Original Research Article

Perception and Practices Related to Breast Milk Donation and Acceptance among Donor and Recipient's Mothers of a Breast Milk Bank at a Tertiary Care Hospital in South India

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Abstract

Background: Human Milk Banks (HMB) ensure the availability of pasteurized donor breast milk for small for gestational age babies, low birth weight infants, sick new born and infants of mothers with failed lactation.

Objectives: To assess the perception, practices and associated factors of breast milk donation and acceptance among donor and recipient's mothers registered with the breast milk bank.

Methodology: This hospital based cross-sectional study was conducted between July to September 2019 among 70 donors and 70 beneficiaries who were mothers of children under 6 months of age, registered at the breast milk bank at a tertiary care hospital in Chennai. Data was collected by interview of the mothers with a predesigned semi-structured questionnaire.

Results: Only 74% of them were aware of breast milk bank services. Almost 47 (67.1%) had received more than twice from breast milk bank. Proportion of recipient's mothers who had complications during their delivery and proportion of children who were treated in NICU were significantly higher among the recipients ($p < 0.001$).

Conclusion: Awareness on breast milk bank services is required especially among the mothers of premature babies, low birthweight neonates, and newborn receiving treatment in NICU.

Keywords: Pasteurized Donor Human Milk, breastmilk bank, lactation, low birthweight, pre-term neonates.

Introduction

Breastfeeding is the most effective intervention which could prevent 0.16 million under-5 deaths in India.[1] A child who is breastfed has higher chances of survival than a child who is not breastfed. In preterm neonates breast feeding improves intelligence and cognitive development and protects against necrotising enterocolitis.[2-4] WHO recommends Donor Human milk especially in low birth weight infants, as it ensures exclusive breast feeding in situations where mothers own milk is unavailable.[5] Donor human milk (DHM) gives a higher protection than formula milk.[6] Preterm neonates who were fed with unfortified

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DHM had fewer episodes of vomiting, more feeding tolerance and less gastric stasis, compared with infants who were formula fed.[7] A human breast milk bank is a service established for collecting, screening, processing, storing, and distributing pasteurized human breast milk. It provides solution to mothers who cannot breastfeed their child.[8]

The ''National Guidelines on Lactation Management Centers in Public Health Facilities'' introduced by the Indian government in 2017 is aimed at making breast milk available to all babies.[9] Thus, relying on donor breast milk is the best alternative for the healthy survival of infants as it is safe, screened and processed. Various factors could influence the mother's willingness for donation of breast milk and receiving donor breast milk by the recipient mothers. With this background the present study was conducted with the following objectives:

1. To assess the perception and practices related to breast milk donation and acceptance among donor and recipient's mothers registered with the breast milk bank at a tertiary care hospital in Chennai.
2. To evaluate the factors associated with breast milk donation and acceptance among them.

Material and Methods

This hospital based cross-sectional study was conducted between July to September 2019 among postnatal mothers of children under 6 months of age, registered as donors and recipients of the breast milk bank at a tertiary care hospital in Chennai. According to the Melwani V et al[10] study, the willingness to donate breast milk by mothers was 84.9% and willingness to accept was 85.4%. At 95% Confidence level and 5 % level of significance (α) with 6% absolute precision (d) and assuming a non-response rate of 5%, the sample size (n) required was calculated as $n = Z^2_{1-\alpha/2} [p^* (1-p)] \div d^2$. Hence 140 mothers i.e, 70 donor mothers and 70 recipient mothers were selected as study participants. Mothers of children under 6 months of age who were registered as either donor or recipient of human breast milk of the hospital were included on obtaining informed consent.

The study subjects selected by simple random sampling were interviewed with a predesigned semi-structured questionnaire. Data was analysed using SPSS version 28.0 with descriptive statistics like proportion, mean, median, standard deviation, range, and inferential statistics like chi-square test and fisher's exact test. At 95% confidence interval and 5% level of significance a P value of ≤ 0.05 was considered as statistically significant.

Results

Table 1 shows the donor mothers were aged between 18 - 36 years with a mean (SD) age of 25.6 (3.9) years. The recipient's mothers were aged between 15 - 35 years with a mean (SD) age of 25.9 (4.5) years. Table-3 shows, that the proportion of recipient's mothers who had complications during their delivery and the proportion of children who were treated in NICU were significantly were higher among the recipients. (P < 0.001).

Table-1: Descriptive statistics of donors and recipients of breast milk bank

Descriptive statistics	Donor mothers (n = 70)	Recipient's mothers (n = 70)
Mean age at menarche:	13.53 (1.39) years	13.60 (1.53) years
Range	11 – 19 years	11 – 21 years
Menstrual Cycles:		
Regular	64 (91.4)	59 (84.3)
Irregular	6 (8.6)	11 (15.7)
Mean (SD) age at marriage	22.64 (3.96) years	22.33 (3.70) years
Range	15 – 35 years	15 - 31 years
Mean (SD) age at birth of this child	25.51 (4.07) years	25.76 (4.37) years
Range	18 – 36 years	15 – 35 years
Median (IQR) age of the last child	7 (5 - 10) days	5 (3 - 7) days
Range	2 - 32 days	1 – 25 days
Mean (SD) birth weight of the last child	2.64 (0.56) kg	2.60 (0.69) kg
Range	1.25 - 3.75 kg	1.18 – 3.80 kg

Table-2: Distribution of characteristics of donor's and recipient infants

Characteristic of the infant	Donor's infants (n =70)	Recipient infants (n =70)
Age of the child:		
Upto 1 week	40 (57.1)	55 (78.6)
1 week to 1 month	29 (41.4)	15 (21.4)
More than 1 month	1 (1.4)	0
Sex of the child:		
Male	40 (57.1)	30 (42.9)
Female	30 (42.9)	40 (57.1)
Birth order of the child:		
First	44 (62.9)	42 (60.0)
Second	22 (31.4)	24 (34.3)
Third	3 (4.3)	4 (5.7)
Above three	1(1.4)	0
Birth weight of the child:		
Very Low Birth weight (< 1.500 kg)	3 (4.3)	8 (11.4)
Low Birth weight (1.500-2.499 kg)	24 (34.3)	21(30.0)
Normal Birth weight (≥ 2.500 kg)	43 (61.4)	41 (58.6)

(Figures in parentheses denotes percentages)

Table-3: Distribution based on factors associated with delivery of the child

Factors associated with delivery of the child	Donor mothers (n = 70)	Recipient's mothers (n = 70)	P value
Mode of delivery of the child:			
Vaginal delivery	40 (57.1)	35 (50.0)	0.403
LSCS	30 (42.9)	35 (50.0)	
Type of delivery of the child:			
Pre-term delivery	11 (15.7)	19 (27.1)	0.105
Term delivery	59 (84.3)	51 (72.9)	
Locality of Delivery:			
Husband's locality	64 (91.4)	43 (61.4)	**< 0.001***
Mother's locality	6 (8.6)	27 (38.6)	
Delivered at:			
Government Facility	69 (98.6)	70 (100.0)	0.999
Private Facility	1(1.4)	0	
Complications occurred during delivery	5 (7.1)	23 (32.9)	< 0.001*
Mother was kept in ICU after delivery	13 (18.6)	19 (27.1)	0.227
Child was kept in ICU after delivery	47 (67.1)	65 (92.9)	< 0.001*

(Figures in parentheses denotes percentages, * - chi-square test)

Perceptions of breast milk donor and recipient's mothers

All the 70 (100.0%) mothers had perceived that, incentive for donating milk was not required. Majority 67 (95.7%) of the donor mothers said spousal consent to donate breast milk was not required. Among

the 61 donor mothers who accepted for donor breast milk in future, mostly 58 (95.0%) of them preferred for any healthy donor rather than a specified known donor.

Majority 69 (98.6 %) of recipient's mothers felt incentive for donating milk was not required. Almost 62 (88.6 %) of them said spousal consent to accept donor breast milk for the child was not required. Among the 66 recipient's mothers who accepted for donor breast milk in future, mostly 64 (97.0%) of them preferred for any healthy donor from breast milk bank rather than a specified known donor.

Table-4: Perceptions related to Breast milk donation and reception

Perceptions of mothers	Response	Donor mothers (n = 70)	Recipient's mothers (n = 70)
Awareness on breast milk banks	Present	70 (100.0)	52 (74.3)
Source of information on Breast milk bank	peer-group	1(1.4)	17 (24.3)
	doctors	3 (4.3)	10 (14.3)
	staff nurses	66 (94.3)	43 (61.4)
Donor breast milk is pasteurised	Yes	48 (68.6)	52 (74.3)
Donor breast milk is safe for children	Yes	70 (100.0)	68 (97.1)
Donor breast milk contains more nutrients than formula milk	Yes	70 (100.0)	67 (95.7)
Donor breast milk may transmit diseases from donor to the recipient baby	Yes	66 (94.3)	68 (97.1)
Donor breast milk reduces infections in the baby	No	69 (98.6)	68 (97.1)
Donor breast milk can increase the risk of allergy in the baby	No	70 (100.0)	67 (95.7)
Donor breast milk is completely screened for diseases	Yes	69 (98.6)	70 (100.0)
Donating mother gets side effects after breast milk donation	No	68 (97.1)	69 (98.6)
Best alternative for mother's milk	Donor milk	63 (90.0)	60 (85.7)
	Cow's milk	7 (10.0)	10 (14.3)
Donating breast milk will cause shortage of breast milk for the donor's child	No	68 (97.1)	61 (87.1)
Willingness to donate breast milk in future	Yes	69 (98.6)	67 (95.7)
In future would prefer to donate breast milk to	A known child	0	0
	An unknown	0	2 (2.9)
	child Any child in need	70 (100.0)	68 (97.1)

Figures in parentheses denotes percentages)

Practice of breast milk donation and reception from breast milk bank

Median (IQR) quantity of milk donated was 50 (25-75) ml with a range of 5 - 150 ml. Frequency of donation of breast milk was once by 30 (42.9%), twice by 23 (32.9%), thrice by 8 (11.4%), four times by 4 (5.7%) and five times by 5 (7.1%) of them. Majority 68 (97.1%) of the mothers had donated during their hospital stay in the post-natal period while only 2 (2.9%) of them had donated following a visit to Hospital for a review. None of the study subjects reported any side effects or milk insufficiency after breast milk donation.

Median (IQR) quantity of donated breast milk received for the child was 40 (30-50) ml with a range of 15 - 100 ml. Frequency of receiving donated breast milk for the child from breast milk bank was more than twice by 47 (67.1%), twice by 5 (7.1%) and atleast once by 18 (25.7%) of them. Majority 64 (91.4%) of the mothers had received donor breast milk for their child during the child's treatment period in Intensive Care Unit at the Hospital as indicated by the doctors as the best alternative for mother's milk during breast milk insufficiency while only 6 (8.6%) of them had received the donor breast milk following breast milk insufficiency during their stay in postnatal inpatient ward at Hospital. Most of the recipient's mothers 69 (98.6%) felt that the child's health status improved following consumption of donor breast milk and did not report any side effects.

Discussion

Age at child birth and parity of mothers are important factors influencing the breast milk donation and acceptance. Katke RD et al had reported that women in extremes of reproductive age group and increased parity had a decreased breast milk donation rate. Similarly, we observed that Mean (SD) age at birth of the child among the donors was 25.51 (4.07) years and almost 63% of them were primiparous.[11]Lack of awareness on breastmilk donation and advantages of PDHM among mothers is a major point of concern. In contrast to Melwani V et al study where only 10% of the mothers were aware of existence of breast milk bank in our study it was around 74%. The willingness to accept and willingness to donate breast milk in near future was 85.4% and 84.9 % respectively as per Melwani V et study which was comparable to our study results which was 94.3% and 95.7% respectively.[10] Table-4 shows, in our study only 2.9 % of mothers feared of transmission of infection through donor milk, which contrasted with Mantri et al study who reported 23.3% of mothers with fear of using donor human milk.[12]

Compared to formula milk, PDHM reduces the risk of sepsis, necrotizing enterocolitis, diarrhoea and feeding intolerance, and the length of stay in NICU.[13,14] In Melwani V et al study 55.4% of the mothers felt other animal's milk like cow or buffalo milk as best alternative for mother's milk to child and only 35% felt donor breast milk as a best alternative. In contrast in our study, we found 90% of donor mothers and 85.7% of recipient's mothers felt donated breast milk as best alternative to mother's milk compared to animal's milk.[10]

In our study we found majority 78.6% of the recipients of PDHM were neonates aged upto one week after birth and almost 92.9% of the recipients had history of treatment in neonatal intensive care unit. In similar to this Pal A et al study had reported that almost 81% of the mothers with children in NICU were more likely than mothers of well babies to accept milk from a milk bank rather than a relative or friend.[15] Sachdeva RC et al study had reported that among the recipients of DHM, 30% to 50% of them were neonates under treatment in Intensive Care Unit and 10% to 20% of the babies were in Postnatal care ward after birth.[16] In the present study we observed that 91.4% of the beneficiaries were neonates under Intensive care treatment and 8.6% were in post-natal wards. As per Nangia S et al study, reported that around 53.3% had given birth to a premature infant and 63% of the donors were from the postnatal care wards.[17] In contrast in our study, we found that 15.7 % of donor mothers had delivered pre-term babies while 38.6 % of them had low and very low birth weight babies.

Conclusion

Awareness on breast milk bank services is required especially among the mothers of vulnerable children like, those who are born with low birthweight, premature babies and neonates receiving treatment

in NICU. PDHM would also fulfill the nutritional needs of newborns whose mothers are on treatment for complications during delivery or has lactation failure, as it is a safe alternative to cow's milk and formula feed. PDHM would ensure early initiation and adherence to exclusive breastfeeding practices especially to the vulnerable infants. This would in turn translate into better nutritional status and lower infections among them.

Ethical approval: Institutional Ethics Committee (IEC) approval was obtained from our institution prior to the data collection (IEC letter no.: 16/2019/IEC/GMC, OGE. dated:15/07/2019).

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Conflict of interest: None

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