

FACTORS THAT INTERFERE WITH DONATION OF HUMAN MILK: INTEGRATIVE REVIEW

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ABSTRACT: The present study aimed to analyze Brazilian scientific literature related to the factors that interfere with donation of human milk. Integrative review of databases *Literatura Latino-Americana em Ciências da Saúde*, National Library of Medicine and Sci Verse Scopus Top Cited. No time frame was established and data was collected in January 2016. The descriptors used were “bancos de leite” OR “milk banks”. After the search, 20 articles were selected for the final *corpus* of the research. The factors that interfere with breast milk donation were classified as operational, educational and structural. The study found that health professionals play a key role in the encouragement of human milk donation and should be multipliers of good practices related to breastfeeding. High quality care should be provided to nursing mothers to meet their demands, on an individual basis.

DESCRIPTORS: Milk banks; Breastfeeding; Maternal-Child Health; Maternal-Child Nursing.

FATORES QUE INTERFEREM NA DOAÇÃO DE LEITE HUMANO: REVISÃO INTEGRATIVA

RESUMO: O objetivo deste trabalho foi analisar a produção científica brasileira acerca dos fatores que interferem na doação de leite humano. Estudo do tipo revisão integrativa, realizado nas bases de dados Literatura Latino-Americana em Ciências da Saúde, *National Library of Medicine* e *Sci Verse Scopus Top Cited*. Não foi estabelecido recorte temporal e a coleta de dados ocorreu em janeiro de 2016. Foram utilizados os descritores: “bancos de leite” OR “milk banks”. Após as buscas, 20 artigos integraram o *corpus* final da pesquisa. Os fatores que interferem na doação de leite foram identificados como operacionais, educacionais e estruturais. Identificou-se que os profissionais de saúde têm papel fundamental no estímulo à doação de leite humano e devem ser multiplicadores de boas práticas relacionadas ao aleitamento materno. O atendimento oferecido às nutrizes deve ser qualificado e os profissionais devem procurar atender as demandas das nutrizes, de acordo com as suas particularidades.

DESCRIPTORES: Bancos de leite; Aleitamento materno; Saúde Materno-Infantil; Enfermagem Materno-Infantil.

FACTORES QUE SE INTERPONEN A LA DONACIÓN DE LECHE HUMANA: REVISIÓN INTEGRATIVA

RESUMEN: La finalidad de este trabajo fue analizar la producción científica brasileña acerca de los factores que se interponen a la donación de leche humana. Estudio de tipo revisión integrativa, realizado en las bases de datos Literatura Latinoamericana en Ciencias de la Salud, *National Library of Medicine* y *Sci Verse Scopus Top Cited*. No se estableció periodo temporal y los datos fueron obtenidos en enero de 2016. Se utilizaron los descriptores: “bancos de leche” OR “milk banks”. Como resultado de las búsquedas, 20 artículos integraron el *corpus* final de la investigación. Los factores que interfieren en la donación de leche fueron identificados como operacionales, educacionales y estructurales. Se identificó que los profesionales de salud son fundamentales para el estímulo a la donación de leche humana y que buenas prácticas acerca del amamantamiento materno deben ser multiplicadas por esos profesionales. El atendimento ofrecido a las nutrizes debe ser cualificado y los profesionales deben atender a las demandas de ellas, de acuerdo con sus particularidades.

DESCRIPTORES: Bancos de leche; Amamantamiento materno; Salud Materno-Infantil; Enfermería Materno-Infantil.

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● INTRODUCTION

Breast milk (BM) is considered the ideal food for newborns, providing physiological and immunological benefits for the infant. Breastfeeding (BF) also provides psychological and emotional benefits, due to the bonding between mother and child⁽¹⁾. Therefore, breastfeeding (BF) may reduce morbimortality in the first year of life and prevent diseases throughout the individual's life⁽²⁾.

Brazil's Ministry of Health (MS) recommends exclusive BF during the first six months of life and complemented until two years with gradual introduction of new foods. However, despite scientific evidence of the superiority of breast milk over artificial substitutes, most Brazilian children are not breastfed during the first six months of life⁽³⁾. A study conducted by Brazil's Ministry of Health (MS) showed that only 41% of the total number of children in the sample, under six months of age, were exclusively breastfed (EBF)⁽⁴⁾.

According to the National Monitoring Report on the Millennium Development Goals 2013 (MDG), Brazil achieved the global target of reduction of infant mortality, in 2012. There was a reduction in the infant mortality rate from 53.7, in 1990, to 17.3 deaths per thousand live births in 2012, indicating a decrease of 67.7%. This reduction is directly related to governmental programs such as encouragement of BF⁽⁵⁾.

Preterm births remain one of the leading causes of infant mortality. It is known that prematurity is directly related to high rates of infant mortality, accounting for about 27% of infant deaths. Regarding the risk factor "gestational age", the incidence of neonatal mortality was 53.1% preterm infants (n=20.712) in 2013⁽⁶⁻⁷⁾.

One difficulty in the management of preterm infants is associated to the immaturity of the gastrointestinal tract. Human milk is more tolerated by preterm infants than formula milk because it contains adequate nutrients that stimulate intestinal maturation and motility. The earlier breastfeeding starts, the greater the chance of survival and recovery of the newborn⁽⁸⁾.

Over the past decades some health actions were developed to improve BF indicators and hence contribute to reduce infant morbimortality. Health professionals play a key role in the support to breastfeeding women. Thus, strategies aimed to promote breastfeeding, especially targeted to preterm infants, were developed in neonatal units. such as the implementation and operation of Human Milk Banks (HMB)⁽⁸⁻⁹⁾.

HMB are specialized centers that promote and encourage BF, and also collect, process and distribute expressed human milk to infants⁽¹⁾. Expressed milk is supplied to preterm infants that are not capable of suckling until they reach the ability for oral feeding. Therefore, this strategy allows mothers to actively participate in lactation, favoring breastfeeding⁽¹⁰⁻¹¹⁾.

The present study identified the gaps in care provided to nursing mothers and possible milk donors, contributing to improve the rates of breastfeeding and HM donation. The present review aims to analyze the factors that interfere with human milk donation in the Brazilian scientific literature.

● METHOD

Integrative review of the factors that interfere with human milk donation was adopted in the present study. In this methodology, findings from prior studies on a selected theme are collected and summarized, allowing the identification of gaps in the current research. Therefore, these reviews may directly contribute to improve care practices⁽¹²⁾.

The elaboration of this study involved the following steps: establishment of the guiding question; selection of descriptors; selection of databases; definition of inclusion and exclusion criteria of studies; categorization of the studies; assessment of the included studies; interpretation of results and synthesis of knowledge⁽¹²⁾.

In order to achieve the proposed objective, the guiding question was "What are the factors that interfere with human milk donation, according to Brazilian scientific literature?". The descriptors (Descritores em Ciências da Saúde - DeCS) used were "bancos de leite" and "milk banks", and Boolean operator OR was used in the searches. Descriptor "bancos de leche" did not influence the number of articles found. The databases selected for the study were Literatura Latino-Americana em Ciências da Saúde (LILACS), National Library of Medicine (PubMed) and Sci Verse Scopus Top Cited (Scopus). The search was conducted in January 2016.

A total number of 1,302 publications were identified and the inclusion criteria were original articles in English, Portuguese or Spanish whose theme answered the guiding question. No time frame was established to allow for the identification of the largest possible number of articles that answered the guiding question. Therefore, 216 were excluded because they were not articles; 132 were not written in the selected languages (Portuguese, English or Spanish). The use of the filter “humanos” in the databases resulted in the exclusion of 78 publications. Finally, after the use of filter “Brasil” 299 texts were excluded.

The titles and abstracts of 577 articles were analyzed. Non-original articles (letters to the editor, papers accepted for publication in annals of events, commentaries, etc.), as well as articles not related to the investigated theme and that did not answer the guiding question were excluded at that stage. Studies that addressed specific laboratory and microbiological issues related to human milk were also excluded. Duplicate articles were eliminated and coded only once. The corpus of the review was composed of 20 articles. A flowchart (Figure 1) provides a better illustration of the search and the reasons for exclusion of the studies.

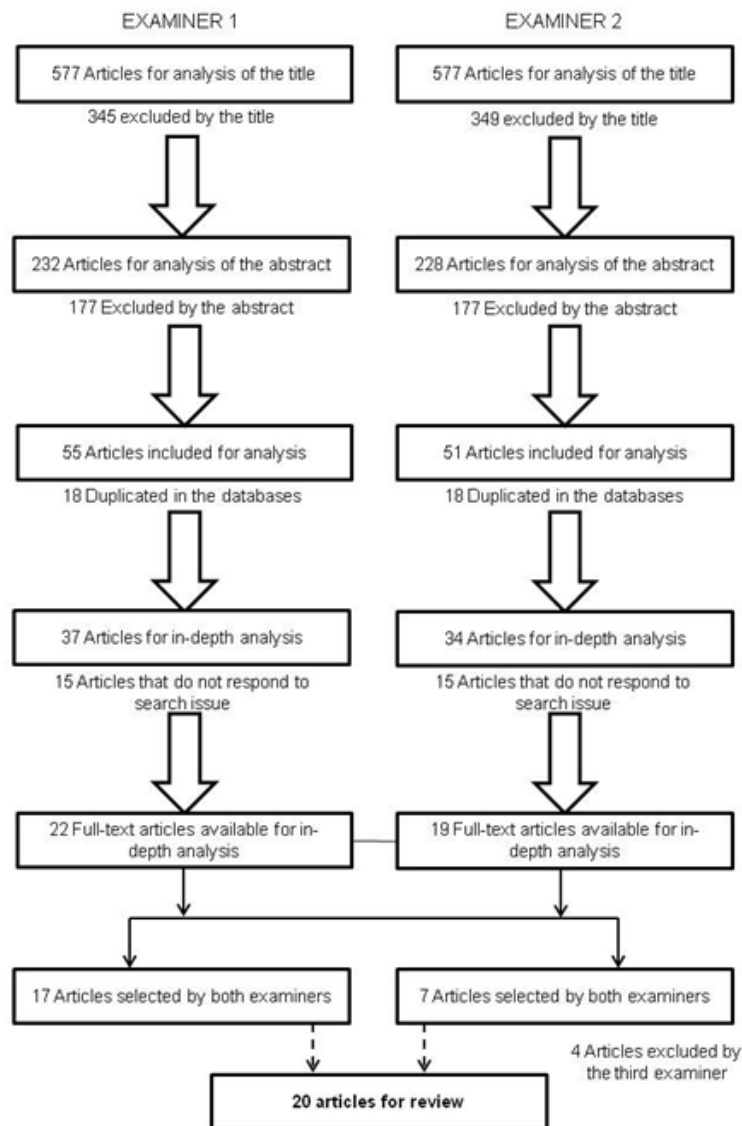


Figure 1 – Flowchart for selection of the Brazilian scientific production on HMB and the factors that interfere with milk donation. Santa Maria, RS, Brazil, 2016

After selection of the articles, a chart was created to collect and summarize the information to be extracted from the texts, which included the following items: title, journal and year of publication, objectives of the study, methodology of the study, level of evidence and main results.

The articles collected were categorization, interpretation and grouping of similar data to make it possible summarizing the information contained in the articles, according to the factors that interfere in human milk donation, namely: operational (10 articles), educational (12 articles) and structural (seven articles), as shown in Figure 2.

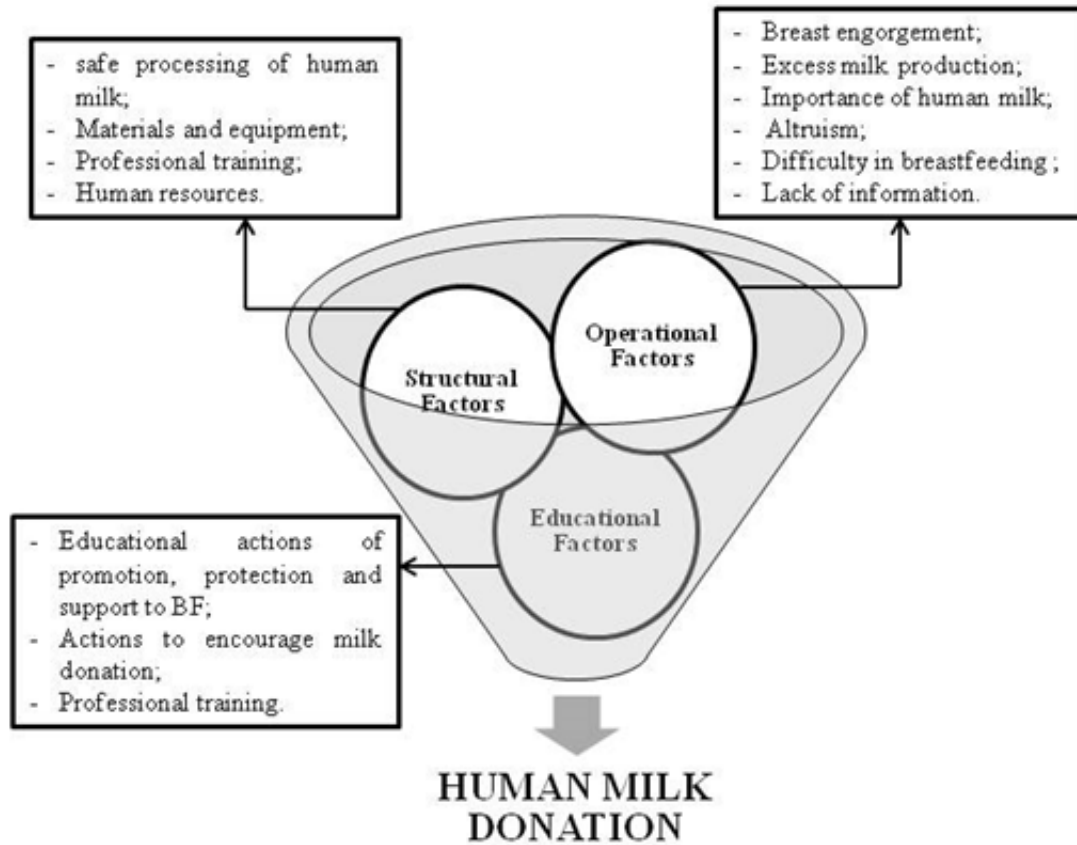


Figure 2 – Factors that interfere with human milk donation. Santa Maria, RS, Brazil, 2016

● RESULTS

Name and title of the primary author, field of knowledge and teaching institution to which the author is attached were identified in the articles, as well as methodology used, levels of evidence of the studies, year of publication and language.

Regarding the name and title of the first author, most articles were produced by masters (seven), followed by doctors (five), graduates (four), post-graduates (two), masters students (one) and graduate students (one).

The fields of knowledge of the primary author were also identified, and nursing was the most frequent (Figure 3).

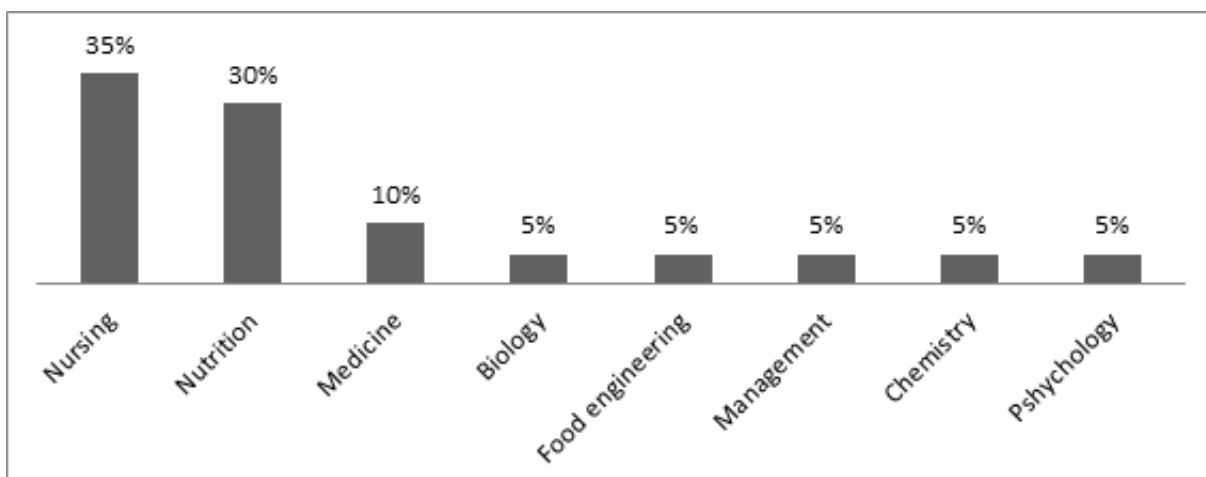


Figure 3 – Distribution chart according to the field of knowledge of the primary author of integrative review articles on human milk donation. Santa Maria, RS, Brazil, 2016

Regarding the institutional bond of the primary authors, the articles were produced in 13 different institutions, and only one author was not attached to any institution. The Federal University of Brasília was the most cited, with four articles related to the theme followed by the federal universities of Paraná, Ceará and Alagoas and Universidade Estadual de Maringá, with two articles each. The other institutions, Universidade Federal Fluminense, Centro Universitário São Camilo/SP, Universidade Estadual de Londrina, Fundação Oswaldo Cruz, Universidade Federal de Minas Gerais, Universidade Federal de Uberlândia, Universidade Federal da Bahia and Universidade de Taubaté produced one article each.

Regarding the methodologies used, all the articles were original, with emphasis to descriptive studies (Figure 4).

Concerning the sample of articles, most information was collected from mothers/nursing mothers (Figure 5).

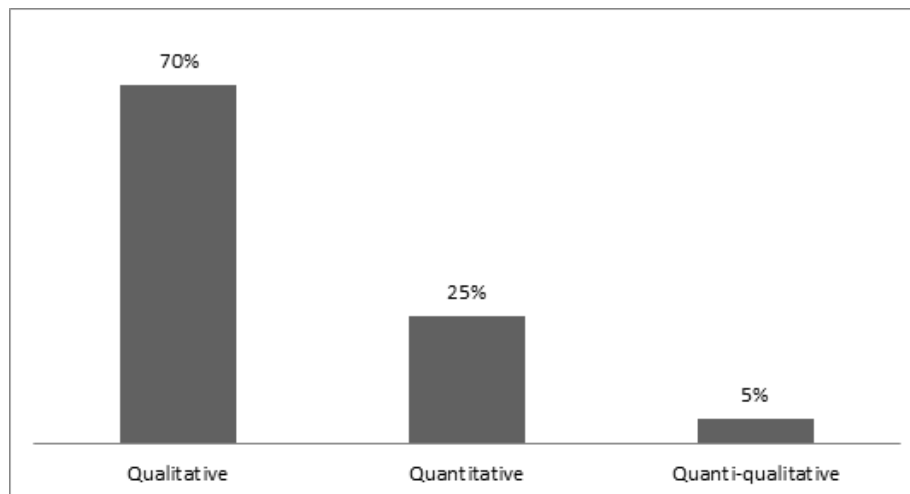


Figure 4 – Distribution chart according to the methodology used in integrative review articles on the theme human milk donation. Santa Maria, RS, Brazil, 2016

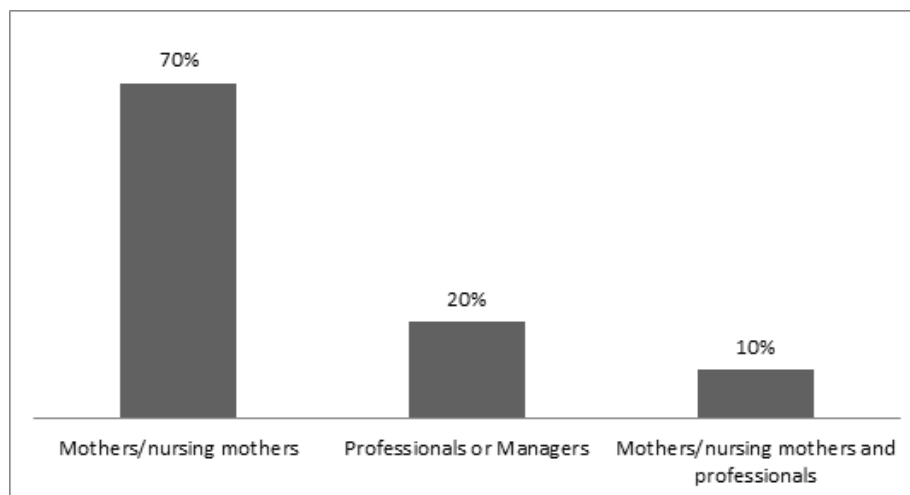


Figure 5 – Distribution chart according to the sample of integrative review articles on the theme human milk donation. Santa Maria, RS, Brazil, 2016

The articles were assessed according to their level of evidence, considering the clinical question addressed by the primary study, (13). Of the studies related to prognosis or etiology (13), most showed level of evidence IV (12), and only one had level of evidence II. Five studies had level of evidence II. Only two studies addressed the clinical question of treatment /intervention, one with level of evidence III and the other with level of evidence II.

Regarding the year of publication, the articles identified were published between 2000 and 2015, and were analyzed by four-year distribution. Three articles were published in the 2000-2003 period and four

articles in the 2004-2007 period. Most articles were published from 2008 to 2011: nine articles. Four articles were published in the 2012-2015 period. Increase in the number of published articles over the years was found in the analysis, confirming that the theme has attracted considerable attention.

Most articles were published in Portuguese (17), and only two in English and one in Spanish.

● DISCUSSION

Operational Factors

The main reasons why nursing mothers donate their milk were engorgement⁽¹⁴⁻¹⁸⁾, excess milk supply^(14,16,19), knowledge of the importance of breast milk for hospitalized infants^(14,16,19-21), altruism^(14-17,19,21) and previous experience of breastfeeding difficulties^(16,19), among other less cited reasons.

On their first visit to the HMB, nursing mothers intended to express their milk. Their decision to volunteer for donating breast milk was made after contact with the health team⁽¹⁴⁻¹⁵⁾. Since one of the most frequent reasons for donating is excess supply of breast milk, beyond the needs of their babies, this finding was expected⁽¹⁶⁾. After being informed on the importance of BF and the benefits of their milk to the newborn (NB), these women were more willing to donate⁽¹⁷⁾.

Some studies reported that the nursing mothers were aware of the importance and benefits of BM, and this awareness motivated them to donate breast milk^(14,19). The donors were happy to be able to help the mothers and infants at the ICUs and understood the importance of the donation process⁽²⁰⁾.

Altruism has also motivated milk donation: helping mothers who were unable to breastfeed⁽¹⁶⁾. Nursing mothers experience a feeling of self-respect, being aware that they are performing a relevant social role^(16,20). Previous experience of difficulty and/or impossibility of breastfeeding of the donor or another person of her social circle were also decisive for donation⁽¹⁶⁾.

The main reason for seeking milk bank services was the need for help with breast engorgement or other problems⁽¹⁴⁻¹⁸⁾. At the milk bank, health professionals are responsible for guiding nursing mothers on the importance of BF and milk donation, and some of them may feel encouraged to volunteer for donating breast milk, especially during pre-natal, delivery and postpartum^(16-17,21).

Some studies suggested the need to improve health education in maternity units, particularly in joint accommodation in these units and in neonatal care units. Thus, greater attention should be given to guidance on breast milk donation by health professionals, associated with guidance on breastfeeding^(14,17).

Thus, decision making regarding milk donation is directly influenced by the assistance received by nursing mothers at the HMB⁽²²⁾. Valuation of milk donation^(15,20,22) and appropriate communication between professionals and nursing mothers are of key importance in the process of breast milk donation⁽²⁰⁻²²⁾.

The main difficulties faced by women in their decision of donating milk were lack of adequate information:^(17,19) lack of time because of their work activities^(16,19) and number of children⁽¹⁵⁾.

Regarding lack of adequate information, many respondents said they would not donate their milk because they were afraid of depriving their babies from breast milk. Lack of information is evident here, because greater nipple stimulation during pumping will result in greater milk supply⁽¹⁹⁾. Another study showed that although the nursing mothers had already heard of HMB, they were only aware of a service that expressed milk from the mothers to their babies. However, one of the objectives of the HMB is to operate, in an optimized manner, the excess milk supply of each nursing mother, as well as to give advice on breastfeeding and milk donation⁽¹⁾. At the milk banks, nursing mothers were clarified on the objectives of these banks, on the destination of their milk and on the benefits to other children^(17,19,22).

Lack of time and reduced milk supply because of work activities were negative operational factors in three studies^(16,19,22). So, milk banks emphasize the importance of donating milk during the most favorable period, i.e. maternity leave (four months), without neglecting the ethical principles related to voluntariness and autonomy.

One of the above mentioned studies reported a correlation between decrease in the number of breast milk

donors and higher number of children of nursing women⁽¹⁵⁾. This can be explained by the fact that women with only one child have more time to express their milk, prepare the materials and store the milk than those with two or more children.

Another aspect concerned the causes of disposal of donated human milk, as follows: inappropriate milk expressing procedure and/or milk storage; smoke smell and forgetting to put the milk in the fridge⁽²³⁾. According to the referred study, these occurrences were reduced when the milk bank provided checklists to clarify issues regarding milk donation to the donors. The same study also reported that the use of informal conversation with donors whose milk was rejected caused embarrassment both for the donor and the health professionals. In turn, the use of a checklist successfully reduced milk disposal, and improved the interaction between health professionals and donors. The donors welcomed the checklist that was considered a document that recognized the quality of their milk⁽²³⁾.

In the two other studies on loss of expressed milk for non-conformity^(20,23), one of the reasons for disposal of human milk was that it was past its expiration date, which was mostly attributed to delay in home visits and in the delivery of the expressed milk to the bank. Unfortunately, the referred facts demonstrate that health promotion has been widely neglected.

Educational factors

Most studies addressed educational aspects related to promotion, protection and support to BF and milk donation. The need to improve technical support, assistance and monitoring of donors were some of the issues raised^(14,17), to emphasize the importance of BF. It is assumed that pregnant women who receive information and guidance on BF and milk donation are more likely to become donors^(14,16-17).

Human milk expressing and storing were also frequently raised issues. Thus, guidance on appropriate milk expressing and storing techniques are needed to ensure the supply of high quality expressed breast milk⁽²²⁻²⁵⁾, as well as on the importance of feedback from donors on milk processing and destination^(23,26). One study found that collection of human milk for further delivery at the milk banks is a safe way to improve the quality of the milk donated, as long as the donors are informed on the appropriate hygiene and storing processes⁽²⁷⁾.

Another study resulted in the elaboration of a manual with guidance on home nursing consultation, allowing its systematization. This manual resulted in improvement of health professional/nursing mother relationship and in a more effective promotion of BF and milk donation⁽²⁸⁾.

Most information and/or guidance on BF and milk donation was provided by health professionals^(15,17). However, it is also necessary to strengthen public policies of promotion, protection and support to BF.

It is important that well-trained health professionals advise pregnant and postpartum on BF and milk donation. According to some studies, the number of donors would significantly increase if guidance on milk donation began in the prenatal period^(16,21,24), including discussions on the various aspects involved in this process.

One study identified differences between adult and adolescent milk donors concluding that the latter faced unfavorable socioeconomic and perinatal conditions, requiring special care in BF management. Support and encouragement of the health team are essential for the mother and the infant⁽²⁹⁾.

The referred studies detected lack of health professionals well prepared to provide effective guidance to nursing mothers. Health education actions targeted to the promotion, protection and support to BF and to the appropriated training of health professionals who provide care to pregnant women or nursing mothers who seek these services may result in the increase in the number of human milk donation.

Structural factors

Resolution 171/2006 of the Collegiate Board of Directors of the National Sanitary Surveillance Agency (ANVISA) provides guidance to managers and professionals of milk banks on compliance to the current legislation, in order to improve structural and process-related aspects, such as purchase of equipment, implementation of mandatory tests, record of human milk processing stages and strict control of product

quality⁽³⁰⁾. One article stressed that the milk banks that comply with the current legislation contribute to the achievement of high quality services⁽²⁵⁾.

Some studies reported the importance of safe processing of human milk, which should be ensured throughout the process, from the selection of donors to product distribution^(20,22,25,31). Therefore, it is essential that human milk banks comply with the above mentioned operating rules. Other studies pointed to some failures in this process, such as the inappropriate physical structure of some facilities, incomplete records of pasteurization of human milk^(25,31), poor hygiene of breasts and hands⁽³¹⁾. Equipment insufficient to meet the demands⁽³¹⁻³²⁾ and under-qualified and understaffed personnel^(25,31-32) were also reported.

Thus, the management of human milk banks must maintain updated documents and records to ensure the appropriate operation of these centers and also provide the necessary materials and equipment, as well as qualified professionals, according to the legislation^(31,33).

Adequate guidance on milk expressing is essential, since the quality of the human milk submitted to pasteurization depends directly on the hygienic-sanitary procedures adopted in this process⁽²²⁾. Thus, the factors cited in the present study are interdependent.

Despite the lack of materials and equipment in human milk banks, their health teams were very considerate and kind, reassuring and guiding mothers on breastfeeding and milk donation, despite the reported fatigue⁽³³⁾.

One study stressed that the importance of the Brazilian network of HMB is undeniable, as it promotes the incorporation of new knowledge in the search for modernization⁽³⁴⁾, and should include systematized processes aimed at a better management of the milk supply and the care provided to the donors^(25,32).

● FINAL CONSIDERATIONS

The present study allowed identifying the factors that interfere with human milk donation, according to the Brazilian scientific literature about the theme. It also allowed identifying which aspects should be improved to increase milk donation.

The operational aspects concerned the reasons that led nursing mothers to donate their milk and those that made it difficult for them to donate milk. Aware of these aspects, health professionals can work more effectively. Guidance on human milk donation associated to breastfeeding may contribute to increase the number of donations. Therefore, nurses play a key role in this process because they are responsible for providing guidance and assistance in breastfeeding, both in the prenatal and immediate postpartum periods, and thus capable of influencing nursing mothers to become donors.

The educational aspects were actions of promotion, protection and support to BF and milk donation. In addition to providing guidance on milk donation, information on milk expressing and storing should also be provided to the mothers in order to raise their awareness on the importance of breast milk and donation. Thus, health professionals must be trained to provide such guidance, according to instructions of the Ministry of Health. The findings of this study indicated the need to train health professionals in the management of BF and milk donation.

Regarding structural aspects, lack of professional training impacts the quality of human milk processing that involves strict quality control procedures. Moreover, the personnel is understaffed. These aspects reveal the need for governmental actions targeted to HMB.

Therefore, further studies on this issue focused on health professionals who work in maternal-infant care and in HMB are needed to obtain more clarification on this population. These studies will make it possible to identify the need for professional training and increase the number of human milk donations and the prevalence of breastfeeding.

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