

# Knowledge and Attitude Regarding Human Milk Banking among Antenatal Mothers Attending Antenatal Clinic

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## ABSTRACT

### Background

Breast milk is the ideal food that has essential nutrients for the normal growth and development of infants. It contains antibodies that help to protect against many common childhood illnesses. For infants who cannot receive breast milk from their own mothers, due to maternal illness, death, medication, disability, insufficient milk production, allergies, or prematurity, donated breastmilk can become the ideal option.

### Objective

To assess the knowledge and attitude regarding human milk banking among antenatal mothers.

### Method

A cross-sectional analytical research was conducted among 422 antenatal mothers attending the antenatal outpatient department of Bharatpur hospital from date 04 November to 04 December 2022. Systematic random sampling was used to select the study unit. A semi-structured interview schedule was adopted to collect the data. Collected data were analyzed by using Descriptive statistics as well as inferential statistics.

### Result

Out of 422 mothers, the majority 58.8 % had poor knowledge and 55.9% had a negative attitude toward human milk banking. There was a significant association between poor knowledge and negative attitude with some socio-demographic variables such as age (AOR=2.16; 95%CI= 1.372-3.401; p=0.001), history of adverse pregnancy outcome (AOR =6.202 95% CI=1.786-21.54;p=0.004), occupation (AOR= 1.906; 95% CI = 1.246-2.915; p=0.003).

### Conclusion

It is concluded that the majority of the respondents had poor knowledge and a negative attitude regarding human milk banking. Knowledge and awareness of human milk banking, play a major role to remove misperceptions about human milk donation and banking. Therefore, proper dissemination of information about human milk bank services, is necessary.

## KEY WORDS

*Antenatal Clinic, Antenatal mother, Human milk bank, Knowledge and attitude*

## INTRODUCTION

Breast milk is the ideal food for infants, particularly in the first six months of life. It contains antibodies that help to protect against many common childhood illnesses.<sup>1</sup> Breastmilk is critical for the healthy survival of sick, very low birth weight, a premature infants who cannot receive breast milk from their mothers.<sup>2-4</sup> Similarly, In the absence of the infant's mother due to maternal illness, death, medication, disability, insufficient milk production, or allergies donated breastmilk from the breastmilk bank can become the ideal option.<sup>3,5,6</sup> A human milk bank is a service that collects, screens, processes, and provides donated breast milk to needy infants.<sup>7</sup> Formula-fed babies may have a greater risk of respiratory infections, food allergies, nutrient deficiency, etc.<sup>8</sup> Recently, a human milk bank was established in Nepal. It is a new concept so very few studies were found so the present study aimed to assess the knowledge and attitude of the human milk banking among antenatal mothers.

## METHODS

A cross-sectional analytical research design was used to assess the knowledge and attitude toward human milk banking among antenatal mothers. At first, Bharatpur hospital was selected purposefully where antenatal case flow is relatively high. This hospital provides antenatal care and delivery services for pregnant mothers free of charge. In one month of data record review, the total number of pregnant women who came for ANC checkups was 1600. Later on, a systematic random sampling technique was used to select the study unit. The sampling interval was determined by dividing the expected number of ANC attendees per month and the required sample size (1600/422) with a sampling interval of four. Thus, every number based on sample interval was interviewed until the required total sample size meets. The population of this study was all pregnant women irrespective of the gestational week who attain ANC OPD at Bharatpur hospital. The pregnant women, who were unwilling to participate, mentally ill or disabled (dumb/deaf) were excluded.

Before data collection ethical approval was obtained from the Institutional Review Committees SMTC-IRC-20220929-14. Formal permission was obtained from the authority of Bharatpur hospital. Written informed consent was taken from respondents. The face-to-face interview method was used to collect the information. The researchers themselves collected the data from dates 04 November to 04 December 2022. A pretested semi-structured interview schedule was used to collect the data. Content validity was maintained by thoroughly reviewing the literature, and consulting with the subject expert. The tool was first developed in English language and translated to Nepali version and back translated to English. The research

tool consisted of three parts: part I: questions related to socio-demographic information; part II questions related to knowledge regarding human milk banking. part III: likert scale to assess attitude regarding human milk banking.

The collected data was checked, reviewed, and organized for accuracy and completeness on a daily basis. Data were entered in Microsoft Excel 2016 for cleaning and coding and later imported to Statistical Package for Social Sciences (version 22.0) for statistical analysis. Descriptive statistics (frequency, percentage, mean and standard deviation) and inferential statistics (chi-square test, logistic regression) were used for statistical analysis.

## RESULTS

Table 1 shows that the majority, 58.8% of respondents had poor knowledge and 44.1% had good knowledge regarding human milk banking. Regarding attitude, the majority 55.9% of respondents had an unfavorable attitude while on the contrary 44.1% had a favorable attitude regarding human milk banking.

**Table 1. Respondents' Level of Knowledge and Attitude regarding Human Milk Banking n=422**

| Variables          | Frequency (%) | Mean Score (SD) | Minimum score | Maximum score |
|--------------------|---------------|-----------------|---------------|---------------|
| Level of Knowledge |               | 17.05(4.35)     | 8.00          | 33.00         |
| Poor               | 248(58.8)     |                 |               |               |
| Good               | 174(41.2)     |                 |               |               |
| Level of attitude  |               | 34.01(4.92)     | 22.00         | 55.00         |
| Negative           | 236(55.9)     |                 |               |               |
| Positive           | 186(44.1)     |                 |               |               |

Table 2 shows, data results delineate, that respondents' socio-demographic variables such as age (AOR=3.048; 95%CI= 1.542-6.027; p=0.001), education status (AOR= 7.542; 95% CI =2.583-22.023; p=0.001) a number of pregnancy ( AOR 2.394; 95% CI = 1.467-3.908;p=0.001), history of adverse pregnancy outcome (AOR =6.202 95% CI=1.786-21.54;p=0.004), trimester (week of gestation(AOR =1.624 95% CI=1.062-2.482;p=0.025), were found to be significant for poor knowledge.

Table 3 shows, data results delineate, that respondents' socio-demographic variables such as ethnicity (AOR=2.16; 95%CI= 1.372-3.401; p=0.001), occupation (AOR= 1.906; 95% CI=1.246-2.915; p=0.003), monthly family income (AOR 1.847; 95%CI=1.121-3.044;p=0.016), number of pregnancy (AOR=1.853; 95% CI =1.146-2.995;p=0.012), history of adverse pregnancy outcome (AOR =3.757 95% CI=0.958-14.738;p=0.021), were found to be significant for a negative attitude.

**Table 2.** Association between Level of Knowledge regarding Human Milk Banking and Socio-Demographic Variables

| Variable                             | Category                            | Level of Knowledge |             | UOR (95% CI)         | p-value | AOR (95% CI)         | p-value |
|--------------------------------------|-------------------------------------|--------------------|-------------|----------------------|---------|----------------------|---------|
|                                      |                                     | Good               | Poor        |                      |         |                      |         |
| Age in years                         | ≤20                                 | 16 (25.8)          | 46 (74.20)  | 2.249 (1.227-4.121)  | 0.009   | 3.048 (1.542-6.027)  | 0.001   |
|                                      | > 20                                | 158 (43.9)         | 202 (56.1)  | 1                    |         |                      |         |
| Respondent education status          | Literate                            | 6 (15.40)          | 33 (84.60)  | 4.298 (1.760-10.496) | 0.001   | 7.542 (2.583-22.023) | 0.001   |
|                                      | Illiterate                          | 168 (43.90)        | 215 (56.10) | 1                    |         |                      |         |
| Education level                      | Secondary                           | 118 (38.8)         | 186 (61.20) | 2.718 (1.628-4.536)  | 0.000   | -                    | -       |
|                                      | Above secondary                     | 50 (63.30)         | 29 (36.7)   | 1                    |         |                      |         |
| Occupation                           | Homemaker                           | 87 (41)            | 125 (59)    | 1.016 (0.690-1.497)  | 0.935   | 0.912 (0.596-1.393)  | 0.669   |
|                                      | Other than homemaker                | 87 (41.4)          | 123 (58.6)  | 1                    |         |                      |         |
| Monthly family income                | ≤ 500000 Rs.                        | 130 (39.80)        | 197 (60.20) | 0.936 (0.588-1.492)  | 0.782   | 1.153 (0.698-1.904)  | 0.579   |
|                                      | > 500000 Rs.                        | 56 (58.90)         | 39 (41.10)  | 1                    |         |                      |         |
| Number of pregnancies                | 1 <sup>st</sup> time                | 116 (45.5)         | 139 (54.5)  | 1.568 (1.048-2.346)  | 0.029   | 2.394 (1.467-3.908)  | 0.001   |
|                                      | 2 <sup>nd</sup> time                | 58 (34.7)          | 109 (65.3)  | 1                    |         |                      |         |
| History of adverse pregnancy outcome | No                                  | 161 (40)           | 242 (60.)   | 3.257 (1.213-8.744)  | 0.019   | 6.202 (1.786-21.54)  | 0.004   |
|                                      | Yes                                 | 13 (68.4)          | 6 (31.60)   | 1                    |         |                      |         |
| Trimester                            | 1 <sup>st</sup> and 2 <sup>nd</sup> | 78 (36.3)          | 137 (63.7)  | 1.89 (1.265-2.824)   | 0.002   | 1.624 (1.062-2.482)  | 0.025   |
|                                      | 3 <sup>rd</sup>                     | 96(46.4)           | 111(53.6)   | 1                    |         |                      |         |

**Table 3.** Association between Level of Attitude regarding Human Milk Banking and Socio-Demographic Variables

| Variable                    | Category                   | Level of Attitude |            | UOR (95% CI)        | p-value | AOR (95% CI)        | p-value |
|-----------------------------|----------------------------|-------------------|------------|---------------------|---------|---------------------|---------|
|                             |                            | Positive          | Negative   |                     |         |                     |         |
| Age                         | ≤ 20                       | 19(30.6)          | 43(69.4)   | 1.958(1.098-3.492)  | 0.023   | 1.71(0.891-3.283)   | 0.107   |
|                             | > 20                       | 167(46.4)         | 193(53.6)  | 1                   |         |                     |         |
| Ethnicity                   | Brahmin Chettri            | 101(56.70)        | 77(43.3)   | 0.408(0.274-0.606)  | <0.001  | 2.16(1.372-3.401)   | 0.001   |
|                             | Other than brahmin chhetri | 85(34.8)          | 159(65.2)  | 1                   |         |                     |         |
| Religion                    | Hinduism                   | 164(48.10)        | 177(51.9)  | 2.485(1.457-4.237)  | 0.001   | 1.001(0.522-1.921)  | 0.997   |
|                             | Other than Hinduism        | 22(27.2)          | 59(72.8)   | 1                   |         |                     |         |
| Respondent education status | Literate                   | 175(45.70)        | 208(54.3)  | 4.298(1.76-10.496)  | 0.016   | 1.823(0.828-4.016)  | 0.136   |
|                             | Illiterate                 | 11(28.2)          | 28(71.8)   | 1                   |         |                     |         |
| Education status level      | Secondary                  | 118(38.8)         | 186(61.20) | 4.084(2.372-7.032)  | 000     | -                   | -       |
|                             | Above secondary            | 50(63.30)         | 29(36.7)   | 1                   |         |                     |         |
| Occupation                  | Homemaker                  | 77(36.30)         | 135(63.7)  | 1.892(1.282-2.793)  | 0.001   | 1.906(1.246-2.915)  | 0.003   |
|                             | Other than homemaker       | 109(51.9)         | 101(48.10) | 1                   |         |                     |         |
| Monthly family income       | ≤ 500000 Rs.               | 130(39.8)         | 197(60.2)  | 2.176(1.367-3.464)  | 0.001   | 1.847(1.121-3.044)  | 0.016   |
|                             | > 500000 Rs.               | 56(58.9)          | 39(41.1)   | 1                   |         |                     |         |
| Number of pregnancies       | 1 <sup>st</sup> time       | 119(50.6)         | 126(49.4)  | 1.976(1.320-2.957)  | 0.001   | 1.853(1.146-2.995)  | 0.012   |
|                             | 2 <sup>nd</sup> time       | 57(34.1)          | 110(65.9)  | 1                   |         |                     |         |
| History of adverse preg     | No                         | 184(45.7)         | 222(54.3)  | 7.142(1.629-31.316) | 0.009   | 3.757(0.958-14.738) | 0.021   |
|                             | Yes                        | 2(7.1)            | 6(31.60)   | 1                   |         |                     |         |

## DISCUSSION

Several studies have been conducted on knowledge and attitude regarding human milk banking but among antenatal mothers, very few studies were found. In this study, Pearson correlation tests revealed a statistically significant positive correlation between knowledge and attitude ( $r=0.110$ ,  $p<0.024$ ). Only 41.2% of the respondents had good knowledge. This finding is in the line with other

study findings from Turkey (41.6%) and China (40.1%).<sup>9,10</sup> This was lower than other related study conducted in India (52%) although it is greater than the study findings from Nigeria (10%) and USA (34%).<sup>11-13</sup> This variation might be due to the difference in sociodemographic characteristics, knowledge questions, study setting, study population, and study design.

Enhancing the understanding of the donor breast milk concept through encouragement by healthcare professionals, relatives, or friends, were associated with a higher prevalence of breast milk donation.<sup>14</sup> Correspondingly, it was noted in our study that the most common source of information about human milk banking 57.5% was from healthcare workers which is identical to the 46.1% reported in a study conducted in Nigeria.<sup>12</sup> Study findings of Turkey and Kenya showed that 85.7% of media and 55% internet accounted for the source of information of human milk banking.<sup>9,15</sup> So better availability of a different source of information on human milk banking and, milk bank publicity campaigns can help reduce misconceptions and better awareness among the population.

Respondents whose age  $\leq 20$  have poor knowledge as compared to those  $> 20$  age this finding is in line with study findings of China.<sup>10</sup> The possible explanations might be that older women are more likely to be aware and have more experience to have knowledge of the benefits of breastfeeding than younger women. Higher the education level greater the knowledge shown in various studies.<sup>13,11</sup> which further supports the finding of this study as well. As education makes mothers more aware and concerned for their health which eventually enhances their knowledge. Individuals with higher formal education would be open-minded and more likely to search different sources of information to update themselves and their families compared to uneducated individuals. So, awareness programs regarding human milk banking should be designed according to educational level, and more attention should be paid to women with lower educational levels.

In this study mothers who had got pregnant for the first time had poor knowledge about human milk banking. This finding is contrast with the finding of China Shanghai.<sup>16</sup> A possible explanation for the difference might be that multiparous mothers had the experience and knowledge from previous pregnancies but new mothers who participated in our study were inexperienced and less aware of exclusive breastmilk feeding and human milk banking.

In this study majority of respondents agreed that Donor milk is the optimal nutrition for those infants with premature and low birth, Donor milk is the best alternative when mothers' milk is insufficient. In this study only 44.1% respondent had a positive attitude this finding is lower than the findings of Turkey (59%) and Turkey Istanbul (57.7%), and higher with the finding of human milk banking in Turkey, Denmark, and South Africa where low positive attitude were found.<sup>9,11,17-19</sup> In this study respondent who had higher monthly family income had a positive attitude towards human milk banking. Respondents from lower income had 1.847 times more negative attitudes towards human milk banking than higher income this finding is significant with the findings of China Shanghai.<sup>16</sup> But contrast with the study findings of Denmark If a people have a high income, commonly they

were educated too.<sup>19</sup> They can take better precautions, knowledge, and preparation so that their health status can be maintained.

Attitude towards human milk banking is also affected by ethnicity, religion, cultural beliefs, and concerns about the safety of breast milk in human milk banking.<sup>9</sup> Similarly in this study respondents from ethnicity other than brahmin/Chhetri had 2.160 times more positive attitudes towards human milk banking than brahmin Chhetri group. This might be due to the differences in sociocultural beliefs values and customs. These findings should be taken into consideration in human milk banking initiatives and in activities to increase acceptance by the public. In this study level of education was also found significant for the positive attitude which is further supported by the findings of Turkey which shows mother's high education status had a positive effect on milk donation.<sup>9</sup> Differently, in another study conducted in India, showed although the participants had a poor educational background, most of the participants had a positive view towards breast milk donation and banking.<sup>20</sup> Likewise contrast with the findings of the study done in China Shanghai, where the correct rate for human milk donation attitude in mothers was not influenced by education level.<sup>16</sup> But Education and counseling the mothers during the antenatal period might help them to develop a positive attitude toward exclusive breastfeeding and to understand its benefits to the mother and baby. Further, it can help to understand the mother about the significance of breastfeeding.

In this study majority of the respondent who was homemaker had a negative attitude towards human milk banking than non-homemaker which is similar to the findings of the other studies.<sup>9,11,18</sup> Likewise, In this study women who had no history of adverse pregnancy outcomes had a negative attitude towards human milk banking than women with a history of adverse pregnancy outcomes. The possible explanation might be that mothers who had a history of problems are more conscious of their pregnancy, this experience could motivate the mother to seek more knowledge which might change their attitude. Similarly, in this study primiparous mothers had positive attitude than multiparous. This finding is similar to the finding of China Shanghai, where parity is not significant to positive attitude.<sup>16</sup> The reason for this situation is considered to be caused by the fact that the majority of the multiparous respondents already breastfed their babies and did not have many problems in which case their attitudes about donor milk would score lower. It is worth noting that, our study was conducted in a single center with a limited sample, which may impact the external validity of the data acquired. Only mothers were enrolled in our study, the views of health professionals, policymakers, community people and other stakeholders in the breast milk banking service were left out thus eliminating an important source of data regarding this concept.

## CONCLUSION

In this study, the majority of the respondents had poor knowledge and a negative attitude regarding human milk banking. There were significant associations between knowledge and attitude levels and some sociodemographic factors like age, education, occupation, history of adverse pregnancy outcome and income, and number of children. The benefits of human milk banking cannot be replaced by any other source of nutrition. Knowledge and awareness

of human milk banking, play a major role to remove misperceptions about human milk donation and banking. Therefore, Proper dissemination of information about human milk bank is necessary.

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