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A cross sectional study to assess the knowledge and practices of expressed breast milk among mothers of admitted neonates in selected hospitals of Meghalaya

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Abstract
Breast milk, endorsed by the WHO, is the optimal nutrition for newborns, offering benefits to infants, mothers, and society. Expressed breast milk is a key alternative for mothers unable to breastfeed directly due to illness, work, or premature infants. Using manual or electric pumps, it provides essential nutrients and immunity to infants, especially those who are unwell or premature. The present study aimed to assess the knowledge and practices, regarding Expressed Breast Milk among mothers of admitted neonates in selected Hospitals of Meghalaya. A quantitative, cross-sectional design was used for this study. A total of 75 mothers were selected through consecutive sampling technique. Data were collected through structured interview questionnaires for knowledge and an observational checklist for practices.
Majority 56 (74.7%) mothers had poor knowledge, and only 19 (25.3%) had average knowledge, with a mean score of 6.18±2.19 on Expressed Breast Milk. However, 51 (68%) demonstrated adequate practice, with a mean score of 8.61±1.77.
An association was found between knowledge with educational status (p=0.02) and number of children (p=0.02) respectively. Notably, 50.7% of mothers had never heard of Expressed Breast Milk, while the remaining received information primarily from healthcare providers.
In conclusion. The study revealed that while mothers follow adequate practices, they lack knowledge.

Keywords: Knowledge, practices, mothers of neonates and expressed breast milk

Introduction
The World Health Organization has universally recommended breast milk as the optimal nutrition for babies, advising exclusive breastfeeding for the initial half-year and continuing breastfeeding for the next two years. Many benefits for women, children, and society as a whole have been brought to light through years of research. It is a common knowledge that breastfeeding provides babies with the most optimal nourishment and emotional support. Breast milk has evolved over millions of years to be exactly suited to baby's needs. For babies, breast milk provides the ideal nourishment. For around the first six months of life, babies get all the nutrients they need from breast milk alone [1, 2, 3].

If a woman is ill or is a working woman, if the baby is born prematurely or is in special care, etc. she can express breast milk. This method can help induce lactation, soften to facilitate latching, ease uncomfortable breast engorgement, and gather milk for upcoming baby feedings. The expressed breast milk provides a neonate with essential nutrition, antibodies, and other beneficial components that support their growth, development, and overall health [1, 4].

"Over one in ten, or 15 million newborns, are born prematurely (WHO). Approximately one million babies pass away in the first 24 hours of life, accounting for 75% of all neonatal mortality. One of the fundamental contributing elements that increases a child's susceptibility to serious illnesses is malnutrition. One of the most important things for a newborn, is to breastfeed exclusively and early [5]. There are 25 million births in India each year, with 3.5 million preterm births and 7.5 million low birth weight births". These premature and underweight babies have difficulties surviving, primarily related to feeding issues. For these babies, direct breastfeeding is frequently not an option, thus the next best thing would be expressed breastmilk [6].

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Need of the study

"According to The National Family Health Survey (NFHS-5, 2019–2021) reports that in Meghalaya Neonatal Mortality Rate (NNMR) is 19.8, higher than the NFHS-4's estimate of 18.3 deaths per 1,000 live births, and its Infant Mortality Rate (IMR) is estimated to be 32 deaths per 1,000 live births, higher than the NFHS-4's estimate of 30". Malnutrition is one of the contributing factors for neonatal deaths and making neonates more vulnerable to severe diseases. Sick neonates are vulnerable and deprived of adequate nutrition. And breast milk expression has benefits not only for children but also for mothers [7].

It is impossible to overstate the value of breastmilk for unwell and premature infants, as it promotes growth and offers immunity to infections. Specifically, data indicates that expressed breast milk reduces the frequency and intensity of the potentially fatal condition, necrotizing enterocolitis. Mothers who breastfeed their children can feel confident that they are making a special contribution to their child's health and development [8].

Therefore, the present study was undertaken to assess the knowledge and practices of expressed breast milk among mothers of admitted neonates.

Objectives

1. To assess the knowledge of Expressed Breast Milk among mothers of admitted neonates in a selected Hospitals of Meghalaya.
2. To assess the practices of Expressed Breast Milk among mothers of admitted neonates in a selected Hospitals of Meghalaya.
3. To find the association between knowledge of Expressed Breast Milk among mothers of admitted neonates with selected demographic variables.

Materials and methods

- **Study setting:** Study was conducted in two different hospitals; North Eastern Indira Gandhi Regional Institute of Health & Medical Sciences (NEIGRIHMS), and Ganesh das Govt. M & CH, Hospital, Shillong, Meghalaya.
- **Study population:** In the present study mothers of neonates who were admitted were included in the study population.
- **Sampling technique and sample size:** A consecutive sampling technique was used to select the study participants. The sample size was calculated by using the "Prevalence estimation" formula [N=$Z^2 p(1-p)/d^2$] for the study. A total sample of 75 mothers of admitted neonates, who met the inclusion criteria were selected for the study.

Criteria for sample selection
Inclusion criteria

- Mothers of neonates who are expressing breast milk
- Mothers of neonates who are willing to participate
- Mothers of neonates who are above 18 years of age

Exclusion criteria

Sick mothers during the study period who are in ICU.

Study instrument: A structured interview questionnaire for knowledge and observational checklist for practices were developed and was validated by the experts. Subsequently, the tool was translated and retranslated into English, Hindi and Khasi by professionals in the corresponding fields.

Scoring interpretation

The interpretation for knowledge:

Score	Interpretation
11-14 (>75%)	Good Knowledge
8-10 (50-75%)	Average Knowledge
0-7 (≤50%)	Poor Knowledge

The interpretation for practices:

Score	Interpretation
8-14 (51-100%)	Adequate
8-10 (≤50%)	Inadequate

Method of data collection: After obtaining Institutional Ethical Clearance, a formal administrative permission was obtained from the Directorate of Health Services (DHS) and medical superintendent of respective hospitals. The final study was conducted from 15th January to 10th February 2024 in North Eastern Indira Gandhi Regional Institute of Health & Medical Sciences (NEIGRIHMS), and Ganesh das Govt. M & CH, Hospital, Shillong, Meghalaya. A total of 75 participants who met the inclusion criteria were selected for the study. Written informed consent was obtained after providing information about self and the study, and data was collected by face-to-face interview method for 20-30 minutes and observational checklist for the duration of 30-40 minutes.

Statistical analysis: Analysis of the data was done on the basis of the objectives of the study using Descriptive Statistics (Frequency, percentage, mean and standard deviation) and Inferential Statistics (Fisher's Exact test and Corelation Coefficient) using Statistical Package for Social Sciences (SPSS), version 21.

Results
Demographic data of participants

Table 1: Frequency and percentage distribution of demographic variables of the study participants. N=75

Socio demographic variables	Frequency (f)	Percentage (%)
Age (in years)		
19-29	55	73.3
30-39	18	24.0
≥ 40	02	2.7
Religion		
Christian	62	82.6
Hindu	05	6.7
Muslim	05	6.7
Other (Indigenous religion)	03	4.0
Educational status		
Uneducated	04	5.3
Primary	38	50.7
Secondary	22	29.3
Higher secondary	06	8.0
Graduate	05	6.7
Occupational status		
Unemployed	59	78.7
Daily wage bearers	12	16.0
Govt. workers	04	5.3
Habitat		
Rural	40	53.3
Urban	35	46.7
Type of family		
Joint	47	62.7
Nuclear	28	37.3
No. of children		
1 child	38	50.7
2-4 children	32	42.6
≥ 5 children	05	6.7
Mode of Delivery		
Normal	57	76.0
LSCS	18	24.0
Weight of baby at birth		
VLBW (1000-1499 gm)	08	10.7
LBW (1500-2499 gm)	33	44.0
Normal (2500-3900 gm)	34	45.3
Heard of Expressed Breast Milk		
Yes	37	49.3
No	38	50.7
Source of information (n=37)		
Health care provider	24	32.0
Media	01	1.3
Family member	12	16.0

Table 1 shows the distribution of participants according to demographic variables of 75 respondents i.e., the mothers of admitted neonates of selected hospitals. 55(73.3%) participants belonged to the age group of 19-29 years. Majority of the mothers are Christian 62(82.6%) with regard to educational status 38(50.7%) of primary schooling, 59(78.7%) are unemployed and comes from a rural habitat 40(53.3%). Majority of mothers comes from joint family i.e., 47(62.7%), out of 75 mothers, 38(50.7%) mothers were bearing only 1 child. Majority 57(76.0%) have Normal Vaginal Delivery, majority of the baby's weight are in the normal range of 2500-3900gm i.e., 34(45.3%), and 38(50.7%) mothers have not heard of Expressed Breast Milk and 37(49.3%) have heard of Expressed Breast Milk, where 24(32.0%) received information from health care provider, 1(1.3%) from media, and 12(16.0%) from their relative.

Assessment of the knowledge of participants regarding expressed breast milk

Table 2: Frequency and percentage distribution of knowledge score of the participants regarding expressed breast milk. N=75

Knowledge level	Range of score	Frequency (f)	Percentage (%)	Mean	Standard deviation
Average knowledge	8-10 (51-75%)	19	25.3	6.18	2.19
Poor knowledge	0-7 (≤ 50%)	56	74.7		

Table 2 shows that out of 75 mothers, majority 56(74.7%) of them are having poor Knowledge, 19(25.3%) have average knowledge and 0(0%) have good knowledge with the mean and standard deviation of 6.18±2.19, which can be concluded that most of the mothers had poor knowledge regarding Expressed Breast Milk.
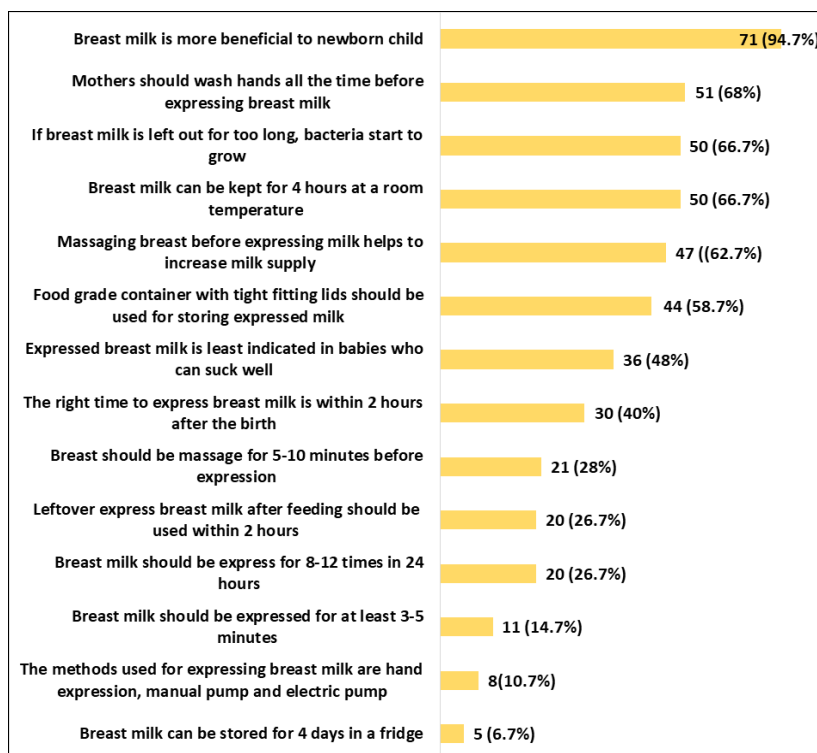

Fig 1: Bar diagram showing frequency and percentage distribution of correct response of the participants regarding expressed breast milk. N=75

Fig 1 shows that out of 75 mothers, majority 71(94.7%) know that breast milk is more beneficial to newborn child, 51(68.0%) know that hand washing should be done all the time before expressing breast milk, around 50(66.7%) mothers know bacteria starts to grow if breast milk is left out for too long, around 50(66.7%) mothers know breast milk can be kept for 4 hours at room temperature, and about 47(62.7%) know massaging helps to increase milk supply, 44(58.7%) know to use food grade container with tight fitting lids for storing milk, 36(48.0%) mention expressed breast milk is least indicated in healthy baby, 30(40.0%) know the right time to express breast milk, about 21(28.0%) mothers know to massage breast for 3-5 minutes, 20(26.7%) know that leftover feeding can be used within 2 hours, 20(26.7%) know that breast milk should be express for at least 8-12 times in 24 hours, 11(14.7%) know to express breast milk for at least 3-5 minutes, about 8(10.7%) know the methods used for expressing breast milk, only 5(6.7%) mothers know that breast milk can be stored for 4 days in fridge.

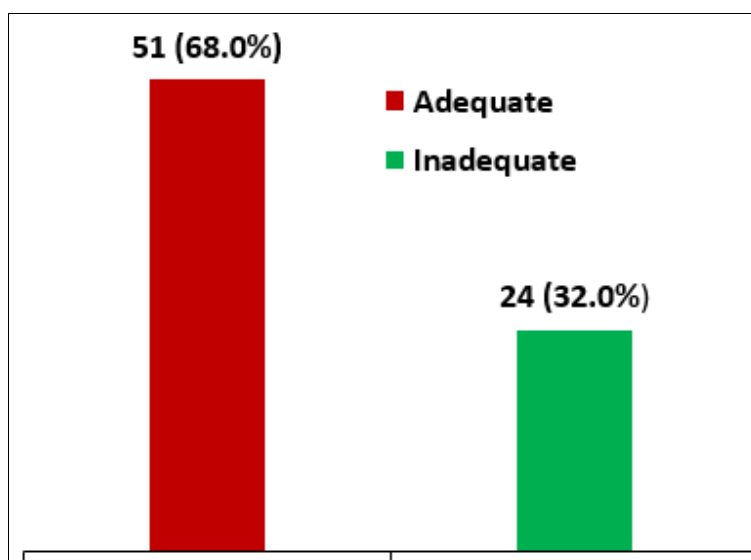**Assessment of practices of participants regarding expressed breast milk**

Fig 2: Bar diagram showing frequency and percentage distribution of Practice score of the participants on expressed breast milk. N=75

Fig 2 shows that out of 75 mothers, Majority 51(68.0%) of them have adequate practice and 24(32.0%) are having inadequate practice with mean and standard deviation of 8.61±1.77, which can be concluded that most of the mothers have adequate practice regarding Expressed Breast Milk.

Association of the knowledge with selected demographic variables

Table 3: Association between knowledge on Expressed Breast Milk with selected demographic variables. **N=75**

Demographic variable	Level of knowledge	P value
	Average (f, %)	Poor (f, %)
Age (in years)		
19-29	12 (16%)	43 (57.3%)
30-39	07 (9.3%)	11 (14.7%)
40-49	00 (0%)	02 (2.7%)
Educational status		
Uneducated	00 (0%)	04 (5.3%)
Primary	09 (12%)	29 (38.7%)
Secondary	03 (4%)	19 (25.3%)
Higher secondary	04 (5.3%)	02 (2.7%)
Graduate	03 (4%)	02 (2.7%)
Habitat		
Rural	08 (10.6%)	32 (42.7%)
Urban	11 (14.7%)	24 (32%)
Number of children		
1 child	06 (8%)	32 (42.7%)
2-4 children	13 (17.3%)	19 (25.3%)
>5 children	00 (0%)	05 (6.7%)
Weight of baby at birth		
VLBW (1000-1499 gm)	01 (1.4%)	07 (9.3%)
LBW (1500-2499 gm)	06 (8%)	27 (36%)
Normal (2500-3900 gm)	12 (16%)	22 (29.3%)
P value		0.24, 0.02*, 0.25, 0.02*, 0.18

* p-value ≤ 0.05 significance

Table 3 depicts the findings of association between knowledge with selected demographic variables. The findings shows that there is an association between knowledge on expressed breast milk with education, and number of children, as indicated by p value i.e., the calculated p value is 0.02, which is less than or equal to 0.05 level of significance.
In relation to age, habitat, weight of baby at birth and information on Expressed Breast Milk have no association with the Knowledge.
So, it can be concluded that the knowledge of the participants depends on their educational status and number of children.

Correlation between knowledge and practices of mothers regarding expressed breast milk

Table 4: Correlation between knowledge and practices of mothers regarding expressed breast milk. N=75

Variables	Pearson's correlation coefficient (r)	p-value
Knowledge practice	.012	.920

*p-value ≤0.05 significance

Table 4 indicates that mothers' knowledge and practices about expressed breast milk have a weak positive correlation (r =.012), but it is not statistically significant because the calculated p value is .920, which is more than the significance level of 0.05.

Hence, there is an increase in practices with increase in knowledge.

Discussion
The present study aimed to assess the knowledge and practices of Expressed Breast Milk among mothers of admitted neonates in selected Hospitals of Meghalaya.
According to the present study, majority 55(73.3%) of mothers are in the age group of 19-29 years, 38(50.7%) mothers have one child and 47(62.7%) belongs to a joint family. This was comparable to a study done by Adhikari D, *et al.* (2022) in which majority of mothers 72.6% are in the age group of 20-29 years, 65.1% are having 1 child and 53.8% belongs to a joint family [9].
The present findings shows that 56(74.7%) are having poor knowledge, 19(25.3%) are having average knowledge and none of the participants have good knowledge. According to the study by Amin B U, (2021) reported that 46% of the participants had inadequate knowledge, 54% had moderate knowledge and none of the participants had adequate knowledge [10].
The findings in the present study shows that 51(68.0%) have adequate practice and 24(32.0%) have inadequate practice. Which is similar with the findings reported by Warrior M.A, *et al.*, (2023) where it was found that 51.7% participants had average practice, 48.3% had poor practices and none had good practices [11].
The present study finds a significant association between knowledge regarding expression of breast milk with the selected demographic variables (number of children and educational status) which is similar to the study conducted by Adhikari D, *et al* (2022) where it was reported that there is a significant association between knowledge with selected demographic variables (educational status) at ≤ 0.05 level of significance [9].

Conclusion
In the present study conducted among mothers of admitted neonates it was found that 56 (74.7%) of the participants have poor knowledge, 19 (25.3%) have average knowledge and none of the participants have good knowledge about Expressed Breast Milk. The findings also reveal that majority 51 (68.0%) have adequate practice on Expressed Breast Milk. Furthermore, there was a significant association between knowledge regarding expression of breast milk with the selected demographic variables (number of children and educational status).
The study reveals that mothers follow adequate practices but lack knowledge on expression of breast milk. Therefore, it is imperative to bridge the significant knowledge gap among mothers in order to disseminate information about Expressed Breast Milk.

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