

# ANALYSIS OF THE PERSPECTIVES OF TURKS AND ARABS ON MOTHER'S MILK BANKING

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## ABSTRACT

**Aims:** The purpose of this study is to analyze in detail whether there is a difference in knowledge and opinion of Turkish and Arab citizens on the subject while examining the opinions of individuals on breast milk banking, and to analyze in detail the attitude towards practice in Muslim countries where milk banking is not available, and to conduct a validity and reliability study of the scale created.

**Place and Duration of Study:** The sample of the study consisted of 385 people living in Turkey and 182 living in Riyadh, the capital of Saudi Arabia which is selected by easy sampling method. The study was conducted between September 2020 and January 2021.

**Material and Methods:** A total of 6 hypotheses including 1 main hypothesis and 5 sub-hypotheses were formed for the research. Each of the sub-hypotheses has been tested separately for Turkish and foreign nationals. The compliance of the data to normal distribution was examined by Shapiro Wilk and Kolmogorov Smirnov tests. For comparison of independent group differences, Mann Whitney U test was used for 2-class data and Kruskal Wallis H tests were used for multi-class data. Hochberg's GT2 test, which is one of the Post Hoc tests, was used to determine among which groups the source of the difference was.

**Conclusion:** It is observed that the highly educated people in the Turkish society prefer breast milk bank application to the application of wet-nurse, those who had children had more information about breast milk than those who did not have child, women know more about breast milk and milk-sibling than men, in Arab society regarding to practice of milk-sibling women have more knowledge than men and people who have children than who do not, in case of breastfeeding of another infant women looked more positive than men.

**Keywords:** *Breast milk, breast milk bank, milk bank, Riyadh, Ethics.*

## 1. INTRODUCTION

Starting from infancy, one of the basic conditions of being healthy throughout life is a healthy diet. The first feeding of newborn mammals takes place with the milk of their mother. According to many beliefs, breast milk is considered sacred in infant nutrition, and it is known that each mammal's milk is intended for its offspring and meets all the needs of the newborn when examined in terms of the components it contains [1]. It has been accepted that breast milk, which can meet all physiological and psychosocial needs of the baby, is the most ideal food for babies [2]. It is observed that the mortality rate of babies who are breastfed decreases compared to babies who do not receive breast milk, and they are protected from diseases better [3].

The World Health Organization states that babies should be fed only breast milk for the first six months after birth, and breast milk with additional foods until the completion of 24 months [4]. Although some babies are breastfed after birth, the situation is different for some babies. Milk production of mothers due to stress may decrease or stop. Inability to breastfeed due to reasons such as death of the mother, insufficient health of the mother, low birth weight, insufficient development of sucking reflex, feeding bottle habit or breast rejection may occur after a while [5]. When mothers cannot breastfeed their babies, they resort to different ways and share milk by communicating over the internet and social networks. In such cases, breast milk banks are a very important resource in providing nutrition for the baby [6].

Breast milk banks have been defined in many ways. The most common of these is as follows: Institutions that collect breast milk using medical techniques and preserve it in certain environments and distribute it to babies in need through donation or sales are called breast milk banks [7]. The

benefits of breast milk are far greater when considering the risks of informally shared milk or the harms of formula foods. This situation causes parents to struggle to obtain unpasteurized milk by informal means [8].

The American Academy of Pediatrics (AAP) stated that “all preterm babies should be breastfed, and pasteurized donor milk should be used if they cannot receive breast milk for some reason”. Although the importance of breast milk is constantly expressed with the developing medical studies, the formula foods produced especially for premature babies since the 1980s are still used today, although not as much as that period [9].

B.C. The fact that there are sanctions related to breastfeeding in the Hammurabi Law in 2250, the nursing mother feeding the babies whose mothers have died according to some criteria in Göktürks shows that the concept of nursing is based on ancient times when we look at the history of humanity. In 1909, Theodor Escherich established the first milk bank in Vienna on the grounds that mortality rates are high in babies who are fed other than breast milk [10]. The North American Breast Milk Bank (HMBANA) was established in 1985 and the European Breast Milk Bank (EMBA) was established in Milan in 2010, increasing the number of breast milk banks worldwide. As of 2019, there are 238 active breast milk banks in Europe and 15 are planned to be opened [11].

Comment [P1]: clarify

It is known that EMBA mentions the rules that the donor must obey in order for the breast milk banks to be opened to become operational. The donor's use of any drugs, cigarettes or electronic cigarettes that are not approved by EMBA, having a blood transfusion, having a tattoo or piercing, having a vegan diet without taking vitamin B12 support, having a spouse / partner at risk of having a sexually transmitted disease, are some of the unsuitable conditions [12].

Looking at the countries of the world, the biggest milk banking system is in Brazil. In the country, it is seen that the Ministry of Health considers milk banks as a part of its health policy, as in France, Germany and Scandinavian countries [13]. The milk banking practice which widespread in many countries is a controversial issue in Turkey due to traditional and religious beliefs, ethical issues, concerns of the families about the reliability of the donor milk and lack of knowledge [14].

A kinship bond originating from milk forms between a woman who is breastfeeding a baby in the breastfeeding period. Therefore, a breastfeeding woman is a "wet nurse" and a baby is a "foster-child". In addition, children who suck milk from the same mother, although their parents are different, gain the status of milk siblings with each other. This kinship, which is established due to milk, is not limited to those who suck and breastfeed, but also creates barriers to marriage between the nursing baby and the other relatives of the nursing mother. As a result, there is a third barrier to marriage due to breastfeeding between parties with no family or marital ties [15].

One of the most important reasons for the discussion of breast milk banks is the issue of milk sibling and milk kinship. In our country, the Supreme Board of Religious Affairs examined this issue in 2012 and shared the institution's views and comments with the public. Since breast milk banks are controversial according to Islamic law, it was stated that it is more appropriate to develop wet nursing centers [7, 16].

Comment [P2]: name of countries please

Different societies view breast milk banks from a different perspective because of their different culture and religion. It is observed that there are differences of opinion among people who share the same culture and belong to the same religion regarding the milk banking practice due to social, economic and religious reasons.

## 2. MATERIAL AND METHODS

**Table 1. When the scores obtained according to the results of the factor analysis made in the Turkish society are examined;**

Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
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	W.A Med	± (min - max)	S.D	W.A Med	± (min - max)	S.D	W.A Med	± (min - max)	S.D	W.A Med	± (min - max)	S.D	W.A Med	± (min - max)	S.D
Female (n=272)	61,96	± 15,57		4,37	± 1,79		12,37	± 1,83		10,33	± 2,23		6,74	± 1,72	
Male (n=112)	63,57	± 13,63		4,56	± 1,78		12,13	± 1,66		9,62	± 2,46		6,7	± 1,91	
Between groups p	0,391		(z=- 0,859)	0,374		(z=-0,889)	0,134		(z=- 1,497)	0,008*		(z=- 2,673)	0,637		(z=-0,472)
Literate + middle School (1) (n=14)	52,43	± 16,77		4,36	± 1,6		11,93	± 3,36		9,57	± 2,79		6,57	± 1,28	
High school (2) (n=44)	62,86	± 14,5		5,09	± 1,58		12,02	± 1,56		9,86	± 2,33		7,14	± 1,62	
Universit y (3) (n=245)	63,03	± 14,9		4,36	± 1,84		12,4	± 1,72		10,16	± 2,34		6,82	± 1,79	
Master and above (4) (n=81)	62,1	± 15,08		4,28	± 1,7		12,22	± 1,71		10,25	± 2,17		6,25	± 1,81	
Between groups p	0,093		(χ <sup>2</sup> =6.416)	0,048*		(χ <sup>2</sup> =7.892)	0,359		(χ <sup>2</sup> =3.221)	0,902		(χ <sup>2</sup> =0.507)	0,015*		(χ <sup>2</sup> =10.4)
Single (n=137)	63,78	± 15,01		4,46	± 1,84		12,21	± 1,82		9,86	± 2,21		6,74	± 1,7	
Married (n=247)	61,68	± 15,03		4,41	± 1,77		12,35	± 1,76		10,27	± 2,37		6,72	± 1,81	
Between groups p	0,163		(z=- 1,396)	0,908		(z=-0,116)	0,397		(z=- 0,846)	0,063		(z=- 1,861)	0,825		(z=-0,222)
Yes (n=178)	63,76	± 14,79		4,41	± 1,88		12,33	± 1,75		9,9	± 2,25		6,61	± 1,76	
No (n=206)	61,28	± 15,18		4,44	± 1,71		12,28	± 1,81		10,31	± 2,36		6,83	± 1,78	
Between groups p	0,097		(z=- 1,657)	0,624		(z=-0,49)	0,874		(z=- 0,158)	0,035*		(z=- 2,107)	0,317		(z=-1,001)

\*p<0.05 statistically significant difference; χ<sup>2</sup>: Kruskal Wallis Variance Analysis (Post hoc: Mann Whitney U test with Bonferroni correction) ; z: Mann Whitney U test

In the 4th sub factor, the difference between genders is significant. It can be said that women are more informed than men in the statements about how milk fraternity is formed. It was observed that the scores of the men were significantly lower than the women.

It was observed that there was a statistically significant difference in Factor 2 and Factor 5 according to their educational status. Factor 2 shows the characteristics of the donor. It is observed that the scores of the people with high school education are significantly higher than those with the university education level, and high school graduates agree more than university graduates with the statements that babies who receive donation milk will take the genetic and personal characteristics of the donor.

In factor 5, it is seen that the scores of the people who are high school graduates are significantly higher than those who have a master or higher education level. Accordingly, it can be said that high school graduates prefer breastfeeding practice to milk banking according to people with a master's degree and above.

In factor 4, a statistically significant difference was found according to the state of having children. It was observed that the scores of those who have children are significantly higher than those who do

not. Accordingly, it is possible to say that those who have children have more information about breast milk than those who do not.

	Factor 6		Factor 7		Factor 8		Factor 9(S25)		TOTAL POINTS	
	W.A Med (min - max)	± S.D	W.A Med (min - max)	± S.D	W.A Med (min - max)	± S.D	W.A Med (min - max)	± S.D	W.A Med (min - max)	± S.D
Female (n=272)	9,46 ± 0,98 10 (3- 10)		4,28 ± 1,56 4 (2- 9)		3,76 ± 1,13 4 (1- 5)		7,24 ± 1,76 8 (2- 10)		118,99 ± 15,84 120 (71- 163)	
Male (n=112)	9,57 ± 0,82 10 (6- 10)		4,67 ± 1,81 5 (2- 10)		3,72 ± 1,17 4 (1- 5)		7,42 ± 1,68 8 (2- 10)		120,51 ± 14,6 122 (75- 155)	
Between groups p	0,254 (z=-1,14)		0,063 (z=-1,862)		0,833 (z=-0,211)		0,387 (z=-0,864)		0,296 (z=-1,045)	
Literate + middle school (1) (n=14)	9,64 ± 0,74 10 (8- 10)		4,14 ± 1,61 4 (2- 7)		4 ± 0,88 4 (1- 3)		7,36 ± 1,74 7 (4- 10)		108 ± 20,14 110 (71- 146)	
High school (2) (n=44)	9,84 ± 0,43 10 (8- 10)		4,3 ± 1,44 4 (2- 8)		3,61 ± 1,04 4 (1- 5)		6,68 ± 1,75 7 (3- 10)		120,18 ± 15,77 122 (81- 150)	
University (3) (n=245)	9,46 ± 0,93 10 (6- 10)		4,32 ± 1,62 4 (2- 10)		3,76 ± 1,14 4 (1- 5)		7,29 ± 1,74 8 (2- 10)		120,08 ± 15,06 121 (74- 163)	
Master and above (4) (n=81)	9,36 ± 1,13 10 (3- 10)		4,7 ± 1,81 5 (2- 9)		3,75 ± 1,22 4 (1- 5)		7,63 ± 1,66 8 (3- 10)		119,04 ± 15,22 118 (77- 154)	
Between groups p	0,031* (χ <sup>2</sup> =8.884) (2-4, 2-3)		0,314 (χ <sup>2</sup> =3.555)		0,619 (χ <sup>2</sup> =1.781)		0,023* (χ <sup>2</sup> =9.533) (2 4)		0,114 (χ <sup>2</sup> =5.955)	
Single (n=137)	9,47 ± 0,88 10 (7- 10)		4,37 ± 1,7 4 (2- 9)		3,54 ± 1,24 4 (1- 5)		7,56 ± 1,58 8 (2- 10)		120,92 ± 15,37 122 (74- 155)	
Married (n=247)	9,5 ± 0,97 10 (3- 10)		4,4 ± 1,62 4 (2- 10)		3,87 ± 1,06 4 (1- 5)		7,14 ± 1,81 8 (2- 10)		118,6 ± 15,52 120 (71- 163)	
Between groups p	0,573 (z=-0,564)		0,739 (z=-0,333)		0,018* (z=-2,367)		0,047* (z=-1,985)		0,176 (z=-1,354)	
No (n=178)	9,41 ± 0,96 10 (6- 10)		4,33 ± 1,71 4 (2- 9)		3,64 ± 1,23 4 (1- 5)		7,51 ± 1,66 8 (2- 10)		120,61 ± 15,43 121,5 (74- 163)	
Yes (n=206)	9,56 ± 0,91 10 (3- 10)		4,45 ± 1,59 4 (2- 10)		3,84 ± 1,04 4 (1- 5)		7,11 ± 1,79 7,5 (2- 10)		118,41 ± 15,5 119 (71- 150)	
Between groups p	0,1 (z=-1,645)		0,376 (z=-0,885)		0,201 (z=-1,278)		0,042* (z=-2,031)		0,175 (z=-1,357)	

p

\*p<0.05 statistically significant difference;  $\chi^2$ : Kruskal Wallis Variance Analysis (Post hoc: Mann Whitney U test with Bonferroni correction) ; z: Mann Whitney U test

It was observed that there was a statistically significant difference in Factor 6 and Factor 9 according to their educational status.

In factor 6, it is seen that the scores of high school graduates are significantly higher than those who have university education and master's degree. Accordingly, high school graduates agreed more than university graduates with the statements that breast milk strengthens immunity and babies who are breastfed are less sick than those who are fed with formula. If we develop this item by adding comments, the reason why high school education level participants participate more in these expressions that require basic knowledge with breast milk is the reason why individuals with a high level of education play a more role in business life. Therefore, it may be that they cannot feed their babies with breast milk sufficiently and they have to prefer formulas may have an instinctive difficulty in participating in the idea that breastfeeding babies are healthier.

In factor 9, it was observed that the scores of the people who received high school education were significantly lower than those who received a master's degree and above. Those at the high school education level do not think that there is a risk of transmission of diseases through breast milk compared to those with a master's degree and above.

It was observed that there was a statistically significant difference in Factor 8 and Factor 9 according to marital status. It is possible to say that married people are more opposed to wanting milk banks to be an independent business than single ones, and those who have children are more opposed to milk fraternity than those who do not.

Comment [P3]: p value?

		age	No. Of children
Turkish total	r	-0,003	-0,173 <sup>*</sup>
	p	0,959	0,013
Sub Factor 1	r	-0,003	-0,202 <sup>**</sup>
	p	0,957	0,004
Sub Factor 2	r	0,002	0,073
	p	0,964	0,299
Sub Factor 3	r	-0,074	-0,023
	p	0,150	0,739
Sub Factor 4	r	0,063	0,038
	p	0,220	0,593
Sub Factor 5	r	0,013	0,160 <sup>*</sup>
	p	0,797	0,022
Sub Factor 6	r	0,136 <sup>**</sup>	0,163 <sup>*</sup>
	p	0,008	0,019
Sub Factor 7	r	-0,070	0,044
	p	0,175	0,527
Sub Factor 8 (s25)	r	0,057	0,051
	p	0,269	0,467
Sub Factor 9	r	-0,045	-0,063
	p	0,385	0,373

\*p<0.05 statistically significant relationship; Spearman correlation analysis

Considering the relationships between the ages of the individuals and the scale scores, it was seen that there was a statistically significant relationship only in Factor 6. There is a weak positive correlation between factor 6 scores and the ages of the individuals. It can be said that the people become older, the more they agree with the statements about the properties and benefits of breast milk.

When the number of children and scale scores of the people are examined; It has been observed that there are weak positive relationships between factor 5 and factor 6 and the number of children they

have. Accordingly, it can be said that individuals with a high number of children prefer wet nursing practice more than milk banking than those with fewer children.

**Table 2. When the scores obtained according to the result of the factor analysis made in the foreign society are examined;**

	Sub Factor 1		Sub Factor 2		Sub Factor 3		Sub Factor 4		Sub Factor 5	
	W.A Med max)	± S.D (min - max)	W.A Med max)	± S.D (min - max)	W.A Med max)	± S.D (min - max)	W.A Med max)	± S.D (min - max)	W.A Med max)	± S.D (min - max)
Female (n=86)	49,84 ± 9,82		9,79 ± 2,96		5,63 ± 2,11		13,22 ± 2,6		11,15 ± 2,37	
	50 (14 - 68)		9 (4 - 18)		6 (2 - 10)		13 (4 - 20)		11 (5 - 15)	
Male (n=96)	49,8 ± 10,69		10,66 ± 3,42		5,6 ± 2,18		12,96 ± 2,19		10,54 ± 2,21	
	50 (14 - 68)		10,5 (4 - 20)		6 (2 - 10)		13 (8 - 20)		10 (6 - 15)	
Between groups p	0,974 (z=- 0,032)		0,073 (z=- 1,792)		0,923 (z=- 0,097)		0,308 (z=- 1,019)		0,046* (z=- 1,991)	
Literate + middle School (1) (n=2)	37,5 ± 6,36		7,5 ± 0,71		6,5 ± 0,71		12 ± 2,83		11 ± 0	
	37,5 (33 - 42)		7,5 (7 - 8)		6,5 (6 - 7)		12 (10 - 14)		11 (11 - 11)	
High school (2) (n=11)	52,91 ± 8,4		11,27 ± 3,88		6,91 ± 1,92		14,45 ± 2,91		10,82 ± 2,14	
	49 (45 - 67)		9 (7 - 18)		7 (4 - 10)		14 (11 - 20)		10 (8 - 15)	
University (3) (n=139)	50,3 ± 9,43		10,35 ± 3,26		5,54 ± 2,06		12,96 ± 2,25		10,7 ± 2,21	
	51 (14 - 68)		10 (4 - 20)		6 (2 - 10)		13 (4 - 20)		11 (5 - 15)	
Master and above (4) (n=30)	47,27 ± 13,64		9,57 ± 2,84		5,43 ± 2,54		13,23 ± 2,73		11,43 ± 2,8	
	48,5 (17 - 68)		9 (4 - 14)		5 (2 - 10)		12,5 (8 - 18)		12 (6 - 15)	
Between groups p	0.409 (χ <sup>2</sup> =1.788)		0.469 (χ <sup>2</sup> =1.515)		0.129 (χ <sup>2</sup> =4.103)		0.321 (χ <sup>2</sup> =2.270)		0.330 (χ <sup>2</sup> =2.215)	
Single (n=72)	51,86 ± 9,32		10,75 ± 3,58		5,43 ± 2,37		13,13 ± 2,15		10,51 ± 2,06	
	52 (14 - 68)		10 (4 - 20)		6 (2 - 10)		13 (10 - 20)		10 (6 - 15)	
Married (n=110)	48,48 ± 10,66		9,92 ± 2,95		5,74 ± 1,98		13,05 ± 2,54		11,04 ± 2,44	
	49 (14 - 68)		9 (4 - 18)		6 (2 - 10)		13 (4 - 20)		11 (5 - 15)	
Between groups p	0,075 (z=- 1,783)		0,114 (z=- 1,581)		0,506 (z=- 0,666)		0,785 (z=- 0,273)		0,078 (z=- 1,763)	
No (n=79)	50,92 ± 9,62		10,92 ± 3,57		5,44 ± 2,29		13,08 ± 2,06		10,49 ± 2,11	
	51 (14 - 68)		10 (4 - 20)		6 (2 - 10)		13 (8 - 20)		10 (6 - 15)	
Yes (n=103)	48,97 ± 10,7		9,73 ± 2,86		5,75 ± 2,03		13,09 ± 2,62		11,09 ± 2,42	
	50 (14 - 68)		9 (4 - 16)		6 (2 - 10)		13 (4 - 20)		11 (5 - 15)	
Between groups p	0,329 (z=- 0,976)		0,019* (z=- 2,348)		0,539 (z=- 0,615)		0,916 (z=- 0,105)		0,047* (z=- 1,988)	

\*p<0.05 statistically significant difference; χ<sup>2</sup>: Kruskal Wallis Variance Analysis (Post hoc: Mann Whitney U test with Bonferroni correction) ; z: Mann Whitney U test

In the 5th sub factor, the difference between genders is significant. It was observed that the scores of the men were significantly lower. It is possible to say that men have less knowledge about how milk fraternity emerged than women, and those who do not have children are more than those who have children.

	Sub Factor 6		Sub Factor 7		Sub Factor 8		Sub Factor 9 (S4)		Total Point	
	W.A Med max)	± S.D (min - max)	W.A Med max)	± S.D (min - max)	W.A Med max)	± S.D (min - max)	W.A Med max)	± S.D (min - max)	W.A Med max)	± S.D (min - max)
Female (n=86)	7,62 ± 1,58		9 ± 1,44		11,13 ± 1,85		3,37 ± 1,04		120,53 ± 13,87	
	7 (4 - 10)		10 (4 - 10)		11 (5 - 15)		3,5 (1 - 5)		121,5 (63 - 162)	
Male (n=96)	6,98 ± 1,26		9,24 ± 1,09		10,75 ± 1,62		3,81 ± 1,1		120,11 ± 14,07	

	7 (3 - 10)	10 (5 - 10)	11 (8 - 15)	4 (1 - 5)	120 (80 - 158)
Between groups p	0,006* (z=-2,728)	0,339 (z=-0,957)	0,186 (z=-1,323)	0,005* (z=-2,808)	0,558 (z=-0,585)
Literate + middle School (n=2)	6 ± 2,83	6,5 ± 3,54	8 ± 1,41	3 ± 1,41	101 ± 0
High school (2) (n=11)	6,73 ± 1,68	9,27 ± 1,27	12,73 ± 2,2	3,73 ± 1,1	126,82 ± 17,55
University (3) (n=139)	7,36 ± 1,35	9,12 ± 1,25	10,87 ± 1,62	3,63 ± 1,06	120,6 ± 13,45
Master and above (4) (n=30)	7,2 ± 1,73	9,27 ± 1,08	10,73 ± 1,64	3,47 ± 1,22	117,87 ± 14,05
Between groups p	0,261 (χ <sup>2</sup> =2,684)	0,822 (χ <sup>2</sup> =0,393)	0,013* (χ <sup>2</sup> =8,747) (2-3, 2-4)	0,894 (χ <sup>2</sup> =0,224)	0,504 (χ <sup>2</sup> =1,369)
Single (n=72)	7,13 ± 1,46	9,21 ± 1,19	11,06 ± 1,8	4,14 ± 1	122,93 ± 14,59
Married (n=110)	7,38 ± 1,44	9,07 ± 1,33	10,85 ± 1,7	3,25 ± 1,01	118,6 ± 13,29
Between groups p	0,271 (z=-1,1)	0,504 (z=-0,668)	0,842 (z=-0,199)	0,0001* (z=-5,542)	0,167 (z=-1,381)
No (n=79)	7,03 ± 1,42	9,23 ± 1,17	10,85 ± 1,81	4,03 ± 1,01	121,81 ± 14,16
Yes (n=103)	7,48 ± 1,45	9,05 ± 1,35	10,99 ± 1,69	3,28 ± 1,04	119,17 ± 13,73
Between groups p	0,059 (z=-1,889)	0,357 (z=-0,921)	0,709 (z=-0,373)	0,0001* (z=-4,626)	0,268 (z=-1,067)

\*p<0.05 statistically significant difference; χ<sup>2</sup>: Kruskal Wallis Variance Analysis (Post hoc: Mann Whitney U test with Bonferroni correction) ; z: Mann Whitney U test

It was observed that there was a statistically significant difference in Factor 6 and Factor 9 according to gender. In factor 6, the scores of men are significantly lower than women; It can be said that women view the statement of breastfeeding someone else's baby in case of need more positively.

A statistically significant difference was found in factor 9 according to the status of having children. It can be said that people who have children do not agree that the diseases are transmitted through breast milk.

**Table 3. The Relationship between the Age and Number of Children of Foreign Participants with Sub-Factors and Total Scores**

		age	No. of children
foreign_total	r	0,026	-0,040
	p	0,724	0,691
Sub Factor 1	r	0,029	0,021
	p	0,698	0,835
Sub Factor 2	r	0,021	-0,211

	p	0,781	0,032
Sub Factor 3	r	0,160*	-0,016
	p	0,031	0,874
Sub Factor 4	r	0,010	-0,071
	p	0,890	0,475
Sub Factor 5	r	0,085	-0,057
	p	0,256	0,567
Sub Factor 6	r	0,076	0,023
	p	0,311	0,815
Sub Factor 7	r	-0,034	0,316**
	p	0,650	0,001
Sub Factor 8	r	-0,053	-0,178
	p	0,475	0,072
Sub Factor 9 (S4)	r	-0,212**	-0,083
	p	0,004	0,402

\*p<0.05 statistically significant relationship; Spearman correlation analysis

**When looking at the relationships between the ages of people and scale scores;** It was found that there was a statistically significant relationship only in Factor 3 and Factor 9. While there was a weak positive correlation between the scores of factor 6 and the ages of the individuals, it was observed that there was a weak relationship in the negative direction with factor 9. Accordingly, it can be said that as the age of individuals increases, their level of knowing about the concepts of breast milk, milk banking and milk fraternity increases.

**When examining the number of children and scale scores of people;** In addition, a moderate positive correlation was observed between factor 7 and the number of children they had. Accordingly, those who had more children agreed more with the statements about the benefits and properties of breast milk than those who did not.

## HYPOTHESES OF THE RESEARCH

In the study, the following hypotheses were tested in revealing the views of a total of 569 people on breast milk banking:

Main hypothesis: There is a significant difference between Turkish and foreign nationals' views on breast milk banking.

**H1:** There is a significant difference between the gender of the participants with their views on breast milk banking.

**H2:** There is a significant difference between the ages of the participants and their views on breast milk banking..

**H3:** There is a significant difference between the education levels of the participants and their views on breast milk banking.

**H4:** There is a significant difference between the marital status of the participants and their views on breast milk banking.

**H5:** There is a significant difference between the participants' views on having children and breast milk banking.

## Normality Analysis

In the study, the results of the normal **distribution** of the data were revealed as a result of the questionnaire conducted to determine the opinions of the participants about breast milk banking.

**Table 4. Normal Distribution Results**

Kolmogorov-Smirnov			Shapiro-Wilk		
Statistics	df	p	Statistics	df	p

**Comment [P4]:** As method not described please add a previously published method, you may add the following <https://doi.org/10.1111/ijfp.15233>

,058                      569                      ,000                      ,983                      569                      ,000

As can be understood from Table 2, it has been revealed that the opinions of the participants on breast milk banking do not show a normal distribution..

### Demographic Characteristics of Participants

This section contains the results regarding the demographic characteristics of the participants in the research.

**Table 5. Ages of Turkish and Foreign Participants**

Turkish Participants			Foreign Participants		
N	%		N	%	
Under 25 years old	47	12,2	Under 25 years old	20	10,9
25-29 years old	86	22,3	25-29 years old	79	42,9
30-34 years old	96	24,9	30-34 years old	43	23,4
35-39 years old	78	20,3	35-39 years old	21	11,4
Over 40 years old	78	20,3	Over 40 years old	21	11,4
Total	385	100,0	Total	184	100,0

According to the results obtained regarding the ages of the participants, Turkish participants are mostly in the 30-34 age range; It was revealed that the foreign national participants were mostly between the ages of 25-29.

**Table 6. Gender of Turkish and Foreign Participants**

Turkish Participants			Foreign Participants		
	N	%		N	%
Female	273	70,9	Female	87	47,3
Male	112	29,1	Male	97	52,7
Total	385	100,0	Total	184	100,0

In the gender distribution of the participants, Turkish participants are mostly women; It was revealed that the foreign national participants consisted of men.

**Table 7. Education Levels of Turkish and Foreign Participants**

Turkish Participants			Foreign Participants		
	N	%		N	%
High school	44	11,4	High school	11	6,0
Literate	4	1,0	-	-	-

Middle School	10	2,6	Middle School	2	1,1
University	246	63,9	University	141	76,6
Master / Doctorate	81	21,0	Master / Doctorate	30	16,3
Total	385	100,0	Total	184	100,0

As can be seen from the table, it has been revealed that Turkish participants are predominantly university graduates. Similarly, it was found that among the foreign nationals, there were more people with university degrees.

**Table 8. Marital Status of Turkish and Foreign Participants**

	Turkish Participants		Foreign Participants		
	N	%	N	%	
Married	247	64,2	Married	111	60,3
Single	138	35,8	Single	73	39,7
Total	385	100,0	Total	184	100,0

In the marital status distribution of the participants, it was revealed that 247 people were married and 138 people were single among Turkish participants. In this part, it was also revealed that 111 foreign participants were married and 73 were single.

**Table 9. Child Ownership of Turkish and Foreign Participants**

	Turkish Participants		Foreign Participants		
	N	%	N	%	
Yes	206	53,5	Yes	104	56,5
No	179	46,5	No	80	43,5
Total	385	100,0	Total	184	100,0

In the distributions of the participants regarding the ownership of children, it was revealed that there were 206 children in Turks and 104 children with the foreign participants.

**Table 10. Number of Children Owned by Turkish and Foreign Participants**

	Turkish Participants		Foreign Participants		
	N	%	N	%	
I have no children	179	46,5	I have no children	80	43,5
I have 1 child	91	23,6	I have 1 child	38	20,7
I have 2 children	85	22,1	I have 2 children	35	19,0
I have 3 children	28	7,3	I have 3 children	21	11,4
I have 4 children	2	,5	I have 4 children	6	3,3
Total	385	100,0	I have 5 children	4	2,2

In the results obtained for the number of children among the Turkish participants, it was revealed that 91 people had 1 child, and 85 people had 2 children. In this section, the results obtained from foreign participants who have children revealed that 38 people have 1 child and 35 people have 2 children.

**Table 11. The Average and Standard Deviation Results of All Expressions**

	Responses of Turkish Participants			Responses of Foreign Participants		
	Average	SD	N	Average	SD	N
1. Breast milk strengthens the immune system. It protects the baby from infections.	4,91	,363	385	4,78	,529	184
2. Breastfed babies are less sick than formula-fed babies.	4,58	,732	385	4,35	,941	184
3. Nowadays, mothers who do not have milk try to obtain breast milk from people they know online.	3,08	,808	385	3,05	,957	184
4. Some diseases are at risk of being transmitted through breast milk.	3,43	1,090	385	3,59	1,103	184
5. In the absence of breast milk, donor milk may be an alternative.	3,36	1,132	385	3,57	1,027	184
6. When babies cannot receive breast milk, donation from the breast milk bank is preferred to the formula.	3,26	1,162	385	3,34	1,054	184
7. The donor breastfed baby takes the genetic characteristics of the donor.	2,26	,950	385	2,85	1,140	184
8. The baby receiving donation breast milk takes the personality traits of the donor.	2,16	,977	385	2,78	1,139	184
9. I know what wet-nurse means.	4,21	,854	385	3,47	,874	184
10. If necessary, someone else's baby should be breastfed.	3,88	,992	385	3,81	,888	184
11. I know what milk-siblings means.	4,33	,664	385	4,13	,850	184
12. Milk-siblings must be practiced.	2,14	1,255	385	2,33	1,174	184
13. I don't mind marrying the milk-siblings.	2,43	1,333	385	1,99	1,274	184
14. Milk-sibling not only from breastfeeding from the same mother, but also in the form of feeding with the same milk in the form of bottles and etc.	3,50	1,263	385	3,28	1,204	184
15. As a result of feeding with breast milk taken from milk banks becomes milk siblings.	3,54	1,129	385	3,61	,991	184
16. It is forbidden for a Muslim child to be fed from a milk bank.	2,54	1,222	385	2,95	,996	184

17. I know what a breast milk bank is.	3,75	,895	385	3,93	,875	184
18. I consider the application of breast milk bank necessary.	3,47	1,139	385	3,36	1,098	184
19. I would like to have a breast milk bank in the country where I live.	3,51	1,212	385	3,36	1,127	184
20. There should be a milk bank close to the newborn care units.	3,70	1,210	385	3,61	1,096	184
21. 21. Mother milk banks have positive effects on the individual, institutional or country level in terms of cost.	3,41	1,014	385	3,52	,969	184
22. Mother milk banks positively affect the family's infant feeding costs.	3,43	1,049	385	3,64	,895	184
23. The increase of milk banks should be supported.	3,56	1,226	385	3,55	1,060	184
24. Milk banks should be located in a hospital.	3,81	1,186	385	3,72	1,032	184
25. Milk banks can be independent enterprises outside the hospital.	2,25	1,137	385	3,04	1,120	184
26. Insurance companies should cover the cost of breast milk to be collected from the milk bank.	3,61	1,159	385	3,65	1,029	184
27. It is appropriate to use intensive care units where the donor and the recipient are introduced instead of the mother's milk bank.	3,28	1,122	385	3,49	,997	184
28. Consultancy, support and training should be provided by health professionals regarding the milk bank.	4,04	1,020	385	3,93	,918	184
29. Today, health personnel are supportive about breast milk bank or wet nurse.	3,31	1,026	385	3,23	,786	184
30. General information about breast milk banks should be given in the prenatal period.	3,99	1,010	385	3,78	,991	184
31. Donations in breast milk banks cannot be sold in exchange for money.	4,05	1,052	385	3,69	1,139	184
32. In case of medical necessity, donor milk can be used in hospitals even if families do not give written consent.	2,74	1,368	385	2,90	1,278	184
33. Donor is paid for donated milk.	2,45	1,067	385	3,11	1,151	184
34. Mothers should be referred to the milk banks by health professionals.	3,46	1,168	385	3,78	1,001	184
35. Wet-nurse application is more accurate than milk bank application.	3,45	1,098	385	3,42	,871	184

Considering the views of Turkish participants on breast milk banking, it was revealed that the highest level of participation is with the statement "1. Breast milk strengthens the immune system. It protects the baby from infections." and the lowest level of participation is with the statement "12. Milk-siblings must be practiced."

When considering the opinions of foreign national participants regarding breast milk banking, it was revealed that the "1. Breast milk strengthens the immune system. It protects the baby from infections." statement is the highest level of participation and the "13. I don't mind marrying the milk-siblings." statement is the lowest level of participation.

### Testing Hypotheses

In this part of the study, the test results of the hypotheses formed in the context of comparing the opinions of the participants on breast milk banking are included. In this part, Mann-Whitney U test for comparison of binary variables; for the comparison of questions with more than two variables, Kruskal Wallis H test was used. In the evaluation of these analyzes, the level of significance was accepted as 0,05.

Main hypothesis: There is a significant difference between Turkish and foreign nationals' views on breast milk banking.

**Table 12. Comparison of Participants' Opinions on Breastfeeding According to Their Nationalities**

Nationality	N	Ordered Average	p
Turkish	385	279,71	.27
Foreign nationals	184	296,07	
Total	569		

It was revealed that there was no significant difference between the nationalities of the participants and their views on breast milk banking.

**H1:** There is a significant difference between the gender of the participants with their views on breast milk banking.

**Table 13. Comparison of Gender and Views on Breast Milk Banking**

All Participants				Turkish Participants			Foreign Participants		
Gender	N	Ordered Average	p	Gender	Ordered Average	p	Gender	Ordered Average	p
Female	360	284,00	.85	273	192,06	.80	87	94,53	.62
Male	209	286,72		112	195,30		97	90,68	
Total	569			385			184		

It was found that there was no significant difference at the 0.05 level between the gender of the participants and their views on breast milk banking.

**H2:** There is a significant difference between the ages of the participants and their views on breast milk banking.

**Table 14. Comparison of Age and Views on Breast Milk Banking**

All Participants				Turkish Participants			Foreign Participants		
Age	N	Ordered Average	p	Age	Ordered Average	p	Age	Ordered Average	p

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<https://doi.org/10.1016/j.heliyon.2020.e05233>

Under 25	66	262,87		47	181,41		20	77,23	
25-29 age	166	286,20	.57	86	195,16	.95	79	91,71	.32
30-34 age	139	300,98		96	196,76		43	105,37	
35-39 age	99	285,87		78	195,69		21	92,21	
Over 40	99	274,42		78	190,28		21	83,95	
Total	569			385			184		

It was revealed that there was no significant difference between the ages of the participants and their views on breast milk banking.

**H3:** There is a significant difference between the education levels of the participants and their views on breast milk banking.

**Table 15. Comparison of Education Level and Views on Breast Milk Banking**

All Participants		Turkish Participants			Foreign Participants				
Education level	N	Ordered Average	p	Education level	Ordered Average	p	Education level	Ordered Average	P
High school	55	311,23		44	208,52		11	108,05	
Literate	4	226,75		4	158,25	.12	-	-	.09
Middle School	12	152,50	.01	10	121,80		2	11,25	
University	387	292,71		246	198,44		141	94,22	
Master / Doctorate	111	261,55		81	178,54		30	84,12	
Total	569			385			184		

In the comparison of the education levels of the participants and their views on breast milk banking, a significant difference was found at the 0.05 level. Multiple comparison test methods have been used to determine which groups the difference is in and are shown in the table below.

**Table 16. Hochberg's GT2 Comparison of the Education Levels of All Participants and Their Views on Breast Milk Banking**

Hochberg			
(I) Education level	(J) Education level	Averages Difference	p
Middle School	High school	-,523*	,001
	Literate	-,333	,853
	University	-,451*	,003

Master / Doctorate	-,368*	,044
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\*. Averages Difference is Significant at 0.05 Level.

The education levels of the participants and their opinions about breast milk banking revealed a significant difference between the opinions of the secondary school graduates and those of the high school, university and master / doctorate graduates in the Hochberg's GT2 multiple comparison test results.

**H4:** There is a significant difference between the marital status of the participants and their views on breast milk banking.

**Table 17. Comparison of Marital Status and Views on Breast Milk Banking**

Marital status	All Participants			Turkish Participants			Foreign Participants		
	N	Ordered Average	p	Marital status	Ordered Average	p	Marital status	Ordered Average	p
Married	358	276,76	.20	247	188,77	.32	111	88,71	.23
Single	211	298,98		138	200,58		73	98,26	
Total	569			385			184		

It was revealed that there was no significant difference between the marital status of the participants and their views on breast milk banking.

**H5:** There is a significant difference between the child ownership of the participant and their views on breast milk banking.

**Table 18. Comparison of Child Ownership and Views on Breast Milk Banking**

Do you have children?	All Participants			Turkish Participants			Foreign Participants		
	N	Ordered Average	p	Do you have children?	Ordered Average	p	Do you have children?	Ordered Average	p
Yes	311	277,98	.26	206	188,63	.41	104	89,94	.46
No	258	293,46		179	198,03		80	95,83	
Total	569			385			184		

It was revealed that there was no significant difference between the child ownership of the participants and their views on breast milk banking.

### 3. RESULTS AND DISCUSSION

In this study, which was conducted to examine the opinions of individuals about the application of breast milk banking in Turkish and Arab society, a scale was developed in two languages, Turkish and English. After the studies and necessary analyzes, the scale was tested to be valid and reliable and the study continued after it was seen that it could be used as a measurement tool. As a result of this study, when Arab and Turkish societies are evaluated separately, it can be said that people with a high level of education in the Turkish society prefer breast milk banking to breastfeeding practice, people who have children have more information about breast milk than those who do not have a child, women know more about breast milk and milk fraternity than men. It is seen that in Arab society about the milk sibling women has more knowledge than men and as well people who

have children more than those who do not have children, and women view more positively about breastfeeding another baby in case of need than men. When the Arab and Turkish communities were evaluated together, it was revealed that there was no significant difference between the nationalities of the participants and their views on breast milk banking. In general, it is seen that the Arab society has similar results with the Turkish society. The opinion of the majority of individuals is that the milk banking application should be put into operation provided that suitable conditions are met. It can be stated that if a system is prepared in which the baby and the donor mother are integrated into the population information system with barcodes that do not allow mixing milk from many mothers, hygiene conditions are provided before and after milking, and the families are informed while the milk received from the mother is given to babies of male or female sex only, the registration of the identities of the mother and the breastfed baby is made with legal regulations, the concerns about the milk banking application will decrease.

Studies on milk banking in the literature are as follows:

Gecer, E. (2018) examined the thoughts of midwives, nurses, physicians and mothers who have given birth in a public hospital about milk banking and wet nursing, and stated that all of the participants know the benefits of breast milk, and the most common benefit is to strengthen the immune system and protect the baby from diseases and 63.4% of healthcare workers and 46.5% of mothers stated that donated breastmilk is an option in the absence of breast milk. According to the study, 77.1% of midwives, 60% of nurses, 59.1% of doctors have chosen a wet nursing application instead of milk banks in Turkey and 22.9% of midwives, 40% of nurses, 40.9% of physicians have chosen a milk bank application in Turkey [17]. In this study conducted in the Ministry of Health, Karabük University Karabük Teaching and Research Hospital, it was observed that women who gave birth with higher education level had more information about milk banks. In a study conducted by Eksioğlu et al. (2015), it was observed that the education level of the women participating in the study did not affect their preference of milk banks in a way that would make a significant difference. Eksioğlu et al. (2015), although the majority of mothers view positively about opening a milk bank, they are concerned about the risk of infectious diseases and religious beliefs [18].

Maman, B. (2019) stated that 77.1% of women wanted milk banking in their province in a study in which the knowledge and opinions of married women on milk banking were determined, whereas women who did not want to benefit from milk banking in the same study had concerns due to the milk of a foreigner (40.4%), being religiously objectionable (35.2%) and the possibility of infecting the baby (24.4%) respectively. In addition, 49.1% of the women stated that if they cannot breastfeed their baby, from someone they know can get breast milk [19].

According to Kadioğlu and Sahin (2014), it is seen that the ethical dimensions of the duties undertaken by breast milk banks are a very important issue. It has been stated that the "breast milk bank" project is one of the issues on the agenda of the Ministry of Health in our country and has been in the media for a long time, but it has not been established yet due to many criticisms and the insufficient infrastructure of the project. According to the statement of the Ministry of Health; It has been stated that the infrastructure of the project will be strengthened and arranged in a way to answer everyone's questions and concerns. It has been planned according to the necessity that these regulations should be realized without mixing the milk of mothers who donate milk, taking milk from a single donor for each baby, and using a secure recording system, recording the identities of the donor and the recipient, It has been deemed appropriate that it should be applied in the form of sending to the population registry. It was stated that a written consent form is requested from both the donor and the recipient, and it is ensured that the baby of the donor mother and the baby of the recipient mother are of the same sex, and that babies who receive milk will be informed at least 5 times after 5 years and every 5 years. In addition, it is among the plans to establish "wet nurse centers" that will serve the same function instead of breast milk banks and to activate the "wet nursing and milk sibling" project [5].

Brownell et al (2013) stated that keeping records in breast milk banks is one of the important ethical issues and stated that when donor information is not kept correctly, milk banks are less preferred due to non-compliance with HMBANA rules. Miracle et al (2011) suggests that although the studies show that healthcare personnel do not have sufficient knowledge about milk banking, families should be informed about all aspects of nutrition in order for individuals to benefit from milk banks, and if milk banks are to be used, the consent of the family must be obtained [20].

Unulu and Can (2019) found that the mothers who participated in their research did not have sufficient knowledge about Breast Milk Banking and had various concerns about wet nursing. The importance of educating mothers, raising awareness of the society, raising awareness about the importance of breast milk and developing solutions (security, religious anxiety, etc.) by dealing with their concerns comprehensively were expressed [21].

In the study conducted by reaching 240 mothers, Ergin and Uzun (2018) stated that 150 of the mothers had heard of the milk bank before, 55 of them approved the establishment of a milk bank, while 46 of the mothers could be milk donors. 76.8% of the mothers who do not want to be a milk donor stated that they are worried about the possibility of getting married as a reason [22].

Erenel et al. (2017), in a study conducted with 344 nurses, midwives and physicians working in Ankara and Malatya, it was observed that the level of knowledge of physicians about breast milk banking was significantly higher than the others [23]. Dorum and Okumus (2016) stated in a study conducted with 154 mothers of risky babies that 50% of mothers can donate their milk [24].

Ozdemir et al. (2015), in a study conducted with 401 religious officials, argued that 63.3% of the participants argued that milk can be obtained from milk banks in the absence of breast milk, 71.3% of them stated that they can approve provided that milk centers are a system in which milk is taken from a limited number of donors (3 donors) to a baby and the milk is not mixed [25]. Aykut et al. (2012) stated that in a study conducted with 614 mothers, 56.2% of the mothers stated that they could donate milk to the breast milk bank, while those who gave negative responses stated that they had the concern of "marrying milk siblings" who were not religiously appropriate [26].

Policies for milk banking should be clearly integrated into existing practices for breastfeeding and breast milk and should be implemented through program development. It is important to determine the attitudes and beliefs towards milk banking. It is seen that there is a need for health, economic and religious policies for breast milk banking and wet nursing practices. According to the statement of the Ministry of Health; The milk banking project infrastructure will be strengthened and arrangements will be made to answer everyone's questions and concerns.

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