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Liquid Gold for Life: Exploring Mothers' Perspectives on Human Milk Donation and Banking

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ABSTRACT

Background: Neonatal mortality remains a major public health concern globally, with India bearing a disproportionately high burden. Breastfeeding is a critical strategy to improve neonatal survival, yet when a mother's milk is unavailable, donor human milk can serve as an optimal alternative. Despite its proven benefits, limited awareness and cultural reservations often impede the acceptance of human milk donation and banking.

Objectives: This study aimed to (1) assess mothers' knowledge and attitudes toward human milk donation and banking; (2) explore the sociocultural, religious, and familial factors influencing their willingness to donate; and (3) identify perceived barriers and facilitators to establishing human milk banks in a semi-urban and rural context.

Methods: A descriptive, cross-sectional survey was conducted among 370 postnatal mothers (0–6 months postpartum) residing in rural and urban areas of Ambala, Haryana. Data were collected through a structured opinionnaire, covering socio-demographics, maternal and infant profiles, breastfeeding practices, and detailed items on human milk donation/banking. Descriptive statistics were used to quantify responses, and chi-square tests examined associations between willingness to donate and key variables ($p < 0.05$).

Results: Although only 4.32% of participants had heard of human milk donation and 2.43% knew of human milk banking, the majority (78.11%) expressed a willingness to donate if they had excess milk. Nearly all (99.46%) believed society needs human milk banks, underscoring strong latent acceptance. Religious barriers, lack of family support, and fear of insufficient milk were the main deterrents. Urban residence, nuclear family type, and absence of pregnancy complications were positively associated with willingness to donate.

Conclusion: Despite limited prior awareness, mothers demonstrated high receptivity to human milk donation and banking once informed. Targeted education, culturally sensitive outreach, and supportive healthcare policies could significantly enhance community acceptance and optimize the lifesaving potential of donor human milk.

Keywords: *Mothers' Perspectives, Human Milk Donation, and Human Milk banking*

1. INTRODUCTION

Background of the Study

Neonatal mortality remains a significant global concern, particularly in low- and middle-income countries, where social, economic, and healthcare disparities contribute to high rates of infant morbidity and mortality (World Health Organization [WHO], 2021). According to the United Nations Inter-Agency Group for Child Mortality Estimation (UN IGME), approximately 2.4 million children died in their first month of life in 2020, indicating that the burden of neonatal death is disproportionately concentrated in regions with limited healthcare resources (United Nations Children's Fund [UNICEF], 2022).

In India, neonatal mortality rates remain high despite notable progress in maternal and child health programs. Various factors—such as poor maternal nutrition, suboptimal breastfeeding practices, high rates of preterm birth, and inadequate healthcare facilities—continue to impede the nation's efforts to reduce neonatal and infant mortality (Bhutta et al., 2019). Among the numerous interventions recommended to reduce neonatal deaths, breastfeeding has consistently shown to be one of the most critical determinants in ensuring infant survival (Victora et al., 2016).

Breastfeeding—especially exclusive breastfeeding for the first six months—is widely recognized as the gold standard for infant nutrition (WHO, 2020). However, when the biological mother is unable to produce sufficient milk or is medically contraindicated from breastfeeding, donor human milk has been recommended by leading health organizations as the next best alternative (Meier et al., 2017). The practice of donating excess breastmilk to a centralized facility, often known as a Human Milk Bank (HMB), offers a feasible solution to provide infants in need with the immunological and nutritional benefits of human milk (Arslanoglu et al., 2020).

Despite these proven benefits, the concept of human milk donation and banking is not uniformly accepted or well understood. Mothers' perspectives play a critical role in determining whether they will donate their milk or whether they will use donated milk for their own infants. Factors such as cultural beliefs, religious doctrines, social norms, and family influence often shape mothers' decisions regarding donor milk (Miranda et al., 2016). Hence, understanding mothers' opinions, beliefs, and attitudes toward human milk donation and milk banking is crucial for designing successful public health interventions and establishing sustainable milk banking practices.

Global and Indian Context of Neonatal Mortality

Globally, infants are at the highest risk of dying in their first 28 days of life (WHO, 2022). In 2019, the global neonatal mortality rate was approximately 17.5 deaths per 1,000 live births, a significant reduction from previous decades yet still unacceptably high (UNICEF, 2021). Across different geographical regions, the first week of life remains the most vulnerable period, accounting for the majority of neonatal deaths (Bhutta et al., 2021).

India, which accounts for a large proportion of global births annually, faces various challenges in reducing neonatal mortality. Around 27 million infants are born in India every year, of whom approximately 3.5 million are preterm, and 7.5 million are low birth weight (National Family Health Survey [NFHS]-5, 2020–21). Key causes of neonatal death include birth asphyxia, prematurity, and infections such as sepsis (Baqui et al., 2006). Several national programs and policies exist to address these challenges—like the Integrated Child Development Services (ICDS) and the Janani Suraksha Yojana (JSY)—but breastfeeding promotion and human milk banking are often underemphasized or underfunded (Ministry of Health and Family Welfare, 2019).

Importance of Breastfeeding and Human Milk

Breastfeeding provides numerous health benefits. It protects infants against infections, reduces the risk of necrotizing enterocolitis, improves neurodevelopmental outcomes, and fosters maternal–infant bonding (Meedya et al., 2020). Exclusive breastfeeding is recommended up to six months of age, with continued breastfeeding along with appropriate complementary feeding up to two years and beyond (WHO, 2020).

For mothers, breastfeeding can reduce postpartum hemorrhage, facilitate faster uterine involution, and potentially lower the risk of breast and ovarian cancers (Victora et al., 2016). Public health strategies have recognized breastfeeding as an essential foundation for child survival, growth, and development. Nonetheless, a certain subset of mothers either cannot breastfeed due to health-related issues or face severe lactation problems, making donor human milk a critical solution in such cases (Spatz, 2021).

Human Milk Donation and Banking: A Brief Overview

A Human Milk Bank is an organized facility that collects, screens, processes (usually via pasteurization), and dispenses donated human milk to infants in need (Human Milk Banking Association of North America [HMBANA], 2019). The concept has existed for decades in high-income countries, but its adoption is growing in low- and middle-income settings. The WHO and UNICEF both highlight donor human milk as the best alternative to breastfeeding when a mother's milk is not available (WHO, 2020).

While numerous studies validate the efficacy of donor breastmilk in reducing morbidity and mortality in preterm infants, acceptance at the community level often depends on mothers' willingness to donate or use donated milk (Arslanoglu et al., 2020). Hence, understanding sociocultural contexts and religious beliefs becomes imperative to facilitating milk banking initiatives.

Problem Statement

Although the benefits of donor human milk are scientifically well-established, adoption and acceptance remain suboptimal in many communities. In India, the presence of established human milk banks is limited to a few urban regions, and awareness among mothers—particularly in rural settings—tends to be low (Tiwari & Gangal, 2021). Mothers may harbor misconceptions about safety, fear disease transmission, or feel uncomfortable about the idea of another woman's milk feeding their child (Gupta et al., 2020). Religious doctrines sometimes further complicate acceptance (Yilmaz, 2018).

Without broad community acceptance, the potential of milk banking to save newborn lives remains underutilized. Investigating mothers' opinions and attitudes is a crucial step in identifying barriers and facilitators to the use and donation of human milk.

Research Objectives

1. To assess mothers' awareness and attitudes toward human milk donation and human milk banking.
2. To identify the factors (socio-demographic, cultural, religious) associated with willingness or unwillingness to donate breast milk.
3. To determine the level of acceptance of donor human milk as an alternative feeding method in the absence of the mother's own milk.

Research Questions

1. What do mothers understand about the concept of human milk donation and human milk banking?
2. Are mothers willing to donate their excess breast milk to a milk bank if established in their vicinity?
3. What social, cultural, or religious factors influence mothers' acceptance or rejection of donor human milk?
4. What concerns do mothers have about the safety and hygiene of stored donor milk?
5. How can healthcare providers and policymakers address barriers and encourage participation in human milk donation and banking?

Significance of the Study

Understanding maternal perspectives on donor milk is vital because mothers are the key stakeholders in donating breastmilk and deciding whether to allow their newborns to be fed by donated milk (Senol & Aslan, 2017). Findings from this study can guide policymakers, healthcare professionals, and community-based organizations in:

- Developing targeted awareness campaigns that address misconceptions and cultural beliefs.
- Formulating guidelines on how to counsel mothers regarding milk donation and use.
- Establishing or expanding milk banking services in a culturally sensitive manner.
- Integrating family members and community elders in initiatives to normalize donor milk.

Ultimately, these efforts could contribute to reducing neonatal mortality rates by ensuring every newborn, especially those at higher risk, receives optimal nutrition.

Delimitations

- Postnatal mothers (within 6 months postpartum) attending immunization clinics, Anganwadi centers, or district hospitals in both rural and urban areas of Ambala, Haryana.

2. METHODOLOGY

Research Design

A descriptive, cross-sectional design was adopted to explore mothers' opinions on human milk donation and human milk banking. This design is suitable for assessing the knowledge, attitudes, and practices within a defined population at a single point in time.

Study Setting

The study was carried out in both rural and urban areas of Ambala, Haryana, including immunization clinics, Anganwadi centers, and the district hospital. Ambala district represents a mix of urban and rural population.

Population and Sampling

Target Population

The target population comprised postnatal mothers (0–6 months postpartum) residing in Ambala district. Mothers who had experienced normal or cesarean deliveries were included, provided their infants were alive at the time of data collection.

Sample Size

A purposive sampling technique was employed to recruit 370 postnatal mothers. The sample size was determined based on feasibility and prior similar studies that suggested a minimum of 300 participants for descriptive analyses. Although purposive sampling can introduce bias, the study specifically targeted mothers in both rural and urban mothers to enhance representativeness. Mothers were asked about recent experiences (0–6 months postpartum) to minimize memory distortion.

Inclusion Criteria

1. Mothers who delivered within the past six months.
2. Willingness to participate and provide informed consent.
3. Residing in the selected rural or urban areas of Ambala during the data collection period.

Exclusion Criteria

1. Mothers with documented severe mental health issues.
2. Those who refused to participate or could not communicate effectively.
3. Mothers of infants who were critically ill at the time of the interview (to avoid additional distress).

Data Collection Tools and Techniques

Structured Opinionnaire

A **Structured Opinionnaire** was developed based on literature reviews (Arslanoglu et al., 2020; Gupta et al., 2020). It contained two main sections:

1. **Demographic Variables**: Age, education, occupation, religion, place of residence, type of family.
2. **Maternal and Infant Profiles**: Gravida, gestational age, mode of delivery, and any breastfeeding issues.
3. **Opinionnaire on Human Milk Donation and Banking**: Twenty items:
    - Five items related to breastfeeding,
    - Five items on human milk donation,
    - Ten items on human milk banking.

Each item offered **three response options** (Agree, Uncertain, Disagree) or a yes/no format, with space for open-ended comments to capture additional information and perceptions.

Validity and Reliability of the Tool

- **Content Validity**: An expert panel of pediatricians, obstetricians, and nurse educators reviewed the questionnaire.
- **Pilot Testing**: Conducted on 10 participants to ensure clarity; minor modifications were made.
- **Reliability**: A Cronbach's alpha coefficient of 0.78 indicated acceptable internal consistency

Ethical Considerations

Approval was obtained from the Institutional Ethical Committee of M.M. (Deemed to be University) (Reference No. IEC/MM/2019/370). Informed consent obtained from each mother by explaining the nature of the study. Confidentiality and anonymity of responses were maintained.

Data Collection Procedure

Data were collected from postnatal mothers who visited **Immunization Clinics** for routine vaccinations, mothers, mothers visiting the **Anganwadi** centers for child nutrition support were approached and postnatal wards and outpatient clinics. Each interview lasted around 20–25 minutes. The interviewer read the questions aloud in the participant's preferred language (Hindi or English) and recorded responses.

Data Analysis

Statistical Package for the Social Sciences (SPSS) version 20 was used. Data analysis involved:

1. **Descriptive Statistics**: Frequency, percentage, mean, and standard deviation to describe demographic variables and

survey items.

2. **Inferential Statistics**:
    - **Chi-square (χ^2)** tests to examine associations between willingness to donate and selected socio-demographic variables (e.g., residence, type of family, complication during pregnancy).

Result

Description of Sample Characteristics

Majority (81.08%) of the mothers were in the age group of 26-27 years Majority (97.30%) of the mothers were homemaker by occupation. Most (88.92%) of the mothers belonged to Hindu religion followed by only (10.81%) form Sikh religion.

Socio demographic characteristics of the mothers are shown in Table 1 (N= 370)

S. No.	Sample Characteristics	f	%
1	**Maternal Age (Year)**		
1.1	22-25	21	5.68%
1.2	26-27	300	81.08%
1.3	28-30	46	12.4%
1.4	More Than 30	03	0.81%
2	**Education**		
2.1	No formal education	08	2.16%
2.2	Primary School	41	11.08%
2.3	High School	180	48.65%
2.4	Higher Secondary	109	29.46%
2.5	Graduate	32	8.65%
3	**Maternal Occupation**		
3.1	Home Maker	360	97.30%
3.2	Self Employed	02	0.54%
3.3	Private Sector Employee	08	2.16%
4	**Religion**		
4.1	Hindu	329	88.92%
4.2	Christian	01	0.27%
4.3	Muslim	0	0.00%
4.4	Sikh	40	10.81%
5	**Residence**		
5.1	Urban	114	30.81%
5.2	Rural	256	69.19%
6	**Type of Family**		
6.1	Nuclear Family	90	24.32%
6.2	Joint Family	280	75.68%

Maternal Profile

Almost all (99.73%) of the mothers had 38-41 weeks of period of gestation in previous delivery. More than two third (67.84%) of the mothers were having one child and (29.73%) of the mothers had two children. Majority (87.57%) of the mothers had normal vaginal delivery and almost all mothers (99.73%) had institutional delivery in public hospital. (Table 2).

TABLE.2 (MATERNAL PROFILE N= 370)

S.No	Variables	f	%
1	**Gravida**		
1.1	Primigravida	247	66.76%
1.2	Multigravida	123	33.24%
2	**Period of Gestation (In Weeks) For Previous Delivery**		
2.1	34-37	01	0.27%
2.2	38-41	369	99.73%
3	**Number of Children**		
3.1	One	251	67.84%
3.2	Two	110	29.73%
3.3	Three	07	1.89%
3.4	More Than Three	02	0.54%
4	**Mode of Delivery**		
4.1	Normal Delivery	324	87.57%
4.2	Assisted Vaginal Delivery	01	0.27%
4.3	Caesarean Section	45	12.16%
5	**Place of Delivery**		
5.1	Public Hospital	369	99.73%
5.2	Private Hospital	01	0.27%
6	**Any Complications During Pregnancy**		
6.1	Yes	36	9.73%
6.2	No	334	90.27%
6.1.1	**Specify Condition**		
6.1.2	Pre – Eclampsia	26	72.22%
6.1.3	Postpartum Haemorrhage	04	11.11%
6.1.4	Any Other (PROM)	06	16.67%
7	**Duration of Hospital Stay During Delivery with Infant**		
7.1	1day	277	74.86%
7.2	2-3days	45	12.16%
7.3	4-7days	47	12.70%
7.4	>7days	01	0.27%

8	**Experienced Any Problem During Breastfeeding**		
8.1	Yes	65	17.57%
8.2	No	305	82.43%
	Type of Problem		
8.1.1	Decrease in Amount of Breastmilk	51	78.46%
8.1.2	Inversion of Nipple	08	12.31%
8.1.3	Inability of Baby to Suck	02	3.08%
8.1.4	Cracked Nipple	02	3.08%
8.1.5	Pain in Nipples During Feed	02	3.08%
9	**Giving Any Other Feed to Baby other Than Breastmilk**		
9.1	Yes	91	24.59%
9.2	No	279	75.41%
	What Type of Feed You Are Giving to Your Baby		
9.1.1	Top Feed/Formula Feed	18	19.78%
9.1.2	Cow Milk	73	80.22%
10	**Previous Experience with Expression and Storage of Breast Milk**		
10.1	Yes	09	2.43%
10.2	No	361	97.57%
Sources of Information on Expression and Storage of Breast Milk			
10.1.1	Health Personnel		66.67%
		06	
10.1.2	Family Members		33.33%
		03	
	Reason for Expression and Storage of Breast Milk		
10.1.1.1	Excess Breast Milk		33.33%
		03	
10.1.1.2	Expressed in previous pregnancy		66.67%
		06	
11	**Have You Ever Heard About Human Milk Donation**		
	Yes	16	4.32%
11.1			
11.2	No	354	95.68%
	Sources of Information		
11.1.1	Friends	03	18.75%

11.1.2	Family Members	03	18.75%
11.1.3	Mass Media	10	62.5%
12	**Have You Ever Heard About Human Milk Banking**		
12.1	Yes	09	2.43%
12.2	No	361	97.57%
	Sources of Information		
12.1.1	Friends	01	11.11%
12.1.2	Family Members	01	11.11%
12.1.3	Mass Media	07	77.77%

Infant profile

Only few (2.16%) of the infant were hospitalized in N.I.C.U and an, reason for stay in hospital was neonatal jaundice (37.5%) followed by birth asphyxia (37.5%) and low birth weight baby (25%)and neonatal sepsis (12.5%) .

TABLE.3 (INFANT PROFILE) (N= 370)

S.No.	Variables	f	%
1	**Age of Infant**		
1.1	< 1month	184	49.73
1.2	2-3month	162	43.78
1.3	4-5month	06	1.62
1.4	6 Month	18	4.86
2	**Birth Weight of Baby**		
2.1	<1000gm	02	0.54
2.2	1000-1500gm	01	0.27
2.3	1500-2500gm	38	10.27
2.4	2500-3000gm	329	88.92
3	**Was Infant Hospitalized In NICU**		
3.1	Yes	08	2.16
3.2	No	362	97.84
3.1.1	**Reason of Infant Stay's in Hospital**		
3.1.2	Neonatal Jaundice	03	37.5
3.1.3	Birth Asphyxia	03	37.50
3.1.4	Neonatal Sepsis	01	12.5
3.1.5	Low Birth Weight Baby	02	25

Mothers Opinion Regarding those mothers having excess breast milk and don't have enough breast milk to feed their baby.

In this study, Only (0.81%) of mothers want to donate in human milk bank. Only (8.38%) said they would express and pour in plant. (See in figure1)

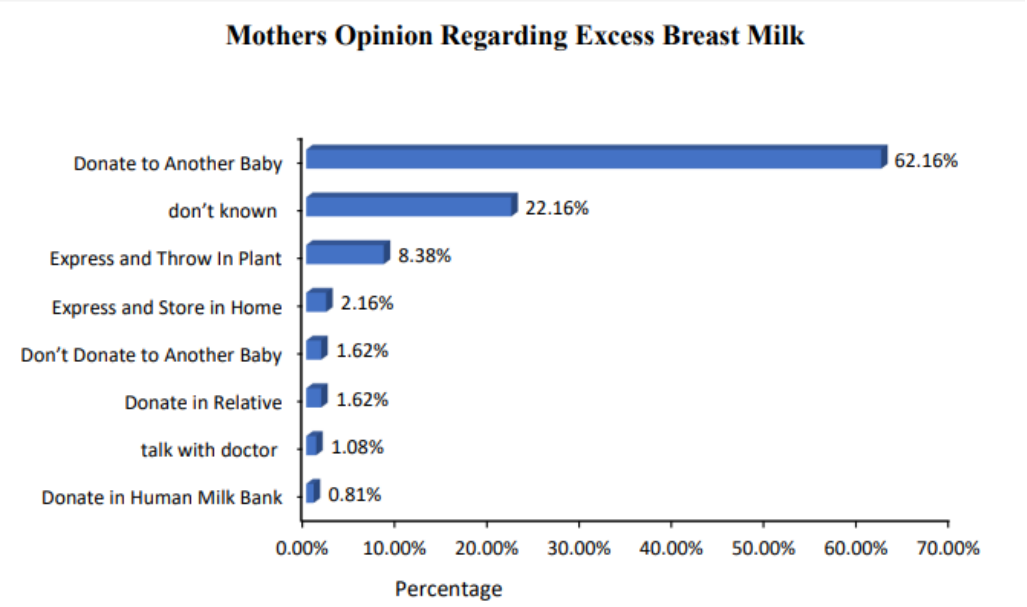

Figure 1 Mothers Opinion Regarding of Excess Breast Milk

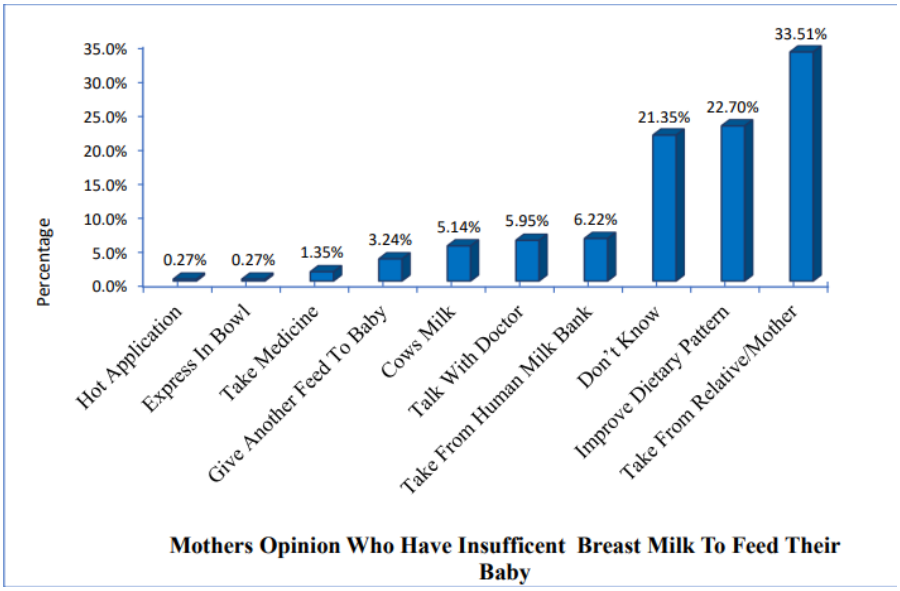

Figure 2: Mother's opinion regarding human milk donation and human milk banking.

Mother's opinion regarding human milk donation and human milk banking. All (100%) of the mothers gave positive opinion regarding breast feeding and agreed that breast feeding is important for the baby, considered as a perfect food for babies and breast feed babies are much healthier than formula feed baby

Table 4 Importance of Breast Feeding

(N=370)

S. No.	Opinion	f	%
1	**Breastfeeding Is Important for Baby.**		
1.1	Agree	370	100

1.2	Uncertain	0	0
1.3	Disagree	0	0
2	**Breast Milk Is Considered the Perfect Food for Babies**		
2.1	Agree	370	100
2.2	Uncertain	0	0
2.3	Disagree	0	0
3	**Breastfeed Babies are much more healthier Than Formula Feed Babies.**		
3.1	Agree	370	100
3.2	Uncertain	0	0
3.3	Disagree	0	0

Mothers Opinion Regarding Human Milk Donation

Among those who were unwilling to donate breast milk, reasons expressed were: religion barriers (54.32%), family do not support (28.40%) and not having enough breast milk to donate (16.05%). Exceptionally few (6.22) of the mothers had ever donated breast milk among their relations, given relations were, cousin, sister (69.57%) and sister-in-law (30.43%).

Table 5

(N=370)

S. No.	**Statement**	**F**	**%**
1	**A Baby Whose Mother Has no Breastmilk can be Breastfeed by Another women?**		
1.1	Permitted	354	95.68
1.2	Should Not Given	16	4.32
2	**Have You Ever Requested Another Mother to Breastfeed Your Baby**		
2.1	Yes	39	10.54
2.2	No	331	89.46
	If Yes, Then What Are You Reason for Requesting Another Mother to Breast Feed Baby		
2.1.1	Less Breast Milk	17	43.59
2.1.2	Family Tradition	18	46.15
2.1.3	No Milk on Day One	4	10.26
3	**Feeding A Baby from Another Women Will Affect the Bonding Between Mother and Baby**		
3.1	Yes	252	68.11
3.2	No	117	31.62
3.3	Not Sure	1	0.27
4	**While Choosing Donor for Breast Milk for Your Baby, Which Donor would You Select**		
4.1	Milk Bank /Unknown Mothers	72	19.46
4.2	Relative	297	80.27

4.3	Friend	1	0.27
5	**Would You Like to Donate Breast Milk**		
5.1	Yes	289	78.11
5.2	No	81	21.89
	If Yes, Why You Want to Donate Breastmilk		
5.1.1	Help Others	283	97.92
5.1.2	Health Promotion	2	0.69
5.1.3	Have Excess Breastfeed	4	1.38
	If No, Why You Do Not Want to Donate Breastmilk		
5.2.1	Fear of Transmission of Disease	1	1.23
5.2.2	Not Having Enough Milk	13	16.05
5.2.3	Family Do Not Support	23	28.40
5.2.4	Not Accepted in Our Religion	44	54.32
6	**Have You Ever Given Your Breast Milk to Baby of your Relative or Any Other**		
6.1	Yes	23	6.22
6.2	No	347	93.78
6.1.1	**If Yes, Then What Type of Relation you have with babies mother.**		
6.1.2	Sister-In-Law	7	30.43
6.1.3	Cousin Sister	16	69.57

3.7 Mothers Opinion regarding Human Milk Banking

Almost all the mothers (99.46%) given positive opinion regarding need of human milk bank in our society.

Table 5

(N= 370)

S. No.	Opinion	F	%
1	**Are You Aware of Any Human Milk Bank in Your Area**		
1.1	Yes	05	1.35
1.2	No	365	98.65
2	**Do You Think Are Society Need Human Milk Bank**		
2.1	Yes	368	99.46
2.2	No	02	0.54
3	**Do You Think It Is Safe to Store Breast Milk in Milk Bank**		
3.1	Yes	361	97.57
3.2	No	09	2.43
4	**Do You Think Storing of Breast Milk For Long Time In A Human Milk Bank Will Reduce Its Properties**		

4.1	Yes	168	45.41
4.2	No	193	52.16
4.3	Not Sure	09	2.43
5	**Are You Willing to Donate Your Breast Milk to A Baby If A Milk Bank Is Established**		
5.1	Yes	355	95.95
5.2	No	15	4.05
6	**Do You Think Human Milk Bank Can Help Sick Babies or mother Who Do Not Have Enough Feed**		
6.1	Yes	369	99.73
6.2	No	01	0.27
7	**Do You Think Mothers with Extra Feed Should Donate Their Breast Milk in Human Milk Bank**		
7.1	Yes	366	98.92
7.2	No	04	1.08
8	**Do You Think That Mother Who Donate Their Breast Milk to Human Milk Bank Should Be Given Money**		
8.1	Yes	9	2.43
8.2	No		97.30
	360		
8.3	Not Sure	01	0.27
9	**Would You Like to Collect the Information of The Mother Who Had Donate Her Milk to your Baby If Needed**		
9.1	Yes	246	66.49
9.2	No	124	33.51
10	**Would You Like to Have Information About the Baby for Whom Your Milk May Be Utilize by Human Milk Bank.**		
10.1	Yes	242	65.41
10.2	No	128	34.59

3.8 Chi Square Showing the Association of Mothers Willingness to donated Breast Milk With Sample Characteristics

The computed chi square was found to be statistically significant with residence (χ^2 = 370.00), type of family (χ^2 =3.85) ,gravida (χ^2 =4.64), complication during pregnancy (χ^2 =4.71) and problem during breastfeeding (χ^2= 2.48) at 0.05 level of significance and found to be non-significant with expression and storage of milk (χ^2 =0.14),give other feed to baby (χ^2 =4.27),heard about human milk donation (χ^2 =1.53) and heard about human milk banking (χ^2= 1.44) at 0.05 level of significance.

Table 6

(N=370)

S.No	Variables	Human Milk Donation		χ^2	Df	p value
		Willing	Not Willing			
		n=289	n=81			
Residing						
	1.1	Urban	102	12	370.00	1	.000*
	1.2	Rural	187	69			
	2	**Family**					
	2.1	Nuclear	77	13	3.853	1	0.03*
	2.2	Joint	212	68			
	3	**Gravida**					
	3.1	Primi	201	46	4.642	1	0.02*
	3.2	Multi	88	35			
	4	**Complication during pregnancy**					
	4.1	Yes	23	13	4.71	1	0.03*
	4.2	No	266	68			
	5	**Problem during breast feeding**					
	5.1	Yes	46	19	2.48	1	0.08*
	5.2	No	243	62			
	6	**Previous expression and storage of milk**					
	6.1	Yes	8	1		1	0.42^{NS}
	6.2	No	281	80	0.14		
	7	**Other feed give to baby**					
	7.1	Yes	64	27	4.27	1	0.29^{NS}
	7.2	No	225	54			
	8	**Heard about human milk donation**					
	8.1	Yes	15	1		1	0.10^{NS}
	8.2	No	274	80	1.53		
	9	**Heard about human milk banking**					
	9.1	Yes	9	0		1	0.10^{NS}
	9.2	No	280	81	1.44		
	(*) Significant p<0.05				NS= not significant p>0.05		

	(y) yate's correction 2		(1) = 3.84, 2 (1)=2.70				
		χ	χ				

3. DISCUSSION

The present study sought to explore mothers' opinions regarding human milk donation and banking in Ambala, Haryana. While breastfeeding was universally acknowledged as the best form of infant nutrition, awareness about donor human milk and milk banking was considerably low. Yet, once exposed to the concept, the vast majority expressed supportive attitudes toward it.

These findings align with other studies suggesting that mothers typically value breastmilk highly but lack structured information about donating or receiving donor milk (Yilmaz, 2018; Gupta et al., 2020). The **high willingness to donate** (78.11% hypothetical; 95.95% to a bank) underscores the potential acceptance if appropriate infrastructure and educational campaigns are introduced.

Breastfeeding Attitudes and Practices

All participants affirmed that breastmilk is vital for infant health, confirming the strong cultural emphasis on breastfeeding in Indian society (Meedya et al., 2020). The near-universal agreement resonates with the **WHO (2020)** stance that breastfeeding is foundational to child survival. However, 17.57% reported breastfeeding challenges, mainly insufficient milk—a finding consistent with global data that perceive insufficient milk supply as one of the top reasons for early supplementation or formula use (Spatz, 2021).

Awareness and Acceptance of Human Milk Donation

Only 4.32% had prior awareness of milk donation, mirroring findings from Senol and Aslan (2017), where 90.6% of mothers were not aware of the concept before being surveyed. This gap in knowledge may be due to insufficient emphasis in antenatal education programs (Gupta et al., 2020). Despite low awareness, acceptance was remarkably high when the concept was explained. This "latent acceptability" implies that targeted information campaigns could dramatically increase donation rates.

The study also found that prior awareness did not significantly correlate with willingness to donate ($p>0.05p>0.05p>0.05$). It may be that those hearing about donation for the first time found the concept acceptable once the benefits were clarified, reflecting an openness to new health interventions.

Cultural and Religious Dimensions

Religious barriers were cited by 54.32% of those who were unwilling to donate. In a predominantly Hindu population, concerns about purity and family acceptance emerged. Similar reservations have been documented among Muslim populations due to the notion of "milk kinship" (Özdemir et al., 2018). Addressing these concerns requires culturally sensitive dialogues and potentially religious endorsements or fatwas clarifying permissible practices (Bich-Thuy & Jooste, 2019).

Social Norms and Family Support

Family acceptance or rejection significantly shaped attitudes toward donation ($p = 0.03$). Mothers in nuclear families displayed a slightly higher willingness, possibly due to having more autonomy in health decisions (Raj & Plichta, 2020). In joint families, elder members often serve as gatekeepers of cultural norms, potentially imposing religious or traditional views that deter donation.

4. CONCLUSION

This research investigated the perspectives of postnatal mothers toward human milk donation and banking in rural and urban areas of Ambala, Haryana. The findings showed that all mothers (100%) recognized the paramount importance of breastfeeding, reflecting strong cultural and health messaging. While awareness was notably low (4.32% for donation and 2.43% for banking), willingness was overwhelmingly positive once the concept was introduced; religious barriers, particularly regarding purity and family acceptance, were major reasons for hesitation. While most believed donated and stored milk could be safe, nearly half worried about reduced nutritional value over time, indicating a knowledge gap regarding pasteurization and storage.

Implications

Healthcare Provider Training

Nurses, midwives, and doctors should receive specialized training on lactation management, donor human milk, and the operation of milk banks. By possessing accurate knowledge, healthcare professionals can serve as reliable advocates,

dispelling myths and guiding mothers through evidence-based practices.

Community Engagement

- Engage religious and community leaders to address scriptural questions and clarify misconceptions about "milk kinship" or purity.
- **Mass Media Campaigns**: Broadcast success stories, highlight the safety measures of pasteurization, and explain how to donate or receive donor milk.
- **Family-Centric Approaches**: Since older family members hold significant influence, involving them in education sessions can normalize the concept of donation.

Strengthening Infrastructure

- **Establish More HMBs**: Policy reforms can mandate setting up certified milk banks in high-demand areas, particularly near NICUs.
- **Mobile Collection Units**: Facilitate milk collection in remote or rural areas, bridging the logistical gap for mothers who are willing but unable to travel.
- **Technological Solutions**: Use mobile applications to schedule donations, track milk usage, and provide feedback to donors, thus maintaining transparency.

Addressing Religious and Cultural Barriers

- Panel discussions with scholars from various religions could generate guidelines accepted by multiple communities.
- **Cultural Sensitivity Training**: Healthcare providers should learn about local traditions to better address patient concerns.

Recommendations

- A qualitative study can be conducted by using Focus groups or in-depth interviews to explore beliefs and emotional factors influencing donation decisions.
- A large-scale comparative studies across multiple districts or states to assess factors and measures how local or rural population accept human milk donation and banking.

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Conflicts of interest

There are no conflicts of interest.

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