Knowledge and attitude towards human milk banking among undergraduate medical students

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ABSTRACT

Introduction: Human milk banks provide screened and processed donor milk to preterm infants, those who have a low birth weight, or lack access to their mother's milk due to maternal illness, disability, admission to an ICU, or insufficient milk production. This study aimed to assess the knowledge and attitudes of undergraduate medical students towards human milk banking.

Methods: A cross-sectional study was conducted among undergraduate medical students studying at the College of Medical Sciences-Teaching Hospital in Bharatpur, Chitwan, Nepal. A total of 159 students participated, comprising 86 males and 73 females. The study included first-and second-year students pursuing a Bachelor of Medicine and Bachelor of Surgery (MBSS) degree. Data were collected using a structured questionnaire and analyzed using Microsoft Excel.

Results: The mean age of participants was 20.48 ± 1.51 years. Of the total participants, 54.1% were male and 45.9% females. The majority of participants were Hindu (93.7%), followed by Muslim (3.1%), Christian (1.9%), and Buddhist (1.3%). The majority of participants (64.2%) had heard of human milk banking. The primary sources of information were social media, followed by health professionals, family and friends, and newspapers, which were the least common source. In this study, 47.8% of undergraduate medical students had adequate knowledge about human milk banking, 40.3% had moderately adequate knowledge, and 11.9% had inadequate knowledge. Similarly, 47.8% of students had a neutral attitude, 40.9% had a favorable attitude, and 11.3% had an unfavorable attitude about human milk banking.

Conclusion: The findings indicate that undergraduate medical students, overall, possessed adequate knowledge and a favorable attitude toward human milk banking.

Keywords: attitude, human milk banking, knowledge, undergraduate medical students.

INTRODUCTION

Breast milk is a healthy and ideal food for infants, particularly during the first few months of life.[1] It contains digestive enzymes, hormones, vital minerals, vitamins, and the right proportions of lipids, protein, and carbohydrates. Furthermore, it helps protect infants from various diseases, due to its antibodies.[2-4] A woman who provides breast milk to an infant who is not her own is considered a human milk donor. In a human milk bank, donated breast milk is screened, processed, and distributed.[4,5] This is especially suitable for infants whose mothers are absent due to illness, medication, insufficient milk production, disability, admission to an ICU, or death.[2,5-7] Although the benefits and importance of breastfeeding for both mothers and infants are well-established and widely recognized, the practice of breast milk donation remains uncommon in many societies.[8]

Globally, 15 million babies are born preterm annually, with approximately 81,000 preterm births annually in Nepal.[9,10] 2019, Nepal Multiple Indicator Cluster Survey reports, the neonatal mortality rate in Nepal as 16 per 1,000 live births. Human milk banks can play a vital role in reducing infant mortality in Nepal. In 2022, the first human milk bank in Nepal, named Amrit Kosh, was established at the Paropakar Maternity and Women's Hospital in Kathmandu.[11,12] The

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donor pool can be increased by improving knowledge about human milk banking and its significance. Limited study has been conducted among undergraduate medical students in this region on human milk banking. Therefore, this study was designed to assess the knowledge and attitudes toward human milk banking among undergraduate medical students.

METHODS

This was a cross-sectional study conducted among undergraduate medical students studying at the College of Medical Sciences-Teaching Hospital, Bharatpur, Chitwan, Nepal. This study was conducted from 1st January 2025 to 31st June 2025. A purposive sampling technique was used. The total number of participants was 159, of whom 86 were male and 73 female. The first- and second-year students of the Bachelor of Medicine and Bachelor of Surgery (MBBS) were included in this study. Undergraduate students of third and fourth year MBBS, Bachelor of Physiotherapy, Bachelor of Laboratory Medicine, and Nursing students were excluded. Written consent was taken from all the participants before enrollment in this study. Data were collected with the help of a questionnaire filled by participants, themselves. They were followed up after two weeks.The data were entered and analyzed using Microsoft Excel. The data were presented as frequency and percentage. Before data collection, ethical clearance (COMSTH-IRC/2024-114) was taken from the Institutional Review Committee of the College of Medical Sciences, Bharatpur, Chitwan, Nepal. Level of knowledge was determined as: Inadequate knowledge (<50%), moderately adequate knowledge (50-75%), and adequate knowledge (> 75%). The attitude was interpreted as follows: unfavorable attitude (<50%), neutral attitude (50-75%), and favorable attitude (>75%).[13]

RESULTS

The mean age of participants was 20.48 ± 1.51 years. Slightly more than half were male (54.1%), while the remaining were female (45.9%). The vast majority identified as Hindu (93.7%), followed by Muslim (3.1%), and the least were Christian (1.9%) and Buddhist (1.3%) (Table 1). A majority of participants (64.2%) reported having heard of human milk banking. The primary source of information was social media (76.5%), followed by health professionals (13.7%), family and friends (8.8%), and newspapers (1.0%).

Table 1: Sociodemographic distribution of participants (N=159)

	Frequency (n)	Percentage (%)
Sex		
Male	86	54.1
Female	73	45.9
Religion		
Hindu	149	93.7
Chistian	3	1.9
Muslim	5	3.1
Buddhist	2	1.3

More than half of the participants were aware of a human milk bank operating in Nepal. The vast majority (84.9%) believed that establishing human milk banks in the count is necessary. Most participants also recognized that human milk contains all required nutrients and minerals and is important for infants, primarily those under six months of age. Regarding the function and purpose of human milk banks, most participants (84.9%) correctly viewed them as a bridge between donors and recipients. Furthermore, 67.3% understood that human milk banks follow a process of collection and processing before distributing breast milk. A majority of participants affirmed that milk banks provide a non-profit, non-commercial service (69.8%) and do not provide milk exclusively to wealthy individuals. Additionally, 80.5% believed that the milk provided by the human milk bank is ideal for infants. However, some concerns were also noted. Over half of the participants (57.9%) perceived a risk of disease transmission to infants through milk from a milk bank. A smaller proportion believed that human milk banking is a burden to the hospital where it is established (21.4%) and that donating breast milk could harm the donor mother (15.1%). Despite these concerns, the majority of participants supported the idea of initiating human milk banking services in various locations across Nepal (Table 2).

Table 2: Frequency and percentage for participants regarding knowledge about human milk banking (N=159)

Knowledge about Human Milk Banking	Yes n (%)	No n (%)
Is there a human milk bank in Nepal?	93 (58.5)	66 (41.5)
Is there a necessity of human milk bank in Nepal?	135 (84.9)	24 (15.1)
Breast milk contains all the required nutrients and minerals.	143 (89.9)	16 (10.1)
Breast milk is important for infants mainly up to 6 months of age.	147 (92.5)	12 (7.5)
Human milk banks act as a bridge between donors and recipients.	135 (84.9)	24 (15.1)
Human milk banks provide milk only to rich people in the country.	31 (19.5)	128 (80.5)
Human milk bank collects, process and then only provides breast milk to the donor.	107 (67.3)	52 (32.7)
Human milk bank is a non-profit and non-commercial service.	111 (69.8)	48 (30.2)
Do you think milk provided from a human milk bank is ideal for infants?	128 (80.5)	31 (19.5)
Do you think milk provided from a human milk bank can transfer diseases to infants?	92 (57.9)	67 (42.1)
Human milk banking is a good idea to start in different parts of Nepal.	139 (87.4)	20 (12.6)
Human milk banking is a burden to the hospital where it is started.	34 (21.4)	125 (78.6)
Donation of breast milk harms the donor mother.	24 (15.1)	135 (84.9)

Table 3: Knowledge about human milk banking among undergraduate medical students (N=159)

Variable	Inadequate knowledge n (%)	Moderately adequate knowledge n (%)	Adequate knowledge n (%)
Knowledge of undergraduate medical students about human milk banking	19 (11.9)	64 (40.3)	76 (47.8)

Table 4: Attitude of undergraduate medical students about human milk banking (N=159)

Variable	Unfavorable attitude (<50%) n (%)	Neutral attitude (50-75%) n (%)	Favorable attitude (>75%) n (%)
Attitude of undergraduate medical students about human milk banking	18 (11.3)	76 (47.8)	65 (40.9)

In this study, 47.8% of undergraduate medical students had adequate knowledge of human milk banking, 40.3% had moderately adequate knowledge, and only 11.9% had inadequate knowledge (Table 3).

In this study, 47.8% of undergraduate medical students had a neutral attitude toward human milk banking, 40.9% held a favorable attitude, and 11.3% held an unfavorable attitude (Table 4).

DISCUSSION

In our study, the mean age of participants was 20.48 ± 1.51 years. Slightly more than half were male. The vast majority identified as Hindu, followed by Muslim, and the least were Christian and Buddhist. A majority of participants reported having heard of human milk banking. The primary source of information was social media, followed by health professionals, family and friends, and newspapers. In this study, 47.8% of undergraduate medical students had adequate knowledge of human milk banking, while 40.3% had moderately adequate knowledge and

only 11.9% had inadequate knowledge. These findings can be compared to a study conducted by Taksande et al. among medical and paramedical students, which reported that 74.1% of students had heard about human milk banking. In their study, the information was sourced from health professionals (48.9%), followed by news (16.8%), and family and friends (15.3%). Furthermore, 56.3% of students in their study were positive about feeding their babies with milk from a human milk bank in the future. Similarly, their study also found that 80.4% of students were willing to donate milk.[14] This contrasts with a study by Dhakal et al. among antenatal mothers, which reported that 58.8% had poor knowledge and 41.2% had good knowledge on human milk banking.[15] Correspondingly, a study by Sheela et al. among postnatal mothers found that 90% had poor knowledge, 10% had average knowledge, and none had good knowledge.[16] Further supporting the trend of limited knowledge, Kaur et al. reported that 56.5% of Indian parous women had inadequate knowledge, while only 43.5% had adequate knowledge.[17] In a study by Sapkota et al. assessing mothers' knowledge, 49.6% had average knowledge, 43% had poor knowledge, and only 7.4% had adequate knowledge.[18] Similarly, a study conducted by Varer Akpinar et al. among native Turkish and refugee women residing in a rural region of Turkey reported that 65.7% heard from social media, 20.9% heard from healthcare professionals, and 13.4% heard from their friends. In that study, 27.7% of women were willing to use milk from a human milk bank for their babies.[19]

In our study, 47.8% of undergraduate medical students had a neutral attitude toward human milk banking, 40.9% held a favorable attitude, and 11.3% held an unfavorable attitude. This finding of a predominantly neutral stance contrasts with several other studies. Taksande et al. reported a positive attitude among medical and paramedical students.[14] Similarly, Varer Akpinar et al. found that 59% of women had a positive attitude, with 53.1% supporting the establishment of human milk banks in Turkey.[19] Sapkota et al. also reported high acceptability, with 70.4% of mothers in their study favoring human milk banking. However, other studies align more closely with the less favorable results from the present study.[18] Dhakal et al. reported that 55.9% of antenatal mothers had an unfavorable attitude, while only 44.1% were favorable.[15] Correspondingly, Sheela et al. found that 67% of postnatal mothers held an unfavorable attitude, compared to 33% with a favorable one.[16] Kaur et al. reported a predominantly neutral attitude (66.5%) among Indian parous women, which is similar to the dominant sentiment found in the current research.[17]

CONCLUSION

The undergraduate medical students, overall, possessed adequate knowledge and a favorable attitude toward human milk banking. Undergraduate students, who will be parents in the future, can contribute to the smooth operation of human milk banking through their knowledge and positive attitude.

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