fed from the breast, so the idea of expression of breast milk came into existence to feed them optimally. Many researches done to prove the effectiveness of expressed breast milk usage for the neonates.[3-5]

To help our new generations to get the best of nutrition mothers should be encouraged for breast feeding and overcome any difficulty they can face by teaching them the right ways to do so.

Knowledge and attitude of Saudi mothers regarding expressed human milk was assessed in this study to identify the need of education and improve the interventions from health care providers.

The aim of this study was to assess mother's knowledge and attitude regarding self-expressed milk.

Materials and Methods

Study Area: Jazan region is one of Saudi Arabia regions. It stretches 300 km along the southern Red Sea coast, just north of Yemen. It covers an area of 11,671 km² and has a population of 1,365,110 at the 2010.[6] The study done in Obstetric Department (Well Baby and immunization Clinics) in King Fahd Central Hospital (KFCH). Number of beds in the hospital is 450, 58 beds in Obstetric department and 35 in Pediatric department without the Neonatal Intensive Care Unit and Pediatric Intensive Care Unit. Six PHC in Jazan (randomly selected).

Study Period: December 2016 - March 2017

Study Design: Observational, cross sectional study

Study Population: Pregnant women who delivered babies before and post-partum women in Obstetric departments, Obstetric outpatient clinic, mothers in well baby, and immunization clinics in mentioned areas. Total Saudi Females at Jazan Region is 545721. 408396 are in the reproductive age and 102207 of them are married. National statistics showed that 15162 live births were in the year of 2010.[7] Total Saudi female who are working among reproductive age group in Jazan region are 47830.[7] There is no clear statistics regarding number of lactating mothers in Jazan region.

Inclusion Criteria: Any pregnant women who delivered live baby before and post-partum women in Obstetric Departments Obstetric outpatient clinic, mothers in well baby clinic, and immunization clinics in King Fahd Central hospital who welcoming to participate in the study.

Exclusion Criteria: Primigravida, married women who don't gave live births before.

Sampling Technique: Stratified multistage sampling technique. Total number of governmental hospitals in Jazan is 17, and total number of primary health care centers is 120. First stage selected one hospital and 6 PHCs randomly. Second stage selected proper random with proportion to size. N = 499 Saudi mothers calculated according to survey system with confidence level % 95.

Data Collection Tool: The questionnaire was self-administering questionnaire (in Arabic language) prepared based on the previous literatures and guidelines on expressing breast milk and validated by three experts. Questionnaire was composed of 31 questions include three parts as follows: I- socio-demographic data. II- questions regarding self-expressed milk knowledge. III-questions regarding self-expressed milk practice. Second part (13 questions) is about knowledge of mothers regarding expressed breast milk. Last part (11 questions) is about Mothers Attitude toward self-expressed breast milk. Knowledge questions are 10 and Accuracy of practice questions are 7. Each right answer is given 1 point and every wrong answer or don't know is given 0 points.

Data Collection Technique: Self-Administer questionnaire (in Arabic language) prepared based on the previous literatures and guidelines on expressing breast milk distributed to the mentioned areas after taking permission from authorized persons there during working hours.

Nurses were prepared for any question from participants, and questionnaires collected at the end of the day by the researcher and data coded and entered in a personal computer to be ready for analysis.

Data Entry and Analysis: All data processed via Statistical Package for the Social Sciences (SPSS) version 19. In knowledge and practice sections every right answer given one point and every wrong answer or don't know given zero then number of right answers summed. Statistical

test used according to the data; continuous variables presented by Mean and Standard Deviation (SD), categorical variables presented by frequency and percentage. Significance considered if P value is less than 0.05 and Confidence Interval (CI) is 95%. Statistical analysis shows that sample is not normally distributed by Shapiro-Wilk test. Kruskal-Wallis test used to see the association between level of knowledge and practice with demographic variables that contains more than 2 variables. Mann-Whitney test used to measure association between level of knowledge and practice with demographic variables that contains 2 variables. Spearman correlation used to measure the association between level of knowledge and accuracy of practice and between levels of continues variables with level of knowledge and accuracy of practice.

Pilot Study: Pilot study conducted in Scheme 5 PHC on 10 patients to test the feasibility and applicability of the study and tackle any deficiency in the questionnaire.

Ethical Consideration: Ethical approval of KFCH regional ethical committee was obtained (Registry Number: 025).

Results

Participants Characters and Socio-demographic Data

A total of 499 Saudi mothers were included in the study. The mean age was 30 ± 7 years with mean numbers of kids 3 ± 2. Other characters are shown in Tables 1 & 2. Mothers heard about self-expressed breast milks accounts 73.5%, and 236 mothers of them were practice it.

Knowledge

Among mothers who heard about self-expressed breast milks 34.4% were sure from their knowledge 39.8% were not sure from their knowledge, and the others sure about techniques and storage only or milk usage after expressing only. Mothers were not know the causes that can led mothers to self-expressed their breast milk accounts 5.2%, 0.5% gave wrong answers. 77.1% agreed that mothers can continue breast milk feeding while they are expressing the breast milk. Only 41.1% they know that mothers can use any of manual pumps, electrical pumps, or hand to express the breast milk while 2.7% didn't know. 247 women know that expressed breast milk can be stored, 50.7%, 33.8% were know correctly the maximum duration of storing the expressed breast milk in room temperature.21.5% were know correctly the maximum duration of storing the expressed breast milk in refrigerator. 33.8% were know correctly the maximum duration of storing the expressed breast milk in freezer. 35.7% were know that expressed breast milk should be stored at milk storing containers where 33.5% thought that it should be stored in glass containers, 7.6% plastic containers, 3.8% polypropylene, and 19.3% didn't know.

Kruskal-Wallis test showed that the higher the educational level the higher knowledge level while the participants with low educational level got a less knowledge score ($x^2 = 14$, $p<0.001$). Working mothers have higher knowledge level than house wife and students ($x^2 =14$, $p<0.001$). Nurses especially who toke breast feeding teaching have the highest knowledge level then

physicians then other medical stuffs then teachers (x^2=14, p<0.001). Mothers who toke their knowledge from breast feeding courses have the highest knowledge level followed by medical staffs other than physicians followed by physicians then friends then social media and internet websites and last are mothers or whom in his position (x^2 =14, p<0.001).

Mothers live in city are more knowledgeable than mothers live in rural areas (*U* = 8847.500, Z=-2.196, *P* =0.028 two-tailed)

Mothers in families with monthly income more than 10000 Saudi Riyal have level of knowledge more than mothers in families with monthly income between 5000-1000 Saudi Riyal then mothers in families with monthly income between 2000-5000 Saudi Riyal then mothers in families with monthly income less than 2000 Saudi Riyal. (x^2=14, p<0.001)

Level of sureness of information positively linked to level of knowledge, (x^2=14, p<0.001).

Mothers expressed their breast milk because of work have high level of knowledge in compare to mothers did it to help their babies for feeding and mothers did it when they want to go out of home then mothers want to increase their milk production then mothers had medical issues prevent them from normally breastfeed then mothers tried it to decrease breast pain from engorgement then when mothers are far from babies due other than work causes then at last because of baby medical issue (x^2= 15, p<0.001)

Age, number of kids has no statistically significant effect on the knowledge level (P= 0.417, 0.285).

Practicing accuracy

Regarding mothers who didn't practice self-expressed breast milk before although they heard about self-expressed breast milk 83.1% wasn't practice it because mother did not need for it and 16.9% were not know it while they are lactating. Reasons of pump and mothers practice regarding self-expressed breast milk are listed in Tables 5, 6, and 7.

Mothers with more accurate practice were more knowledgeable than mothers with less accurate practices ($p<0.001$, $r_2= 0.593$). Age, number of kids, living area, monthly income of the family, education level, how much mothers sure about their knowledge has no statistically significant effect on accuracy practicing the self-expressed breast milk (P= 0.982, 0.98, 0.424, 0.954, 0.497, 0.954). Working mothers have higher accuracy practice than house wife and students ($x^2= 6$, $p<0.001$). Most accurately practiced expressed-breast milk among non-house wife's mothers are the nurses followed by physicians then others then teachers then students then other medical stuffs and lastly administrative works ($x^2= 6$, $p<0.001$).

Regarding source of knowledge mothers who attended breast feeding course or program have the highest accuracy level of practicing expressed-breast milk then who educated by medical staff other than physicians and nurses then who learn from social media or internet websites or TV then who counselled by physicians followed by who learned from their friends and at last who learned from their mothers or in whom in her position ($x^2= 6$, $p<0.001$).

Mothers expressed their breast milk because of work have the most accurate practice followed by mothers want to increase their milk production then mothers did it to help their babies to feed and mothers used it when they want to go out of home then mothers had medical issues prevent them from normally breastfeed then mothers tried it to decrease breast pain from engorgement then because of baby medical issue and at last when mothers are far from babies due other than

work causes (x^2=6, P=0.003. Mothers who started to practice expressed breast milk feeding soon after delivery have higher accuracy practice followed by practiced it after more than one-week then within one week of delivery (x^2=6, P=0.013).

All P values are included in Table 8.

Discussion

Adequate nutrition during infancy is essential to ensure the growth, health, and development of children to their full potential. Breastfeeding confers short-term and long-term benefits on both child and mother including helping to protect children against a variety of acute and chronic disorders.[2] Added benefits of breast feeding is decrease more than 12400 infant deaths per year and economic benefits associated with potential improvements in cognition alone, through higher IQ and earnings, total $1.6 billion annually.[8]

Lack of mother's knowledge regarding importance and benefits of breast feeding is one of the factors that interrupt breast feeding.[9,10]

Helping mothers to know more solutions to offer or continue breast feeding should encourage them for breast feeding and eliminate of artificial or cow milk use. Especially after reporting that exclusive breast feeding during first six months of life were decreased in middle east countries from 35% to 34% in the era from 1995 to 2010.[8]

Reasons for expressing breast milk

According to our study mothers gave similar reasons for expressing their breast milk like work that necessitate many hours separation between mothers and infants, decrease pain from engorged breasts, help infants for feeding, mother medical conditions such as nipple problems and mothers complications after delivery.

Time of initiation of expressed-breast milk

Win et al demonstrated that, whoever expressed their milk was less likely to discontinue breastfeeding before 6 months, compared with those mothers who never did any expression.[11,12]

In our study we found that mothers how expressed their breast milk earlier have more accurate practice but we did not ask about how much time they continue breast-milk feeding.

We didn't ask mothers regarding their type of delivery to study its association with time of initiation of expressed-breast milk. It needed more detailed questions.

Source of Information

Source of information was significantly affect mother's knowledge, medical staff other than physicians were having a significant impact opposite nurse's knowledge in Cape Town study that demonstrates 8.9% only of their nurses have correct knowledge regarding self-expressed breast milk.[13]

Our study reviles that nurses and mothers who toke breast feeding course have the highest knowledge and practice level even more than physicians whom not study details about these techniques during their medical school with $p<0.001$ means that special information about breast feeding is very effective in raising knowledge level among mothers as shown im many studies that studies mother's knowledge before and after giving the information.[13,14]

Social media as a source for information have great impact on mother's knowledge as appear in our study in the study that evaluate Twitter as source of information to promote mother's knowledge regarding breastfeeding.[15] Means that health care professionals have a major role in educating mothers about breast feeding and social media as modalities and tools should be used to help them.

Mothers education

Details about techniques, storage, and usage of self-expressed breast milk should be taught. Specially working mothers as the study shows that they were the most ones practiced self-expressed breast milk.

Although most mothers choose self-expressed breast milk due to their work issues and as the study done in Singapore found that most common reason for mothers to discontinue breast feeding is work[7] and most of them were university or higher educational level their level of knowledge was not very high, and they have less accuracy practice. Col-Arazetal shows also same results.[18]

Percentage of mothers knows that when expressed breast milk mothers can continue breast feeding are more than 50% similar to other studies done to same purpose.[11,13,16,17]

Mothers used glass and plastic containers to store milk are 41.1% and 16.5% without know the risks of using non-special storing bags or containers like other women in Turkey.[17,18]

Bottle achieves number one method mothers used to give the expressed-breast milk indicates their lower level awareness regarding factors increase or decrease infant's chances for continuo breast feeding, these results resemble the Turkish study results.[17]

Age of mothers have no significant relation to knowledge or practice level which mean that education should be offered without differentiation regarding these factors. Unlike study done in India which showed significant effect in regarding the monthly income and maternal age[19] which may be due to better access to medical information either from health staff or community around or internet and social media accessibility.

Freezing the expressed breast milk was a less choice for most of lactating mothers as most of them used refrigerator or room temperature because it is the best way as they know. Malaysian

mothers behave the same and know the same.[16] It is good that freezing is not known as best method for expressed milk storage because of its decrease level of antimicrobial activity level with prolonged storage.[20,21]

Although media repeatedly talks about microwave dangers there are mothers still using the microwave for thawing the expressed breast milk though it damages the lysosymes and IgA which is very important to the neonate's immunity.[22,23]

Conclusion

Mothers' knowledge and practice regarding self-expressed breast milk needed to be improved in order to give the babies better chance for exclusive breast feeding. Breast feeding courses for mothers give better results in term of accuracy of mother's knowledge and practice of expressed breast milk. Increase use of social media needed to be considered in educating mothers.

Recommendations

- Utilize modern ways of communication and education such as health education courses, TV, internet, and social media
- Emphasis on initiation time, storage, thawing, using details of self-expressed breast milk.
- Encourage mothers to offer and maintain breast feeding practice even if mother is far from the baby for some hours.
- Insure the knowledge level of mother regarding self-expressed breast milk which affect their accuracy of practicing it.
- Increase health care professional's knowledge and awareness regarding self-expressed breast milk in details in order to educate mothers effectively.

- Offer expressed-breast milk practice education to mothers as part from the breastfeeding national program.
- Involve all health care staff that have direct contacts with mothers in breastfeeding national program and not only nurses.
- More researches needed to be done on best education modalities to deliver proper and effective information to mothers.
- More detailed researches needed to analyze more causes and correlation that affect exclusive breastfeeding and its related practices.

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Table 1: Personal characteristics of participating mothers (N=499)

Variable	Number	%
Age		
15 – 19	22	4.4
20 – 29	233	46.7
30 – 39	199	39.9
40 – 49	38	7.6
50 – 59	7	1.4
Education Level		
Illiterate	62	12.4
Elementary/Intermediate	59	11.8
Secondary Level	88	17.6
University / Higher level	290	58.1
Job Status		
House wife	245	49.1
Working mother	254	50.9
Living area		
City	324	64.9
Rural	175	35.1

Table 2: Social Characteristics of Participating Mothers (N=499)

Variable	Number	%
Mother's Job		
Physician	11	4.7
Nurse	63	27.2
Other medical staff	22	9.5
Teacher	71	30.6
Administrative work	45	19.4
Other	20	8.6
Students	22	8.7
	Total=254????	
Number of Kids		
1	133	
2	133	26.7
3	83	26.7
4	59	16.6
More than 4	91	11.8
Family Monthly Income (SAR)		
Less than 2000	48	9.6
2001-5000	82	15.4
5001-10000	211	42.3
More than 10000	158	31.7

Table 3: Source of Mothers knowledge about self-expressed breast milk (N=)

Variable	Number	%
Source of Knowledge		
My doctor	71	19.3
Medical staff other than my doctor	82	22.3
Friend	53	14.4
Mother or whom in her position	72	19.6
TV/Net/Social Media	65	17.7
Breast Feeding Program/Course	24	6.5
	Total=343???	

Table 4: Assess of mother's knowledge
(N=367)

Variables	Correct		Incorrect	
	No.	%	No.	%
Why breast milk expression is to perform?	346	94.28	21	5.72
Can mothers continue to breast feeding when expressing of breast milk?	283	77.1	84	22.9
How breast milk expression to do?	151	41.1	216	58.9
Can Expressed breast milk be stored?	247	67.3	120	32.7
Expressed breast milk can be stored in room temperature for how much time?	186	50.7	181	49.3
Expressed breast milk can be refrigerated for how much time?	79	21.5	288	78.5
Expressed breast milk can be frozen at less than 4 degrees for how much time?	124	33.8	243	66.2
Which container should be used for the storage of expressed breast milk?	131	35.7	236	64.3
How expressed breast milk should be given to the baby?	244	66.4	123	33.6
What expressed milk should be given to the baby with?	64	17.5	303	82.5

Table 5: General Practice behaviors
N=236)

Variable	Number	%
Why did you express your breast milk?		
Because of work	74	31.4
When I want to go out of home	18	7.6
When I am far from my baby	4	1.7
To increase my milk production	16	6.8
Because of baby medical condition	16	6.8
To decrease pain from breast engorgement	26	11.0
To help baby for feeding	23	9.7
Didn't specify	47	19.9
Due to mother medical issue	12	5.1
When did you start to express your breast milk?		
First day of delivery	20	8.5
After one day from the delivery	38	16.1
Within one week from the delivery	77	32.6
More than one week after delivery	101	42.8
How did you express your breast milk?		
By manual pump	162	68.6
By hand	37	15.7
By electric pump	37	15.7

Table 6: Storage Related Practice behaviors
(N=236)

Variable	Number	%
Which container you used for storage the breast milk?		
Plastic container	39	16.5
Glass container	97	41.1
Polypropylene container	9	3.8
Milk Storing bag	88	37.3
Other	3	13.0
Where did you store your expressed breast milk?		
Room temperature	93	39.4
Refrigerator	133	56.4
Frozen	10	4.2
Why did you choose this way for storing the milk?		
Because of work hours	44	18.6
I need short period	55	23.3
I know only this way	54	22.9
It is the best as far as I know	83	35.2

Table 7: Thawing and Usage of Expressed Breast Milk Practice behaviors (N=236)

Variable	Number	%
How did you thaw the stored expressed breast milk?		
By heating on the stove	25	10.6
By heating in the microwave	9	3.8
By heating in warm water	101	42.8
By waiting on room temperature	98	41.5
Other	3	1.3
How did you give your baby the expressed breast milk?		
With a bottle	176	74.6
With a spoon	28	11.9
With the edge of the cup	28	11.9
Other	4	1.7

Table 8: Association between selected factors and knowledge and accuracy of practicing self-expressed breast milk

Variable	P of Level of Knowledge	P of Accuracy of Practice
Age	*0.417	0.982
Level of education	**0.000	0.497
Job status	**0.000	0.000
Mother's job	**0.000	0.000
Living area	***0.028	0.424
Number of kids	*0.285	0.98
Family monthly income	**0.000	0.954
Sureness about knowledge	**0.000	0.954
Source of mother's knowledge	** 0.000	0.000
Level of Knowledge	*0.000	0.000

*Spearman correlation test used **Kruskal-Wallis test used ***Mann-Whitney