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Original Article

Effectiveness of Video-assisted Teaching Method on Knowledge and Skill Regarding Hand Expression of Breast Milk and Cup Feeding among the Mothers of Low Birth Weight Baby

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Abstract

Introduction: The first food for the baby is breast milk. If baby is not able to breastfeed directly, hand expression should begin as soon as possible and feed the baby with cup.

Objectives: The objective of this study was (1) to evaluate the effectiveness of video-assisted teaching method (VATM) on knowledge and skill regarding hand expression of breast milk and cup feeding among the mothers of low birth weight baby.

Method: The study was conducted among 60 mothers of low birth weight babies admitted in NICU, in a selected hospital at Puducherry. A quantitative approach and pre-experimental design were used. A sample was selected by purposive sampling technique. Data were collected with the structured questionnaire and checklist to assess the knowledge and skill, respectively.

Results: Demography result shows that most of the mothers were in the age group of 21–25 years, who had a primary level of education. Regard to knowledge, it shows that, during pre-test, around 75% of mothers had inadequate knowledge, whereas in the post-test, 95% of mothers had adequate knowledge and related to skill on hand expression, during pre-test, around 93.33% of mothers had inadequate skill, whereas in post-test, 98.33% of mothers had adequate skill. The "*t*"-test highlights that there was a statistically significance difference between pre- and post-test ($P < 0.0001$ and $P \leq 0.0001$).

Conclusions: The above result highlights that the postnatal mother's knowledge and skill were improved after VATM. Hence, it is important to educate each mother regarding hand expression of breast milk and cup feeding with the suitable AV AIDS-like video teaching method.

Keywords: Cup feeding, effectiveness, evaluate, hand expression, low birth weight, Skill, Video-assisted teaching method

Introduction

During antenatal period, the mother and fetus are physically linked and feed through the placenta. After birth, breastfeeding creates a unique bond between the mother and baby. Soon after birth, the baby will be ready to feed. The first food for the baby is breast milk. The best way to provide breast milk to a baby is to breastfeed, but for various reason direct breastfeeding may not be possible always. For example, the mother may need to be separated from her newborn when she is a working mother or the infant may be hospitalized away from the mother. At these times, expressing breast milk enables a woman to give breastfeed her baby which provides optimal nutrition for the newborn (breast milk). The human milk-fed premature infant may experience improved health (such as lower rates of infection and necrotizing enterocolitis, improved gastrointestinal function, and better neurodevelopment). Nature has modified the breast milk of the mother of a preterm baby so as to make it the ideal and best option for the low birth weight (LBW) neonates.[1,2] For women who need

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to be separated from their baby for more than a few hours, expressing breast milk is needed to ensure that the mammary glands continue to produce a sufficient amount of breast milk to meet the baby's nutrition requirements. A woman can begin expressing breast milk at any time soon after the birth of the baby when the baby not able to suckle. If baby is not able to breastfeed, expression of breast milk should begin as soon as possible after the birth, ideally within the 1st h. There are very few Indian studies which have addressed this issue in preterm or LBW babies.[3] LBW baby sucking was not developed properly. For that kind of baby, mother needs to be express her milk and cup feed the baby.[4] Various studies conducted by the researchers highlighted that mothers' knowledge and skill was lacking on hand expression of breast milk and cup feeding.[5,6] There is still a need for programs, which support and encourage breastfeeding particularly at a primary care level, focusing more on younger, less well-educated women and those from lower socioeconomic class.[7] It is evident that the association of breastfeeding success with mothering success only jeopardizes some families' self-esteem and sense of parenting ability. These findings suggest that it would be beneficial to find alternate ways to connect preterm infants and their parents in the preterm nursery environment and find more positive ways to support breastfeeding.[8]

Objectives

The objectives of this study were as follows:

- To assess the existing knowledge and skill on hand expression of breast milk and cup feeding among the mothers of LBW baby before the intervention.
- To evaluate the effectiveness of video-assisted teaching method (VATM) on knowledge and skill regarding hand expression of breast milk and cup feeding among the mothers of LBW baby after intervention.
- To correlate the post-test level of knowledge with the level of skill of the mothers of LBW baby on hand expression of breast milk and cup feeding.
- To associate the post-test level of knowledge and skill with the selected demographic and obstetrical variable.

Hypothesis

- H_1: There will be a significant difference between pre- and post-test scores of knowledge and skill on hand expression of breast milk and cup feeding among the mothers of LBW baby.
- H_2: There will be a significant relationship between the level of knowledge and level of skill on hand expression of breast milk and cup feeding among the mothers of LBW baby.
- H_3: There will be a significant association of post-test scores of knowledge and skill on hand expression of breast milk and cup feeding with the selected demographic and obstetrical variable.

Methodology

The research approach used for this study was a quantitative research approach, and research design was pre-experimental research design (one group pre-test and post-test research design).[6] VATM was the independent variable. Knowledge and skill of the mothers of LBW baby are the dependent variables. Postnatal mothers who were delivered LBW baby got admitted in NICU, and those who fulfil the inclusion criteria, available during the period of data collection, were the sample for this present study. Purposive sampling technique was adopted to select the sample in this study.[9]

Sampling criteria

Inclusion criteria	Exclusion criteria
Those who	
Are willing to participate in the study	Mother who had complications during labor
Can understand the Tamil and English	Baby who was on mechanical ventilator

Development and description of the tool

Section A: Section A comprised demographic data and obstetrical data. Demographic variable includes age, education, religion, location, occupation, type of family, and monthly income. Obstetrical variable includes gravida, number of delivery, type of delivery, number of postnatal day, sex of the baby, and weight of the baby.[9]

Section B: It comprised 25 self-administered structured questionnaires related to knowledge regarding hand expression of breast milk and cup feeding. Each question carries one mark. Total mark is 25.[10] The score was interpreted as shown in Table 1.

Section C: It comprised checklist regarding the skill of hand expression of breast milk and cup feeding. Each correct response will carry one score and zero score for not performed well. The total score for checklist is 18. The score was interpreted as shown in Table 2.

Procedure for data collection

Formal permission was obtained from the concerned authority. Written informed consent was obtained from each mother. Data collection was done in NICU. All mothers were introduced by the researcher, and they were explained about the purpose of the study and also assured that the result of the study will be confidential. A total of 60 mothers of LBW baby were selected based on the inclusion criteria. Each day, around 2–3 subjects

Table 1: Score interpretation of knowledge with percentage

Knowledge	Scores	Percentage
Adequate	17–25	>66.6
Moderately adequate	9–16	66.6–33.3
Inadequate	0–8	<33.3

Table 2: Score interpretation of skill with percentage

Skill	Scores	Percentage
Adequate	13–18	>66.6
Moderately adequate	7–12	66.6–33.3
Inadequate	0–6	<33.3

were selected and data were collected. For each subject, it took around 15–20 min for pre-test, 15–20 min for video teaching, and 15 min for post-test. Pre-test was conducted by using semi-structured knowledge questionnaire to assess knowledge and observational checklist for skill assessment. Investigator personally assessed and evaluated the knowledge and skill on hand expression of breast milk and cup feeding. Post-test level of skill on hand expression of breast milk and cup feeding was assessed on days 1, 2, and 3 after video teaching until the mothers attain adequate skill. In between the data collection the researcher demonstrated about hand expression of breast milk and cup feeding in case of any difficulty while doing hand expression and cup feeding.[11]

Results and Findings

The result of the study highlights that majority 37 (61.67%) mothers were in the age group of 21–25 years, 22 (36.67%) mothers had literacy status up to secondary level, 55 (91.67%) mothers were Hindus, 32 (53.33%) mothers were living in urban area, 52 (86.67%) mothers were homemakers, 42 (70%) mothers belonged to joint family, 35 (58.33%) mothers had a family income of Rs. 5000–10,000, and 45 (75%) mothers not heard about expressed breast milk (EBM) and cup feeding practices [Table 3].

Table 3: Distribution of demographic variables of the mothers of low birth weight baby $n=60$

Demographic variables	F (%)
Age of the mother	
<20 years	5 (8.33)
21–25 years	37 (61.67)
26–30 years	17 (28.33)
>30 years	1 (1.67)
Literacy status of the mother	
Illiterate	0 (0.00)
Primary	16 (26.67)
Secondary	22 (36.67)
Graduate/post graduate	18 (30.00)
Any other	4 (6.67)
Religion	
Hindu	55 (91.67)
Christian	4 (6.67)
Muslim	1 (1.67)
Any other	0 (0.00)
Locality	
Rural	28 (46.67)
Urban	32 (53.33)
Occupation	
Government employee	1 (1.67)
Private employee	4 (6.67)
Self-employee	0 (0.00)
Home maker	52 (86.67)
Any other	3 (5.00)
Type of family	
Joint family	42 (70.00)
Nuclear family	18 (30.00)
Family income	
Rs. 5000–10,000	35 (58.33)
Rs. 10,000–15,000	13 (21.67)
Rs. 15,000–20,000	7 (11.67)
>Rs. 20,000	5 (8.33)
Heard about EBM and cup feeding	
Yes	15 (25.00)
No	45 (75.00)

EBM: Expressed breast milk

In relation to obstetrical data of the mothers, around 43 (71.67%) mothers were primi, 39 (65%) mothers had given birth for the 1st time, 39 (65%) mothers had vaginal delivery, 27 (45%) mothers were on 2nd postnatal days, 33 (55%) mothers had female baby, and 40 (66.67%) baby's birth weight was between 2.0 and 2.5 kg [Table 3].

Pre-test level of knowledge revealed that 45 (75%) mothers had inadequate knowledge, 10 (16/67%) mothers had moderate knowledge, and 5 (8.33%) mothers had adequate knowledge, whereas in the post-test, 57 (95%) mothers had adequate knowledge, 3 (5%) mothers had moderate knowledge, and none of them had inadequate knowledge. Similarly, the skill of the mothers shows that, during pretest, 56 (93.33%) mothers had inadequate skill, 3 (5%) mothers had moderate skill, and only 1 (1.67%) mother had adequate skill, whereas, in the post-test of day 1, 7 (11.67%) mothers had inadequate skill, 51 (85%) mothers had moderate skill, and 2 (3.33%) mothers had adequate skill. On day 2, 31 (51.67%) mothers had moderate skill and 29 (48.33%) mothers had adequate skill. On day 3, almost all 59 (98.33%) had adequate skill and only one (1.67%) had moderate skill [Table 4].

Further, the pre-test mean score of knowledge was 10.17 ± 4.96 and the post-test mean score is 23.45 ± 2.01 with the mean difference of 13.28. The calculated paired "t"-value is $t = 20.419$ found to be statistically significant at $P < 0.001$ level. Similarly, for the skill, the pre-test mean score of skill was 4.52 ± 2.98, while the post-test mean score of skill is

Table 4: Distribution of obstetrical variables of the mothers of low birth weight baby $n=60$

Obstetrical variables	F (%)
Gravida	
Primi mother	43 (71.67)
Multigravida mother	17 (28.33)
Para	
1	39 (65.00)
2	14 (23.33)
3 and >3	7 (11.67)
Type of delivery	
Vaginal delivery	39 (65.00)
LSCS	21 (35.00)
Number of postnatal day	
Day 1	10 (16.67)
Day 2	27 (45.00)
Day 3	13 (21.67)
Day 4	4 (6.67)
Day 5	3 (5.00)
> Day 6	3 (5.00)
Sex of the baby	
Male	27 (45.00)
Female	33 (55.00)
Weight of the baby	
<1.0 kg	1 (1.67)
1.0–1.5 kg	0 (0.00)
1.5–2.0 kg	19 (31.67)
2.0–2.5 kg	40 (66.67)

Table 5: Distribution of pre- and post-test level of knowledge and skill among the mothers of low birth weight babies on hand expression of breast milk and cup feeding $n=60$

Knowledge	Inadequate knowledge	Moderate knowledge	Adequate knowledge
	F (%)	F (%)	F (%)
Pre-test	45 (75.0)	10 (16.67)	5 (8.33)
Post-test	0 (0)	3 (5.0)	57 (95.0)
Skill	**Inadequate skill**	**Moderate skill**	**Adequate skill**
	F (%)	F (%)	F (%)
Pre-test	0 (0)	3 (5.0)	57 (95)
Post-test			
Day 1	7 (11.67)	51 (85.0)	2 (3.33)
Day 2	0 (0)	31 (51.67)	29 (48.33)
Day 3	0 (0)	1 (1.67)	59 (98.33)

Table 6: Comparison of mean pre- and post-test level of knowledge and skill regarding hand expression of breast milk and cup feeding among mothers of low birth weight babies $n=60$

Knowledge	Mean	SD	Mean difference	Paired "*t*" value
Pre-test	10.17	4.96	13.28	t=20.419, P=0.0001 S***
Post-test	23.45	2.01		
Skill	**Mean**	**SD**	**Mean difference**	**Paired "*t*" value**
Pre-test	4.52	2.98	11.96	t=31.105, P=0.0001 S***
Post-test	16.48	1.53		

***P<0.001, S: Significant

16.48 ± 1.53 with the mean difference score of 11.96. The calculated paired "*t*"-value is $t = 31.105$ which was found to be statistically significant at $P < 0.001$ level [Table 5].

The above result indicates that the VATM leads to significant improvement in the knowledge and skill of the mothers regarding hand expression of breast milk and cup feeding for LBW babies.

There was a positive correlation found between knowledge and skill among mothers. Karl Pearson's correlation value of $r = 0.406$ shows statistically significant at $P < 0.01$ level. This indicates that, when the knowledge of the mothers increases, their level of skill also increased.

The demographic variable age of the mother had shown significant association with post-test level of skill (day 3) and the obstetrical variable number of postnatal day had significant association with post-test level of knowledge regarding hand expression of breast milk and cup feeding among mothers of LBW babies at $P < 0.05$ level.

Discussion

The major findings of the study through different analysis revealed that VATM was enhanced the mothers' knowledge and skill on hand expression of breast milk and cup feeding. The pre- and post-test level of knowledge was 10.17 ± 4.96 and 23.45 ± 2.01, respectively, and the pre- and post-test level of skill was 4.52 ± 2.98 and 16.48 ± 1.53, respectively. The mean difference score for knowledge and skill was 13.28 and 11.96, respectively. The calculated unpaired "*t*" test value for knowledge and skill was $t = 20.419$ and $t = 31.105$, respectively, which was found to be statistically highly significant at $P < 0.001$ level. During pre-test, 56 (93.33%) mothers had inadequate knowledge, whereas, in post-test, 59 mothers had adequate knowledge and none of them had inadequate knowledge. The skill was increased day by day. On day 3, 59 (98.33%) mothers had adequate skill. The skill was increased by repeated practice. The calculated Pearson's correlation value of $r = 0.406$ shows a positive correlation between the knowledge and skill of the mother. The knowledge was associated with a number of postnatal day (obstetrical variable), and skill was associated with age of the mother (demographic variable) regarding hand expression of breast milk and cup feeding among the mothers of LBW babies at $P < 0.05$ and $P < 0.05$ level, respectively [Table 6].

The study result supported by various research study findings. Shamili and Aruna conducted a study on effectiveness of information booklet on knowledge and practices of EBM among working postnatal mothers which shows that, during pre-test, 41 (68.3%) working postnatal mothers had good practice on EBM, whereas in post-test, 57 (95%) working postnatal mothers had excellent practice on EBM. The overall findings of the study clearly showed that the information booklet on practice of EBM was effective in improving the knowledge and practice among working postnatal mothers.[12]

Prabhu *et al*. conducted a study on "knowledge, attitude, and practice of expression of breast milk among mothers in Western Maharashtra," representing that 89 (93.7%) participants had correct knowledge about EBM, but they found that every mother was not aware of the methods of breast milk expression. They recommended that proper technique should be taught during ANC clinics.[13]

Shinde and Samaj's conducted a study on "self-instruction module is effective in improving knowledge of mothers regarding expression and storage of breast milk." The pre-test mean knowledge is 6.25 and post-test mean knowledge score was 17.68. There was a significant association between education, occupation, monthly income, with expression and storage of breast milk in imparting the knowledge and creating awareness regarding hand expression of breast milk.[14]

Conclusions

Hand expression of breast milk and cup feeding is the way, in which the mother can involve in their baby's care, even if they are unable to suckle; expressing breast milk may enable the continuation of breastfeeding if baby is preterm or LBW which prevent a baby suckling, as well as in other circumstances which might otherwise prevent breastfeeding (e.g., when the mother works); Hand expression of breast milk helps to

maintain the mother‘s breast milk supply. Hence it is very important each and every mother must have the knowledge and skill on hand expression and cup feeding.

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Conflicts of interest

The authors have no conflicts of interest.

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