Effectiveness of Breast Massage on Expression of Breast Milk among Mothers of Neonates admitted in Neonatal Intensive Care Unit

ABSTRACT
Massaging the breast may help a postnatal mother to improve breast milk production, alleviate breast engorgement and facilitate breast milk expression. The purpose of the present study was to identify the effect of breast massage on breast milk expression in terms of volume of breast milk expressed, pain during breast milk expression and experience of breast milk expression among mothers of neonates admitted in neonatal intensive care unit (NICU).

Materials and methods: The quasi-experimental study was conducted among 30 postnatal mothers whose babies were admitted in NICU, selected as a sample of convenience. The design used was time series research design. After the pretest, breast massage was taught to the mothers by the investigator. Breast massage was performed for 10 minutes prior to each expression. The practice of breast massage and breast milk expression is observed by the investigator using a checklist during the next expression. Volume of breast milk expressed and pain during breast milk expression were assessed three times before and after the intervention using a standardized measuring cup and numerical pain scale respectively. The experience of breast milk expression was assessed before and after intervention using breast milk expression experience measure. Analysis was done using mean, frequency, percentage and paired t-test.

Major findings: The results show that the mean pretest volume of milk expressed in milliliters was 7.33 ± 4.86, which increased to 15.56 ± 8.38 (t = 4.22, p = 0.001) after the intervention. The mean pretest pain score was 7.50 ± 1.42 which decreased to 5.01 ± 1.37 (t = 11.73, p = 0.001) after the intervention. The experience of breast milk expression in post-test 37.6 ± 3.88 was significantly higher than pretest 28.4 ± 4.73 (t = 11.25, p = 0.001).

Conclusion: The study findings conclude that the breast massage is effective in increasing the volume of expressed breast milk, reducing the pain during breast milk expression and improving the experience of breast milk expression.

Keywords: Breast massage, Experience of breast milk expression, Expression of breast milk, Neonates admitted in NICU, Pain, Volume.


Source of support: Nil
Conflict of interest: None
Date of received: 2 November 2015
Date of acceptance: 20 February 2016
Date of publication: March 2016

INTRODUCTION
Breastfeeding high-risk babies especially preterm, low-birth weight babies, babies with congenital anomalies, etc. are often a challenge for the postnatal mothers. These babies may not be able to suck properly due to physiological immaturity or physical problems. The nutritional needs of such babies are usually met by expressed breast milk or formula feeds. Feeding with expressed breast milk is considered as a best alternative for such babies, as artificial feeds may lead to problems like infections, possibility for producing gas and constipation, vomiting, rashes, etc. Commercial formula feeds are designed close to the breast milk. The fat in the breast milk is more easily digested, whereas fat in formula is digested more slowly than breast milk and may not be as well tolerated. Breast milk contains antibodies from mother to protect babies from infection, whereas commercial feeds do not have. This protection is important when babies are sick or premature and may have higher chance of developing an infection. A randomized and quasi randomized trial done by Oshom DA, Sinn Jon on formulas containing hydrodized protein for prevention of allergy and food intolerance in infants found no evidence to support feeding with a hydrodized formula for the prevention of allergy in preference to exclusive breastfeeding. Mothers of those babies admitted in neonatal intensive care unit (NICU) are in severe stress because of poor maternal child bond, disturbed physical appearance of

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comorbidities. Ethical clearance was obtained from Thesis postpartum days and those who do not have any medical neonates aged between 18 and 45 years, from 3rd to 8th of convenience. Inclusion criteria were mothers of expressed breast milk feeding, selected as a sample mothers whose babies were admitted in NICU and were with time series design. Sample consists of 30 postnatal The study used a quasi-experimental research approach • Find out the effect of breast massage on experience • Find out the effect of breast massage on pain during • Find out the effect of breast massage on volume of materials and methods The study used a quasi-experimental research approach with time series design. Sample consists of 30 postnatal materials and methods

MATERIALS AND METHODS

The study used a quasi-experimental research approach with time series design. Sample consists of 30 postnatal mothers whose babies were admitted in NICU and were on expressed breast milk feeding, selected as a sample of convenience. Inclusion criteria were mothers of neonates aged between 18 and 45 years, from 3rd to 8th postpartum days and those who do not have any medical comorbidities. Ethical clearance was obtained from Thesis

RESULTS

Most of the mothers [18 (60%)] of subjects, were in age group 25 to 30 years, and 23 (76%) were graduates. Majority of mothers [21 (70%)] were primigravida and

The demographic data were collected using a proforma prepared by the investigator. The volume of breast milk expressed and pain during breast milk expression were measured during three consecutive expressions. A measuring cup was used to measure the breast milk in milliliters and numerical rating scale was used to measure the pain score. The experience of breast milk expression was assessed using breast milk expression experience measure after three observations. Breast milk expression experience measure is a five-point likert scale developed by Flaherman to evaluate women experience of expressing breast milk. The tool consists of three subscales, they are social support, learning experience and personal experience. Reliability of the tool is established by checking the internal consistency and had a Cronbach’s alpha coefficient of 0.703.

After the pretest, the breast massage is taught to the mother with the help of a video showing breast massage and breast milk expression and was demonstrated to the mother by the investigator. Breast massage includes rubbing, stroking and kneading each breast followed by massaging breast with finger pads, in a circular motion around the whole breast in a clockwise manner. It also incorporates hot fomentation prior to the intervention and expression of breast milk using Marmet technique. Breast massage is given for 5 minutes to each breast. Then expression is done using Marmet technique for 10 minutes. To ensure the correct method practiced by the mother, the first expression after the teaching is evaluated by the researcher with the help of a checklist. The volume of breast milk and pain during expression for the next three expressions is measured, followed by measurement of experience of breast milk expression.

The pretest and post-test scores of volume of breast milk, pain during breast milk expression and experience of breast milk expression were compared using paired t-test. Average of the three observations of volume and pain before and after the intervention was considered as pretest and post-test respectively.
underwent delivery above 36 weeks of gestation. About the type of delivery, 19 (64%) mothers underwent normal vaginal delivery and 11 (36%) underwent lower segment cesarean section (LSCS). None of the mothers took any medication to increase breast milk production.

The volume of the breast milk and the pain during breast milk expression before and after breast massage is presented in Graph 1 and it shows that following breast massage there is an increase in the volume of breast milk and decrease in the pain during expression.

In order to find out the effect of breast massage on breast milk expression, the pretest and post-test scores were compared using paired t-test. The average of three observations before the intervention is considered as the pretest and average of the three observation following the breast massage is considered as post-test for volume of breast milk expressed and pain during breast milk expression.

Table 1 shows that the post-test (15.56 ± 8.38) volume of milk is significantly higher than the pretest (7.33 ± 4.86) volume of milk (t = 4.22, p = 0.001).

Table 2 shows that the post-test (5.01 ± 1.37) pain score is significantly lower than the pretest (7.50 ± 1.42) pain score (t = 11.73, p = 0.001).

Table 3 shows that the experience of breast milk expression score is significantly higher in the post-test than the pretest score. So, breast massage helps in improving breast milk expression experience.

**DISCUSSION**

The present study finding is more or less consistent with the literature findings. The pretest volume of breast milk expressed is 7.33 ± 4.86 and, in post-test, the volume increased to 15.56 ± 8.38. The study results interpret that the breast massage is effective in increasing the volume of breast milk at 0.001 level of significance. An experimental study conducted on 36 postnatal mothers found that the volume of breast milk expressed was high with breast massage than without massage in sequential pumping (78.71 vs 51.32 gm) as well as simultaneous pumping (125.08 vs 87.69 gm). The above-findings supports the results of the present study.

The result of the present study shows that post-test pain score (5.01 ± 1.37) is significantly lower than pretest pain score (7.50 ± 1.42) at 0.001 level of significance. A study conducted among 60 postnatal mothers evaluate the effect of breast massage on breast pain and newborn sucking. Compared to the control group, women in the intervention group reported significant decreases in breast pain (p < 0.001), increases in number of times newborns suckled after the first and second massage (p < 0.001), and a decrease in breast-milk sodium after the first massage (p = 0.034). These studies suggest that breast massage is effective in reducing the pain.

As an intervention breast massage requires no additional equipments or cost. It just requires training the postnatal mothers on breast massage and expression. By reducing the pain and improving the experience of breast milk expression, it improves the mothers comfort and confidence in an extremely stressful situation. By

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**Table 1:** Comparison of volume of milk expressed between pretest and post-test (n = 30)

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>Mean difference</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>7.33</td>
<td>4.86</td>
<td></td>
<td></td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Post-test</td>
<td>15.56</td>
<td>8.38</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 2:** Comparison of pain score between pretest and post-test (n = 30)

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>Mean difference</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretest</td>
<td>7.50</td>
<td>1.42</td>
<td></td>
<td></td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Post-test</td>
<td>5.01</td>
<td>1.37</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 3:** Comparison of experience of breast milk expression between pretest and post-test (n = 30)

<table>
<thead>
<tr>
<th></th>
<th>Pretest</th>
<th>Post-test</th>
<th>Mean difference</th>
<th>t-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social support</td>
<td>7.56 ± 1.38</td>
<td>8.13 ± 1.38</td>
<td>0.57</td>
<td>3.458</td>
<td>&lt;0.002</td>
</tr>
<tr>
<td>Learning experience</td>
<td>9.40 ± 2.38</td>
<td>14.46 ± 2.52</td>
<td>5.06</td>
<td>9.98</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Personal experience</td>
<td>11.43 ± 2.81</td>
<td>15.06 ± 2.75</td>
<td>3.63</td>
<td>6.46</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Total score</td>
<td>28.4 ± 4.73</td>
<td>37.6 ± 3.88</td>
<td>9.2</td>
<td>11.25</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>
increasing the volume of breast milk, it helps to avoid the problems related to formula feeds. The findings of the study highlight the role of the nurse in the postnatal care, especially the mothers of high-risk babies.

**CONCLUSION**

Based on the findings of the study, it can be concluded that breast massage is effective in increasing the volume of breast milk expressed, reduces the pain during breast milk expression and improves the breast milk expression experience among mothers. Breast massage can be incorporated as an intervention for the care of postnatal mothers not only to facilitate the breast milk expression but also to relief breast engorgement.

**ACKNOWLEDGMENTS**

We extend our sincere gratitude toward Dr Radhamany K, Professor and Head of Obstetrics and Gynecology Department, Amrita Institute of Medical Sciences, Kochi, for her full support, inspiration and suggestions in completing this work successfully. We are also thankful to Thesis Review Committee of Amrita Institute of Medical Sciences, Kochi, Kerala.

**REFERENCES**