Medical Journal of Eastern Nepal ISSN 2822-2032 (Print) 2822-2040 (Online)

Volume 04, Number 02, Issue 08, July-December *Original Research Article*

# ACCEPTABILITY TOWARDS HUMAN MILK BANKING AMONG POSTNATAL MOTHERS IN A TERTIARY LEVEL HOSPITAL, NEPAL

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**CITATION**
Poudel S, Thakulla B, Maharjan P, Prajapati L, Acceptability Towards Human Milk Banking Among Postnatal Mothers in A Tertiary Level Hospital, Nepal, MJEN. 2025 December;4(2); (21-25)

## ABSTRACT

### Background
Breast milk is the optimal food for infants, offering numerous health benefits. When a mother's milk is unavailable, the World Health Organization recommends donated human milk as the best alternative. Although there is considerable research on the safety and scientific aspects of donor milk, Nepal having only one certified Human Milk Bank, its utilization is limited. Besides, fear of disease transmission, cultural, and religious prohibitions as well as concerns about the inadequacy of MOM for the babies of donor mothers and safety concerns are the factors to be addressed for the development of interventions to address identified barriers.

### Methods
A descriptive, quantitative, cross-sectional study was conducted among 181 postnatal mothers at a tertiary hospital in Kathmandu using non-probability purposive sampling technique. Ethical approval was obtained from the IRC (PMWH-IRC-65/1816) of Paropakar Maternity and Women's Hospital. Data were collected from 2081/10/20 (02/02/2025) to 2081/ 12/20 (02/04/2025) via a self-developed structured interview schedule and analysed using descriptive and inferential statistics (SPSS version 20).

### Results
The study revealed that only 5% of the participants had adequate knowledge of human milk banking. However, 85.6% expressed acceptability towards human milk banking. Knowledge level was significantly associated with education, residential area, and income ($p<0.001$) whereas, acceptability was significantly associated with ethnicity ($p<0.001$). A positive correlation ($r=0.392$, $p<0.001$) existed between knowledge and acceptability.

### Conclusion
The study finding shows low level of knowledge but high acceptability toward human milk banking. Education, residence, and income influenced knowledge levels whereas ethnicity of the respondents influenced acceptability. Awareness campaigns and educational programs are recommended to improve understanding.

**Keywords:** *Acceptability, Breastfeeding, Human milk bank, Knowledge, Mother*



**ARTICLE INFO:**
Received Date: 20th July 2025
Accept Date: 17th September 2025
Published Date: 29th December 2025

## INTRODUCTION

Breast milk is undoubtedly a gold standard and is one of the foundations of child health, development and survival. Breastfeeding has shown to have short-term and long-term benefits on both child and mother, including helping to protect children against a variety of acute and chronic disorders and is considered the single most cost-effective preventive intervention to reduce child mortality [1, 2]. Preterm infants who are breastfed tend to tolerate feeds more effectively, experience fewer serious infections and cases of necrotizing enterocolitis (NEC), and typically have shorter hospital stays compared to those fed alternative nutrition sources [3]. Fifty-five percent of children in Nepal age 0–23 months engaged in early initiation of breastfeeding and 56% of children under 6 months were exclusively breastfeed which has declined by 10% from the NDHS report, 2016 [4].

However, when an infant is unable to receive their own mother's breast milk, the World Health Organization advises that the next best option is pasteurized donated human milk [5]. A human milk bank systematically collects, pasteurizes, stores, and distributes donated breast milk to the needful new-borns. As of 2024, over 700 human milk banks have been established, with most being in Europe, North America and Brazil [6]. The official inauguration of Human milk bank in Nepal was done on August 2022 as "Amrit Kosh" to ensure the access to breast milk to every infant. The HMB is responsible for assessing potential donor mothers, collecting, storing and processing donated milk, conducting post-pasteurization tests, storing, and ddistributing the processed milk to infants who are not biologically related to the donors [7].

Fear of disease transmission, cultural, and religious prohibitions as well as concerns about the inadequacy of MOM for the babies of donor mothers were found to have effect on acceptability among postnatal mothers [8, 9]. In addition, there were concerns about the safety of donor human milk and discomfort about using another mother's milk [10]. Participants felt that increasing awareness about the benefits of human milk—along with clear information about how donor milk is screened, processed, and stored—would significantly enhance its acceptability [11]

Although donor human milk is well-established in high-income nations, its acceptance and utilization remain limited in South-Asian countries including Nepal due to factors such as safety concerns, cultural perceptions, and limited awareness. Being a noble practice, very few studies are available in the field. As with any new health interventions evaluating how it is perceived and accepted by the target community is an essential initial step, thus researcher was motivated to assess the willingness to donate or accept human milk among the post natal mothers admitted in the post natal ward.

## METHODS

A descriptive cross-sectional research design based on a quantitative approach was used to assess acceptability on human milk banking among 181 postnatal mothers admitted to post natal wards at Paropakar Maternity and Women's Hospital, Thapathali, Kathmandu. A non-probability purposive sampling technique was used to select the sample in the postnatal ward. Participants were selected based on predefined criteria to ensure they could provide meaningful and experience-based information regarding human milk banking. Postnatal mothers who had been diagnosed with severe medical conditions and were human milk donors were excluded from the study. Ethical approval was obtained from the IRC (PMWH-IRC-65/1816) of Paropakar Maternity and Women's Hospital. Data was collected from 2081/10/20 (02/02/2025) to 2081/ 12/20 (02/04/2025) using a face to face interview technique using a self-developed structured questionnaire schedule assessing knowledge and acceptability regarding Human Milk Banking, created based on previously published literatures was used to collect data. The acceptability-related questions included willingness of mothers to donate milk, where mothers were asked if they are open to donating their milk, these questions also explored whether the mothers are open to receiving donor milk for their babies. Acceptability was measured as, Score >50% as Acceptability and score ≤ 50% considered Non Acceptability

## RESULTS

**Table 1: Respondents' Level of Knowledge Regarding Human Milk Banking n=181**

| level of knowledge | Number | Percent |
|---|---|---|
| Poor Knowledge | 114 | 63.0 |
| Average Knowledge | 58 | 32.0 |
| Adequate Knowledge | 9 | 5.0 |
| Mean knowledge Score ± S. D. 17.91 ±4.81 out of 33 | | |

Table 1 represents that the Majority (63.0%) of the respondents had poor knowledge, 32.0% of the respondents had average knowledge whereas 5% of the respondents had adequate knowledge regarding human milk banking. The mean knowledge score is 17.91 out of 33 with standard deviation of ± 4.81

**Table 2: Respondent's Level of Acceptability Regarding Human Milk Banking n=181**

| Variable | Number | Percent |
|---|---|---|
| **Acceptability level** | | |
| Acceptability | 155 | 85.6 |
| Not Acceptability | 26 | 14.4 |
| Mean Acceptability score ± S.D.: 11.9 ± 3.09 out of 16 | | |

Table 2 shows that most (85.6%) of the respondents expressed acceptability towards human milk banking, while 14.4% of the respondent's expressed acceptability. The mean Acceptability score is 11.9 out of 16, with a standard deviation of ± 3.09.

**Table 3: Association between Knowledge Levels Regarding Human Milk Banking with Selected Variables n=181**

| Variables | Level of knowledge | | Chi square value ($?^2$) | p-value |
|---|---|---|---|---|
| | Poor NO. (%) | Average to Adequate NO. (%) | | |
| **Age** | | | | |
| less than or equal to 25 years | 56(70.0) | 24(30.0) | 3.20 | 0.082 |
| more than 26 years | 58(57.4) | 43(42.6) | | |
| **Educational qualification** | | | | |
| primary and less | 47(79.7) | 12(20.3) | 10.443 | 0.001* |
| secondary and more | 67(55.0) | 55(45.0) | | |
| **Employed status** | | | | |
| Homemaker | 63(67.0) | 31(33.0) | 1.368 | 0.242 |
| other than a homemaker | 51(58.7) | 36(41.3) | | |
| **Religion** | | | | |
| Hindu | 65(60.7) | 42(39.3) | 0.561 | 0.454 |
| Other than Hindu | 49(66.2) | 25(33.8) | | |
| **Ethnicity** | | | | |
| Janajati | 60(67.4) | 29(32.6) | 1.479 | 0.224 |
| Others than janajati | 54(58.7) | 38(41.3) | | |
| **Residential area** | | | | |
| Rural area | 41(50.0) | 41(50.0) | 10.84 | **0.001*** |
| Urban area | 73(73.7) | 26(26.3) | | |
| **Income** | | | | |
| Up to 30,000 | 57(67.0) | 28(33.0) | 1.142 | 0.285 |
| Above 30,000 | 57(59.0) | 39(49.0) | | |
| **Gravida** | | | | |
| Primi gravida | 52(65.0) | 28(35.0) | 0.25 | 0.617 |
| multi and grandmulti gravida | 62(61.4) | 39(38.6) | | |
| **Number of children** | | | | |
| one child | 61(61.6) | 38(38.4) | 0.175 | 0.676 |
| Two or more children's | 53(64.6) | 29(35.4) | | |

Table 3 shows that there was a significant association between knowledge level regarding human milk banking with educational qualification and Residential area of the respondents ( p value = <0.001). However, there was no significant association between knowledge levels with other variables.

**Table 4: Association between Acceptability Levels Regarding Human Milk Banking with Selected Variables n=181**

| Variables | Level of Acceptability | | Chi square value ($?^2$) | p-value |
|---|---|---|---|---|
| | Not Acceptability NO. (%) | Acceptability NO. (%) | | |
| **Educational qualification** | | | | |
| Up to Primary | 10(16.9) | 49(83.1) | 0.475 | 0.491 |
| Secondary and more | 16(13.1) | 106(86.9) | | |
| **Employment status** | | | | |
| Homemaker | 12(12.8) | 82(87.2) | 0.406 | 0.524 |
| Other than a Homemaker | 14(16.1) | 73(83.9) | | |
| **Religion** | | | | |
| Hindu | 16(14.9) | 91(85.1) | 0.074 | 0.786 |
| Other than Hindu | 10(13.5) | 64(86.5) | | |
| **Ethnicity** | | | | |
| Janajati | 7(7.9) | 82(92.1) | 6.013 | **0.014*** |
| Others than Janajati | 19(20.7) | 73(79.3) | | |
| **Residential Area** | | | | |
| Rural Area | 8(9.8) | 74(90.2) | 2.588 | 0.108 |
| Urban Area | 18(18.2) | 81(81.8) | | |
| **Income** | | | | |
| Up to NRS 30,000 | 16(19.0) | 69(81.0) | 2.590 | 0.108 |
| Above NRS 30,000 | 10(19.0 | 86(81.0) | | |
| **Number of Children** | | | | |
| One Child | 12(12.1) | 87(87.9) | 0.894 | 0.344 |
| Two or more children | 14(17.0) | 68(83.0) | | |
| **Gravida** | | | | |
| Primi gravida | 8(10.0) | 72(90.0) | 2.22 | 0.136 |
| Multi and grandmulti gravida | 18(17.8) | 83(82.2) | | |

**Significant at p-value<0.05*

Table 4 shows that there was a significant association between acceptability level regarding human milk banking with the Ethnicity of the respondents (p-value = <.001). However, there was no significant association between the acceptability levels with other variables.

**Table 5: Correlation between knowledge and acceptability regarding human milk banking n=181**

| Variables | Pearson correlation(r) | P value |
|---|---|---|
| **Knowledge** | .392 | <.001* |
| **Acceptability** | .392 | <.001* |

*Note: Significant at p-value <0.05, 95% confidence level*

Table 5 shows there is a positive relationship between the level of knowledge and acceptability among the respondents at a 95% confidence level (p <0.001).

## DISCUSSION

In the current study, it was found that more than half (55.8%) of the respondents were aged more than 26

years, with a mean age of 26.73 ± 5.175 years. Likewise, cent percent of the respondents were literate. Concerning the qualification, half (50.3%) of the respondents had secondary level education. Regarding occupational status cent percent of the respondents were employed. Among the employed, more than half (51.9%) of the respondents were homemakers. Likewise, more than half (59.1%) of the respondents followed Hinduism, and 49.2% of the respondents belonged to Janajati. Regarding residence, more than half (53.6%) of the respondents were from rural areas.

The current study shows, 63% of the respondents had a poor level of knowledge, 32% had an average level of knowledge, and 5% had an adequate level of knowledge regarding human milk banking. These findings are supported by studies conducted in India, where only 8% of respondents had a good level of knowledge [12]. 35% of respondents had an average level of knowledge regarding human milk banking [13]. However, the current study is inconsistent with the study conducted in Nepal, [14] where 49.6% had an average level of knowledge and 43.0% had a poor level of knowledge regarding human milk banking. This variation may be attributed to differences in the religious composition of the participants. In a previous study in Chitwan, 85.2% were Hindu, 7.4% Christian, and 6.7% Buddhist. In contrast, the present study had greater religious diversity: 59.1% Hindu, 24.9% Buddhist, 9.9% Christian, 4.4% Muslim, and 1.7% Kirat. This variation may affect knowledge levels.

The present study showed majority of the participant's acceptability towards human milk banking which was 85.6%. The findings is consistent with various studies around the world. A study in Tanzania shows 84.48% of the respondents were willing to donate milk, and 83.45% were open to accepting milk from a milk bank [14]. Another study in Uganda [15] shows 77.6% acceptability among respondents. However, studies done in Southwest Nigeria [16] and Ethiopia[17] shows contrasting findings with 17.4% acceptability and 11% acceptability for donation and 15.2 for receiving donated human milk respectively.

In terms of concerns, the current study found that 54.1% of the respondents were concerned about the safety and hygiene of the milk bank. This is consistent with the findings of the Tanzania study [14] where 54% of the respondents expressed concerns about the safety of breast milk banking. Similarly, in this study, 77.9% of the respondents responded that they would feed their baby with someone else's milk if they didn't have enough breast milk, a finding similar to the study conducted in Nepal [14], where 83% of the respondents reported a similar response.

The finding of the study shows that there was a statistically significant relationship with socio-demographic variables and level of knowledge. Educational qualification ($\chi 2=10.443$, p-value=0.001), and Residential area ($\chi 2=10.84$, p-value=0.001). The study finding was similar to the study conducted in India [15] where the level of awareness was statistically significant with education ($\chi 2=28.099$, p-value 0.0001) and income ($\chi 2=3.569$, p-value=0.0837). However, this is in contrast with another study done in India [16] which revealed that there is no statistically significant relationship with socio-demographic variables. This variation might be due to the difference in educational qualification, as 50.3% of the respondents had secondary level education, whereas 30% of the respondents had secondary level education in a later study.

The finding of the study shows that there was a statistically significant relationship with the socio-demographic variable ethnicity ($\chi 2= 6.013$, p-value=0.014). These study findings were inconsistent with the study conducted in Nepal [14] which revealed that there is no statistically significant relationship with socio-demographic variables. This variation might be due to the ethnic diversity; in a previous study. This ethnic variation in the current study likely highlighted deeper sociocultural differences.

The study demonstrates that the level of knowledge is positively correlated (0.392) with the acceptability of human milk banking, and this correlation was statistically significant with a p-value of less than 0.001. This finding is consistent with a study conducted in Nepal [14] which reported a strong positive correlation (0.846) between knowledge and acceptability regarding human milk banking, with the correlation also being statistically significant (p-value < 0.001).

## CONCLUSION

In conclusion, this study highlights a substantial gap in postnatal mothers' awareness of human milk banking in Kathmandu, with only 5% demonstrating adequate knowledge. Despite this, acceptability is remarkably high (85.6%), suggesting a strong foundation for future interventions. Knowledge—significantly influenced by education, income, and residential area—and acceptability—shaped by ethnicity—are positively correlated ($r = 0.392$, $p < 0.001$), underscoring the critical role that targeted education and culturally sensitive outreach can play in milk bank utilization. Addressing the identified barriers—disease transmission fears, cultural or religious reservations, and misconceptions regarding donor milk adequacy—through tailored health education, community engagement, and safety assurance initiatives could substantially enhance both understanding and use of human milk banking.

## ACKNOWLEDGEMENT

I would like to acknowledge Jagriti Lal for her contribution in data management, all the Human Milk Bank staffs for support during data collection and lastly, I would like to acknowledge all the mothers for their contribution

**Funding:** None
**Conflict of interest:** None
**Ethical approval:** Yes

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