

Effect of Structured Teaching Program on the Frequency of Breast Milk Expression and Milk Output in the Postnatal Mothers of Newborns Admitted in Neonatal Intensive Care Unit

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Abstract

Introduction: Very preterm newborns admitted to the neonatal intensive care unit require expressed breast milk (EBM). Starting the feeding with early expression of breast milk, which is colostrum, is best for these babies. Early expression of milk is the first step towards adequate milk expression for preterm babies. Expression of breast milk can be affected by many factors. This study was done to evaluate the effect of structured teaching program on frequency of milk expression and milk output and to study whether sociodemographic variables have any impact on the knowledge and breast milk expression practice score of postnatal mothers

Objectives:

- (1) To evaluate the effect of structured teaching program on increase in frequency of expression and volume of breast milk.
- (2) To find out the association of knowledge and practice regarding breast milk expression with the selected demographic variables among the postnatal mothers of newborn admitted in NICU.

Method: A study was conducted using a quantitative approach and pre- experimental one group pre-test and posttest design on 50 postnatal mothers in selected areas of NICUs of a tertiary care hospital. Structured interview and observational checklist was used to collect the relevant data from samples regarding expression of breast milk.

Result: In 50 postnatal mothers enrolled, after implementation of the structured teaching program (STP), expression of breast milk 8 or more times in a day increased from 30% to 88%. After STP implementation expression of breast milk at night increased from 44% to 86%. Age and Parity of postnatal mothers was found to be associated with pretest knowledge. Mothers with age 18 to 25 have higher-good score in pretest knowledge than more than 25 years of age. Mothers with higher parity have better pretest practice score of expression of milk.

Conclusions: The structured teaching program and interventions were effective in increasing the expressed breast milk volume and as well as the frequency of expression of the mothers. There was significant improvement in timing of start of expression of milk within 3 hrs of birth. Age and parity of postnatal mothers were significantly associated with knowledge and practice of milk expression score respectively.

Keywords: Expressed breast milk frequency, Structured teaching program, postnatal mothers, demographic variables

Introduction

Milk production has to be initiated by expression in very preterm because in preterm babies breastfeeding is not possible due to infants' immaturity and medical condition. The mothers should initiate expression within three hours of delivery and express frequently. Time of expressing initiation, as well as the early frequency of stimulation, have both been associated with adequate milk output, adequate milk amount (1)

Pregnancy-induced hypertension, delayed milk expression initiation, and low pumping frequency were strongly associated with cesarean delivery leading to less milk production in caesarian delivery mothers.(2)

Breast milk is accepted as the best food, provided by the nature for newborns, use of breast milk decreases the cost and reduces the incidence of necrotizing enterocolitis (3) Mothers own milk feeding has potential to reduce risk of sepsis and feed intolerance.(4) The American academy of pediatrics recommended human milk as the preferred food for all infants, including sick newborns and preterm infants(4) Expressing breast milk refers to the process by which a woman expels milk from her breast. Expression of breast milk is a way to maintain breastfeeding when mother and infant are separated. Depending upon the gestational maturity and condition of the child, there may be difficulties in self-feeding. The baby may not be able to suck or there may be no coordination between sucking and swallowing like in preterm and asphyxia babies. Breast milk expression is essential modality in establishing and continuing the breast feeding in mothers. Milk expression, by hand, may help mothers to overcome some obstacles to successful breastfeeding and, therefore, increase breastfeeding duration.

In India, the practice of Expression of breast milk remains low leading to lactational failure in mothers. It is possibly due to the lack of adequate information and appropriate knowledge about expression of breast milk. It is thus of importance that all mothers should have adequate scientific knowledge about 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.

Present study was planned to find the level of knowledge and practice of mothers towards expression of breast milk and to study the pattern of expression of breast milk in them.

Importance of breast feeding indicates that both timing of initiation and type of breastfeeding pattern exert independent influences on neonatal mortality. Interventions to improve early breast feeding practices can result in less neonatal mortality.

All-cause neonatal mortality could be reduced if initiation of breastfeeding is done within 24hrs. Manually or hand, expressing breast milk is a fabulous alternative to using a breast pump. Hand expression can be taught to mothers easily. Until recently proper and adequate frequency of expression of milk has been an under-utilized in our institution. But there are many benefits of knowing how to express milk from the breast without the use of expensive or cumbersome pumps. There are many videos of proper hand expression of milk. Study was planned to find whether there is an association between demographical variables and knowledge and practice regarding breast milk expression.

Objectives of the study

- (1) To study the association between STP and Increase in volume of breast milk among postnatal mothers of newborn admitted in NICU
- (2) To find out the association of knowledge and practice regarding breast milk expression with the selected demographic variables among the postnatal mothers of newborn admitted in NICU.

Material and method

The Study was conducted on 50 postnatal mothers of babies admitted in NICUs. Structured interview and observational checklist was used to collect the relevant data from samples regarding expression of breast milk. Lecture, videos and focused group discussion was selected as method of teaching to mothers.

Observation check list (Table 1) was developed to assess Practice score of postnatal mother of newborn admitted in NICU containing 17 items. According to the total score obtained by each subject practice was classified into three sections: Poor practice (0-6), Good practice (7-12), Excellent practice (13-17).

Table 1. Observational Checklist Regarding Breast milk expression

Sr.no	Items	YES	NO
1	Does she remove her bangles and rings before hand washing?		
2	Does she wash her hands for 2 mints before expressing breast milk?		
3	Does she maintain the privacy?		
4	Does she put a moisten cloth with warm water over her breast?		
5	Did she massage her breast before expression of milk?		
6	Does she take right position/posture while expressing breast milk?		
7	Does she place her thumb one inch above the nipple?		
8	Does she place her two fingers one inch below the nipple?		
9	Does she apply pressure inward towards her chest wall?		
10	Does she compress her breast in rolling motion?		
11	Does she collect expressed breast milk in a clean container?		
12	Does she repeat this procedure on the other breast?		
13	Does she cover the container properly?		
14	Does she store the milk as safe place?		
15	Does she wash her hands after expressing the breast milk?		
16	Does she express her breast milk 8 or more times in a day?		
17	Does she express her breast milk at night?		

Note-
Each yes
answer

carries 1 mark and each no answer carry 0 mark (Max. score: 17)

Following criteria was used to assess change in volume of breast milk of the postnatal mothers of newborn admitted in NICU. For assessing change in volume of breast milk, following two statements were asked and observed from the sample before and after STP:

1. Postnatal mother express breast milk 8 or more times in a day
2. She express breast milk at night.

The increase in agreement to above two statements after STP indicates increase in the volume of breast milk. Chi-square test was used for analysis. For this purpose, H_0 was tested using chi-square test. It means the milk volume is increased.

The chi square test and fisher exact test is used to determine the association of the knowledge and practice with the selected demographic variables

Results:

Majority of postnatal mothers (72%) lie in the age group of 18-25 years. Majority of postnatal mothers about (42%) were illiterate. Majority of postnatal mothers (82%) belongs to joint family. Most of the postnatal mothers about (60%) related to rural area. Most of about (88%) mothers were housewife. Majority of postnatal mothers (54%) mothers were primigravida. Majority of postnatal mothers (66%) having the family income less than 10000Rs.

Association of pre-test knowledge and practice with demographic variables of postnatal mothers regarding expression of breast milk was shown in Table (2,3)

Table 2 Association of sociodemographic variables with pre-test knowledge

Sample Characteristics	F	Inadequate	Moderate	Adequate	Chi Test	P value	D f	Result
Age								
18-25year	36	17	17	2	0.693	0.874	1	NS
26-30 year	11							

31-35year	2	8	6	0				
36-45year	1							
Education								
Illiterate	21	10	11	0	6.338	0.322	2	NS
Primary	10	7	2	1				
Middle	8	3	5	0				
Secondary and above	11	5	5	1				
Type of family								
Nuclear	9	4	4	1	1.844	0.424	6	NS
Joint	41	21	19	1				
Area of Residence								
Urban	20	8	11	1	1.602	0.538	2	NS
Rural	30	17	12	1				
Occupation								
House wife	44	23	19	2	1.262	0.542	2	NS
Private Job	0							
Govt Job	1	2	4	0				
Self-employment	5							
Parity								
1 st baby	27	20	7	0	14.02	.0001	2	S*
2 nd baby								
3 rd baby	23	5	16	2				
More								
Family income								

Less than 10000Rs	33	16	16	1	0.748	0.892	2	NS
10000-20000	10	9	7	1				
20000 and above	7							

Table 3 Association of sociodemographic variables with pre-test practice of breast milk expression

Sample characteristics	F	Poor practice	Good Practice	Excellent Practice	Chi Test	P Value	Df	Result
Age								
18-25year	36	16	20	0	4.72	0.03	1	S*
26-30 year	11	11	3	0				
31-35year	2							
36-45year	1							
Education								
Illiterate	21	13	8	0	1.105	0.828	3	NS
Primary	10	5	5	0				
Middle	8	4	4	0				
Secondary and above	11	5	6	0				
Type of family								
Nuclear	9	4	5	0	1.84	0.42	1	NS
Joint	41	23	18	0				

Area of Residence								
Urban	20	14	6	0	3.435	0.064	1	NS
Rural	30	13	17	0				
Total	50	27	23	0				
Occupation								
House wife	44	25	19	0	1.172	0.279	1	NS
Private Job	0	2	4	0				
Govt Job	1							
Self-employment	5							
Parity								
1 st baby	27	15	12	0	0.057	0.811	1	NS
2 nd baby	23	12	11	0				
3 rd baby								
More								
Family income								
Less than 10000	33	19	14	0	0.500	0.48	1	NS
10000-20000	10	8	9	1				
20000 and above	7							

Age and Parity of postnatal mothers was found to be associated with pretest knowledge.

Mothers with age 18 to 25 have higher good score in knowledge than more than 25 years of age.

Mothers with higher parity have better knowledge of expression of milk. Age was only factor associated significantly with pretest practice score regarding expression of breast milk expression in postnatal mothers.

Table 4 Association of STP with expression of Breast Milk 8 times or more in a day

		Didn't Expressed Breast Milk 8 times or more in a day	Expressed Breast Milk 8 times or more in a day	Total	Chi-Square Statistic	Df	P-Value
Pre-test	N %	35 (70.0%)	15 (30.0%)	50 (100.0%)	34.766	1	0.0001
Post-test	N %	6 (12.0%)	44 (88.0%)	50 (100.0%)			

The data presented in the table depict that 70% of postnatal mothers didn't express breast milk 8 times or more in a day and 30% of postnatal mother's expresses milk 8 times or more in a day before STP. After STP 88% of postnatal mother's expresses milk 8 times or more in a day Now the chi square value is 34.766 and p value is less at 5% level of significance. There was a significant association of STP with expression of Breast Milk 8 times or more in a day.

Table 5 Association of STP with Expression of Breast Milk at Night

		Didn't Expressed Breast Milk at Night	Expressed Breast Milk at Night	Total	Chi-Square Statistic	Df	P-Value
Pre-test	N(%)	33(66.0%)	17(34.0%)	50(100.0%)	28.167	1	0.0001 (S*)
Post-test	N(%)	7 (14.0%)	43(86.0%)	50(100.0%)			

The data presented in the table depict that 66% of postnatal mothers didn't express breast milk at night and 34% of postnatal mother's expresses milk at night before STP. After STP 86% of postnatal mothers expressed milk at night. Now the chi square value is 28.167 and p value is 0.0001. There is a significant association of STP with expression of Breast Milk at night.

Discussion

Our study has found that structured teaching program can increase the milk output by increasing the frequency of expression as well as night time expression. Demographics factor other than age and parity have no effect on knowledge and practice of expression. All the mothers participated have increased milk output. Studies have showed that with the initiation of milk expression within 1 h following birth of baby, increases the milk output. Quality improvement study has shown that early initiation of expression of milk is key to increase the milk volume. The structured teaching program has shown that significant improvement in knowledge of nursing students (5) as well as mothers (6) Sisk PM et al (7) conducted study on lactation counseling for mothers of very low birth weight infants, it found that counseling of mothers of VLBW infants increases the incidents of lactation and breast milk feeding without stress and anxiety.

Also studies shows that if breast milk expression begins within 1 to 3 hours following the delivery of a VLBW infant, it decreases the time to lactogenesis stage 2 and also increases the duration of lactation (8)

Diane L.S et al (9) conducted a study at Children's hospital of Philadelphia on very sick babies admitted in neonatal intensive care unit (NICU). His study findings revealed that sickest babies can benefit from exclusive breast feeding. Many of these highly vulnerable newborns immediately experience a paradoxical situation. Their mother's milk helps to reduce the infection rates and provided easily digestible nutritious food and also reduces the infant's stay in the NICU. Structured teaching program also increases the breastmilk feeding rate as well knowledge regarding the breastmilk expression.(5,6,10)

Simple measures like finding local barriers, resolving them followed by teaching, counselling both antenatal and postnatal, video, demonstration of skills can improve the frequency of breast milk expression including night expression and breast milk output. All hospital should follow baby friendly hospital initiatives to improve breast feeding practices.(11)

Conclusion: Structured teaching program helped the mothers to improve the milk volume, night time expression as well as increased frequency of expression. Age and Parity of postnatal mothers was found to be associated with pretest knowledge and only age was associated significantly with pretest practice score regarding expression of breast milk expression in postnatal mothers.

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