

Effectiveness of Back Massage on Lactation among Mothers Having Undergone Caesarian Section at Selected Hospitals of Pune City

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Abstract

Breastfeeding is considered as one of the most natural and intimate of human interactions. A mother who has undergone caesarean delivery has a dual role in post-operative self-care as well as newborn care. The researcher conducted a study to assess the effectiveness of back massage on lactation among mothers who had undergone caesarean section at selected hospitals of Pune city. This was a quantitative quasi experimental study with non-equivalence control group design. Non-probability purposive sampling technique was used for the selection of sample; 220 samples were selected from two different settings. It was revealed that letdown reflex among mothers who had undergone caesarean section was significantly improved in experimental group after back massage and corresponding p values were less than 0.05. Similarly breastfeeding, satiety and after weight of neonate whose mothers had undergone caesarean section was significantly improved in experimental group back massage ($p < 0.05$). Hence null hypothesis for effectiveness of intervention was rejected. The study showed that lactation improved significantly after back massage in experimental group.

The woman represents the mother's natural feminine characteristics in the universe. Human breast milk has no substitute and breast is nature's apparatus for feeding babies. Of the 9.7 million under-five deaths globally, most mortality occurs due to suboptimal breastfeeding.

Caesarean babies are given bottles of formula routinely; it clearly lowers the rate and duration of successful breastfeeding. Infants given a supplementary feeding had four times the risk of not being breastfed at three months. Thirty percent of the mothers whose babies received bottles in the hospital reported severe breastfeeding problems, as compared with 14 percent of those whose babies did not (WHO/UNICEF, 2010). The researcher observed that mothers who had undergone caesarean section, were having more stress which inhibits the production breast milk. Back massage appears to be an effective, inexpensive, low-risk, flexible and easily applied strategy for mothers who have undergone caesarean section.

Objectives

The objectives of the study were:

1. To assess the lactation among mothers who have undergone caesarian section in control group and experimental group before and after giving the back massage.

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2. To determine the effect of back massage on lactation among mothers who had undergone caesarian section.
3. To assess the breastfeeding, satiety and weight among the neonates whose mothers had undergone caesarian section in experimental and control group.
4. To find the association of lactation among mothers who had undergone caesarian section with selected demographic variables.

Literature Review

NFHS-III data shows that initiation of breastfeeding within 1 hour is only 24.5 percent, while exclusive breastfeeding rates in children less than 6 months is only 46.4 percent (Times of India, 2012). A randomised control study on primipara mothers of China to observe the differences between back massage and simple suggestions as well as education to enhance the lactation after delivery on 56 samples of primipara were assessed in experimental group treated with intervention and control group with simple instruction and education on breastfeeding. The study concluded that primipara had sufficient milk in experimental group after treatment (Vincy, 2013).

A quasi experimental study was conducted to evaluate the effectiveness of back massage on lactation amongst early post-natal period of women at a tertiary care teaching hospital in India; 200 samples were enrolled in 2 groups. There was significantly higher

post-feed weight gain of baby, higher mean number of urinations and stool passed per day, longer duration of post-feed sleep and improved satisfaction in the experimental group as compared to the control group. The study concluded that back massage was effective to improve lactation of post-natal mothers (Lu et al, 2010).

Methodology

Research approach adopted was quasi experimental and the research design selected was “non-equivalence control group design”. The independent variable was the back massage; the dependent variable was the lactation among mothers who had undergone caesarean section in a 820-bedded private General Hospital with 90-bedded post-natal ward and 400-bedded private general hospital with 60-bedded post-natal ward. Samples were accessible mothers who had undergone caesarean section and were admitted in the post-natal wards of selected hospitals of city.

Inclusion criteria: Mothers after 48-72 hours of caesarean section with full term new born babies with normal physiological characteristics. Mothers whose newborn babies were on direct breastfeeding with weight ranging from 2.5 kg - 3.7 kg.

Exclusion criteria: Mothers (a) who were critically ill and receiving medication for lactation, (b) with breast or nipple anomalies and suffering from psychiatric disorders, (c) with post-dural puncture headache.

Hypotheses

H₀1 - There was no significant difference in lactation after back massage in mothers who had undergone caesarean section in experimental group at 0.05 level of significance.

H₀2 - There was no significant difference in lactation among experimental and control group at the 0.05 level of significance.

H₀3 - There was no significant association between pre-assessment of lactation and selected demographic variables at 0.05 level of significance.

H₁1- There was significant difference in lactation after back massage in mothers who had undergone caesarean section in experimental group at 0.05 level of significance.

H₁2 - There was significant difference in lactation among experimental and control group at the 0.05 level of significance.

H₁3 - There was significant association between pre-assessment of lactation and at least one of the selected demographic variable at 0.05 level of significance.

Sample size was 220 mothers who had undergone caesarean section; 110 samples for experimental group and 110 samples for control groups were taken. Non-probability purposive sampling technique was used. Research tool was divided into three sections - Section I dealt with structured questionnaire for baseline data of mother and neonate; Section II dealt with assessment of let down reflex, and Section III dealt with assessment of lactation breastfeeding assessment tool for neonate.

Pre-assessment was done on day 1 from day 2, back massage were given 4 times in a day for 3 days. After each intervention letdown score was assessed through semi structured questionnaire and observation check list (Table 1). To support the assessment of lactation, breastfeeding assessment tool for neonate was used, number of urination and stool passed by neonates in a day were assessed. Satiety after breastfeeding was also assessed (audible swallowing followed by shallow superficial non-nutritive sucking, self removal from the breast by unlatching, turning head away from the breast, relaxed posture, irritability, duration of breastfeeding and sleep). Weight assessment of neonate before first intervention and after fourth intervention was done.

The content validity of the tool was done by 27 experts. Reliability was done with 20 samples using test-retest method for semi-structured questionnaire and inter-rater method used for observation check list. Corresponding Pearson's correlation for weight assessment was found to be 0.99 and Cohen's kappa was 0.92. This indicates that the tool was reliable. Calibration of Instruments (weight machine) was done. Data analysis was performed by using descriptive and inferential statistics.

Table 1: Details of intervention of back massage and observation

Particulars	Assessment	No. of observations per day
Let down reflex of mother	After intervention of back massage	04
Breastfeeding of neonate	One day, after administration of back massage 4 times in a day.	01
Satiety of neonate	Assessment of breastfeeding done after intervention of back massage followed by breastfeeding	04
Weight of neonate	Before giving back massage for the first time and after the back massage given for fourth time	02

Table 2: Description of samples based on their personal characteristics in terms of frequency and percentage (n=220)

Demographic variable	Experimental		Control	
Age group				
18-23 years	9	8.2	19	17.3
24-28 years	55	50.0	26	23.6
29-33 years	36	32.7	65	59.1
34 years and above	10	9.1	0	0
Parity				
Primipara	66	60.0	64	58.2
Multipara	44	40.0	46	41.8
Birth weight of the neonate				
2.5kg.-3 kg	82	76.6	69	62.7
Above 3kg	28	23.4	41	37.3
Gender of neonate				
Female	58	52.7	59	53.6
Male	52	47.3	48	43.7
Ambiguous Genitalia	0	0.0	3	2.7
Initiation of breastfeeding after caesarean section				
Within first 4 hours	41	37.3	43	39.1
After 4 hours	69	62.7	67	60.9
Receiving any supplementary food to enhance lactation				
Yes	72	65.5	96	87.3
No	38	34.5	14	12.7
Number of times baby been breast fed per day				
1-3 times	1	0.9	10	9.09
4-6 times	87	79.1	97	88.19
7-9 time	22	20.0	3	2.72
Requirement of top feed				
Yes	54	49.1	46	41.8
No	56	50.9	64	58.2
If yes how often				
1-3 times	30	55.6	38	82.6
4-6 times	24	44.4	8	17.4

Results

The major findings of the study are outlined in Tables 2-7.

Corresponding p values were of the order of 0.000 and 0.003 which are small than 0.05, indicate the null hypothesis for comparison and are rejected. There was significant difference in lactation (let down reflex) among experimental and control group at the 0.05 level of significance.

The corresponding p values were less than 0.05. Similarly breastfeeding, satiety and weight of neonates whose mothers had undergone caesarean section was significantly improved in experimental group due to back

massage as z calculated values were more than z table value and p values were less than 0.05, hence the null hypothesis for effectiveness was rejected. Researcher concluded at 0.05 level of significance and 218 degrees of freedom indicates that lactation significantly improved after back massage in experimental group.

Association of let down reflex with demographic variables.

The demographic variables age, parity, birth weight of the neonate, gender of neonate, initiation of breastfeeding after caesarean section, number of times baby was breastfed per day, requirement of top feed were found significantly associated with let down reflex of mothers. Hypothesis for association accepted at 0.05 level of significance except supplementary food to enhance lactation was not associated, hence the researcher accepted the H_0 .

Discussion

Majority of the mothers fell in the age group of 24-28 years and 29-33 years which is peak period of reproduction. Only few of them were elderly, in the age group above 34 years. Majority of them were primipara, becoming a homogenous group. Most of them had planned the first pregnancy after the age of 23 years.

Birth weight of neonate: During antenatal period mothers were aware about extra requirement of food, rest and sleep, etc. which may help the foetus to gain the weight.

Gender of neonate: Majority had female child, which shows awareness about PCPNDT Act related to female foeticide.

Table 3: Pre assessment of let down reflex (n=220)

Let Down Reflex		Experimental Group (%)	Control Group (%)
Based on structured questionnaire	Poor	20.9	23.2
	Good	79.1	76.8
	Excellent	0.0	0.0
Based on observation check list	Poor	23.6	21.8
	Good	76.4	78.2
	Excellent	0.0	0.0

Table 4: Pre-assessment of breastfeeding and satiety among neonates (n=220)

Pre assessment		Experimental Group	Control Group
Breastfeeding	Inadequate	100	76.4
	Adequate	0.0	23.6
Satiety	Poor	80.5	75.5
	Good	11.8	24.5
	Excellent	7.7	0.0

Table 5: Comparison of let down reflex among mothers (n=220)

Day	Semi structured questionnaire				Observation checklist				Z value	p value
	Experimental		Control		Experimental		Control			
	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
Day-0	2.2	0.5	2.3	0.7	2.0	0.5	2.1	0.7	1.8	0.000
Day-3	3.3	0.6	2.4	0.7	3.1	0.6	2.6	0.7	4.1	0.003

Initiation of breastfeeding after caesarean section: Majority of the mothers initiated breastfeeding after 4 hours of caesarean section. This delay was due to lengthy process of shifting the mother from operation theatre to PNC ward, influence of anaesthetic drugs, multiple task of nurses that hampered the mother for breastfeeding etc.

Supplementary food to enhance the lactation: Samples were selected on third post-operative day of caesarean section. Majority of mothers from both groups received supplementary food to enhance the lactation. The quantity and frequency of food was very less, majority of the mothers consumed milk, available in hospital canteen only.

Pre-assessment of lactation: Majority of mothers had good let down score but none of them had excellent letdown reflex. This indicates the need for imparting necessary intervention to improve lactation. Majorities of neonates had inadequate breastfeeding, which may be due to stress of surgical delivery, additional financial burden as well as myths like 'No milk' for first four days.

Effect of back massage on lactation: Lactation was significantly improved in experimental group due

to back massage and p values was less than 0.05 for let down reflex, breastfeeding, satiety and weight of neonate. z calculated value was more than z table value. Hence the null hypothesis was rejected. This indicates that lactation significantly improved after back massage in experimental group at 0.05 level of significance.

Age of mother, her parity, birth weight of the neonate, gender of neonate, initiation of breastfeeding after caesarean

section, number of times baby was breastfed per day, requirement of top feed were found to have significant association with let down reflex of mothers. Only p value for receiving supplementary food to enhance lactation was large hence there is no association with letdown reflex based on semi-structured questionnaire and observation checklist.

A study by Chakravarty (2010) to assess the gender bias in breastfeeding and missing girls in Africa compared the findings with India using sample of over 100,000 children from 32 waves of DHS surveys across 17 countries. Researcher found that boys were breastfed for 0.657 months longer than girls in North African countries, which is nearly twice male advantage of 0.391 months found for India.

The above findings are supported by research done on dietary practices among lactating mothers and amount of breast milk transferred, occurrence of breastfeeding, and time spent for the breastfeeding, as well as change in weight of neonate, recorded on day 1,3,5,7 of delivery. Variations in breastfeeding and type of food consumption are not significantly related to each other. The researcher maintained food consumption means, vegetarian, non-vegetarian and mixed type of food.

Nursing Implications

Such researches will provide opportunity to assess the lactation of post-natal mothers, whether delivered normally on through caesarean section, and assessing the breastfeeding of neonates. The findings can help to assist the mothers to improve the lactation with the help of back massage before the breastfeeding, when a neonate received expressed

Table 6: Effect of back massage on lactation (n=220)

Lactation		Day	Experimental		Control		z cal.	df	p value
			Mean	SD	Mean	SD			
Let down reflex	Semi-structured questionnaire	Day 3	3.3	0.6	2.4	0.7	21.6	218	0.000
	Observation check list	Day 3	3.1	0.6	2.6	0.7	4.3	218	0.000
Breastfeeding	Breastfeeding	Day 3	2.8	0.7	1.5	1.5	13.7	218	0.000
	Satiety	Day 3	1.5	0.7	0.9	4.1	4.1	218	0.000
	Weight of neonate	Day 3	2.82	0.26	2.79	0.04	8.1	218	0.000

Table 7: Association of let down reflex with demographic variables in experimental group and control group (n=220)

Demographic variable	Poor	Good	Excellent	p value	Inference
Age	18-23 years	2	26	0	0.003 Significant
	24-28 years	13	65	3	
	29-33 years	22	79	0	
	34 years and above	2	8	0	
Parity	Multipara	13	76	1	0.006 Significant
	Primipara	16	112	2	
Birth weight of the neonate	2.5kg.-3kg	36	115	2	0.000 Significant
	Above 3kg	25	44	0	
Gender of neonate	Female	16	100	1	0.004 Significant
	Male	13	85	2	
	Ambiguous genitalia	0	3	0	
Initiation of breastfeeding after caesarean section	Within first 4 hours	13	71	0	0.009 Significant
	After 4 hours	16	117	3	
Receiving any supplementary food to enhance lactation	Yes	60	107	1	0.007 Not significant
	No	15	35	2	
Number of times baby was breastfed per day	1-3 times	9	2	0	0.006 Significant
	4-6 times	32	149	3	
	7-9 time	7	18	0	
Requirement of top feed	Yes	15	84	1	0.000 Significant
	No	14	104	2	

breast milk, mothers will be assisted to lactate without (oxytocin reflex) sucking. This method is also useful in community set up to improve the lactation by non-invasive, inexpensive, independent nursing practice like back massage. Nurses can teach back massage to caregivers also. The nurse administrators should accept the new trends in health care about back massage to improve lactation. She can utilise this knowledge and skill to update the nursing staff and also provide evidence-based practice, through in-service education.

Limitations

The time interval between the interventions was not maintained exactly, frequency and period of intervention was limited; and data collection was done with the help of semi-skilled persons.

Recommendation

1. A study can be replicated on large sample in different setting so that the findings can be generalised to large population.
2. A study can be conducted on (a) mother's attitude towards the back massage for improving lactation assessment, (b) attitude of the hospital personnel towards the policy of administration of back massage

for lactation, (c) mothers whose newborns are admitted in NICU.

3. The study can be replicated in different settings to strengthen the findings.

4. A comparative study can be done to study the differential effect between complete body massage and back massage on lactation.

Conclusion

There are numerous factors potentially associated with lactogenesis in humans on maternal side. Due to psychological stress neuro endocrine deregulation occurs leading to irregularities in hypothalamic pituitary adrenal axis function, reducing prolactin and oxytocin resulted in diminishing amount of milk. For over a thousand years mothers in China have used acupressure to increase the supply of breast milk.

Research findings help the nurses in various ways such as in assessment of let down reflex of post-natal mothers, assessment of breastfeeding of neonate and related issues. Back massage can be used by nurses as non-pharmacological, non-invasive, therapeutic approach to increase the lactation, in hospital set up as well as community set up. It will help to decrease the neonatal mortality and morbidity.

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