

A Descriptive Study of the Attitude and Experiences of Donor Mothers in a Human Milk Bank

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ABSTRACT

BACKGROUND

Human milk donation depends on biological factors that are associated with milk production and social factors including donor's age, literacy, culture and economic status. Understanding donors' experiences and their attitudes towards donation is important as it will help improve milk donation and motivate potential donors. The aim of this study was to describe the attitude and experiences of the donor mothers in the Human Milk Bank (HMB).

METHODS

This was a descriptive study conducted in the Human Milk Bank (HMB) attached to this hospital with a time bound sample of 50 mothers who have donated their milk at least once. A questionnaire with 14 questions based on the concepts of the Theory of Planned Behaviour (TPB) including the 5 characteristics of attitude, subjective norms, behaviour control, behaviour intentions, and behaviours was framed and administered. The study was conducted in April and May 2020.

RESULTS

Breast engorgement (36 %) and the donors having a sick neonate unable to feed (40 %) were the main reasons for milk donation. Two thirds of the donors were not aware about the contra-indications for donating milk to HMBs. Health care workers (74 %) were the major motivators and three fourths of the spouses were supporters of milk donation. Majority of the mothers (88 %) did not desire any monetary remuneration for milk donation and about two thirds were willing to continue donation after going home if a collection facility is available nearby. About 90 % of the donors did not feel inadequacy of milk for their baby or have experienced any pain or discomfort during the milk donation.

CONCLUSIONS

Educating the donors about the contra-indications to milk donation and the safety protocols followed in the HMBs, educating the family members about milk donation and establishment of collection centers in the communities will bridge the demand supply gap in Pasteurized Donor Human Milk (PDHM) and ultimately reduce the neonatal mortality and morbidity.

KEYWORDS

Human Milk Bank, Pasteurized Donor Human Milk, Human Milk Donor, Breast Feeding

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BACKGROUND

Mother's milk is the best for the baby in terms of its nutritive and immunological properties. Exclusive breast feeding till 6 months of age has been recommended by World Health Organization (WHO) and it has significantly improved the infant survival in developing countries.¹ In situations where mother's milk is not available, Pasteurized Donor Human Milk (PDHM) is recommended. The WHO and the United Nations International Children's Emergency Fund (UNICEF) recommend the use of PDHM as the first alternative when mother's milk is not available, particularly for preterm neonates.^{2,3} The survival of Very Low Birth Weight (VLBW) neonates increased significantly with the use of PDHM.⁴ A human milk bank (HMB) collects, screens, processes and distributes milk donated by healthy donor mothers. The first HMB in Asia was established in the year 1989 in Mumbai, India.² But the numbers of HMBs are highly inadequate to meet the demand for PDHM throughout the world.⁵ In India, the guidelines for establishment and operation of human milk banks were laid down in detail by the Indian Academy of Paediatrics - Infant and Young Child Feeding Chapter.² The guidelines include selection of donors, documentation, pasteurization, storage, microbiological safety and distribution. Human milk donation depends on biological factors that are associated with milk production and social factors including donor's age, literacy, culture and economic status.⁶ There are many papers available in literature which describes the clinical profile of the recipients, milk collected and the functioning of the milk bank.^{7,8,9} Only very few papers are available in the literature which describes the demographic profile of the donors.^{10,11,12} In contrast, there are many studies available that describes the altruistic attitude and the experiences of the voluntary blood donor.¹³ Blood donors seem to have generally more recognition than milk donors in the society. Though human milk donations increase every year, the demand for PDHM exceeds the supply.⁵ Hence, understanding donors' experiences and their attitudes towards donation is important as it will help improve milk donation and motivate potential donors. The aim of this study was to describe the attitude and experiences of the donor mothers in the HMB.

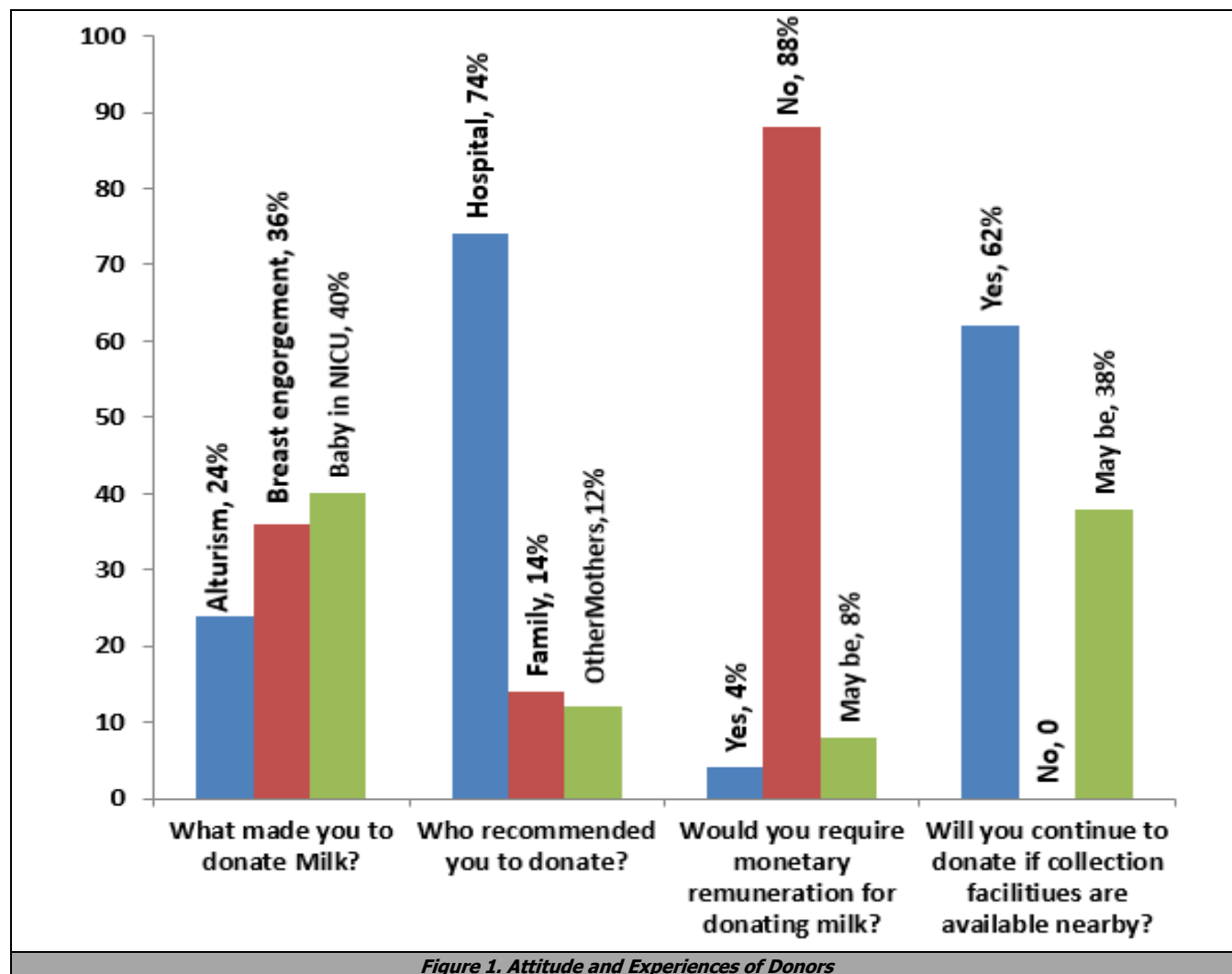
METHODS

This was a hospital based cross-sectional descriptive study conducted in the Human Milk Bank (HMB) attached to this hospital during the months of April and May 2020. A time bound sample of 50 mothers who have donated their milk at least once to this HMB formed the study group. Informed consent was taken before participation and participation in the study implied study consent. Mothers who were not willing were excluded. Institutional ethical committee clearance from our hospital was obtained. For the purpose of this study we developed a questionnaire based on the concepts of the Theory of Planned Behaviour (TPB) and currently available literature on human milk donor

characteristics. In psychology, the TPB is a theory that links one's beliefs with their behaviour. This theory states that the attitude, subjective norms and the perceived behavioural control shape a person's behavioural intentions and behaviours.¹⁴ The HMB in this hospital was established in the year 2015 and the second, third, fifth and sixth authors have more than 5 years of experience in establishment and functioning of HMB. The authors also have experience in attending to the needs of the donor mothers and improving the collection of milk.⁷ With their experience and with review of literature a questionnaire based on the principles of TPB was framed. The questionnaire was carefully designed with the help of the child psychologist of the hospital to cover all the 5 characteristics of TPB including attitude, subjective norms, behaviour control, behaviour intentions and behaviours. The 5 characteristics were translated into questions and a questionnaire with 14 questions was framed. These concepts of TPB were successfully employed in many studies done in western countries.¹⁵⁻¹⁸ To avoid interviewer bias all the participants were interviewed by fourth author alone. The questions were translated into local Tamil language and administered to the donor mothers in their convenient time after at least one sitting of donation. Data regarding the demographic profile of the mothers like age, parity, educational level and socio-economic class were also collected. The socio-economic status was assessed using Modified BG Prasad scale.¹⁹ Data was collected using Google forms and analysed using Microsoft Excel. The descriptive statistics like mean, range, percentage and frequencies were used for the demographic variables and for the questions describing the characteristics of TPB. Bivariate analysis was used to test the association between socio-economic and educational statuses with the TPB characteristics. Statistical Package for Social Studies version 21.1 was used and a p value below 0.05 was taken as significant.

RESULTS

The results are tabulated in tables 1 and 2. The mean age group of the study group was 23.62 years and the range was from 19 to 32 years. About 30% of the study population was in the less than 20 years age group. About 60% were primiparous and 40 % were multi parous. About 20 % of the mothers have completed higher secondary education and 38% were graduates. There was one post-graduate mother in the study group. About 52 % of the donors belonged to the grade 3 socio-economic class and 44% of the donors belonged to grade 2 socio-economic class as per Modified BG Prasad Scale. Analysis of the 5 characteristics of TPB was done based on the 14 questions in the questionnaire. The first characteristic was attitude to behaviour. This was analysed with 4 questions to know the beliefs or disbeliefs the donor is having towards the milk donation. The common reason cited for milk donation was that the donor's neonate was sick (40 %) and admitted in Neonatal Intensive Care Unit (NICU).



Breast engorgement was cited as the reason for donation by 36 % and solely altruistic attitude was seen in 24 % of donors (Fig. 1). About 66% of mothers were not aware of the contra indications to milk donation. About 94 % of the mothers responded that they will receive milk from HMB for their baby in case of need. About 90% of the mothers responded that they will recommend PDHM to other mothers who were in need of it.

The second characteristic in TPB is subjective norms. This was analysed by 3 questions to know the extent of social support the donor received for milk donation. About 74% of mothers responded that the motivation for donating milk was done by health care worker. Family members were the motivational persons in 14% of the donors. About 72 % of donors responded that their spouses supported their milk donation and 34% of the donors responded that their family members supported their milk donation.

The third characteristic in TPB is perceived behavioural control. This was analysed by using 3 questions to know the ease or difficulty the donors perceived about the milk donation. About 88 % of the donors did not require any monetary compensation for their milk donation. About 94 % of the donors said that they will recommend other mothers to donate their excess milk to HMB.

About 64% of the donors felt that this HMB has adequate safety measures in place and about rest responded that they were not aware about the safety measures placed in this hospital. On analysis of fourth characteristic of TPB, behavioural intention, there were 2 questions in the questionnaire to know the donor's intention to donate for any desired period. If a milk collection facility is available nearby their house, 62 % of the donors expressed their desire to continue milk donation.

About 92 % were confident that their health will not be affected by regular milk donation. On analysis of the fifth characteristic of TPB, behaviour, the actual process of milk donation to HMB, there were 2 questions in the questionnaire. About 90 % of the donors responded that they had adequate milk for their neonate after their milk donation to HMB and did not experience any pain or discomfort during the milk donation.

The bivariate analysis of the associations of socio-economic and educational classes with a few TPB characteristics and their responses were shown in tables 3 – 6. These analyses did not find any statistical significance (p value >0.05) and the responses were independent of socio-economic and educational classes. The analysis of the other TPB characteristics also did not find any statistical significance.

Sl. No	Character	No.	Percentage
Age Distribution			
1	Less than 20 years	15	30%
2	21-25 years	17	34%
	26-30 years	17	34%
4	More than 31 years	1	2%
	Mean	23.62 years	
	Range	19 - 32 years	
Parity Status			
1	Primiparous	30	60%
2	Multiparous	20	40%
Educational Status			
1	Primary schooling	1	2%
2	Middle & High schooling	19	38%
3	High secondary schooling	10	20%
4	Graduate	19	38%
5	Post-Graduate	1	2%
Socio Economic Status (Modified BG Prasad Scale)			
1	Grade 1	2	4%
2	Grade 2	22	44%
3	Grade 3	26	52%
4	Grade 4	0	0
5	Grade 5	0	0
Table 1. Demographic Profile of the Study Group (n=50)			

Table 1. Demographic Profile of the Study Group (n=50)

Sl. no	Questions	Response 1	Response 2	Response 3
Attitude to Behaviour (Beliefs About Milk Donation – Positive or Negative)				
1	What made you to donate milk to HMB for the first time?	Altruistic 12 (24%)	Breast engorgement 18 (36%)	Her baby sick in NICU 20 (40%)
2	Do you know the contra indications to donating your milk to HMB?	Knows more than 2 0	Knows less than 2 17 (34%)	Does not know 33 (66%)
3	Will you receive milk from HMB for your baby if needed?	Yes 47 (94%)	No 0	May be 3 (6%)
4	Will you recommend PDHM for other mothers who are in need of it?	Yes 45 (90%)	No 1 (2%)	May be 4 (8%)
Subjective Norms (Perception of Social Support)				
5	Who recommended you to donate milk to HMB?	Health care workers 37(74%)	Family members 7(14%)	Other mothers 6(12%)
6	Did your spouse support you to donate milk?	Yes 36 (72%)	No 1 (2%)	He is unaware 13 (26%)
7	Did your family members support you to donate milk?	Yes 17 (34%)	No 4 (8%)	They are unaware 29 (58%)
Perceived Behavioural Control (Ease or Difficulty in Donation)				
8	Would you require monetary remuneration for donating milk to HMB?	Yes 2 (4%)	No 44 (88%)	May be 4 (8%)
9	Will you recommend other mothers to donate their excess milk to HMB?	Yes 47 (94%)	No 1 (2%)	May be 2 (4%)
10	Do you think this hospital has adequate safety measures in HMB?	Yes 32 (64%)	No 0	Don't know 18 (36%)
Behaviour Intention (Intention to Donate for any Desired Period)				
11	If facility for milk collection is available nearby your home, will you continue to donate your excess milk to HMB?	Yes 31 (62%)	No 0	May be 19 (38%)
12	Do you think your health will be affected by frequently donating milk to HMB?	Yes 0	No 46 (92%)	May be 4 (8%)
Actual Behaviour (Process of Milk Donation)				
13	Did you have adequate milk after donating?	Yes 45 (90%)	Reduced somewhat 4 (8%)	No 1 (2%)
14	Did you experience pain or discomfort during the donation?	Yes 0	Little discomfort 5 (10%)	No 45 (90%)

Table 2. Responses to Theory of Planned Behaviour Characteristics

Education	Altruistic	Excess Milk/ Breast Engorgement	Baby Sick in NICU	P Value
Primary	0	0	1	0.647
Middle and high	3	7	9	
Higher secondary	4	4	2	
Graduate	5	7	7	
Postgraduate	0	0	1	
Socioeconomic Status	Altruistic	Excess Milk / Breast Engorgement	Baby Sick in NICU	p value
Grade 1	0	1	1	0.411
Grade 2	3	8	11	
Grade 3	9	9	8	

Table 3. Bivariate Analysis of the Socio-Economic and Educational Classes with Attitude to Behaviour

Education	Health Care Worker	Family Member	Other Mothers	P Value
Primary	1	0	0	0.797
Middle and high	15	1	3	
Higher secondary	8	1	1	
Graduate	12	5	2	
Postgraduate	1	0	0	
Socioeconomic status	Health care worker	Family member	Other mothers	P value
Grade 1	2	0	0	0.503
Grade 2	18	3	1	
Grade 3	17	4	5	

Table 4. Bivariate Analysis of the Socio-Economic and Educational Classes with Subjective Norms

Education	Yes	No	May be	P Value
Primary	0	1	0	0.535
Middle and high	2	17	0	
Higher secondary	0	8	2	
Graduate	0	17	2	
Postgraduate	0	1	0	
Socioeconomic status	Yes	No	May be	P Value
Grade 1	0	2	0	0.987
Grade 2	1	19	2	
Grade 3	1	23	2	

Table 5. Bivariate Analysis of the Socio-Economic and Educational Classes with Perceived Behaviour Control

Education	Yes	No	May be	P Value
Primary	0	0	1	0.615
Middle and high	11	0	8	
Higher secondary	7	0	3	
Graduate	12	0	7	
Postgraduate	1	0	0	
Socioeconomic status	Yes	No	May be	P Value
Grade 1	1	0	1	0.244
Grade 2	11	0	11	
Grade 3	19	0	7	

Table 6. Bivariate Analysis of the Socio-Economic and Educational Classes with Behavioural Intention

DISCUSSION

This study was conducted in a HMB attached with a NICU in a referral hospital. Most of the other studies are done in HMB located in community. So, the demographic profile and the TPB characteristics of the present study will vary to a

larger extent with other studies. This is a limitation of the present study. Since introduction of HMBs in India in 1989, the motivation for donors and their attitude towards milk donation is steadily improving. The overall attitude of the donors towards milk donation is consistent with other studies. The common reason for milk donation in this hospital based study is that the donor's neonate is sick in the NICU and breast engorgement. In other studies, done in the community, altruism has been cited as the common reason for donation.^{20,21} In the present study about 66% of the donors were not aware about the contra-indications for milk donation. Hence it is imperative for the HMBs to educate the donors about the contra-indications. In the present study about 94% of the donors responded that they will receive PDHM for their neonate and 90 % of donor mothers responded that they will recommend PDHM to other mothers who are in need. These findings are consistent with a study done in Turkey.²² In the subjective norms the social support for milk donation was analysed. In the present study, health care workers were the major (74 %) motivators for the donors. Since this is a hospital based HMB, this is in line with the expectation. About 72 % and 34% responded that their spouse and family members supported their milk donation respectively.

In a study from Nigeria, about 70% of the mothers responded that their spouse had consented for milk donation.²³ On analysis of perceived behavioural control, we can know the perceived easiness and difficulties associated with the milk donation. About 88 % of the donors did not require any monetary compensation for their milk donation in this study. In Brazil, to encourage the donors to donate milk, complete health care for donors and their children and also monetary compensation was provided.²⁴ These types of compensations were common worldwide in the past. Now it has been totally replaced by voluntary altruistic donations as the threat of depriving the donor's own baby of human milk as it was sold to HMBs.²⁵ About 36 % of the donors were not aware about the safety protocols in the HMBs. This factor along with the lack of awareness about the contra-indications for milk donation has to be immediately addressed to improve the quality of milk donation. In the behavioural intention we analysed the extent of freedom of the donors to donate milk to HMBs. About 62 % of the donors were willing to donate milk if a collection center is available nearby their residence. Also 92 % of the respondents felt that their health will not be affected by frequent donations. This is in contrast to other studies where the HMBs are located in the community and this aspect was not studied.^{18,24} In India, most of the HMBs are attached with NICUs in a hospital. Many studies have documented that the collection centers located in the communities are known to improve the collections.^{18,20,23} So, it will be a good option for the HMBs to have collection centers in the communities to improve supply. On the analysis of the actual milk donation, 90 % of the donors did not feel their milk is inadequate for their baby after milk donation or have experienced any pain and discomfort during the process of milk donation. This was consistent with other studies and in a study done in Kansas, the donors felt that their excess milk

should not go waste and were altruistic in helping the babies in need of PDHM.¹⁸

The present study found that the educational and socio-economic classes did not have any significant influence on the TPB characteristics. However, it was well known that the less educated and lower socioeconomic class donors are less likely to regularly donate their milk to HMBs.^{24,26} In the present study there were no donors from grade 4 or 5 socioeconomic class and more donors were educated above higher secondary level. This could be reason for the statistically insignificant association between socioeconomic and educational classes with TPB characteristics in the present study.

CONCLUSIONS

This study was done in a HMB with hospital based donors. Breast engorgement (36 %) and the donors having a sick neonate unable to feed (40 %) were the main reasons for milk donation. Two thirds of the donors were not aware about the contra-indications for donating milk to HMBs. Health care workers (74 %) were the major motivators and three fourths of the spouses were supporters of milk donation. Majority of the mothers (88 %) did not desire any monetary remuneration for milk donation and about two thirds were willing to continue donation after going home if a collection facility is available nearby. About 90 % of the donors did not feel inadequacy of milk for their baby or have experienced any pain or discomfort during the milk donation.

Recommendations

Educating the donors about the contra-indications to milk donation and the safety protocols followed in the HMBs, educating the family members about milk donation and establishment of collection centers in the communities will bridge the demand supply gap in PDHM and ultimately reduce the neonatal mortality and morbidity.

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