

Human Milk Donation: Methods, Perceptions and Experiences in a Descriptive Study

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Abstract

Introduction: In feeding premature babies, the first choice is the fresh milk from mother and if this is not possible, the donated milk from the HMBs (Human Milk Bank). The support to the donation of the human milk (HM) have proved to be an efficient method of promotion to the breastfeeding.

Object: The aim is to know the motivations and the experience of the donation to draw lessons for the improvement of our activity about the promotion of breastfeeding and the donation of the milk.

Material and Methods: 70 donors have been raised. The questionnaire includes 15 questions which relate to the breastfeeding and HM donation. It focuses on data concerning the possible factors which favor the breastfeeding linked to the donation and to the subjective description of the donation's experience and of personal suggestions.

Results: 68.5% of the interviewed women were made aware of the possibility to donate by the direct information from the HMB staff; for the 84.3% of donors there is an altruistic reason underlying the choice to donate. For the 22.85% it was the second or third experience. The length of the breastfeeding together with the donation exceeds about 2 months the time occurred for the other sons without a donation. For 61.4% it was not demanding to donate the milk and for 72.8% HM the donation is considered a factor which favors the breastfeeding. Some donation's experiences were very intense and captivating.

Conclusion: Knowing the experience of donors is the most important method to encourage the promotion of breastfeeding and HM donation. This questionnaire study allowed us to understand many aspects of donation and to recognize false myths.

Keywords: Human Milk Donor; Experience of HM Donation; Human Milk Banking

Introduction

Mother's milk is the best feeding for premature infants and his protective effect against the complications of prematurity has been widely demonstrated [1-6].

When the mother's milk is not available, the alternative is represented by the donated HM recommended by the World Health Organization and others [7-11].

The presence of a Human Milk Bank (HMB) in NICU improves both the availability of mother's milk for feeding the premature baby and breastfeeding, with higher percentages of nutrition with mother's milk on discharge from NICU [12-14].

The HMB of “Casa Sollievo della Sofferenza” Hospital is an integral part of the NICU, it is active since September 1, 2010 and is part of the AIBLUD (Italian Association of Human Milk Banks) that, at present, consists of 38 HMBs. AIBLUD's main mission is to promote breastfeeding and HM in this context that this work moves.

The practices to support the HM donation are now included among those proven to be effective for the protection and promotion of breastfeeding [15-18]. It is demonstrated that the two things enhance each other and contribute to the improvement in a synergistic way of child health and survival, precisely through the exclusive feeding of all newborns, even the most vulnerable, with HM [9,10].

Object

The aim of the paper is to know the methods, the motivations and the experience of the donation with the ultimate goal of improving the promotion of breastfeeding and the donation of the mother's milk.

Materials and Methods

Recruitment

Our HMB has created a social group on the Net that involves between the attendees, the bank staff and women donors who accepted to be part.

The platform is the vessel of recruitment of mothers called for in this study. Accepting to take part in the study they've been asked an e-mail address, in order to send the written version of the questionnaire after explaining the aim and the meaning. We gave them a 6-months period to give in writing the answers and send them to the bank address - in this way, they've been able to freely express their ideas without time conditions. To date, 70 women, out of 90 contacted, have been recruited and in this sample lies the work. All the donors involved in the study, as per the protocol, signed an informed consent to donate their milk at the time of enrollment also for clinical or research use. 4 women gave birth to a premature baby (1 to 25 weeks, 1 to 27 weeks, 2 to 29 weeks). All the others had a term birth (>37 weeks of gestational age). Women recruited to our bank as donors were included, with the criteria set by the national guidelines and who had finished the donation regardless of when.

The Questionnaire

The questionnaire includes 15 questions that can be found in the box.

1. How did you become acquainted about the possibility of donating milk?
2. What inspired you to do this gesture?
3. Does it the first time you donate milk?
4. Your child was born of:
 Vaginal delivery
 Cesarean section
5. How long have you been breastfeeding your child?
6. How much has your child grown?
7. Do you have any other children?
8. How long have you been breastfeeding them?
9. When did you pump the milk for the Bank?
 Morning Afternoon Evening Indifferently
◊ After breastfeeding
◊ Before breastfeeding
10. Did it seem demanding to collect and store milk for the Bank?
 Δ not at all
 Δ a little
 Δ enough
 Δ a lot
11. Do you believe that the donation to the bank has favored the breastfeeding of your child?
 Δ If yes, how?
 Δ If not, why?
12. On the basis of your experience in all its aspects, do you have any suggestions concerning the promotion of breastfeeding and milk donation for future mothers who will address to our birth point?

13. How do you feel when you breastfeed your child?
14. Could you describe your experience as a donor?
15. Other comments

The **first** question is about the way through which they've become aware of the possibility to donate their milk and of the existence, in our NICU, of a milk bank. It is an effective parameter to monitor the spreading activity of our HMB.

The **second** question is crucial because it analyzes the motivations of the HM donation.

In the **third** questions, women are asked if they've already donated their own milk during previous pregnancies. This aspect is very important and is to be examined in depth because a multiple donation is one of the objectives to be pursued and optimized.

The **fourth** question is about the kind of delivery. The caesarean section could represent additional difficulties in the early stages of breastfeeding and we need to understand if it can or could have some repercussion in the possibility to donate.

Other 2 parameters taken into consideration (in **points 5-6-7-8**) are the weight of the child and the length of the breastfeeding. More specifically, we've analyzed the weight gain during the breast- feeding and the donation and mothers have been asked to provide data about the length of the breastfeeding, both during the puerperium (with milk donation) and during the exclusive breastfeeding of other sons (without milk donation).

Question 9 has a practical perspective. Mothers have been asked the precise moment when they used to produce milk to donate to the bank: if before or after the breastfeeding and preferably in which part of the day (morning, afternoon, evening or indifferently), in order to be familiar with the management of the HM donation.

The **tenth** question quantifies the perception of the care which is necessary to carry out the tasks required for the donation, collection, storage and delivery to the carrier of donated milk, through four entries: no commitment, little commitment, enough commitment, hard commitment.

The **question n°11** asks donors if they believe getting (or not) an advantage for breastfeeding of their baby - when combined to the donation.

In the **twelfth** question each mother, on the basis of her experience, is asked to give some personal suggestions on how to help the breastfeeding and the milk donation, to the benefit of future mothers of our department. This presumes a thorough analysis of the perception of each aspect of our work, which includes different moments of the care: pregnancy, delivery, hospitalization and involves different professionals - obstetrician, gynecologist, neonatologist, nurse.

In the **thirteenth** question they are asked to express their emotions during the breastfeeding so to make them available for women who are or will be pregnant, since we believe it to be the most important and effective way to promote the breastfeeding.

The **fourteenth** question invites mothers to describe in detail their experiences as donors.

The **last question** asks, specifically, some comprehensive remarks that, once again, can improve the management of breastfeeding during the hospitalization and the activity of the HMB.

Results

Question	Answer	Nº	%
How did you become acquainted about the possibility of donating milk?	Direct information from the bank staff	48	68.5
	Dedicate poster in the Obstetrics Department	12	17
	Word of mouth between acquaintances	5	7.1
	Personal research	5	7.1
What prompted you to do this noble gesture?	Altruistic reason	59	84.3
		13	22
		16	27.1
		5	8.47
		5	8.47
		11	15.7

Question	Answer	Nº	%
Does it the first time you donate milk?	First experience	54	77
	Double or triple experience	16	23
Way of delivery	Caesarean section	38	54.2
How long have you been breastfeeding your child?		13.84 months (36-2)	
How long have you been breastfeeding other children?		12 months	
How much has your child grown?		1135 grams/month	
When did you pump the milk for the bank?	Before the suckling	18	25.7
	After the suckling	49	70
	In the morning	19	27.1
	In the evening	5	7.1
	In the afternoon	4	5.7
	Indifferently	41	58.57
Was it demanding to collect and keep the milk?	No	43	61.4
	A little	19	27.1
	Enough	8	11.4
	A lot	0	
Do you believe that the donation to the bank has favored the breastfeeding of your child?	Yes	53	75.7
	Plenty of milk due to greater stimulation	41	77.3
	Avoiding the breast engorgement	6	11.3
	Serenity induced by the gesture of donation	6	11.3
	No	17	24.3

Table 1: Answers to the questionnaire

48 (68.5%) women have become aware of the possibility to donate some milk thanks to the direct information of the bank staff during the hospitalization, 12 (17%) thanks to dedicated posters present in Maternity Unit; 5 (7.1%) thanks to the word of mouth with acquaintances and 5 (7.1%) thanks to a personal interest (Table 1).

The prevailing answer about the motivation of the HM donation concerns 84,3% (59) with altruistic reasons, referred to 22% (13) with the abundance of milk, 27.1% (16) refers that the altruistic boast derives from a previous experience (during the breastfeeding of other sons with abundance of milk or in the case of denying breastfeeding for other reasons such as premature birth), 8.47% (5) combines the altruistic motivation with personal satisfaction and pride and we reported the same percentage in women who strongly believe in the power of mother's milk. The remaining part (11) explained the choice in the sorrow of throwing the extra-milk away.

Women have been asked if it was their first experience of HM donation: 54 (77%) of the women gave a positive answer and, for the remaining 16 (23%), it was the second\third experience.

38 women gave birth with vaginal delivery, the others with caesarean section.

The length of breastfeeding combined with the donation is 13,84 months, with a maximum value of 36 months and a minimum of 2 months. The length of the breastfeeding of other sons was on average 12 months. The growth of the newborn was, on average, 1135 grams a month.

The milk for the donation is expressed after the breastfeeding in 49 (70%) and in 18 (25.7%) before. The remaining percentage refers to non-answers. 41 (58.57%) women expressed milk during the day interchangeably, 19 (27.1%) in the morning, 5 (7.1%) in the evening and 4 (5.7%) in the afternoon.

Mothers have been asked if they considered demanding to collect and store the milk, 43 (61.4%) answered "for nothing", 19 (27.1%) "a little", 8 (11.4%) "enough" and nobody answered "very".

Quantifying the perception of the HM donation as a factor benefitting (or not) the breastfeeding, 53 (75.7%) answered "yes" explaining, to the following entry that the donation occurred, because of a major production following a further stimulation for the majority of women 41 (77.3%), avoiding the breast engorgement problems 6 (11.3%), through a bigger serenity derived from the donation 6 (11.3%) and the remaining percentage affirmed it didn't impede in any way the breastfeeding.

For 17 (24.3%) of interviews women, the donation didn't influence the breastfeeding because the milk was aplenty.

At this point, a comment should be made. The answers to the last three questions are more difficult to summarize and categorize, since they represented a way to widely describe their thoughts, beliefs, acquaintances and experiences, regarding the breastfeeding and the donation in all their aspects.

The experience of breastfeeding has been described as unique, intense, indescribable and not to be missed, even if in the presence of initial difficulties or after resuming work.

Breastfeeding and Donation

For 15 mothers, it needs to start with the concept that if they want they can breast-feed and donate too.

In particular, a mother who experienced a difficult and painful breastfeeding due to bleeding fissures healed after 3 months (after precluding previous child's breastfeeding) gives an important suggestion. The frustration for the missing breastfeeding of the first child and the strong motivation with the second one to breast-feed and donate, underlie the achievement of the aim and generates the suggestions for new mothers to find "*their way*" to breast-feed. Moreover, *this can arise only from an accurate information, in other words "there's no breast without milk... we don't own milk, we produce it... and the continual sucking of the child is the only way to let it increase: if I succeeded despite having painful fissures, everybody can do it*". On the same wavelength is the answer of another mother who suggests to the HMB team "*to let mothers understand and know that the mother's milk comes out always and however and that all mothers are able to produce it both with a caesarean section and a natural delivery, with a big or small breast. Everything, definitely depends on will*".

A mother says that the breastfeeding and, consequently, the HM donation was not simple: actually, during the first months "*it was a calvary with painful fissures and recurring mastitis... the donation was the reward for all my efforts*".

The topic of information was peculiar for this answer. In detail 50 mothers suggested to inform (also before the delivery) women about: the advantages of mother's milk, the possibility to breast-feed and donate, the difficulties (13) or the first days, the breastfeeding upon request (11) that promotes the stimulation and therefore the production. 15 women affirm that the possibility to donate depends on the will.

More than half of women suggest that information needs to go with support and reassurance and it's necessary both before and after the delivery, also at home. It has been highlighted also the necessity to widely promote the reality of the milk bank and HM donation (35 answers). On the same topic, 18 answers suggest to share the beautiful experience of the donation among mothers so as to spread it.

4 women write that the donation is a choice to be made with serenity. 3 women retain that the HM donation is a due towards the most fragile newborns and propose to visit the NICU to take account of it. Another suggestion from two mothers is to keep the newborn as close as possible, so as to favor the breastfeeding upon request with breast emptying and stimulation. 2 mothers suggest to empty the breast until the last drop and educate other women to do it. 4 women don't give a specific answer as everything was excellent; the remaining part didn't answer.

The Question "Could You Describe Your Experience as a Donor?"

We after had to quote entire parts of the stories, both because only in this way we could pull out the real sense of donation, and because a summary could have damaged the authenticity of the recordings.

80% of the mothers identified the moment of the milk shipment as the most satisfactory.

28 mothers admitting that the donation is a great experience, repeated it also in the following pregnancies.

It's necessary to make a distinction between those who donated more times. Some of them (around 50%) lived similar and positive experiences with different sons, others found some differences.

A donor, for example, refers that the last daughter came in a stressful period, there was no milk and she had to appeal to the formula; this caused sadness because she felt as she didn't give the newborn the same opportunities of the previous sons and couldn't honor the commitment to the milk bank as in the past. But she calmed down – thanks to the support of a friend who gave her hope, patience and strength - and produced enough milk for her daughter and for the milk bank, specifically "*for a newborn who didn't have the same good fortune*". "*I insisted and, when I was waiting for the bottle to fill in, I imagined, as during my pregnancy, the child who would have received my milk. I found myself thinking of him, imagining his future and cheering him.*" "*I was moved because my milk was nourishment and relief from a life that, reluctantly, made him fight since the early stages of life. This gave sense to my commitment and rewarded me*".

Another mother discusses about pregnancy during a sad moment: she refers she felt guilty. The pregnancy came after the loss of her 6-year-old first born; when she was asked to donate milk, she promptly answered in the affirmative – it was a way to regain self-esteem and to feel "*strong and proud*". "*When I gave my milk, I felt useful and proud... when they told me that after the sixth month, they wouldn't have come to take it anymore I was sorry*".

Therefore, a cleansing effect is highlighted in the HM donation of 2/3 of the mothers.

Another woman (to the second experience) reports that she was proud of helping children without their mother's milk and encouraged her friends to do the same, but with limited results because they always fear to deprive their child of milk.

The pride of donating milk to children in need is given in 60 reports with particular reference to the moment of shipment.

The Commitment of Donating

The term "commitment" is found in 15 answers, but with different acceptations. Specifically: one of them (at the beginning) was skeptical, she was afraid of not following the rules and that it was a huge responsibility, but when she filled in the first bottles, all the fears disappeared. Another woman describes the donation as "demanding" because it requires breast-care, a proper hygiene and diet, that she carried out without difficulty even bringing up other children: "*every time they came home to take the milk, I felt happy. I knew that my milk was useful to children in need and I thank those who gave me this possibility because I felt twice as woman*".

Another mother talks about little commitment, which is necessary for the care and the storage of the milk in view of a great present, the hope of a major survival for babies and families in difficulties. Another donor, due to the milk abundance, lived the donation in an easy way; moreover, she tells that the collection was easy thanks to the availability of the couriers who arrived in any moment after a call.

"For my part, it was the most beautiful experience I've ever had. When I thought that my milk could help someone less fortunate than my son, I felt good; it wasn't demanding, the only thing you need is the organization." That's the experience of a donor that considered the commitment minimal.

Another woman, happy to be part of the project, considers the donation something natural and a right and duty for each woman; she says "*my commitment with the pump and the bottles, which are useful to the collection and storage of the milk made me feel mother of other children*" and "*giving the mother's milk is a marvelous love feast that is good for the heart of donors*". She also thanks the drivers because they planned days and times for the collection, always meeting her needs.

The combination "motivation to do well-not onerous commitment" is reported in 62 answers.

Another woman was not so confident because she was afraid of not honoring the commitment. But she succeeded with a kind of success.

There's also someone who saw something positive in this commitment: "*it was amazing to be committed... a sort of appointment with suckling and shipment... a feeling related to the act of donating and being useful to those in need. It was very rewarding and I'd like to repeat this experience during the next pregnancy*". Others felt free since "*the commitment didn't seem onerous. I was happy because my milk could help other children to grow up. I've never considered it as an onerous commitment and the staff never pushed me to meet certain standards, so this freedom contributed to the successful outcome of my commitment*".

The Mothers Who Had a Direct or Indirect Experience of a Pre-Term Delivery

"When you feel guilty because you failed to protect your (pre-term) baby and you donate your milk, you are in a team that does well (Neonatology Department)"

"I was happy to help helpless creatures because I knew what meant to have a premature baby on your hands feeling powerless... Hoping for the best and be sure that, thanks to my donation (that didn't hurt me), a newborn could have survived",

"Direct experience: in my room there was a mother and we gave birth on the same day... she underwent an emergency Caesarean section. I was thinking for them... to that child that was upstairs in an incubator, who needed milk and to her mother who was bedridden".

A woman gave birth to a daughter with pathologies in a hospital far from our HMB and donated us the milk she wasn't able to give to her baby. A woman who gave birth to 2 VLBW twins donated 100 litres to the milk bank while breastfeeding her babies.

Analysis of Responses and Discussion

The answers are particularly rich of useful cues to improve our activity. Specifically, let's start from the first operational steps: the information about the possibility of donating. We can affirm that the direct information during the hospitalization and after the delivery (performed by the bank staff in a standard and capillary manner), really works: thank for it, 68.5% became aware of the bank. This is certainly a strong point which is possible because the bank is equipped with dedicated staff and also for the number of births, compliant with a personal systematic approach and a recruitment method that could be exported.

The reason of the HM donation is the altruism which is prevailing in 84.3% of answers. This data is in line with the literature [18-28] and is a positive one, even if we consider it together with the abundance of milk produced (27.1%), because it sheds light on mothers' sensitivity regarding pre-term babies; we should encourage them through information campaigns on this reality, which is little known by the public opinion except for anecdotal cases that get into papers, media and on the Net.

22.85% of women is not at the first experience. Mothers who have already donated their milk are breeding ground that is to be cultivated, because there's a high possibility that they would do it again. Instinctively, a woman tends to renew the feeling of pride and satisfaction and, if we succeeded in gratifying it through moments of worthy public and private appreciation, the goal of multiple donation is closer.

The kind of delivery does not influence the possibility to donate, despite the idea of a difficult start of breastfeeding could compromise the continuation by women who underwent caesarean section.

We analyzed the length of breastfeeding related or not related to donation. In the first case, the length was superior of about two months - a satisfying datum if combined with the growth of newborns. It can be disclosed to dispel one of the main fears related to the donation, that is to say not guaranteeing the intakes suitable for the child grows.

The moment, during the day, is not important, while 70% of women pull their milk out after breastfeeding. Probably, the fact that they've already fed their child creates a major serenity which is a prerequisite of the donation.

It is reassuring that about 61.4% defined as "zero" the commitment necessary for the collection, the storage and the shipment of the milk to be donated. This is a key-message to spread, so as to unravel one of the most common perplexity inherent to the donation, that is to say the fear of not honoring the commitment to the milk bank.

This is perfectly linked to another message retrievable from our questionnaire, related to the answers about the favoring effect of the HM donation on the newborn. 72.8% of answers are affirmative and motivated with subsequent breast simulation and major production of milk. The donation is considered a method to improve and extend the breastfeeding. This is one of the most important data and deserves the largest diffusion.

The suggestion given by mother's concerns the information: the will to breast-feed and donate can do everything, can overcome also the most demanding difficulties.

The answers to the questionnaire were particularly rich of useful suggestions, which could improve breastfeeding and donation promotion activities (Table 2) and represent a confirmation of how donation does not undermine breastfeeding but favors it.

Data sharing	<ul style="list-style-type: none"> Newborns breastfed during the donation grow well The donation increases the quantity of milk and the length of the breastfeeding Breast complications can be avoided with the donation 	Operational proposals	<ul style="list-style-type: none"> Dispel false myths: The fear of removing milk from your child, affecting growth Donation undermine breastfeeding
The experience of the donation			
Key messages	<ol style="list-style-type: none"> Pride and satisfaction Altruism for newborns and solidarity for their mothers Minimal commitment The will is fundamental 	Operational proposals	<ol style="list-style-type: none"> Award mothers Cultivate these feelings spreading NICU realities Spread the idea of a non burdensome commitment against a grandiose goal Inform to improve the will

Table 2: Operational proposals

About the experience of the HM donation (Table 2), the key messages of this interview are: donating the milk procure pride and satisfaction; the sentiments promoting the human milk donation are altruism for preterm newborns and solidarity for their mothers; the practice of donating is not experienced as challenging and that the desire to breastfeed and offer an important health opportunity to fragile children is fundamental to the success of this virtuous practice.

Exploring human experiences is always exciting because it takes you on an intense and interesting emotional paths considered important; we believe that these feelings, highlight a cultural model made with respect, sharing and solidarity that needs to be spread and safeguarded.

Originality of the Study

The originality of this work lies in the fact that such an articulate questionnaire has never been done, on the experience of donating one's milk, both in terms of the feelings attached to it and the practical aspects. This can be useful to NICU and HMB operators in their important work promoting the use of human milk in the NICU, which is crucial for the care of premature babies.

Limitations of the Study

The limit could be represented by the fact that donors have voluntarily consented to be submitted to the questionnaire and therefore it could be assumed that they are the most motivated donors, but this limit could be overcome by the fact that the entire population of donors is composed of volunteers. However, for the purposes of the study, we believe it is not relevant.

Conclusion

Knowing the experience of donors is the most important method to encourage the promotion of breastfeeding and donation. This questionnaire study allowed us to understand many aspects of donation and to debunk false myths. This type of donor survey should be carried out in HMB around the world and occupy a more space in the literature, such as anything that can improve human milk use.

Acknowledgement

The first big thank you goes to the women who decide to donate part of their milk to other children because with their milk they give an important health opportunity. Then I thank the staff of the milk bank, attentive and committed to their job. I thank the management of the hospital that supports all the initiatives of the milk bank, recognizing its ethical and social value, as well as promoting health.

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