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Women's opinions about human milk donation and human milk banking.

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Abstract

Purpose: The aim of the study was to determine opinions of women about human milk donation and human milk banking.
Methods: The study has a cross-sectional, descriptive design. The sample included 231 married women giving birth at least once in Turkey between January and April in 2015. Data were collected by using a 25-items questionnaire at face-to-face interviews.
Results: Half of the women found human milk donation acceptable, and 58% of the women stated they wanted to donate their human milk if milk banks were launched. Human milk donation was found to be inappropriate by 45.9% of the women since it is against religious rules, by 23.6% of the women since it has a risk of infectious diseases. The mothers who accepted giving their milk to another woman's baby and someone else's milk to their own baby found milk donation appropriate.
Conclusion: The women had a positive attitude towards human milk donation and milk banking. Transmission of infectious diseases and religious beliefs were found to be barriers.

Keywords: Human milk, Human milk donation, Human milk bank, Muslim.

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Introduction

The World Health Organization (WHO) recommends receiving donor milk from another mother as an alternative for babies unable to get their own mothers' milk [1]. This recommendation has prompted an increase in human milk banks in some parts of the world. The first milk bank was launched in Vienna in 1909 [2]. At the beginning, milk collected was distributed without testing for viral and bacterial contamination between donors and recipients. After HIV/AIDS appeared in 1980's and since screening tests were insufficient, many human milk banks were closed. To support and promote human milk banks having professional standards, Human Milk Banking Association of North America was established [3]. Upon understanding importance of breastmilk for preterm babies with diseases at the beginning of the 21th century, many attempts were made to increase the number and the quality of human milk banks. Evidence about safety and benefits of breastmilk caused a rapid increase in the number of milk banks in the world and there were 210 milk banks in Europe by 2015 [4]. Milk banks are supported by the WHO, American Pediatrics Academy and the United States Surgeon General [5].

Although there are human milk banks in many countries, Brazil is the leading country with its 212 milk banks and 113 milk collection centers [6]. Teams including physicians, nurses, dieticians, breastfeeding counselors, infection control units and medical and clerical support units offer services in milk banks [7]. In accordance with policies, rules and protocols, human milk is collected, sterilized and recorded and donors' and recipients' rights are guaranteed in these banks [8]. Potential milk donors are unpaid volunteers who must first be screened for medication use, nutrition status, smoking, alcohol intake, general health status, international travel history, place of living, disease history, high risk behavior, history of risks for infectious diseases, shape of nipples and the minimum amount of milk likely to be obtained [9]. Although questionnaires about lifestyle seem to be reliable in questioning risky behavior like illegal drug use, they have limitations such as inability to determine passive smoking, consumption of caffeinated drinks and time of consumption of these drinks [10]. Milk from mothers that pass the screening process and is considered appropriate for donation is accepted at certain intervals [6]. Human milk donation is affected by biological factors and such socio-cultural characteristics as age, education, political views, financial status, and culture. In several studies, religious beliefs, financial factors, lack of confidence in serological tests, inability to know donors, likelihood for mistaking donors, considering procedures as unhygienic, lack of information about milk donation and staff shortage have been shown to have negative effects on milk donation and acceptance of donation [6,11].

Views about human milk vary with cultures and religions. Human milk donation is not forbidden by Christianity, Budhism and Hinduism. It fact, it is encouraged. Islam has also been reported to emphasize importance of sharing human milk and breastfeeding in a study by Ramli in 2010. Some verses of Koran lend support for this view. According to Islam, babies breastfed by donor mothers and babies of donor mothers are

considered siblings and they are forbidden to get married to each other [12]. Therefore, The Concil of Islamic Law Academy prohibited establishing human milk banks and feeding Muslim children with human milk from milk banks [13,14]. Human milk banking is not acceptable in Muslim countries. There are no milk banks in Turkey, where almost all of the population is Muslim. The Ministry of Health had some attempts to establish milk banks in 2013. However, these attempts were inconclusive since a new population recording system and new regulations were required to determine people likely to be considered as siblings after receiving breastmilk from the milkbanks according to Islam. Therefore, this study was carried out to determine opinions of a small sample of Turkish women about human milk donation and human milk banking.

Material and Methods

Study design

This was a cross-sectional descriptive study.

Study setting and sample

The sample was comprised of mothers of babies in the pediatric unit of a maternal and obstetrics hospital between January and April in 2015. The hospital is located in a city in the South of Turkey where the traditional family structure extensive families were predominant. Education levels and socio-economic status of the residents of the city were low when compared to the general population of the country. Most of the women in the study sample were Muslim. Of the 350 women contacted, 60 declined to participate in the study due to hospital procedures and time constraints and 59 were not considered eligible. As a result, 231 women were included into the study. Inclusion criteria were giving birth at least once and breastfeeding for 6 months to 1 year.

Data collection

A questionnaire created by the researchers in light of the relevant literature and composed of 25 questions was used for data collection. The questions were directed towards eliciting information about demographic features, obstetric characteristics, health behavior, breastfeeding behavior and opinions about human milk donation. The questionnaire was completed at face-to-face interviews which took 15-20 min.

Ethical consideration

A signed informed consent form approved by the Istanbul Medipol University Ethics Committee and the Ministry of Health was completed by all the women who participated in the study (date: 21 January, 2015 and number: 64222187/030.03/6639). All the procedures in the study were performed in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Before obtaining written informed consent, the women were supplied information about the aim of the study and assured that the study was based on the principle of volunteerism. The study had one limitation; the women were not asked any questions about their religious lifestyle.

Data analysis

Data were analyzed with Statistical Package Program for Social Sciences 22.0 and evaluated with descriptive statistics, Chi-square tests and logistic regression. Results were evaluated with a confidence interval of 95% and a significance level of $p<0.05$.

Results

The mean age of the women was 30.2 ± 6.9 years (range: 37). Of all the women participating in the study, 44.2% were primary school graduates, 83.1% were housewives, 84% had a health insurance, 50% had an income adequate to meet their expenses and 22% were smokers. The mean age of marriage was 20.0 ± 3.8 years (range: 21), the mean number of pregnancies was 2.8 ± 1.7 (range: 13), the mean number of births was 2.4 ± 1.4 (range: 8) and the mean number of children alive was 2.4 ± 1.4 (range: 8). Characteristics of the women's lactation periods are given in Table 1. Women's opinions about human milk donation are outlined in Table 2. A distribution of the women's opinions according to the status of approval for human milk donation are shown in Table 3.

Table 1. *Features of lactation period in the participants (N=231).*

	n	%
Experiencing problems during breastfeeding their children (n=231)		
Yes	57	(24.7)
No	174	(75.3)
Problems related to breastfeeding (n=57)		
A decrease in the amount of breastmilk	33	(57.9)
Inability of babies to suck or sucking only one breast	14	(24.6)
Cracked nipples	10	(17.5)
Requesting another mother to breastfeed one's own baby (n=57)		
Yes	4	(7.0)
No	53	(93.0)
Giving milk to the baby of another mother with little or no milk (n=231)		
Yes	41	(17.7)
No	190	(82.3)
Giving milk to the baby of a relative (n=41)		
Yes	25	(61.0)
No	16	(39.0)
The degree of the relation with the baby given milk (n=25)		

The baby of a sibling	14	(56.0)
The baby of a cousin	7	(28.0)
The baby of a sister-in-law	4	(16.0)

A significantly higher rate of the women willing to donate their human milk and to receive human milk from another mother found milk donation acceptable ($p<0.05$). However, socio-demographic factors including age, education, employment status, health insurance and income did not affect considering milk donation acceptable ($p>0.05$). A significantly higher rate of the women amenable to giving their milk to another baby and receiving milk from another woman for their own baby and wanting to donate their milk to prospective human milk banks found establishment of milk banks acceptable ($p<0.05$). The women's opinions about human milk donation to milk banks, which could be opened in the future, were not influenced by their age, education, employment status, health insurance and income ($p>0.05$) (Table 4).

Table 2. *The women's opinions about human milk donation.*

	n	%
Acceptance of milk donation (n=231)		
Yes	129	(55.8)
No	102	(44.2)
Acceptance of giving another mother's milk to their own baby (n=231)		
Yes	104	(45.0)
No	127	(55.0)
Agreeing to give one's own milk to the baby unable to get his/her mother's milk (n=231)		
Yes	124	(53.7)
No	107	(46.3)
Willingness for human milk donation if a milk bank is established (n=231)		
Yes	134	(58.0)
No	97	(42.0)
Wanting to get to know the family of the baby who was donated milk (n=134)		
Yes	113	(84.3)
No	21	(15.7)
Wanting to get to know the mother donating her milk (n=134)		
Yes	121	(90.3)
No	13	(9.7)
Considering milk donation inconvenient (n=231)		
Yes	106	(45.9)
No	125	(54.1)
Reasons for considering milk donation inconvenient (n=231)		
Milk donation is against religious rules	25	(23.6)
Diseases can be transmitted from mothers donating their milk	21	(19.8)
Milk donation is not safe and healthy (Milk may not be clean)	20	(18.9)
Marriage between the donor's babies and the recipient of donor milk may not be possible	20	(18.9)
Human milk donation is not ethical	5	(4.7)
No comments	15	(14.2)

According to results of the logistic regression analysis, the rate of the women considering human milk donation unacceptable for religious reasons was 7.25 times higher. The rate of those finding it unacceptable for health-related reasons was 3.86 times higher. The rate of those reporting to donate human milk when human milk banks are established was 7.06 times higher and there was a statistically significant relation between acceptance of human milk donation and willingness to donate human milk ($p<0.05$) (Table 5).

Table 3. *The distribution of the women finding human milk donation conveninent or inconvenient or according to their opinions and experiences.*

		Human Milk Donation				χ^2	p
		Convenient		Inconvenient			
		n	%	n	%		
Experiencing problems during breastfeeding babies	Yes	31	(54.4)	26	(45.6)	0.06	p=0.45
	No	98	(56.3)	76	(43.7)		
Agreeing to give breastmilk from another mother to one's own baby	Yes	92	(88.5)	12	(11.5)	81.6	p<0.001
	No	37	(29.1)	90	(70.9)		
Agreeing to give breastmilk to a baby of another mother	Yes	104	(83.9)	20	(16.1)	85.2	p<0.001
	No	25	(23.4)	82	(76.6)		
Donating breastmilk if milk banks were established	Yes	104	(77.6)	30	(22.4)	61.3	p<0.001
	No	25	(25.8)	72	(74.2)		

χ^2=Pearson Chi-Square

Table 4. *The women's opinions about human milk banks.*

		Donating milk if human milk banks were established				χ^2	p
		Yes		No			
		n	%	n	%		
Agreeing to give milk from another woman to one's own baby	Yes	87	(83.7)	17	(16.3)	51.0	p<.001
	No	47	(37.0)	80	(63.0)		
Agreeing to give one's own milk to a baby of another woman	Yes	107	(86.3)	17	(13.7)	87.9	p<.001
	No	27	(25.2)	80	(74.8)		
Considering milk donation inconvenient	Yes	41	(38.7)	65	(61.3)	30.0	p<.001
	No	93	(74.4)	32	(25.6)		

χ^2=Pearson Chi-Square

Discussion

Mothers can use milk from another woman to feed their babies when they have no or little milk [15]. In the present study, 17.7% of the women said they were wet nursing, mostly for a baby of a relative. In a study by Can et al. 17% of the Turkish women were wet nursing and 14.7% of the women had another woman breastfeed their babies [16]. Eksioglu et al. reported that 8.2% of the mothers had been a wet nurse before [17]. Siera-Kolomina et al. found in their study that 5.8% of the women had donated their milk during their previous lactations [18]. In a qualitative study by Mackenzie et al., the women said that they gave their milk to a baby of a relative or a friend [19]. In a similar study by Keim et al. on 499 postpartum women, 4% of the women had been a wet nurse for a baby of a relative and/or a friend [20]. Palmquist et al. found that 17.3% of the milk donors gave their milk to a baby of a family member or a friend [21]. They concluded that milk donation was already available even if it was not called donation. Human milk banks are organizations which obtain milk from donors and screen, process, store and distribute it to individuals who need it [22]. In the present study, nearly all of the women said they had heard about human milk donation and human milk banking. Another study from Turkey revealed that 41.6% of the mothers knew about milk banks [17]. However, in a qualitative study, some participants admitted that they had not heard about milk banks [6]. Perrine and Scanlon reported that the rate of donor milk use increased from 5.4% in 2007 to 8.9% in 2011 and from 25.1% to 45.2% in neonatal intensive care units [23].

More than half of the women in the current study found human milk donation acceptable. In a study by Karadag et al., nearly half of the mothers (49.9%) found establishment of human milk banks acceptable [24]. The rates of breastfeeding were very low in Muslim countries like Egypt (29%), Saudi Arabia (24%), Kuwait (10%) and Indonesia (16%), which increases infant death rates in those countries [25]. Development of tests for donor screening and infectious diseases, improvement of safety of these tests and increased evidence for benefits of human milk have caused an increase in interest and willingness for milk donation [26]. Women having difficulty in breastfeeding and breast milk release, unable to breastfeed in the postpartum period, having wet nurse experience and agreeing to give their babies milk of another woman have been shown to find milk donation acceptable. In a qualitative study by Mackenzie et al., although some participants did not hear or know about milk banks, they supported milk donation to help other mothers and their babies [6]. We thought that mothers without human milk and unable to breastfeed their babies were emotional and had a positive attitude towards milk donation so that babies should not be deprived of human milk.

Table 5. *Factors related to human milk donation according to results of the regression analysis.*

Human Milk Donation	Unstandardized Coefficients		Sig.	Odds Ratio (OR)	95% C.I. for EXP (B) Lower-Upper
	B	S.E.			
Unacceptable for religious reasons	1.98	0.44	0	7.25	3.06-17.15
Unacceptable since it is unhealthy	1.35	0.41	0.001	3.86	1.73-8.61

Wanting to donate human milk if milk banks were established	1.95	0.35	0	7.06	3.59-13.87
Constant	-1.98	0.28	0	0.14	

*Variable (s) entered on step 1

In the present study, 58% of the women reported that they would donate their milk if milk banks were opened, which is consistent with the literature. The rate of the mothers willing to donate their milk was reported to 68.8% by Eksioglu et al., [17] 64% Gurol et al., [11] and 56.2% by Karadag et al. [24]. Although pasteurization eliminates viral and bacterial agents in breastmilk, it partly affects nutrients and immunological elements. It is a fact that pasteurization has protective and beneficial effects. In addition, it is necessary that women who will donate their milk should be healthy, have a regular check-up and have serological tests against the risk of infectious diseases and should not use any drugs in the prenatal period except vitamins [27]. In the current study, 45.9% of the women commented that human milk donation is inconvenient. The reasons proposed for this inconvenience were that it may not be clean (18.9%) and that infectious diseases can be transmitted from donors (19.8%). In a qualitative study by Leung et al. the women were worried about safety related to health status of donors and storage and transportation of human milk [8]. In a study by Eksioglu et al. 62.2% of the mothers unwilling to donate breastmilk pointed out to the risk of infections [17]. In several other studies, infectious diseases, problems with storage and transportation of human milk and the risk of infections in newborns were found to be reasons for objections to milk donation [6,27].

In the present study, the rate of the women considering donation inconvenient due to religious rules (23.6%) and the idea that milk siblings may not get married (18.9%) was higher than the rate of those objecting to donation due to the risk of infections. Consistent with the above finding, several studies revealed that human milk donation was thought to be forbidden by religious rules by 36.3-37.2% of the women [11,27]. According to Islam, the donor's offspring and the recipient of donor milk cannot get married and the possibility of marriages between them without recognizing milk kinship leads to worries [13]. Muslim people living in countries where most of the population is not Muslim may have different opinions about the issue. In a study by Hsu et al. from Malaysia, 88% of the donors and 77% of the recipients were reported to be Muslim [14]. The logistic regression analysis showed that the rate of the women finding human milk donation unacceptable for religious reasons was seven times higher. However, the rate of those finding it acceptable and wanting to donate human milk when milk banks are established was seven times higher. There is a disagreement about human milk donation between Islamic law experts. Some argue that human milk donation means helping a person in need and is not wrong since breastfeeding does not occur in human milk banking. However, others suggest that marriages between babies of donors and recipients or wet mothers are definitely forbidden [28]. Many women face this conflict or do not have an idea about human milk donation. It seems that they can be willing to donate human milk when they are offered appropriate religious information about the issue, when conflicting ideas are eliminated and when healthy donation conditions are created.

In the present study, opinions about human milk donation and human milk banks did not differ in terms of socio-demographic features including age, education, employment status, health insurance and income. Eksioglu et al. also reported that views about human milk banks were not affected by age, education and employment status [17], whereas Katke and Saraogi mentioned that a higher rate of the women with low education and income levels donated human milk [29]. This conflicting evidence can be explained by the fact that mothers in some countries are paid for their human milk donation.

Conclusions

Women unable to breastfeed their baby and/or having problems with breastfeeding have a more positive attitude towards human milk donation and human milk banks. The risk of infection transmission and the idea that human milk donation is prohibited by religious beliefs can be considered as potential barriers. In view of the results of this study, it can be recommended that attempts to inform about social-cultural factors affecting human milk donation and to raise awareness about the issue should be made and that necessary regulations for human milk banks should be adopted. Women should be educated about the reduced risk of infectious disease with pasteurized breast milk. Further studies about the issue should focus on more detailed explorations of religious beliefs and religious aspects likely to be disadvantageous in terms of human milk donation. Authorities should cooperate with religious leaders to achieve more positive attitudes towards human milk donation and banks.

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