REVIEW ARTICLE

# Motivators and Barriers to the Use of Breast Milk Banks: A Narrative Review

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## Abstract

**Aim:** To summarize the scientific evidence on motivations and barriers to human milk banking by donor and recipient mothers.

**Materials and methods:** A narrative review of articles in PubMed published between 2014 and 2024 was conducted. The search identified 405 articles, of which 5 met the inclusion criteria and were analyzed in detail.

**Results:** The results show that lack of access to trained personnel and lack of knowledge about donated human milk (DHM) are significant barriers to the use of human milk bank (HMB). In addition, strict donation requirements and logistical concerns hinder maternal participation. However, excess milk production and social support, along with increased awareness of the benefits of human milk donation, are key motivators for this practice.

**Conclusion:** The use of HMBs by both donor and recipient mothers depends on various aspects of themselves, their environment and even the norms or procedures established by the health institution.

**Keywords:** Breastfeeding, Health services accessibility, Milk banks, Milk human, Motivation.

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## Introduction

Breast milk is fundamental for the health of neonates, since it provides essential nutritional requirements and immunological benefits that are crucial, especially for preterm or low birth weight infants. When maternal breast milk is not available, donated human milk (DHM) is the best alternative recommended by the World Health Organization (WHO).[1] In that sense, human milk banks (HMBs) play an essential role in the collection, processing and distribution of DHM, being a vital tool to ensure that neonates receive the best possible care.[2] Since the opening of the first HMB in 1909, the network has grown to more than 700 globally.[3]

However, the presence of HMBs varies significantly between regions, with notable deficiencies in South Asia and Africa, where lack of infrastructure and resources limits access to donated milk.[4–6] In addition, the absence of uniform global standards for the operation of these banks contributes to variability in milk quality and operational practices.[1] Although many HMBs implement quality control systems to ensure the safety of donated breast milk, differences in community needs, resource availability, and processing methods lead to considerable variability in the quality of donated milk.[4]

Increased demand for DHM, driven by increased awareness of its neonatal health benefits, has put additional pressure on HMBs. This growing demand is a result of international recommendations and the widespread use of DHM as a supplement in preterm and sick neonates.[1] However, difficulties in meeting this demand are related to challenges, such as donor management, resource stability, and funding, which are significant barriers in many settings.[7]

In this regard, the experiences of mothers who donate and receive at HMBs also reveal important aspects of the process; on the one hand, mothers who must provide milk during their infants' hospitalization in neonatal intensive care units (NICUs) face numerous challenges, including the emotional stress and practical difficulties associated with milk expression and storage.[8,9] Pressure to provide milk, both internal and external, can significantly affect their well-being and their ability to maintain adequate milk production.[10] Likewise, donors also report various barriers and motivations, such as the desire to help others and difficulties in the donation process, which affect the quantity and quality of donated milk.[7,11,12]

Thus, DHM is a crucial tool in neonatal care, but its efficacy and availability are conditioned by operational, logistical, and emotional factors. To improve access to and quality of DHM, it is necessary to strengthen HMB systems, standardize practices globally, and provide better support to donor and recipient mothers. These actions will help to ensure that all neonates have access to the best possible nutrition, regardless of their location or circumstances.[13,14] Therefore, the aim of this review is to summarize the available

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scientific evidence on the motivations and pitfalls for the use of HMB, in order to provide a comprehensive view to guide future interventions in this field.

## Materials and Methods

This research consisted of a narrative review of publications between 2014 and 2024 in scientific journals indexed in PubMed, which explored the topic of motivators and barriers to using HMBs.

Prior to executing the search, a search strategy was elaborated from keywords connected with Boolean operators, this strategy was as follows: ("Motivator*" OR "Barrier*" OR "Facilitat*" OR "Challenge*") AND ("Milk Sharing" OR "Sharing Milk" OR "Banks Milk" OR "Milk Bank*" OR "Expression Breast Milk" OR "Expressions Breast Milk" OR "Milk Expression Breast" OR "Milk Expressions Breast" OR "Breastmilk Expression*" OR "Expression Breastmilk" OR "Expressions Breastmilk" OR "Breast Milk Collection*" OR "Collection Breast Milk" OR "Collections Breast Milk" OR "Milk Collection Breast" OR "Milk Collections Breast" OR "Breastmilk Collection*" OR "Collection Breastmilk" OR "Collections Breastmilk" OR "Breast Pumping*" OR "Pumping Breast" OR "Pumpings Breast" OR "Breast Milk Expression*").

The inclusion criteria established for the selection process include (i) original articles whose topic was related to the motivators and barriers to use HMBs; (ii) published between 2014 and 2024; (iii) available in full text. On the other hand, secondary studies, notes, editorials, case reports and books or book chapters were excluded.

The systematic search for information was conducted on June 3, 2024, subsequently, the metadata of all identified articles were exported to the Rayyan online platform, which also allowed for the elimination of duplicates. The selection process was carried out blindly and anonymously by two authors (Kleider Livias-Moya and Jose Leonardo Escobar Diaz), in charge of the evaluation of the title and abstract; and, with a third author (John Barja-Ore) discrepancies were resolved. The full-text evaluation of the articles selected in the first phase was carried out by the same authors; after this stage, 5 scientific articles were included.

Information extraction was carried out by two authors (Kleider Livias-Moya and Jose Leonardo Escobar Diaz), and validated by a third author (John Barja-Ore). For the synthesis of the information, a matrix was designed with the general information of the articles, methodological aspects, and the main findings (Table 1).

## Results

The search identified 405 scientific articles, of which four were eliminated for being duplicate records. In the first phase, 142 records were eliminated because they were a different type of publication and 252 because they did not address the research topic. In the second phase, it was not decided to exclude any of them because they addressed the topic of the study; therefore, seven scientific articles were finally included in this review (Fig. 1).

### Barriers

#### *Inadequate Access to Counseling and Lack of Trained Personnel*

The lack of trained health personnel meant that no time was devoted to counseling mothers about breastfeeding and all the possibilities available to ensure its continuity.[15] In this regard, raising mothers' awareness of the misconceptions they may have, such as the scarcity of milk for their own child, is necessary so that they can seek alternatives in health institutions, such as breast milk banks, both for the acceptance or donation of donated milk.[15–17]

In countries with established HMBs, the lack of dialogue with families about the donation and function of DHM contributed to the limited knowledge and use of these services in the community.[15] Strategies to improve this situation included the creation of support groups to encourage donation,[15] the development of educational materials,[15,16] the integration of milk banks with breastfeeding promotion programs, and the implementation of awareness campaigns through various media.[15,17]

#### *Production and Expression of Breast Milk*

Insufficient production of breast milk is an important reason for not donating breast milk to HMBs.[7,15,18] In addition, lack of knowledge about how to express breast milk not only limits its conservation for personal use but also for donating it to mothers who need this food for their children.[18,19]

#### *Human Milk Bank Requirements*

There are many rules and requirements in the milk banks for donors, such as serological tests, the time limit to be able to donate, among them the minimum amount to donate. In addition to this, another barrier encountered was the delivery/shipping of milk to the milk bank due to distances and the small number of milk banks, as well as hygiene practices, since the milk banks asked them to follow a certain number of rules to be able to donate;[7,19] However, in another study, hygiene was a concern for the mothers receiving the milk, mainly because of what hygiene measures the donors complied with and how to guarantee the safety of the milk, although they were able to continue with the process in a normal manner after explaining the whole process to them.[15] It is important to take into account the concerns presented by both donor and recipient mothers in order to promote and strengthen breast milk banks in health institutions, especially because there is still a lack of knowledge about who to consult and how to carry out the process.[18]

#### *Risks and Concerns*

Among the main concerns on the part of recipient mothers are the risk of contamination due to non-compliance with safety rules, the possibility of nutrient loss during the process until it reaches their child, and the health status of the donor in case she has a disease that may be transmissible and harmful to the baby.[15–17] The main concerns for mothers are due to the lack of information on how milk banks implement predonation tests to comply with the biosafety of donated milk, but it is necessary that they specify the processes of thawing, culture, storage, and maintenance of the equipment used.

#### *Barriers Related to the Child*

The main barrier related to the child of the donor mothers of the milk banks was that their child would run out of milk to continue drinking during growth, although it was recognized that this information was from the Internet.[15,19] Another barrier to take into account is the decrease in affection for their child due to the fact of feeding on donated milk, so they preferred formula, due to its availability and ease of preparation.[16]

#### *Religion*

Religious and cultural practices have great influence in participating as a donor or recipient of breast milk in milk banks, this stigma is related to the values that influence behavior, but the main reason

**Table 1:** Characteristics of the studies included in the review

| *Authors* | *Country, year* | *Aim* | *Sample* | *Data collection* | *Main findings* |
|---|---|---|---|---|---|
| Mondkar et al.[15] | 2018, India | To explore the perception and practice of human milk donation and human milk banking among service providers, mothers and influencers of admitted preterm and sick neonates | Study conducted among 56 service recipients, comprised of mothers and strategic influencers and service providers | Qualitative study on perceptions of DHM and HMB through interviews with nine service providers in newborn care for at least 6 months and informed of HMB operation and policies, and diverse recipients (donors, fathers, mothers, and grandmothers) | Barriers: Shortages of donated milk, staff and infrastructure; safety concerns; family resistance; and lack of communication<br>Motivators: Positive perception of informed providers and mothers; willingness to donate; parental support; suggestions for improvement; and recommendation for national expansion of milk banks |
| Gelano et al.[20] | 2018, Ethiopia | To find out the acceptability of donated breast milk banking, its use for infant feeding and associated factors among mothers in Eastern Ethiopia | Study with 1,085 lactating and pregnant mothers in hospitals with intensive care unit | Cross-sectional descriptive study, which used a questionnaire based on a pretested structured interview | Motivators: Attending healthcare services, visiting NICU and having more number of antenatal visits during pregnancy |
| Wambach et al.[19] | 2019, United States | To describe the personal and social aspects of breast milk donation to a milk bank in the Midwestern United States | Study with 50 female donors comprised of 45 one-time donors, 3 two-time donors, and 2 three-time donors ranging in age from 24 to 40 years in breastfeeding status and previously within the last year | Descriptive cross-sectional study that applied an online survey of 26 items, designed based on evidence and the Theory of Planned Behavior. Assessed motives, beliefs, barriers, support, donation history and intentions using the Iowa infant feeding attitude scale | Barriers: Removal process, donation rules, costs, distance, and lack of knowledge<br>Motivators: Abundant milk supply, infant health, trust in the bank, family support, altruism, avoidance of waste, personal benefits, and milk bank information |
| Mantri et al.[16] | 2021, India | Exploring barriers to implementing breast milk banks in Rajasthan, India | Study with 30 lactating mothers and 25 healthcare providers. Most of the mothers (20–34 years old) were unemployed, while the healthcare providers were 25–36 years old | Qualitative study using in-depth interviews with key informants applying the in-depth interview guide about difficulties in HMB practice. The Root Cause Analysis framework and a fishbone diagram were used to analyze the challenges | Barriers: Lack of funds, personnel, and facilities; maintenance problems; risk of contamination; limiting beliefs; fears and lack of awareness<br>Motivators: Support for health personnel; prenatal education; NICU visits; emotional motivation; donor recognition; community support and awareness campaigns |
| Biggs[18] | 2021, South Africa | Determine why mothers who had committed to donating to a human milk bank in South Africa did not donate their milk | Study carried out on 37 nursing mothers over 18 years of age, who were contacted by telephone. The majority were Black African (83.8%), Christian (62.2%), and unemployed (70.3%) | Cross-sectional descriptive study, in which a questionnaire was used that evaluated 5 important aspects related to breastfeeding | Barriers: Lack of knowledge of the procedure, insufficient production, lack of knowledge of breast milk extraction, difficulty transporting to the hospital and lack of time due to work |

*(Contd...)*

**Table 1:** *(Contd...)*

| *Authors* | *Country, year* | *Aim* | *Sample* | *Data collection* | *Main findings* |
|---|---|---|---|---|---|
| Dos Santos et al.[7] | 2024, United States and United Kingdom | To describe and compare facilitators, barriers, and patterns of human milk donation and identify factors predicting donation volume in a convenience sample of approved milk bank donors in the United Kingdom and the United States | The study analyzed a convenience sample of 556 approved milk bank donors, after excluding 30 participants. The sample included 369 donors from three banks in the United States and 187 donors from one bank in the United Kingdom | A cross-sectional online survey was conducted from August to December 2022, with 6 domains based on a systematic review, Likert scale was used, adapting the infant feeding practices study II (IFPS II), O'Sullivan's Questionnaire on Infant Feeding (QIF), and Human Milk Banking Association of North America (HMBANA) procedures | Barriers: Serological testing, storage, minimum volumes (UK) and logistics (US), and milk donation standard<br>Motivators: Access to information on milk banking; breastfeeding counseling by health professionals and act of solidarity in the face of excess milk |
| Ramachandran et al.[17] | 2024, Malaysia | To identify factors that facilitate or hinder the acceptance of human milk banks in Malaysia | Study of 367 participants: 73.3% Muslims, 82.2% with tertiary education and 70.8% employed | Online cross-sectional study with a validated questionnaire on sociodemographic data, breastfeeding knowledge, and attitudes toward HMB | Barriers: Religious concerns, lack of knowledge, safety, trust and ethical issues<br>Motivators: Knowledge about breastfeeding, access to information, positive attitudes, altruistic motivation, existing practices, government support and willingness to accept information |

reported is because of the possible transfer of hereditary traits from another religion that they do not agree with.[16] Mothers reported that kinship through religion is important, so they were concerned when the anonymity of the donor mother was maintained in the milk banks.[17]

### *Logistical Aspects*

Milk banks faced logistical challenges, including adequate storage and transportation; associated costs, such as travel expenses, dry ice and containers, represent barriers for donors and recipients.[15,16,19] The lack of recurrent funding hinders the efficient operation of milk banks, which negatively affects the maintenance and repair of equipment, increasing the risk of contamination during processing.[7,15,16] On the other hand, the distance between donors and recipients complicated logistics;[7] in addition, the lack of transparency in collection, pasteurization and storage procedures generated distrust in the process.[17] The absence of fully functional HMBs and the debate on donor compensation were additional factors that limited the availability of this vital resource for neonatal nutrition.[17]

### *Maternal Situation*

The distance to the hospital makes it difficult for mothers to donate their breast milk, and the time required to arrive and perform the procedure may limit other activities that they consider important in their daily lives,[18,19] which is why the recruitment of these women in the care of their child would be a relevant strategy to increase the use of HMBs. On the other hand, the working condition of the mother limits her willingness to go to HMBs,[18] due to lack of time or lack of facilities in the working environment.

## Motivators

### *Excess Milk Production*

Excess milk was a common motive; mothers' willingness to voluntarily donate for surplus milk to avoid wasting it.[7,15,19]

### *Access to Information and Breastfeeding Counseling*

Access to information was a crucial factor in the context of breastfeeding and milk banks. Health professionals play a key role in providing information that influences parents' decisions regarding infant feeding. Education and counseling during pregnancy about infant feeding options, as well as knowledge about the benefits of breastfeeding and infant health, were crucial aspects.[7,15–17] Counseling and motivation by hospital staff, the creation of maternal support groups, and information provided by milk banks encouraged donation.[7,15,16,19]

### *Sources of Support for Breastfeeding Promotion and Milk Donation*

The support received was a determining factor in breast milk donation. Donors experienced support in a supportive hospital environment, as well as from spouses, family members, and friends.[15,16,19] The intervention of community leaders, social workers, accredited social health activists, and auxiliary nurse midwives showed promise in increasing awareness and subsequent knowledge of milk banks.[16] Health professionals, family members, and friends motivated numerous mothers to donate. Potential government support, under proper management, was considered critical to ensure the sustainability of these programs. Breastfeeding education and implementation of guidelines to expand milk banks nationwide were identified as promising strategies to promote donation.[15,17]

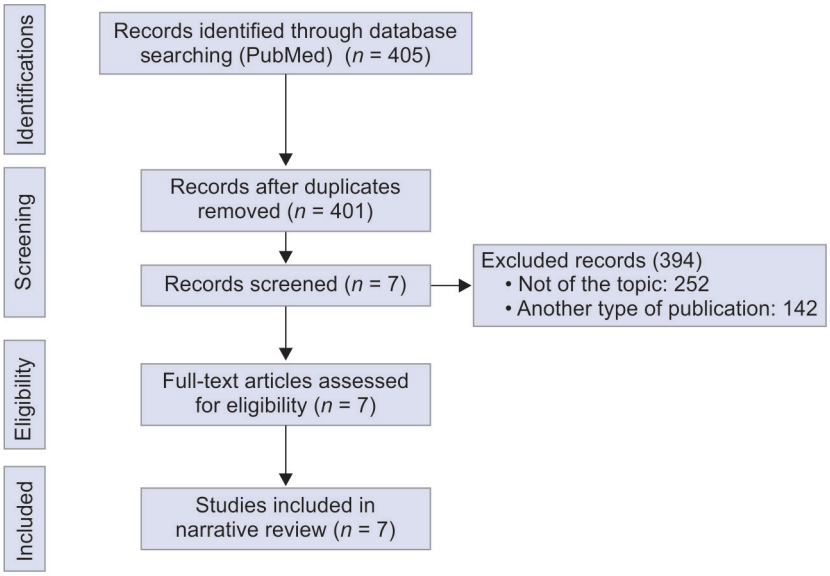


**Fig. 1:** Flowchart for the selection of scientific publications

### *Maternal Solidarity and Neonatal Well-being*

Mothers showed favorable disposition to donation by understanding its potential to save lives in vulnerable neonatal situations,[15,19] without compromising the supply for their own infants.[19] The primary motive for donation was a feeling of kindness and sisterhood, based on the belief that breast milk was irreplaceable,[15–17,19] especially to ensure adequate infant health and growth.[7]

Healthcare providers and recipient mothers, once informed, developed a positive perception of the benefits of donated milk, recognizing its vital role in the survival of vulnerable neonates. The desire to help other babies was an important motive for donating breast milk, especially after visiting NICUs;[16,20] and therefore, gaining personal benefits, such as the satisfaction of contributing. Recognition and appreciation toward donor mothers fostered solidarity.[15,16,19]

## Conclusion

Human milk banks represent an important strategy to support breastfeeding, ensuring its exclusivity and continuity. Their use by donor and recipient mothers depends on various aspects of themselves, their environment and even on the norms or procedures established by the health institution. Access to information seems to be an important motivator for using HMBs, as well as excess milk production and maternal solidarity; on the other hand, the requirements of the institutions, their logistical aspects, risks and concerns about breast milk and the health of their child.

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