Association of Belief and Experience of Insufficient Breast Milk Supply with Mothers' Knowledge Regarding Breast Feeding

Nazeera Tahseen Kareem; *Department of Nursing, College of Nursing, Hawler Medical University, Erbil, Kurdistan Region, Iraq* (Correspondence: nazeera.tahsen@gmail.com)

Hamdia Merkhan Ahmad; *Department of Midwifery, College of Nursing, Hawler Medical University, Erbil, Kurdistan Region, Iraq.*

ABSTRACT

Background and objectives: Belief and experience of insufficient milk supply (IBMS) are important and modifiable factors for optimal breastfeeding. However, very few people know about maternal belief, experience about breast milk supply, and how it impacts breastfeeding practice. The aim of the study is to identify the prevalence and association between mothers' belief and experience of insufficient breast milk supply with mother's knowledge regarding breast feeding.

Methods: This descriptive cross-sectional study was conducted on (1,000) participants who took six months postpartum in the primary health care centers (PHCC) and Raparin Teaching Hospital for children (RTHC) in Erbil city /Iraq. Data were collected via direct interview. The question used in the interview were developed after a review of the relevant literature. Frequency, percentage, and Chi-square were used for the purpose of data analysis.

Results: In general, the study showed the prevalence of mothers' belief regarding insufficient breast milk supply was 59.8%. Also, the prevalence of a mother's experience was 78.6%. Mothers who had a poor level of knowledge regarding breastfeeding got the highest percentage, 62.2%. However, it showed the highly significant association between mothers' knowledge and mode of the last delivery with mothers' belief of insufficient breast milk supply. Moreover, there was a highly significant association between mother's experience with socio economic status.

Conclusion: The majority of the mothers had belief and experience of insufficient breast milk supply (IBMS). The current study showed a significant association between mothers' belief with mother's knowledge regarding the benefits of breastfeeding.

Keyword: Belief; Experience; Insufficient breast milk supply; Breastfeeding; Knowledge.

INTRODUCTION

Breast milk is a primary source of nutrition for infants during the first year of life. In the first month, breast milk serves as the newborn's main source of sustenance. Infants mostly get their nutrition from breast milk, especially during the first six months of life. It has a nutritional composition that closely resembles what a baby needs for growth, immune system health, and brain development. Although human milk has a variety of nutritional compositions, its main components are water, lipids, carbohydrates, and proteins, each of which plays a significant role in the growth and development of the infant [1, 2].The American Academy of Pediatrics (AAP) and major organizations like the United Nations Children's Fund (UNICEF) and World Health Organization (WHO) advise that infants should only be fed breast milk for the first six months. And this should be continued for the second half of the first year or longer with an overview of complementary foods, as this is what both the infant and mother prefer from the age of six months to the age of two years [3, 4].One of the significant causes of newborn formula supplementation and early breastfeeding termination is insufficient breast milk supply [5].The term "insufficient milk supply (IBMS)" refers to a mother's perception that the amount of breast milk she produces is insufficient for her child's requirements. Instead of counting the baby's wet diapers and feces, mothers frequently use certain inaccurate signals, including infant satiety cues or newborn screaming, as the main indicator of inadequate milk supply. After birth, mothers who believe their breast milk supply is insufficient have a tendency to put off starting to breastfeed until they feel it is sufficient. They may also start adding needless formula supplementation early [6,7,8,9].The main cause of low breast milk production is aberrant hormonal lactation that takes place during the final week of pregnancy and after the birth of the baby, which leads to insufficient milk production. This can happen if aberrant hormone levels disturb breastfeeding's endocrine balance [9].Several aspects, such as stress, anxiety, depression, alcohol, smoking, obesity, and heredity, can lead to hormonal imbalances. Unknown factors like, nipple or breast massages that stimulate the oxytocin hormone may also alter how much breast milk a woman produces. However, autocrine control may interfere with milk production [5].

Mothers with a low milk production might think it is impossible to continue breastfeeding [10].The mother may prematurely stop nursing for a number of reasons, including: demographic, physical, social, psychological, and biological variables that influence mothers' adherence to inadequate breast milk production. The degree of breastfeeding success, sleep, nutrition, family support, family income, and a mother's ability and self-efficacy can all contribute to her decision to continue exclusively nursing [11].The prevalence of insufficient breast milk supply in the USA over the first year of life was between 43% and 55% [12], 54% in Iran [14], 56% in Poland [15], 58% in Australia [16], 47% in New Zealand [5], and 36% in Madrid [13].Many studies result on mothers' notion and attitudes toward breast feeding, but few discuss IBMS beliefs and experiences. But there was not any specific study in regard to the belief in insufficient breast milk supply in Kurdistan. The objectives of the study were to:1) Determine the prevalence of belief and experience insufficient breast milk supply. 2) Find associations between IBMS with knowledge of the mother regarding breast feeding, parity, mode of last delivery, and socio-economic status.

METHODS

A descriptive cross-sectional study was conducted from September 1st 2020 to September 1st 2022, with data collected during the postpartum period in eight primary health care centers (PHCC) and Raparin Teaching Hospital (RTH) in Erbil city from October 1, 2021 to May 25, 2022. The PHCC was chosen randomly from the following geographical areas: Nazdar Bamarny and Zhiyan (North), Azadi and Rasty (South), Nawras and Mahammad Bajalan (West), and Kurdistan and Mala Fandi (East). The approval was obtained from the Ethical and Scientific Committee of the College of Nursing at Hawler Medical University (N.103, on October 7th ,2021). The formal agreement was reserved from Directorate of Health and PHCC and RTH. Verbal consent was obtained from all participants before starting interview.Data were gathered directly from 1,000 mothers who participated in the study during the postpartum period through a questionnaire. and the calculated net had been used to estimate the sample size of the study, according to the following values: The confidence interval was 95%, the margin of error showed 1%, and the population proportion was 50%. In terms of inclusion criteria (prime and multiparous women, women with a healthy newborn baby capable of breast milk sucking, and mothers at 6 months postpartum), and in regard to exclusion criteria: mothers who refused to participate in the study; mothers who have breast diseases such as breast cancer, breasts mass, or breast surgery. The questionnaire consisted of five parts: part one: Socio-demographic information, including age, education level, employment, and residence location; types of family, and body mass index: Underweight: under 18.5, Normal weight: 18.5-24.99, Over weight, 25-29.99, and Obese, had got 30

or more. For measuring family income, the socio-economic status scale (SES) was used, which was composed of the following variables. It was determined by the mother's age, education level, and occupation, as well as her husband's occupation and possession of a car and a house [35]. Part 'two'obestrical history of women includes: parity (1- primiparous, 2-4 multiparous, ≥ 5 grand multiporous), abortion, mode of last delivery ,vagianal and ceserean delivery. Part 'three' includes the mother's belief and seven items about the reasons and factors that affected insufficient breast milk supply.Part 'four' includes the mother's experiance of IBMS with 6 itimes. Part 'five' of the questionnaire(the questionnaire was via direct interview) was regarding the mothers' knowledge toward breast feeding (BF) consisted of 16 items that were divided into two sections. Items were scored as one when answered correctly or zero when answered incorrectly. The total score for the scale ranged from zero to 16 points, with a higher score indicating a higher degree of maternal BF knowledge. The first section had eight question items relating to the benefits of breastfeeding for the infant. The second section consisted of eight question items about the benefits of BF for the mother. The level of knowledge regarding breastfeeding was categorized into three levels as follows: 1) Poor level of knowledge (0–5); 2) Fair level of knowledge (6–10); and 3) Good level of knowledge (11–16). The data were entered and analyzed via using the Statistics Package for Social Science (SPSS, version 26), to find out the descriptive statistics (frequency and percentage) and Chi-square test.

Original Article

RESULTS

Table 1- focuses on the sociodemographic characteristics of the study sample, which were estimated based on participants age, level of education, occupation status, and their residential location, economic status, family type, and BMI. The highest percentage (51.8%) of the study sample was between 21-30 years old, while the lowest percentage (3.1%) was between ≥ 40 years old. According to the mother's level of education, it shows that intermediate levels had the highest percentage 27.6% while MSc holders had got 1.4% that was the lowest percentage. In terms of occupation, mothers who had semiskilled manual occupations got 50.8%, which was the highest percentage, and highly skilled professional mothers scored the lowest percentage, which is 1.2% The study shows residential place, urban mothers had got the highest percentage 69.5% while 'rural' had got the lowest percentage 2.9%. The study, also, shows that the majority of the participants, 76%, had their own car, and the minority, 24%, didn't have it. furthermore, it shows the percentage of having house, the highest percentage 53.4% didn't have it and the lowest percentage 46.6% had it. In addition, it shows the percentage of the mother's body mass index. mothers who were overweight got the highest percentage 46.8% and underweight mothers the lowest percentage 0.3%. According to their family types, mothers who had unclear family type were the majority with the highest percentage (73.3%), and extended family mothers were the minority with the lowest percentage (26.7%). The results also indicate the socioeconomic levels of mothers; it shows that middle socioeconomic level mothers had the highest percentage (52.2%), while mothers who had a high socioeconomic level had the lowest percentage (only 3.6%).Table 2 - indicates the obstetrical data of the study samples, in .

terms of parity, the highest percentage 65.5% of the study sample were multiparous, while the lowest percentage 9.3% of them were grant mute parous. The highest percentage, 65.5%, of the study samples had no abortions, while the lowest percentage, 1.0% of them had more than three abortions. The high percentage, 89.7%, had no neonatal deaths, while the lowest percentage, 0.4%, had >3 neonatal deaths. Regarding mode of last delivery, the highest percentage, 63.2%, was a cesarean section, while vaginal delivery gave the lower percentage, 36.8%.The prevalence of belief was 59.8% regarding insufficient breast milk supply. And the mothers experience was 78.6% regarding insufficient breast milk supply. Table 3 highlights, the mothers' knowledge towards all items of breastfeeding and the benefits for infants and the mothers were showed. Regarding the benefits of breastfeeding for the baby, protects against infection and illnesses had the highest percentage (54.9%). Also, it showed that breastfeeding leads to uterine involution had the highest percentage (37.8%), regarding the benefits of breastfeeding for the mother. The overall level of perceptions among participants showed that 62.2% of the mothers had poor level of knowledge. Table 4 shows that there was a highly significant association between mode of the last delivery and mothers' knowledge with belief because of their p- value rates (0.01). It shows that there is not a significant association between parity and socioeconomic status with belief because of their P- value rates (0.869) and (0.986).Table 5 shows that there was a highly significant association between socioeconomic status with mother's experience because of its P-value rate (0.01), also mother's knowledge is nearby significant, it shows that there's not any significant association between experience and the other factors

Table 1: Socio-demographic characteristic of the study sample (n=1000).

Variables	F	(%)
Age groups (years)		
≤20	52	(5.2)
21-30	518	(51.8)
31-40	399	(39.9)
>40	31	(3.1)
Mother education		
Illiterate	144	(14.4)
Primary (or read and write)	112	(11.2)
Intermediate	276	(27.6)
High school or vocational	146	(14.6)
Institute (2years)	131	(13.1)
College (Bachelor degree)	177	(17.7)
College (MSc degree)	14	(1.4)
Occupation status		
Unskilled Manual	91	(9.1)
Semi-skilled manual	508	(50.8)
Skilled manual and manual	239	(23.9)
Associated professional	108	(10.8)
Skilled professional or senior managerial	42	(4.2)
Highly skilled professional	12	(1.2)
Residential place		
Urban	695	(69.5)
Sub urban	276	(27.6)
Rural	29	(2.9)
Possession of car		
Yes	760	(76)
No	240	(24)
Possession of house		
Yes	466	(46.6)
No	534	(53.4)
Socio economic status		
Low economic level	442	(44.2)
Middle economic level	522	(52.2)
High economic level	36	(3.6)
Type of family		
Nuclear	733	(73.3)
Extended	267	(26.7)
BMI		
Under weight	3	(0.3)
Normal weight	314	(31.4)
Over weight	469	(46.9)
Obese	215	(21.5)

Economic status: It was depending on the mother's age, level of education, mother's occupation, also Husbands occupation, car, house [35].

Table 2: Mothers obstetrical history sample size (n=1000)

Variable	F	(%)
Parity		
Primiparous	252	(25.2)
Multiparous	655	(65.5)
Grant multiparous	93	(9.3)
Abortion		
None	655	(65.5)
1-3	335	(33.5)
>3	10	(1)
Neonatal death		
None	897	(89.7
1-3	109	(10.9)
>3	4	(0.4)
Mode of last delivery		
Vaginal delivery	368	(36.8)
Cesarean delivery	632	(63.2)
Mothers believed of insufficient breast milk supply		
Yes	598	(59.8)
No	402	(40.2)
Mothers experienced of insufficient breast milk supply		
Yes	786	(78.6)
No	214	(21.4)

Table 3: Mother's Knowledge Regarding Breast feeding

Benefits of breast feeding	Correct (%)	Incorrect (%)
Benefit of breast feeding for infant	549 (54.9)	451 (45.1)
1- Protects against infection and illnesses	152 (15.2)	848 (84.8)
2- Promotes bonding between mother and child	154 (15.4)	855 (85.5)
3- Baby is rarely constipate	350 (35)	650 (65)
4- Strengthen child's bones	494 (49.4)	506 (50.6)
5- Enhances development	490 (49)	510 (51)
6- Enhances intelligent	198 (19.8)	802 (80.2)
7- Is at the right temperature	167 (16.7)	833 (83.3)
8- It is always clean		
Benefit of Breastfeeding for Mother		
1-Leads to uterine involution	378 (37.8)	622 (62.2)
2-Decrease incidence of breast disease	365(36.5)	635(63.5)
3-Decrease incidence ovarian cancer	363 (36.3)	637 (63.7)
4- Helps mother's body to return to normal	239 (23.9)	761 (76.1)
5- Provides emotional satisfaction to the mother	153 (15.3)	847 (84.7)
6- Save money	159 (15.9)	841 (84.1)
7- Lose weight faster after birth	247 (24.7)	753 (75.3)
8- Spacing birth.	101 (10.1)	899 (89.9)

Overall Mother's Knowledge	F	(%)
Poor knowledge	622	(62.2)
Fair knowledge	368	(36.8)
High knowledge	10	(1)

Table 4: Associated factors with belief of insufficient breast milk supply

Factors	Believed F (%)	Not believed F (%)	P -value
Parity			
Primiparous	150 (59.5)	102 (40.5)	0.869NS
Multiparous	390 (59.5)	265 (40.5)	
Grant multiparous	58 (62.4)	35 (37.6)	
Mode of last delivery			
Vaginal delivery	79 (21.5)	**289 (78.5)**	**0.017HS**
Cesarean delivery	98 (15.5)	**534 (84.5)**	
Mothers' knowledge			
Poor knowledge	369 (59.3)	253 (40.7)	0.015*HS
Fair knowledge	223 (60.6)	145 (39.4)	
Good knowledge	6 (60)	4 (40)	
Socio-economic status			
Low socioeconomic level	266 (60.2)	176 (39.8)	0.986NS
Middle socio-economic level	310 (59.4)	212 (40.6)	
High socio-economic level	22 (61.1)	14 (38.9)	

*Fisher's exacted test was applied. NS: Non significant   HS: Highly significant

Table 5: Associated factors with mother's experience about insufficient breast milk supply

Factors	Experienced F (%)	Not experience F (%)	P -value
Parity			
Primiparous			
Multiparous	525 (80.2)	130 (19.8)	0.064 NS
Grant multiparous	76 (81.7)	17 (18.3)	
Mode of last delivery			
Vaginal delivery	299(81.3)	69 (18.8)	0.119 NS
Cesarean- Section	487(77.1)	145(22.9)	
Mothers' knowledge			
Poor knowledge	474 (76.2)	148 (23.8)	0.051*NS
Fair knowledge	303 (82.3)	65 (17.7)	
Good knowledge	9 (90)	1 (10.0)	
Socio-economic status			
Low economic level	329 (74.4)	113 (25.6)	0.014S
Middle economic level	426 (81.6)	96 (18.4)	
High economic level	31 (86.1)	5 (13.9)	

NS: Non significant   S: Significant.

DISCUSSION

Promoting positive beliefs about breast milk in women during postpartum is an important precursor to future breastfeeding. The study showed that knowledge about the benefits of breastfeeding and perceived social influences were important for individuals with positive breastfeeding belief. The study included 1,000 healthy women who were six months postpartum, and the results revealed that the majority of the participants were between the ages of 21-30 years old. This finding is consistent with the findings of Sultania et al. (2019), who conducted a cross-sectional study of 1000 healthy women in India [18], and discovered that the majority of them were between the ages of 20 and 30. and Topothai, (2021) conducted a cross-sectional study on 676 mothers, of whom a high percentage were 17-35 years old, in Bangkok [19].The current study found that, the majority of residential places were in urban areas; this finding is similar to that of Huang (2022), who conducted a longitudinal cohort study in China; 628 of the 1520 mothers recruited into the study were from urban areas [20]. The result of the present study indicates that overweight mothers had the highest percentage of 46.9% in regard to BMI; this result agrees with the result of two studies Preusting's (2017) descriptive cohort study, which included 216 women, showed that the majority of participants had become overweight [21]. Nommsen et al. (2010) also conducted a cohort study with 431 postpartum women. showed the high percentage of overweight people (44.8% in California) [22].The current study found that intermediate level education received the highest percentage of 27.6% in terms of mother's education, which agrees with the findings of Abdallah (2018), who conducted a cross-sectional study with 384 women and found that intermediate level

education received the highest percentage of 58.6%, which is higher than the current study in Zagazig [23]. But in another study in India by Sultania et al. (2019), it showed that the illiterate had the highest percentage [18].Regarding types of families, the result showed that the highest percentage was the nuclear type (73.3%). This is consistent with a study by Menekse, (2021) a descriptive a cross-sectional study that included 429 mothers in Turkey, where the highest percentage, 83.4%, were living in a nuclear family [24].In the present study, the highest percentage in SES (socioeconomic status) (52.2%) was middle economic level. This result is compatible with the finding of Nukpezah, (2017), who conducted a study on 393 mothers in Ghana [25], which showed the highest percentage (53.1%) were in the middle economic level, while these results are in contrast with the finding of Sultania et al. (2019), who showed that 49% belonged to the low socio-economic level in India [18]. Habibi (2018) discovered a 44% low economic level in a cross-sectional study of 297 mothers in Casablanca [26]. The current study showed that there was a highly significant association between socioeconomic status with mother's experience regarding insufficient breast milk supply. But there was not significant between mothers' belief with socio economic status. The results of the present study showed that the highest percentage in the study, 65.5%, were multiparous, respectively, which is consistent with a previous study done by Topothai (2021) [19]. Sandhi et al. (2020) conducted a cross-sectional study and included 237 participants in Yogyakarta City More than half of the mothers were multiparous [9].However, primiparous was 25.2% that was similar to the previous study Sultania et al (2019) that 25.5% was

primiparous [18].The current study showed that the most percentage in the mode of the last delivery was cesarean section, that agree with previous studies by Menekse (2021) and Segura (2022) systematic review showed that the majority was caesarean sections [24, 27]. Yet, it disagrees with two previous studies that the high percentage in vaginal delivery by Topothai (2021) [19] and Sandhi et al (2020) [9].The present study, also, showed that there was a significant association between the mode of last delivery and beliefs. Yet, there was not a significant association between parity, belief, and experience with insufficient breast milk supply. The result of parity is similar in two studies, McCarter-Spaulding and Kearney (2001), which concluded a cross-sectional study of 60 mothers in the northern United States [28]. and previous study, Sandhi et al. (2020) [9].Moreover, the result shows that beliefs and experiences are highly significant along with mothers' concepts regarding insufficient breast milk supply and breast feeding. This finding is consistent with previous studies Camurdan (2008) descriptive cross-sectional study included 1230 mothers in Turkey [29]. Sacco (2006) conducted a qualitative study using semi-structured interviews with 200 mothers in Mexico [30], which found that postpartum mothers who did not practice exclusive breastfeeding had a perception of insufficient milk supply. The current study found the prevalence of mothers' belief about insufficient milk supply to be 59.8%; that was the most prevalent reason for stopping breast feeding during the first six months. However, in a study conducted by Sultania et al. (2019) in India, insufficient breast milk supply was cited by 41% of respondents as the most common reason for discontinuing breastfeeding [18].The prevalence of a mother's experience with insufficient breast milk supply was 78.6%

in Erbil, Iraq. The highest percentage of mother's experiences was 72% in the study by Gewa (2016) [31], which conducted a cross-sectional study on 400 mothers, which is in contrast with another study by Gatti et al. (2018) [17].The study showed that the mothers with poor knowledge were the majority in regards to the benefits of breastfeeding for the baby and the mother; this result is almost similar to the previous studies by Ahmed and Piro (2019) that conducted a cross-sectional study in Erbil, Iraq; Sultania et al. (2019) in India; Cardoso (2017) in Portugal; and Qarabi (2017) in Saudi Arabia [32, 18, 33, 34, 35].The study indicated that there was a highly significant association between the mother's belief and knowledge with insufficient breast milk supply, which was similar to the previous study's result by Menekse (2021) [24]. But in the longitudinal design study that applied to 61 participants in New Zealand by Hintz (2019) [5], there was not a significant association between a mother's knowledge and the perception of insufficient milk supply. The study shows a near-significant association between mothers' experience with insufficient breast milk supply, which is similar to the previous studies by Gewa (2016) [31] and Hintz (2019).

Conclusion

The results of the present study indicate that there is an association between mother's belief of insufficient breast milk supply with mothers' knowledge about breastfeeding. Also, there is an association between the mother's belief with mode of last delivery. Besides, there is an association between a mother's experience with socio-economic status regarding insufficient breast milk supply.

REFERENCES

[1] Gruca MA. Breast milk macronutrient composition and infant growth in rural west Africa. Breast. 2017 Jan 1.*A thesis submitted to the Faculty of the Graduate School of the University of Colorado in partial fulfillment of the requirement for the degree of Master of Arts. Department of Anthropology*.

[2] Jarosh W, Phelan G, Dwyer JT, Ziegler PJ, Hendricks K. Menus for infants and toddlers to explore the dietary world. *Nutrition Today*. 2006 Jul 1;41(4):144-52.

[3] Karacam Z. Factors affecting exclusive breastfeeding of healthy babies aged zero to four months: a community-based study of Turkish women. *Journal of Clinical Nursing.* 2008 Feb;17(3):341-9.

[4] Aljawadi HF, Ali EA, Altimimi HA. Exclusive breast-feeding incidence in the first six months of life and its associated factors. *Mustansiriya medical journal.* 2017 Dec;16(3):62.

[5] Hintz M. Perceived insufficient milk supply in New Zealand mothers during *the first-year postpartum: this thesis presented in partial fulfilment of the requirements for the degree of Master of Science in Nutrition and Dietetics at Massey University, Albany, New Zealand 2019* (Doctoral dissertation, Massey University).

[6] Sharma IK, Byrne A. Early initiation of breastfeeding: a systematic literature review of factors and barriers in South Asia. *International breastfeeding journal*. 2016 Dec;11(1):1-2.

[7] Mohseni H, Jahanbin I, Sekhavati E, Tabrizi R, Kaviani M, Ghodsbin F. An investigation into the effects of prenatal care instruction at home on breast-feeding self-efficacy of first-time pregnant women referred to shiraz clinics, Iran. *International Journal of Women's Health and Reproduction Sciences.* 2018;6(1):41-6.

[8] Victora CG, Bahl R, Barros AJ, Franca GV, Horton S, Krasevec J, et al. Breastfeeding in the21st century: epidemiology, mechanisms, and lifelong effect. *the Lancet.* 2016;387(10017):475–90.

[9] Sandhi A, Lee GT, Chipojola R, Huda MH, Kuo SY. The relationship between perceived milk supply and exclusive breastfeeding during the first six months postpartum: a cross-sectional study. *International Breastfeeding Journal*. 2020 Dec;15(1):1-1.

[10] Grzeskowiak LE, Amir LH. Pharmacological management of low milk supply with domperidone: separating fact from fiction. *The Medical Journal of Australia* 2014 Sep 1;201(5):257-8.

[11] Lou Z, Zeng G, Huang L, Wang Y, Zhou L, Kavanagh KF. Maternal reported indicators and causes of insufficient milk supply. *Journal of Human Lactation.* 2014 Nov;30(4):466-73.

[12] Whipps MD, Demirci JR. The sleeper effect of perceived insufficient milk supply in US mothers. *Public Health Nutrition*. 2021 Apr;24(5):935-41.

[13] González MD, Marrón HO, Cañedo-Argüelles CA, Olcina MJ, Rico OC, Claramonte MT, et al. Prevalence of breastfeeding and factors associated with the start and duration of exclusive breastfeeding in the Community of Madrid among participants in the ELOIN. *Anales de Pediatría (English Edition)*. 2018 Jul 1;89(1):32-43.

[14] Olang B, Heidarzadeh A, Strandvik B, Yngve A. Reasons given by mothers for discontinuing breastfeeding in Iran. International breastfeeding journal. 2012 May;7(1):1-7.

[15] Krolak-Olejnik B, Błasiak I, Szczygieł A. Promotion of breastfeeding in Poland: the current situation. *Journal of International Medical Research*. 2017 Dec;45(6):1976-84.

[16] Anggraeni MD, Latifah L, Rismawati I. The Effect of "Insufficient Milk Supply" Concept Intervention on Mother's Perception of Breast Milk Production. *Indonesian nursing journal of education and clinic (injec)*. 2016 sep 24;1(1):71-4.

[17] Gatti L. Maternal perceptions of insufficient milk supply in breastfeeding. *Journal of nursing scholarship.* 2008 Dec;40(4):355-63.

[18] Sultania P, Agrawal NR, Rani A, Dharel D, Charles R, Dudani R. Breastfeeding knowledge and behavior among women visiting a tertiary care center in India: A cross-sectional survey. *Annals of Global Health.* 2019;85(1).

[19] Topothai C, Topothai T, Suphanchaimat R, Patcharanarumol W, Putthasri W, Hangchaowanich Y, et, al. Breastfeeding practice and association between characteristics and experiences of mothers living in Bangkok. *International journal of environmental research and public health.* 2021 Jul 26;18(15):7889.https://doi.org/10.3390/ijerph18157889 2021

[20] Qiu L. *Factors that influence breastfeeding initiation and duration in urban, suburban and rural areas of Zhejiang Province, Peoples Republic of China* (Doctoral dissertation, Curtin University). 2008 [cited 2021 Dec 19]. Availablefrom: https://espace.curtin.edu.au/handle/20.500.11937/1242.

[21] Preusting I, Brumley J, Odibo L, Spatz DL, Louis JM. Obesity as a predictor of delayed lactogenesis II. *Journal of Human Lactation*. 2017 Nov;33(4):684-91.

[22] Nommsen-Rivers LA, Chantry CJ, Peerson JM, Cohen RJ, Dewey KG. Delayed onset of lactogenesis among first-time mothers is related to maternal obesity and factors associated with ineffective breastfeeding. *The American journal of clinical nutrition.* 2010 Sep 1;92(3):574-84.

[23] Abdallah NM, Eldin SA, Gad AH. Breast and nipple problems encountered among puerperal primipara women in Zagazig. *International Journal of Pharmaceutical Research &Allied Sciences.* 2018;7(1):183-95.

[24] Menekse D, Tiryaki Ö, Karakaya Suzan Ö, Cinar N. An investigation of the relationship between mother's personality traits, breastfeeding self-efficacy, and perception of insufficient milk supply. *Health Care for Women International.* 2021 Jul 1;42(4-6):925-41.

[25] Nukpezah RN, Nuvor SV, Ninnoni J. Knowledge and practice of exclusive breastfeeding among mothers in the tamale metropolis of Ghana. *Reproductive health*. 2018 Dec;15(1):1-9.

[26] Habibi M, Laamiri FZ, Aguenaou H, Doukkali L, Mrabet M, Barkat A. The impact of maternal socio-demographic characteristics on breastfeeding knowledge and practices: An experience from Casablanca, Morocco. *International Journal of Pediatrics and Adolescent Medicine.* 2018 Jun 1;5(2):39-48.

[27] Segura-Pérez S, Richter L, Rhodes EC, Hromi-Fiedler A, Vilar-Compte M, Adnew M, et, al. Risk factors for self-reported insufficient milk during the first 6 months of life: A systematic review. *Maternal & Child Nutrition*. 2022 Mar 28: e13353.

[28] McCarter-Spaulding DE, Kearney MH. Parenting self-efficacy and perception of insufficient breast milk. *Journal of Obstetric, Gynecologic, & Neonatal Nursing.* 2001 Sep;30(5):515-22.

[29] Camurdan AD, Ilhan MN, Beyazova U, Sahin F, Vatandas N, Eminoglu S. How to achieve long-term breast-feeding: factors associated with early discontinuation. *Public health nutrition.* 2008 Nov;11(11):1173-9.

[30] Sacco LM, Caulfield LE, Gittelsohn J, Martínez H. The conceptualization of perceived insufficient milk among Mexican mothers. *Journal of Human Lactation*. 2006 Aug;22(3):277-86.

[31] Gewa CA, Chepkemboi J. Maternal knowledge, outcome expectancies and normative beliefs as determinants of cessation of exclusive breastfeeding: a cross-sectional study in rural Kenya. *BMC public health.* 2016 Dec;16(1):1-9.

[32] Ahmed HM, Piro SS. Knowledge and Attitudes of Pregnant Women Regarding Breastfeeding. *Polytechnic Journal*. 2019 Dec 1;9(2):55-62.

[33] Cardoso A, e Silva AP, Marín H. Pregnant women's knowledge gaps about breastfeeding in northern Portugal. Open *Journal of Obstetrics and Gynecology*. 2017 Mar 15;7(3):376-85.

[34] Orabi A, al-Sayad R, Alharthi K. Investigating the Knowledge, Attitudes, Practice and Perceived Barriers of Breastfeeding among Saudi Women in the National Guard Hospital Jeddah. *Athens Journal of Health*. 2017;257.

[35] Omer W, Al-Hadithi T. Developing a socio-economic index for health research in Iraq. *East Mediterr Health J.* 2017 Oct 1;23(10):670-7.