

# Handling, Storage and Use of Expressed Breastmilk among Working Mothers of Infants in Anantnag, Kashmir

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## Abstract

*Rising number of mothers are expressing their breastmilk to feed their infants when away from them, which presents new issues for infant feeding. Having sound knowledge regarding expression, storage and use of breast milk is first step towards promoting practice of expressed breast milk, which in turn promotes exclusive breastfeeding. Primary concern in this is handling, storage, and warming of expressed breastmilk. So all breastfeeding mothers should be motivated to learn different techniques of expression, storage and use of expressed breastmilk. The settings chosen for present study were 18 villages of Dachnipora block of district Anantnag (J&K) with a sample size of 50 mothers of infants. This setting was selected as per feasibility & availability of study subjects. A questionnaire was used for data collection. The study revealed that 46 percent of subjects had inadequate knowledge level, 54 percent had moderate knowledge level and none of subjects had adequate knowledge level regarding expression, storage and use of expressed breast milk. A significant association of knowledge level of mothers of infants was found with demographic variables, parity and previous experience with expression and storage at  $p \leq 0.05$  level and no association was found with variables like age, educational status, nature of job and monthly family income. To conclude, mothers of infants had insignificant level of knowledge about expression, handling, storage and use of expressed breast milk. If they are provided and supported with adequate and appropriate information from the beginning of their motherhood, they will make exclusive breastfeeding a success.*

**Key words:** Breastfeeding, Infant, Expressed breast milk

Breast milk is best food for baby, which protects against infections, helps growth, improves survival and provides lifelong health and development benefits to newborns and infants. Breastfeeding is the fundamental right of every child that prevents neonatal mortality and morbidity. Irrespective of the mode of delivery, breastfeeding must be started within the golden hour of birth (CDS, cited 2022). First year of life is vital in laying the bedrock of good health. At this time certain biological and psychological needs must be met to guarantee the survival and healthy development of the child into future adult (Neville et al, 2012). Breastfeeding helps to foster warmth, love and affection between the baby and mother.

Importance of breastfeeding has been so widely realised that the World Health Organisation started to celebrate World Breast Feeding Week from 1 – 7

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August in more than 170 countries with a particular theme every year (Devi et al, 2020). Exclusive breastfeeding for first six months of life is important for sound growth and development of every infant. Though breastfeeding is a natural process, its success has many obstacles like breast engorgement, inadequate milk production, working mothers, admissions of neonates in Intensive Care Unit etc. For example, problems of latching are seen in 54.8 percent of cases and problems for initiation of breastfeeding are present in 5.65 percent as found in a study (Buvaneswari & Dash, 2019).

Mothers play a vital role in framing child's health and in shaping his future. It is possible to administer the breast milk even in the absence of the mother by expressing, storing and using it as and when required (Devi et al, 2020). To have exclusive breastfeeding, breast milk expression can be widely practiced by mothers. This practice permits mothers to be intermittently away from their infants to carry out their daily lifestyle activities while continuing to breastfeed. Win et al (2006) concluded that mothers who express their breast milk were more likely to continue breastfeeding up to 6 months than those who did not express. If a mother has to breastfeed

her infant successfully during the period of separation, she must acquire the technique of expression, storage and use of expressed breast milk. Mother can express breast milk and store it in a refrigerator or in a cool place to feed her baby in her absence. Breast milk after expression can be collected and stored in sterile containers. It can be stored for up to six months in a freezer at -18°C or lower temperature (Ghai, 2022; CDC, 2022).

Breast milk expression, manually or with a pump device, helps mothers to increase breastfeeding duration and overcome the hurdles of successful breastfeeding. Expressed breast milk diminishes a few advantages of the nutritional components of the milk, but compared to bottle milk/formulae feeding, expressed breast feeding is best for infants (Uwaezuke et al, 2017). In developed countries like USA, mothers use breast pumps to express milk to feed their infants while they are away from them. But in India this practice is not preferred that much, because we lack adequate information and appropriate knowledge about expression of breast milk. It is important that all mothers should have adequate knowledge regarding expression of breast milk so that she will be able to prevent correct the problems, if any, and increase the milk supply to prevent malnutrition.

The Sample Registration System Bulletin Jammu Kashmir reported in December 2016 that infant mortality rate has dropped from 41 to 34 to 26 in 2013, 2014, 2015 respectively and the reason was exclusive breastfeeding and oral rehydration. A Nursing officer in neonatal intensive care unit noticed that neonates admitted in neonatology were fed with formulae feed due to which they are suffering from many problems in later life.

Since the breast milk is essential for the infant's health, the mother has to continue the exclusive breastfeeding. But in cases of working women, they can feed their child only at leisure time. One of the other methods through which the working women can manage their baby's health is through expressed breast milk. Expression of breast milk is beneficial to both the baby as well as the mother; it provides nutrition to the child and prevents breast complications in mothers. Premature cessation of exclusive breastfeeding and introduction of formula feed unnecessarily exposes children to the risk of infection and malnutrition (Ghai, 2022).

Artificial feeding came into play with industrial revolution and dairy business in the 19th century. The sub-optimal breastfeeding in the first 6 months of life results in 1.4 million deaths and 10 percent of the disease burden in children younger than 5 years of age (World Health Organization, 2010). Optimal breastfeeding of infants under two years of age prevents over 800,000 deaths (13% of all deaths) in

the developing countries. The American Academy of Pediatrics addresses the importance of supporting breastfeeding mothers who return to the work force. They recommend providing appropriate facilities and adequate time for manual expression in the workplace (Mary Easter, 2017).

## Objectives

The study was conducted to:

1. Assess the knowledge level of working mothers of infants regarding "expression, storage and use of expressed breast milk.
2. Find out the association of knowledge level of working mothers of infants regarding expression, storage and use of expressed breast milk with their selected demographic variables.

## Review Literature

Ester Mary (2017) conducted a study among 100 working lactating mothers on effectiveness of self-instructional module on knowledge regarding collection and storage of expressed breast milk among working mothers of infants at selected children hospital in Chennai. An Information booklet and pamphlet were used to educate the mothers. In pre-test, out of 100 lactating mothers 15 had adequate knowledge, 35 had moderate knowledge and 50 had inadequate knowledge. In post-test out of 100 lactating mothers 65 had adequate knowledge, 25 had moderate knowledge and 10 had inadequate knowledge. The paired t test reveals that self-instructional module was effective in increasing the knowledge on collection and storage of expressed breast milk among mothers of infants at the level of  $p < 0.05$ .

Preeti et al (2017) conducted a prospective study to assess knowledge, attitude and breast-feeding practices of working mothers in Punjab, India. 1000 mothers were selected by purposive sampling technique. The study revealed that some (38%) of the mothers had prior knowledge regarding importance of Colostrum, whereas 67.2 percent were not aware of it; 42 percent mothers had knowledge about importance of breastfeeding while rest 58 said breastfeeding was not important. It was concluded that mothers have an average knowledge about breastfeeding and poor breastfeeding practices were followed. Thus, it is important to educate mothers and families regarding breastfeeding and its importance, we need to strengthen public health education system to promote breastfeeding.

Janet Danso (2014) conducted a cross sectional study to examine the practice of exclusive breastfeeding among 1000 professional working lactating mothers in Kumasi Metropolis of Ghana. From the study findings, 48 percent mothers were able to practice exclusive breastfeeding and 52 percent could not practice exclusive breastfeeding. The study con-

cluded that professional working lactating mothers find it difficult to exclusively breastfeed their babies and full time employment status and family members influence undermine the practice of exclusive breastfeeding.

Mori J Good Win (2010) conducted a study on middle class mothers on breast feeding duration and employment at Washington. The survey reveals that the usual duration of breast feeding is significantly shorter for working women, 16 weeks' average compared with the 25 weeks for non-working mothers.

Hemalatha G (2008) conducted a pre-experimental study to assess the effectiveness of lecture-cum-demonstration programme on knowledge regarding breast milk expression and its storage among 60 mothers of babies in Neonatal intensive care unit in selected hospital, Bengaluru. The study revealed that 35 percent of mothers had average knowledge and 65 percent had poor knowledge score. After the teaching programme, 45 percent of mothers had good knowledge score, 43 percent had average knowledge score and 12 percent had poor knowledge score. It was concluded that mothers had poor knowledge and lecture-cum-demonstration method was effective in improving their knowledge and practice score regarding the collection and storage of breast milk.

Labiner-Wolfe (2013) conducted a study among 436-1060 US mothers about how they store and handle their expressed breast milk. It concluded that few mothers stored their milk longer than recommended. Among mothers of the youngest infants in this analysis, 12 percent heated their milk in a microwave and 17 percent rinsed bottle nipples with only water before reuse; percentages were similar as infants aged. These practices may pose risks to infant health. Compared with those who fed no formula, mothers who fed both expressed milk and formula were more likely to heat milk in a microwave and, among those with the youngest infants, to rinse bottle nipples with only water between uses.

## Material and Methods

**Research setting:** The setting chosen for present study were 18 villages of Dachnipora block of district Anantnag viz. Aswoora, Banderpora, Bewoorra, Chenigund, Chandpora, Durgund, Hatigam K Kalan, Kanelwan, Khiram Darga, Khiram Bala, Mirgund, Mahind, Nowshera, Satkipora, Sirhama payeen, Sirhama bala& Srigufwara in which target population was found.

**Study population:** It consisted of working mothers of infants in Dachnipora block of district Anantnag Kashmir.

**Sample and sampling technique:** The sample for the study comprised of 50 working mothers from

all 18 villages who were available during the period of data collection and present in selected villages. The convenient sampling technique was adopted to select the study subjects for the present study.

**Data collection tool and technique:** The data collection tool used was knowledge questionnaire for assessing knowledge regarding expression and storage of breast milk among working mothers of infants. Convenient sampling technique was used.

## Results and Discussion

The characteristics of the study subjects in terms of demographic variables which include age, educational status, parity, previous experience with expression and storage of breast milk, nature of job and monthly family income have been presented in the form of frequency and percentage in the Tables 1-8.

The knowledge level of mothers of infants showed that among the total sample (n=50), 46 percent of subjects had inadequate knowledge score, 54 percent of subjects had moderate knowledge score and none had adequate knowledge level regarding expression, storage and use of breast milk.

The association of demographic variable with knowledge level of mothers of infants using Chi square test revealed that there was statistically

**Table 1: Frequency and percentage distribution of study subjects according to their age (n=50)**

| Age (years) | Frequency (f) | Percentage |
|-------------|---------------|------------|
| 20-25       | 1             | 02         |
| 26-30       | 32            | 64         |
| 31-35       | 10            | 20         |
| Above 35    | 7             | 14         |
| Total       | 50            | 100        |

**Table 2: Frequency and percentage distribution of study subjects according to educational status (n=50)**

| Educational status | Frequency | Percent |
|--------------------|-----------|---------|
| High school        | 8         | 16.0    |
| Higher secondary   | 11        | 22.0    |
| Graduate and above | 31        | 62.0    |
| Total              | 50        | 100.0   |

**Table 3: Frequency and Percentage distribution of study subjects according to parity (n=50)**

| Parity | Frequency | Percentage |
|--------|-----------|------------|
| One    | 10        | 20.0       |
| Two    | 31        | 62.0       |
| Three  | 9         | 18.0       |
| Total  | 50        | 100.0      |

**Table 4: Frequency and percentage distribution of study subjects according to previous experience (n=50)**

| Previous experience | Frequency | Percentage |
|---------------------|-----------|------------|
| Yes                 | 21        | 42.0       |
| No                  | 29        | 58.0       |
| Total               | 50        | 100.0      |

**Table 5: Frequency and percentage distribution of study subjects according to nature of job (n=50)**

| Nature of job | Frequency | Percentage |
|---------------|-----------|------------|
| Govt          | 37        | 74.0       |
| Private       | 13        | 26.0       |
| Total         | 50        | 100.0      |

significant association with variable i.e. parity and previous experience with expression and storage at  $p \leq 0.05$  level and no association was found with variables age, educational status, nature of job and monthly family income.

#### *Knowledge level regarding expression, storage and use of expressed breast milk among mothers of infants*

In the pre-test 46 percent of study subjects had inadequate knowledge score, 54 percent had moderate knowledge level and none of study subjects had adequate knowledge level regarding expression, storage and usage of breast milk. In pre-test mean score was 16.72, range 17 and standard deviation was 3.14. It was found that majority of working mothers had moderate knowledge score, so they need to be educated and informed about expression and storage of breast milk.

The present study was supported by that of Ester Mary (2017) on effectiveness of self-instructional module in knowledge on collection and storage of ex-

pressed breast milk among 100 working mothers of infants. In pre-test out of 100 subjects, 15 (15%) had adequate knowledge, 35 (35%) had moderate knowledge, 50 (50%) had inadequate knowledge. The study concluded that knowledge of collection and storage of expressed breast milk among working mothers of infants was insufficient and needs to be improved.

There was significant association between pre-test knowledge scores of study subjects and the selected demographic variables like parity and previous experience with expression and storage of breast milk. Hence, the researcher accepts the research hypothesis (H2) which states that there is significant association between pre-test scores of knowledge and selected demographic variables such as parity and previous experience with expression and storage of breast milk at the significant scores of 0.05. However, no significant association was found between pre-test knowledge scores of study subjects and the selected demographic variables like age, educational status, nature of job and monthly family income. Hence, the researcher partially accepts the research hypothesis (H2) and accepts null hypothesis (H02) which states that there is no significant association between scores of knowledge and selected demographic variables at the significant scores of 0.05

Similar results were found in a study conducted by Elaiyamudha (2012) on effectiveness of structured teaching programme on knowledge and attitude regarding expression and storage of breast milk among employed mothers in Sothupakkam, Kanchipuram district where there was significant association between pre-test level of knowledge and variables like parity and education. There was no significant association between the other demographic variables like age, nature of job, monthly family income, previous experience. It is evident that mothers of infants have inadequate knowledge about expression, storage and usage of expressed breast milk. Some of them were not aware about expression at all. Mothers need to have adequate knowledge regarding expression, storage and usage of expressed breast milk, so that they can safely express, store and use the expressed breast milk. This will reduce transmission of different types of infections to infants and help mothers to exclusively breastfeed their infants when away from them. Moreover, instructional module will be helpful in improving knowledge regarding expression, storage and use of breast milk among mothers of infants in Dachnipora block of district Anantnag, Kashmir.

The local Community Health Workers

**Table 6: Frequency and percentage distribution of study subjects according to monthly family income (n=50)**

| Monthly family income (in Rs) | Frequency | Percentage |
|-------------------------------|-----------|------------|
| 10000-20000                   | 1         | 2.0        |
| 20000-30000                   | 11        | 22.0       |
| Above 30000                   | 38        | 76.0       |
| Total                         | 50        | 100.0      |

**Table 7: Distribution of study subjects according to knowledge level of mothers of Infants regarding expression, storage and use of expressed breast milk**

| Pre-test knowledge scores | No. of study subjects |            |
|---------------------------|-----------------------|------------|
|                           | Frequency             | Percentage |
| Inadequate (0-25)         | 23                    | 46         |
| Moderate (25-35)          | 27                    | 54         |
| Adequate (35-50)          | 0                     | 0          |



**Table 8: Association of demographic variables with pre-test knowledge level**

| Variables                                                         | Sub items        | Adequate | Moderate | Inadequate | Chi Test | P Value | df | 't' value | Result |
|-------------------------------------------------------------------|------------------|----------|----------|------------|----------|---------|----|-----------|--------|
| Age                                                               | 20-25 years      | 0        | 1        | 0          | 1.102    | 0.212   | 3  | 3.841     | NS*    |
|                                                                   | 26-30 years      | 0        | 14       | 18         |          |         |    |           |        |
|                                                                   | 31-35 years      | 0        | 8        | 2          |          |         |    |           |        |
|                                                                   | Above 35 years   | 0        | 4        | 3          |          |         |    |           |        |
| Educational status                                                | High school      | 0        | 2        | 6          | 5.113    | 0.238   | 4  | 9.49      | NS     |
|                                                                   | High secondary   | 2        | 4        | 5          |          |         |    |           |        |
|                                                                   | Graduate & above | 2        | 26       | 3          |          |         |    |           |        |
| Parity                                                            | One              | 03       | 5        | 2          | 10.813   | 0.021   | 4  | 9.49      | S*     |
|                                                                   | Two              | 6        | 13       | 12         |          |         |    |           |        |
|                                                                   | Three            | 1        | 4        | 4          |          |         |    |           |        |
| Previous experience regarding expression & storage of breast milk | Yes              | 1        | 16       | 04         | 7.130    | 0.124   | 2  | 5.99      | S*     |
|                                                                   | No               | 6        | 9        | 14         |          |         |    |           |        |
| Nature of job                                                     | Govt             | 6        | 27       | 4          | 3.112    | .485    | 2  | 5.99      | NS     |
|                                                                   | Private          | 3        | 7        | 3          |          |         |    |           |        |
| Monthly family income (Rs)                                        | 10,000 - 20,000  | 0        | 0        | 1          | 2.310    | .930    | 4  | 9.49      | NS     |
|                                                                   | 20,000 - 30,000  | 3        | 5        | 3          |          |         |    |           |        |
|                                                                   | Above 30,000     | 10       | 18       | 10         |          |         |    |           |        |

assisted the principal and co-investigators to understand the historical and cultural context of infant feeding practices. Discussion groups consisted of the mothers of infants who are the most trusted persons or caretakers, thus indicating potential obstacles to giving expressed breastmilk.

### Nursing Implications

**Nursing education:** The educational background of a nurse should equip him/ her with the knowledge necessary to function as a health educator. Health education is the major key to improve the knowledge so as to modify the practice among nurses. Health programmes can be organised by the nursing students in the areas like antenatal, postnatal, paediatric wards, immunisation centres and community settings. Continuing nursing education programmes can be organised for the nurses regarding expression and storage of breast milk, so that they can educate mothers. Nursing education should prepare nurses to give awareness by using various methods of teaching and technology. Nurse educators must educate students regarding expression and storage of breast milk, so that they can aware mothers regarding the same. The curriculum of nursing should highlight the importance of breastfeeding, its expression and storage.

**Nursing practice:** Nurses can impart knowledge regarding expression and storage of breast milk. They should impart awareness in effective manner to mother's regarding expression and storage of

breast milk. They can educate the mothers regarding expression and storage of breastmilk, during their posting whenever and wherever possible. Nurses in the paediatric wards must support, advise and motivate mothers regarding expression and storage of breast milk and encourage working lactating mothers for expression and storage of breastmilk.

**Nursing administration:** Administration in both private and government sectors should take action to update the knowledge of clinical nurses regarding expression and storage of breast milk. The nurse administrator can formulate policies and procedures regarding exclusive breastfeeding. They should organise in-service and continuing education programmes on expression and storage of breast milk. Nursing conferences, group discussion can be conducted periodically to promote breastfeeding. Nurses need to take up responsibility to give awareness to mothers regarding exclusive breastfeeding, expression and storage through informative booklets, pamphlets, mass media etc. Administration can provide financial assistance for purchasing equipments in neonatal units for expression and storage of breast milk.

**Nursing research:** The findings of the present study serve as the basis for professionals and nursing students to conduct further studies regarding expression and storage of breast milk. Management and administrative authorities should encourage,

motivate and provide financial support to do relevant research. The findings of the study need to be disseminated among nurses and general public in order to have sound knowledge regarding expression and storage of breast milk. The study will motivate the initial researchers to conduct the same study on large scale and in different settings.

### Limitation of the study

- Small number of subjects limits generalisation of research findings, hence long-term follow-up could not be carried out due to time constraints.
- The study was limited to those mothers who were present at the time of data collection, lactating and willing to participate in the study

### Recommendations

- The same study can be done (a) in large samples, (b) by using True Experimental research design.
- Comparative study can be done among working and non-working mothers.
- A scoping review should be undertaken to explore guidelines in local language for handling and storage of expressed human breastmilk which are readily accessible to mothers with the help of ASHA / AWW or through online modes.
- The expression, storage and use of breast milk should be part of the training of community health workers (ANMs, ASHA and AWW).

### Conclusion

Expressing breastmilk for feeding infants when the mother and baby are separated is a new concept in some rural communities. More promotion and practical skills training in hand expression, safe breastmilk storage and feeding of expressed breastmilk by caretakers would help mothers to maintain their milk supply whilst continuing their education and work activities.

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