

Contributing and Limiting Factors for Human Milk Donation

Fatores Contribuintes e Limitadores da Doação de Leite Humano

Betine Pinto Moehlecke Iser^a; Tayná Molon Fernandes^b; Paloma Oliveira Schuelter^b; Daniela Ferreira D'Agostini Marin^b

^aUniversity of Southern Santa Catarina, Faculty of Medicina, Graduate Program in Health Sciences. SC, Brasil.

^bUniversity of Southern Santa Catarina, Medical Course. SC, Brasil.

*E-mail: betine.iser@unisul.br

Recebido em: 30/03/2020

Aprovado em: 30/06/2020

Abstract

Human Milk Banks have the purpose to foster and support breastfeeding in hospitals, especially for newborns who, for several reasons, need attention and specialized care. The aim of this study was to determine the profile of women who donated human milk from a milk bank in southern Brazil and to identify the motivation, contributing and limiting factors to the donation. It was a Cross-sectional study carried out with donors registered at a milk bank in 2017. The study was conducted in two stages, the first one being the sociodemographic and gestational data collection, and the second, telephone contact for the donation process details. The results show that the intention to help was the main reason for the donation (48.3%). The main contributing factor was the collection at the donor's home (42.2%), while lack of it (29.3%) was the most cited limiting factor. Information on breastfeeding (31.9%) and milk donation (62.1%) was obtained during admission to the labor. The median donation time was four weeks (1-28). Receiving information on breastfeeding and milk donation during antenatal classes were factors associated with longer donation time ($p < 0.02$). It is concluded that the collection at the donor's home was an important factor in the milk donation process, as well as the orientation received during the antenatal classes, a moment in which the woman is very receptive to new information.

Keywords: Breast Feeding. Milk Banks. Postpartum Period. Human Milk.

Resumo

Os Bancos de Leite Humano têm como objetivo promover e apoiar a amamentação em hospitais, especialmente para recém-nascidos que, por várias razões, necessitam de atenção e cuidados especializados. O objetivo deste estudo foi determinar o perfil das mulheres doadoras de leite humano de um Banco de Leite do sul do Brasil e identificar a motivação, os fatores contribuintes e limitantes à doação. Foi realizado estudo transversal, com doadoras de leite cadastradas em um banco de leite do Sul do Brasil, em 2017. O estudo foi realizado em dois momentos, sendo o primeiro com dados sociodemográficos e gestacionais da ficha de cadastro, e o segundo por contato telefônico para detalhamento do processo de doação. Os resultados mostram que a intenção de ajudar foi o principal motivo para a doação (48,3%). O principal fator contribuinte foi a coleta domiciliar (42,2%), ao mesmo tempo que a falta dela (29,3%) foi o fator limitante mais citado. Informação sobre o aleitamento materno (31,9%) e a doação de leite (62,1%) foi recebida durante a internação para o parto. A mediana de tempo de doação foi de quatro semanas (1-28). Receber informação sobre aleitamento materno e doação de leite no curso de gestante foram fatores associados ao maior tempo de doação ($p < 0,02$). Conclui-se que a coleta domiciliar é um fator importante no processo de doação de leite, bem como as orientações recebidas em cursos de gestantes, momento em que a mulher está bastante receptiva a novas informações.

Palavras-chave: Aleitamento Materno. Bancos de Leite. Período Pós-Parto. Leite Humano.

1 Introduction

Human milk is the most suitable to the nursing¹ and, owing to its complex composition, it is an inimitable nourishment². The World Health Organization - WHO and the United Nations International Children's Emergency Fund - UNICEF state that breastfeeding contributes to the prevention of over six million deaths of children under one year old^{3,4}. Thus, breastfeeding exclusively is recommended up to six months of age and, complementary, to two years of age or more^{4,5}.

When the baby cannot suck on the breast, which occurs in most cases of prematurity, it should be fed by tube, until it gains weight and strength enough to receive milk directly

from the breast. The earlier the introduction of human milk to the newborn happens, the higher the survival chances are⁶. So, the availability of human milk to supply the needs of the baby that cannot suck is fundamental to its development⁷.

Aiming at a better assistance to mothers and newborns, notably regarding feeding and nutritional safety, Human Milk Banks arose, whose objective is to promote and support breastfeeding in hospitals, with the purpose of reducing children's mortality. These institutions carry out actions to stimulate newborns' breastfeeding which, for several reasons, need attention and specialized care, like neonates who are hospitalized in semi and intensive care units, underweight, premature babies⁸. From January to May 2017, according to data obtained from the Brazilian Human Milk Banks

Network, 46,480 milk donor nursing mothers contributed for the feeding of 52,142 receiving children⁹.

To carry out the donation, the woman must comply with a few criteria: not to take medicine or drugs which prevent breastfeeding (alcohol, cigarettes, illegal drugs), to have undergone exams (complete blood count, anti-HIV, HbsAg and VLDR), or to undergo them in case the antenatal card is not fulfilled. Besides the benefits to the baby, donation also aids the donor nursing mother, since it avoids breast engorgement, helps pre-gestational weight regain, and stimulates further milk production⁹.

Although the importance of the human milk for the newborn's physical and intellectual development is undeniable, donations in general do not supply the babies' demand that need this nutrition. There are incentive campaigns for human milk donation; however, it is still not feasible to reach all the possible donors, which makes the amount of donated milk insufficient to assist the children who need it. The campaigns promoted by public bodies need to reach the highest possible number of infants and, for this, it is necessary to find out with the donors the factors which contribute and limit their donations.

In this context, the present study aims at assessing contributing and limiting factors for donation, as well as identifying the motivations, and the median donation time, among milk donors at a maternity hospital in the southern Brazil, in order to understand the obstacles which hinder the beginning and maintenance of the donation.

2 Material and Methods

It is a cross-sectional study. All the women registered as human milk donors at the hospital in 2017 were included in the study. The study hospital is a reference in the southern Santa Catarina in high risk pregnancy care and neonatal intensive care unit - ICU. The Human Milk Bank (Banco de Leite Humano - BLH) was founded in 2007, and receives donations from mothers who gave birth at the hospital itself or somewhere else, as long as the milking and storage were performed properly. The donated milk is made available to newborns hospitalized in the neonatal ICU and to babies whose mothers, for several reasons, could not breastfeed.

At the first moment, sociodemographic data, life habits, gestational data and telephone number were collected from the donors' registration forms from BLH. At the second stage, the women were invited by phone to participate in a more detailed study about the milk donation process; oral free and clear consent for the participation was obtained at this moment.

Women under 18 years old, those whose register data were incomplete at the Hospital Milk Bank, as well as mothers who could not be reached or did not accept to answer the questionnaire by phone, or who did not authorize the use of their register data were excluded.

The collected data were inserted in the Epi-Info program version 3.5.4, in which they were organized and analyzed. The results were expressed through descriptive statistics. Comparisons among parity, number of antenatal medical appointments, mother's age, receiving information about breastfeeding and human milk donation with the donation time were executed through the Analysis of Variance, with significance level of 5%.

The research project was approved by the Ethics in Research Committee from the University of South Santa Catarina, n° 2.430.281, 2017.

3 Results and Discussion

In 2017, 304 registration forms from human milk donors were received. From these, 13 were excluded for being under 18 years old, 14 registered but did not donate, 15 did not accept to take part in the study and 146 could not be reached by phone, due to problems with the device or for not answering it after three attempts during the data collection period. The study sample was made with 116 donors registered in the human milk bank, in which it was possible to verify that 58.6% were from the host city for the milk bank. The average age of the donors was 28.24 years old (± 5.96).

In general, the donors had secondary education (30.2%), were in a stable relationship (86.2%) and worked (79.3%). Most of them had secondary education (30.2%) or a college degree (25%) and (15.5%) reported to work in the health sector (Table 1). Only 9.5% of the mothers exhibited some comorbidity, while concerning life habits, no woman declared to smoke, drink alcoholic beverages or use drugs.

Table 1 - Sociodemographic characteristics of human milk donors. Tubarão/SC, 2017

Variable	N = 116 n	%
Marital Status		
Single	16	13.8
Married/Stable relationship	100	86.2
Age		
18-24	32	27.6
25-34	64	55.2
≥ 35	20	17.2
Education Level		
Illiterate	0	0
Incomplete primary education	5	4.3
Complete primary education	4	3.4
Incomplete secondary education	12	10.3
Complete secondary education	35	30.2
Incomplete post secondary education	18	15.5
Complete post secondary education	29	25
Post-graduation	11	9.5
Master's	1	0.9
Doctorate	1	0.9
Professional Area		

To be continued...

...continuation.

Health sector	18	15.5
Household	24	20.7
Administrative sector	12	10.3
Education	7	6.0
Beauty	4	3.4
Sales	6	5.2
Others	45	38.8

Source: Research data.

About the gestational and obstetric data, the study highlighted that all donors had antenatal assessment (100%), with a minimum of 03 (three) and a maximum of 20 (twenty) appointments, with an average of 8.96 (± 2.52) appointments. It was also emphasized the prevalence of cesarean section births (61.2%), being, mostly, primiparous (63.8%)

Among the study donors, 31.9% of them had information about breastfeeding during the hospitalization for the labor and 26.7% during the antenatal classes. About the human milk donation, 62.1% got information during the hospitalization for the labor, 9.5% cited the antenatal classes and 23.3% cited another moment, being this directly at the milk bank in 22.2% of the same (Table 2).

Table 2 - Moment when information about breastfeeding and milk donation was obtained by human milk donors (N=116). Tubarão/SC, 2017

Moment when the information was obtained	Breastfeeding		Milk Donation	
	n	%	n	%
Obstetric appointment	20	17.2	3	2.6
Antenatal classes	31	26.7	11	9.5
During hospitalization for delivery	37	31.9	72	62.1
Pediatric appointment	3	2.6	3	2.6
Others	25	21.6	27	23.3

Source: Research data.

Intention to help was the main reason for milk donation (48.3%), followed by the fact that her child itself had used donated milk (21.6%). Among the factors which facilitated the donation process, home collection was the most cited one (42.2%). Conversely, the lack of home collection (29.3%) was also cited as one of the factors which hindered the donation process (Table 3).

Table 3 - Factors which contribute or limit human milk donation, reported by the human milk donors (N=116). Tubarão/SC, 2017

Contributing Factors	n	%
Home collection of human milk	49	42.2
Electric pump for milking	43	37.1
Relief of breast engorgement	16	13.8
Milk already stocked at the hospital	6	5.2
Others	6	5.2
Limiting Factors	n	%
Lack of home collection	34	29.3

To be continued...

...continuation.

Tiredness	30	25.9
Manual milking	25	21.6
Hygiene care	22	19.0
Lack of time	20	17.2
Fear of not having milk left for her own child	14	12.1
Lack of adequate bottle	8	6.9
Decrease in milk production	6	5.2
Others	20	17.2

Source: Research data.

None of the women reported to be donating milk at the moment of the interview, being the median donation time of 4 weeks, varying from 1 to 28 weeks. Being primipara or multipara did not interfere in the donation time, as well as difference of time among the women according to the number of antenatal appointments and mother's age was not verified (Table 4).

The women who obtained the information about breastfeeding during the antenatal classes (26.7%) had a longer donation period, 9.6 weeks (± 6.2) compared to the ones who did not report this kind of guidance (6.5 weeks ± 6.15), being a statistically significant difference ($p=0.017$). Likewise, mothers who reported having information about human milk donation in the antenatal classes presented higher donation time (Table 4).

Table 4 - Factors related to donation time among human milk donors (N=116), Tubarão/SC, 2017

Factors	Duration of Milk Donation (weeks)		p value*
	Mean	\pm SD	
Parity			
Primipara	7.45	6.30	0.83
Multipara	7.19	6.37	
Antenatal Appointments			
0-5	4.75	2.50	0.401
≥ 6	7.48	6.43	
Mother's age			
18-24	6.12	5.91	0.429
25-34	7.85	6.72	
≥ 35 years old	7.80	5.54	
Received Information of Breastfeeding			
Antenatal classes	9.64	6.20	0.017
Another moment	6.50	6.25	
Received Information of Milk Donation			
Antenatal classes	13.00	7.08	0.0015
Another moment	6.75	5.94	

*Student's t test / Analysis of Variance, significance level of 5%. SD= standard deviation.

Source: Research data.

This study investigates, along with human milk donors, contributing and limiting factors for milk donation, in order to identify measures which could be taken to increase the

number of donations, to expand the supply of milk available. It was verified that the mean donation time was low, which may be related to logistic reported difficulties, as the lack of home collection and the milk extraction process, or yet, due to most of the women not receiving information about breastfeeding and the donation process during the antenatal period, preventing them to prepare themselves in due course for this task.

As limitations of this study, it is possible to cite the need for contact by phone for detailing of the donation process, and the consequently loss of 50% of the sample available for the period of study, because of the impossibility of contact. It was opted to carry the study out with registrations from the previous year (2017), as to diminish the possibility of recall bias over the data referring to an earlier period.

About the sociodemographic profile of the studied sample, the average age of the study corroborates with those found in the literature in relation to the donors, 30.3¹⁰, 28.5¹¹, as well as the prevalence of married women or in a stable relationship 92.9%¹⁰ 77.14%¹¹, having secondary education 48%¹². It was verified that 79.3% of the mothers performed labor activities, slightly above the studies carried out in the Southeast¹⁰ and Northeast¹² of Brazil. Mothers who worked out of their home in general have more difficulty maintaining breastfeeding for longer periods, for the need to work, which may interfere directly on the donation process, which generally remains while the milk volume is in excess⁶.

Regarding age, albeit a prevalence of young adult women, age group with fewer perinatal risks and, considered great for reproduction, there are studies showing that there is no correlation between age and milk donation^{11,13-15}. In this study, it was also verified that most of the donors were married or in a stable relationship, suggesting that having a partner fosters support for the practice of breastfeeding and milk donation^{11,14}.

The fact that no woman donor stated to smoke, drink alcoholic beverages or do drugs, or to have any comorbidity, must be related to the trial process made by the milk bank to register donors, despite not being an official recommendation from the Ministry of Health that smoking prevents donation, up to 10 cigarettes a day is considered acceptable for donation¹⁶.

Concerning the gestational and obstetric data, in which all donors had antenatal assessment, the average number of appointments was similar to the study performed in the Southeastern Brazil (10.17 ± 4.50)¹⁰, and followed the recommendation of the Ministry of Health¹⁷, in which the number of antenatal appointments must be equal or higher than six. This shows that studied milk donors prepared themselves for the child's arrival and, probably, were aware of the guidance received during the antenatal period, including the preparation for breastfeeding¹⁶.

Most of the donors in the study were primiparae, presenting proportion similar to the literature, 50-60%^{10,13,18} besides the prevalence of cesarean births in 60 to 70%^{10,11,15}. Being a

first-time mother stimulates the mother to seek guidance in antenatal classes and in health services, as the milk bank, to solve doubts due to their lack of experience and insecurity about breastfeeding, becoming more prone to donate their milk. Furthermore, it is supposed that not having another child to take care provides the mother with more available time for the breastfeeding tasks, as milking and stocking^{13,15}.

The most cited moment when information about breastfeeding and milk donation was obtained by women was during hospitalization for the delivery. This shows that there is still deficiency in information about breastfeeding and milk donation, coming from the antenatal period, as highlighted by the studies in the Northeastern Brazil^{10,19}. Such fact meets the evidences that the information coming during the antenatal period are the ones which support, stimulate and maintain more breastfeeding and milk donation^{6,10,12,20}.

Conversely, it was verified in this study that mothers who received guidance on breastfeeding during the antenatal classes donated longer than the mother who reported not having received this type of guidance. This fact may be associated to the profile of the mothers who took part of the antenatal classes, besides suggesting that women who receive adequate orientation still in the antenatal period have more opportunities to prepare themselves for breastfeeding, making this act more natural and favoring donation. Thus, the need for simple and adequate orientation about breastfeeding in antenatal classes is reinforced, moment when the woman is very receptive to guidance and education. Moreover, health professionals training in basic care teams, responsible for antenatal assessment in health facilities, turns out to be equally fundamental for the improvement of the care with the mother-baby binomial.

The main reason reported in this study for the donation was to help, corroborating with the feeling of solidarity of this action¹⁰. Altruism was also highlighted as motivational aspect for donation, in an integrative review published in 2016⁶, showing that the "wish to help others" contributed for the retention in the donation process¹⁹. The fact that the child had already needed donated milk, cited by 21.6% of women, also seems to create a feeling of retribution and empathy for donation.

As facilitating reason for the donation process, home collection was the most cited one, as reported in the Southeastern study¹⁰. Abreu¹² exhibits as facilitating factor for donation the fact of benefitting the health of the receiving child (90%), followed by excess of milk production (46%). In a study from the northeastern USA²¹ the most facilitating factor of the donation process was the nurse staff who aided and motivated the donor. In this same study, all the nursing staff in the hospital took an intensive course on human milk and breastfeeding, which limits it when comparing with other places where this does not take place.

In the present study, the most cited difficulty was the lack of home collection, corroborating with the study by Santos¹⁹.

Sierra-Colomina *et al.*²², in a study performed in the central region of Spain, also points that a system of home collection would make a great difference in the amount of donations. In the study by Abreu¹², 68% of the mothers reported not having any difficulty, 28% reported it hurt their breasts, 4% reported the lack of a vehicle for the milk collection. Miranda¹⁰ found the lack of time for milking and needed hygiene issues in the process as the most cited difficulty. An integrative review⁶, found as difficulties the lack of adequate information, lack of time and the number of children.

In a study carried out in the eastern Ethiopia²³, made up of 1,085 pregnant women and puerperae, only 11% of them were willing to donate their milk, due to their fear, related to disease transmission, and religious issues. Such finding indicates that there is also a cultural matter involved with the act of donating their milk, factors which were not deepened in this study.

The median duration of donation in the present study was 28 days, considered little time if compared to studies carried out in Midwest¹¹, with a median of 90 days, and in Northeastern Brazil²⁴, with a duration of 60 days.

4 Conclusion

The collection at the donor's home was an important factor in the milk donation process, as well as the orientation received during the antenatal classes, a moment in which the woman is very receptive to new information.

Considering the reported difficulties and the low donation maintenance time, measures which decrease limitations and support women in the donation process become necessary. Turning this process simpler, demanding less time from the donor and relieving the logistic difficulties may increase donation attraction and donation time, fundamental measures, as well as guidance about breastfeeding and human milk donation received during antenatal, to have an adequate stock which supplies the milk bank demand.

Financial:

The study does not have a funding source.

References

- Santos AJAO, Bispo AJB, Cruz LD. Padrão de aleitamento e estado nutricional de crianças até os seis meses de idade. *HU Rev* 2016;42(2):119-24.
- Brasil. Fundação Oswaldo Cruz (Fiocruz). Rede Brasileira de Bancos de Leite Humano. Aleitamento Materno. Rio de Janeiro: Fundação Oswaldo Cruz; 2005.
- Fundo das Nações Unidas para a Infância (UNICEF). Situação Mundial da Infância 2008 Caderno Brasil. Brasília: Fundo das Nações Unidas para a Infância; 2008.
- World Health Organization -WHO. Collaborative Study Team on the Role of Breastfeeding on the Prevention of Infant Mortality. Effect of breastfeeding on infant and child mortality due to infectious diseases in less developed countries: a pooled analysis. Geneva: WHO; 2000.
- Brasil. Ministério da Saúde. Secretaria de Atenção à Saúde. Departamento de Atenção Básica. Dez passos para uma alimentação saudável: guia alimentar para crianças menores de dois anos: um guia para o profissional da saúde na atenção básica. Brasília: MS; 2013.
- Rechia FPNS, Cherubim DO, Paula CC, Padoin SMM. Fatores que interferem na doação de leite humano: revisão integrativa. *Cogitare Enferm* 2016;21(3):1-11. doi: <http://dx.doi.org/10.5380/ce.v21i3.44723>
- Nascimento MBR, Issler H. Aleitamento materno em prematuros: manejo clínico hospitalar. *J Pediatr* 2004;80(5):163-172. doi: <http://dx.doi.org/10.1590/S0021-75572004000700008>
- Brasil. Fundação Oswaldo Cruz (Fiocruz). Rede Brasileira de Bancos de Leite Humano. Quem Somos. Rio de Janeiro: Fundação Oswaldo Cruz; 2005
- Brasil. Sociedade Brasileira de Pediatria. SBP alerta pediatras e a sociedade para importância da doação de leite materno, o que beneficia mulheres e bebês. Rio de Janeiro: Sociedade Brasileira de Pediatria; 2017.
- Miranda JOA, Serafim TC, Araújo RM, Fonseca RMS, Pereira PF. Doação de leite humano: Investigação de fatores sociodemográficos e comportamentais de mulheres doadoras. *Rasbran* 2017;8(1):10-7.
- Silva ES, Jesus LE, Santos EB, Castro NA, Fonseca LB. Doação de leite materno ao banco de leite humano: conhecendo a doadora. *Demetra Aliment Nutr Saúde* 2015;10(4):879-89. doi: 10.12957/demetra.2015.16464
- Abreu JN, Pereira YJAS, Lobato JSM, Foutoura IG, Neto MS, Santos FS. Doação de leite materno: fatores que contribuem para esta prática. *Arq Ciênc Saúde* 2017;24(2):14-8. doi: <https://doi.org/10.17696/2318-3691.24.2.2017.548>
- Ferreira LB, Nea ITO, Sousa TM, Santos LC. Caracterização nutricional e sociodemográfica de lactantes: uma revisão sistemática. *Ciênc Saúde Coletiva* 2018;23(2):437-48. doi: 10.1590/1413-81232018232.05542016
- Fonseca-Machado MO, Parreira BDM, Dias FA, Costa NS, Monteiro JCS, Gomes-Sponholz F. Caracterização de nutrizas doadoras de um banco de leite humano. *Ciênc Cuid Saúde* 2013;12(3):529-38.
- Soares LG, Dolinski D, Wagner LPB, Santos LSF, Soares LG, Mazza VA. Captação e aproveitamento de leite humano em um banco de leite de um município do estado do Paraná. *Rev Pesq Cuidado Fund Online* 2018;10(3):656-62. doi: 10.9789/2175-5361.2018.v10i3.656-662
- Brasil. Ministério da Saúde. Agência Nacional de Vigilância Sanitária. Resolução-RDC Nº 171, de 4 de setembro de 2006. Brasília: MS; 2006
- Brasil. Ministério da Saúde. Secretaria de Atenção à Saúde. Departamento de Atenção Básica. Atenção ao pré-natal de baixo risco. Brasília: MS; 2012.
- Silva PLN, Jorge JCT, Fonseca JR, Pereira ACA, Oliveira VGR. Perfil das mães doadoras de um banco de leite humano. *Rev Enferm UFPE* 2013;7(7):4635-40. doi: 10.5205/reuol.4656-38001-2-SM.0707201307
- Santos JC, Sobreira AAP, Santos DAO, Lima LE, Santana WJ, Marques AA. Banco de leite humano: facilidades e dificuldades para manutenção do estoque. *Rev e-ciência* 2018;6(1):23-30. doi: dx.doi.org/10.19095/rec.v6i1.35.
- Machado ACL, Santos JDA, Trigueiros PQS. Perfil das doadoras de leite materno do banco de leite humano de uma maternidade federal da cidade de Salvador, Bahia. *Rev Pediatr*

- SOPERJ 2017;17(2):18-24.
21. Candelaria LM, Spatz DL, Gordano N. Experiences of women who donated human milk. *J Obstetr Gynecol Neonatal Nurs* 2017;47(4):556-63. doi: 10.1016/j.jogn.2017.12.007.
 22. Sierra-Colomina G, García-Lara NR, Escuder-Vieco D, Alonso-Díaz C, Esteban EMA, Pallás-Alonso CR. Donor milk volume and characteristics of donors and their children. *Early Hum Dev* 2014;90(5):209-12. doi: 10.1016/j.earlhumdev.2014.01.016.
 23. Gelano TF, Bacha YD, Assefa N, Motmma A, Roba AA, Ayele Y, Tsigie F. Acceptability of donor breastmilk banking, its use for feeding infants, and associated factors among mothers in eastern Ethiopia. *Int Breastfeed J* 2018;13:23. doi: 10.1186/s13006-018-0163-z
 24. Pinto MCLM, Campelo TC, Ramos CV, Lima MER, Pereira TG. Alegações maternas para doação de leite humano ao banco de leite em Teresina-Piauí. *Rev Int NOVAFAPI*. 2012;5(2):15-30.