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A Study to Assess the Knowledge Regarding Human Milk Banking Among Mothers Admitted in Hospital of New Delhi, with A View to Develop and Disseminate an Informational Pamphlet Regarding Human Milk Banking

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Abstract
Human milk banking is a vital health care initiative that ensures the availability of safe, pasteurized donor human milk for infants who are unable to receive their mother's milk, especially premature and critically ill newborns. It plays a crucial role in reducing neonatal morbidity and mortality, particularly by preventing conditions like necrotizing enterocolitis. Donor mothers are carefully screened, and the milk undergoes standardized pasteurization and testing processes to ensure safety and quality. Human milk banks operate under established ethical and medical guidelines to promote breastfeeding and support neonatal health. Despite its growing importance, challenges such as lack of awareness, limited infrastructure, and cultural barriers remain. Expanding human milk banking services globally can significantly improve infant survival rates and long-term health outcomes. The objectives of study were to assess the level of knowledge among mothers admitted in a selected hospital of New Delhi regarding human milk banking, to develop and disseminate an informational pamphlet on human milk banking and to find association between the knowledge level and demographic variables among mothers. A quantitative research approach was used and the research design used was non experimental descriptive research design. 40 mothers were selected through non probability purposive sampling technique. A structured knowledge questionnaire was used. After the administration of the knowledge questionnaire the informational pamphlets on human milk banking were distributed to mothers. The data was analysed by descriptive and inferential statistics. The results revealed that 50% had average knowledge and 50% had poor knowledge about human milk banking. The mean value of knowledge score was 9.9 and the median value was 10.5 with a standard deviation of 4.05. There was a significant association of mother's knowledge with their education, family income, no. of children

Keyword: Human milk Banking, Mothers, Knowledge

Background of the study

Children represent an important part of population with unique healthcare needs as they represent large in number but also vulnerable to various health problems and consider as special risk group. Breast milk is the first and foremost source of nutrition for neonates and infants, which helps in decreasing health risk among Infants. WHO recommends exclusive breast feeding for the first six months then supplemented breast feeding is recommended at least two years and then as long as the mother and child wishes.[1] According to WHO and CDC report of 2024 Globally 34.6% of mother world wide experience difficulties with breast feeding, 23.4% of mother's worldwide reported lactation insufficiency 14.5% of mother's has faced problem in latching due to nipple soreness or other breastfeeding challenges, where as 5.4% are unable to feed due to breast surgery or medications and 12.1% experience returning to work or school and not having adequate support for breastfeeding. Hence, lack of exclusive breastfeeding among infants 0-5 months of age and no breastfeeding among children 6-23 months of age are associated with increased diarrhoea morbidity and mortality in developing countries.[2] The practical alternative diet for baby who are unable to breastfeed is Human milk Bank and commercially available formula. Human Milk Bank is responsible for collection storage and processing of donated human milk by lactating women for infant other than their own. If we compare formula feed with human breast milk, formula feed can be a suitable option but Breast milk has unique benefits, like antibodies and a changing composition that meets a baby's needs. According to the World Health Organization (WHO), when a biological mother is unable to breastfeed, the recommended alternative is to provide human milk from other sources, such as a human milk banks. In these facilities, donated milk undergoes pasteurization to eliminate pathogens while preserving most of its beneficial properties. The process includes rigorous screening of donor mothers for infectious diseases, followed by meticulous handling and storage to maintain the milk's safety and quality. After screening, processing, and distribution, the milk is given to infants who cannot receive their mother's milk due to maternal illness, death, or insufficient lactation. Asia's First milk bank was set up at Lokmanya Tilak Municipal hospital in 1989. The world's Human Milk Bank was established in Austria. The first human milk bank in Pune city was inaugurated in Deenath Manhhekar hospital. In Delhi Human Milk Bank facilities are available at Vatsalya-Maatri kosh: Lady Hardinge Medical College, New Delhi, Amara human milk bank: Greater Kailash, Fortis, New Delhi, AIIMS New Delhi, Safdarjung Hospital: Emergency Building seventh floor, New Delhi. It plays a crucial role in treating conditions in neonatal intensive care units (NICU's), including prematurity and immune deficiencies. As of 2021, India has over 90 human milk banks actively working to enhance and support child health. Human milk banking has emerged as a crucial public health intervention, particularly in countries with high neonatal mortality rates. This practice primarily benefits premature and low birth weight infants, for whom breast milk is considered life-saving due to its essential immunological and nutritional properties. It provides vital nutrients and antibodies that significantly reduce the risk of infections such as necrotizing enterocolitis (NEC), sepsis, and respiratory tract infections in vulnerable newborns.[3] In India, where neonatal mortality remains a pressing concern, human milk banking is being actively promoted through initiatives like the "Amrut" initiative, under which more than 80 milk banks have been established as of 2023. Despite its benefits, milk donation faces significant challenges, including low awareness and persistent myths that discourage potential donors. Barriers to effective human milk banking include limited infrastructure, social stigma, and a shortage of trained personnel. Additionally, cultural beliefs and socioeconomic factors can impact both donation rates and the use of donor milk. Ensuring that ethical guidelines are upheld and access to donor milk is equitable remains a critical priority. Therefore, with adequate public health support,

educational initiatives, and a robust policy framework, human milk banking has the potential to significantly
reduce neonatal mortality and improve infant health outcomes across socio-economic groups. Promoting breastfeeding, supporting lactating mothers, and integrating milk banking into mainstream neonatal care are pivotal strategies that emphasize the importance of this intervention.

Objectives of the study

- To assess the knowledge regarding Human Milk Banking among mothers admitted in a hospital.
- To find the association of mother's knowledge regarding Human Milk Banking with selected demographic variables
- To develop and disseminate an informational pamphlet regarding Human Milk Banking among mothers admitted in hospital.

Materials and methods

Study design

Non-experimental descriptive design was used to assess the knowledge of mothers regarding Human Milk Banking at Holy Family Hospital, New Delhi.

Study setting

The study was carried out in the antenatal and postnatal wards of Holy Family Hospital.

Sample size and sampling technique

The sample size was 40 mothers admitted in Holy Family Hospital, New Delhi. Non-probability purposive sampling technique was used to select the sample of the study.

Tools of data collection

The tool consists of 2 sections i.e. Demographic Variables and a Structured Knowledge Questionnaire to assess Knowledge of mothers admitted in antenatal and postnatal wards regarding HUMAN MILK BANKING. It was based on literature extracted from books, journals, research report, personal experience, peer group and expert opinion.

SECTION A: Demographic variables of admitted mothers, it consists of eleven questions based on demographic variables which includes age in years, education, occupation, area of residence, religion, family income, number of children, type of delivery, and seeking previous knowledge of mother about Human Milk Banking, source of information and have they ever donated breast milk for HUMAN MILK BANKING.

SECTION B: Structured Knowledge Questionnaire to assess the Knowledge regarding HUMAN MILK BANKING among mothers admitted in antenatal and postnatal wards of Holy Family Hospital. It consisted of 20 multiple choice questions. The prepared questions were based on knowledge regarding Human Milk Banking.

Data analysis procedure

The data was collected, organized, analysed, and interpreted using inferential and descriptive statistics and was presented as tables and diagrams. Demographic data was analysed in terms of frequency and percentage. The knowledge of mothers was calculated using frequency, mean percentage and standard deviation.

Table 1: Frequency and percentage distribution of demographic variables n=40

Variable	Frequency (f)	Percentage (%)
Age in years		
a)21-30	26	65
b)31-40	12	30
c)Above 40	2	5
Education of mother		
a) Primary	1	2.5
b) Secondary	9	22.5
c)Graduate	18	45.1
d)Post Graduate	12	30
Occupation		
a) Government job	0	0
b) Private job	12	30
c) Homemaker	25	62.5
d) Business Woman	1	2.5
e) Any Other	2	5
rea of Residence		
Rural	7	17.5
Urban	33	82.5
Religion		
a) Hindu	26	65
b) Christian	2	5
c) Muslim	12	30
d) Sikh	0	0
e) Others	0	0
Family income (monthly income)		
a) Below 15,000	3	7.5
b) 15,001-50, 000	21	52.5
c) 50,001-1lakh	11	27.5
d) 1lakh and above	5	12.5
No. of children		
1	22	55
2	14	35
3 and above	4	10
Type of Delivery		
a) Normal Vaginal Delivery	20	50
b) Lower Segment Caesarean Section	20	50
Have you ever heard about Human Milk Banking?		

a) Yes	14	35
b) No	26	65
Have you ever donated breast milk for Human Milk bank?		
Yes	2	5
) No	38	95

Table 2(a): Frequency and percentage distribution of the knowledge scores of the mothers.n=40

Level of knowledge	Scoring	Frequency (f)	Percentage (%)
Good Knowledge	>15	0	0
Average knowledge	11-15	20	50
Poor knowledge	≤10	20	50

Table 2(b): Mean, Median and Standard deviation of knowledge scores of mothers regarding Human Milk Banking. n=40

Score	Maximum score	Mean	Median	Standard deviation
Knowledge score	20	9.9	10.5	4.05

Table 3: Chi square association between knowledge with selected demographic variables. n=40

Variables	Knowledge scores			Chi-Square	P value	Inference
	Good	Average	Poor			
Age in years						
21-30	0	11	15			
31-40	0	7	5	2.95	0.0859	Not significant
Above 40	0	2	0			
Education of mother						
Primary	0	0	1			
Secondary	0	1	8	15		
Graduate	0	8	10		0.0001	Significant
Post graduate	0	11	1			
Occupation						
Government job	0	0	0			
Private job				3.334	0.0679	Not significant
Housewife	0	8	4			
Business woman	0	10	15			
Any other	0	1	0			
	0	1	1			
Area of Residence						

Rural Urban	0 0	3 16	4 17	0.074	0.7856	Not significant
Religion Hindu Christian Muslim Sikh Others	 0 0 0 0 0	 13 2 5 0 0	 13 0 7 0 0	 2.334 	 0.1266 	 Not significant
Family income Below 15,000 15,001-50,000 50,001-1lakh Above 1lakh	 0 0 0 0	 1 8 6 5	 2 13 5 0	 6.614 	 0.0101 	 Significant
No. Of children 1 2 3 and above	 0 0 0	 12 8 0	 10 6 4	 4.468 	 0.0345 	 Significant
Type of Delivery Normal Vaginal Delivery Lower Segment Caesarean Section	 0 0	 12 9	 8 11	 0.902 	 0.3422 	 Not significant
Have you ever heard about Human Milk Banking? Yes No	 0 0	 9 11	 5 15	 1.758	 0.1849	 Not signific-ant
Have you ever donated breast milk for Human Milk Bank? Yes No	 0 0	 1 18	 1 20	 0.005	 0.9436	 Not significant

A total of 40 mothers participated in study. The data regarding the assessment revealed that there was a significant association of knowledge with selected demographic variables, i.e., Education of mother (chi square=15, p value=0.0001 at $p<0.05$ level of significance, Monthly family income (chi square=6.614, p value=0.0101 at $p<0.05$ level of significance) and Number of children (chi square =4.468, p value 0.0345 at $p<0.05$ level of significance). Hence, the Null hypothesis is (H0) is rejected and Research hypothesis (H1) is accepted. The mean knowledge score was 9.9 and the median value was 10.5 with a standard deviation of 4.05. The test results revealed that out of 40 mothers admitted in hospital, 20(50%) had poor knowledge, 20(50%) had good knowledge related to Human Milk Banking.

DISCUSSION

The present study was concluded with the aim to assess the knowledge of mothers regarding Human Milk Banking in the selected hospital of New Delhi. It was conducted to assess the knowledge regarding Human Milk Banking in the year 2025 among mothers of Holy Family Hospital. In our study the results demonstrated that 50% (20) of the mothers have poor knowledge, 50% (20) mothers have average knowledge and none of the mother's present with good knowledge regarding Human Milk Banking. The relationship between socio- demographic variables and knowledge of mothers showed that the mother's educational status was statistically significant.

A similar was conducted by **Seyda Can** (2018) conducted a study to determine the knowledge level of mothers regarding breast milk banking and wet nursery in Bursa province Turkey. It was detected that the average age of mothers who participated in the study was 28.10±5.26; 31.8% (n=129) were primary school graduates; and 88.2% (n=258) were not working. It was detected that 54.9% (n=223) of mothers gave birth with normal delivery and most of them (92.4% n=375) breastfed their baby. It was seen that more than half of the mothers (56.4% n=229) did not want to be a wet nurse for someone they do not know; and 81% (n=329) of mothers would not accept wet nursing from someone they do not know if their baby needed breast milk. Out of 297 women surveyed, 73.20% were unaware of Breast Milk Banking (ASB). When asked why they didn't want to use ASB, 44.9% (n=115) of moms said they didn't trust breast milk banks. Moms in nuclear families were more likely to wish to be wet nurses for babies whose moms they did not know (35.3%) than mothers in extended families (p: 0.016; $p < 0.05$). The study found that moms had little awareness regarding breast milk banking and had concerns about breast milk and ASB. Educating mothers, boosting societal knowledge of the importance of breast milk, and addressing their concerns (e.g. security, religious beliefs) is vital in developing solutions.[4]

A similar study was also conducted by **Roshani Pareshkumar Naik** (2020) to assess the knowledge and attitude regarding human milk donation among postnatal mother of selected hospital, Pune. Researcher adopted Non-Experimental descriptive design using structured questionnaire and Likert scale. Non probability convenient sampling technique used for data collection. According to the current study, postpartum moms' mean knowledge score on human milk donation is 8.89 with a standard deviation of 36 3.06. According to the results, the postpartum moms' mean attitude score on human milk donation is 28.56 with a standard deviation of 9.62. There was a negative correlation between knowledge and attitude about human milk donation. Knowledge of human milk and donation does not significantly correlate with demographic variables such as age (years), education, family type, occupation, monthly family income, and area of residence at the 0.05 level of significance. Therefore, the Ho2 has agreed. At the 0.05 level of significance, there is no apparent association between mothers' attitude scores about human milk and the demographic variables of age (years), education, family type, occupation, monthly family income, and area of residence. Thus, the hypothesis of H02 has been accepted. In conclusion, postpartum moms' understanding of breast milk donation was mediocre at best. Postpartum mothers' attitudes can be roughly categorized as highly favourable, somewhat favourable, or unfavourable. In this study, there is no correlation between knowledge and attitude.[5]

RECOMMENDATION

- A comparative study can be done in large sample between two different hospitals to evaluate the knowledge level of postnatal mothers regarding donating milk to the Human Milk Bank.

- A study can be replicated on Nursing Staff.
- A study to find out the effect of nursing interventions.
- A study to find out the effect of different teaching methods in improvement knowledge of nurses.

LIMITATIONS

In Our Study the limitation was that the study is confined to one selected hospital only. The study was limited to 40 participants, which may not be representative of all mothers. The study can be conducted on a larger sample to make better generalization.

NURSING IMPLICATION

Nursing Practice

- Encourage nurses to take active role in advocacy, ensuring widespread awareness of breast milk donation, donor eligibility.
- Nursing can improve the knowledge by giving Health education on the importance of donating breast Milk, its uses, benefits to the society and the mother as well.
- Upgrading the knowledge of nursing personnel regarding Human Milk Banking and its resistance.

Nursing Education

- Nursing students should be trained to educate mothers regarding the significance of donor milk for premature and sick neonates.
- Simulation-based training and case studies should be included in nursing programs to enhance knowledge.
- This education should be included in the discharge education package.

Nursing Research

- More studies should be conducted to assess the impact of educational interventions on increasing knowledge and participation in Human Milk Banking.
- Future researches can be conducted on nursing practices in Human Milk Banking to upgrade and improve knowledge and skills.

Nursing Administration

- Hospital administrators should ensure that maternity wards and neonatal intensive care units (NICUs) have educational posters and pamphlets on Human Milk Banking.
- Collaboration with health organizations and government initiatives can help in increasing accessibility and awareness.
- Organize professional development programs to strengthen nurses' competencies in providing education and counselling.

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