RESEARCH
O&G Forum 2024; 34 – 3s: 1479-1484

EFFECTIVENESS OF BOM METHOD (BREAST CARE, OXYTOCIN MASSAGE AND MARMET TECHNIQUE) ON BREAST MILK SECRETION AMONG POSTNATAL MOTHERS ADMITTED IN A TERTIARY CARE HOSPITAL, PUDUCHERRY

Srividhya M [1], Lavanya. S [2]*, Annie Annal M [3], Dr. Poongodi. V [4], Umamaheswari. R [5]
[1] Srividhya M , PG Student, Department of Obstetrics and Gynaecological Nursing , Kasturba Gandhi Nursing College, Sri Balaji Vidyapeeth (Deemed-to-be-University), SBV Campus, Pillaiyarkuppam, Puducherry 607 402, India.
srividhya17091997@gmail.com
[2] Professor, Department of Obstetrics and Gynaecological Nursing, Kasturba Gandhi Nursing College, Sri Balaji Vidyapeeth (Deemed-to-be-University), SBV Campus, Pillaiyarkuppam, Puducherry 607 402, India.
lavanyasankarmn@gmail.com
[3] Professor, Department of Obstetrics and Gynaecological Nursing, Kasturba Gandhi Nursing College, Sri Balaji Vidyapeeth (Deemed-to-be-University), SBV Campus, Pillaiyarkuppam, Puducherry 607 402, India.
mannieselvam@gmail.com
[4] Professor, Department of Obstetrics and Gynaecological Nursing, Kasturba Gandhi Nursing College, Sri Balaji Vidyapeeth (Deemed-to-be-University), SBV Campus, Pillaiyarkuppam, Puducherry 607 402, India.
poongodiv@kgnc.ac.in
[5] Associate professor, Department of Obstetrics and Gynaecological Nursing, Kasturba Gandhi Nursing College, Sri Balaji Vidyapeeth (Deemed-to-be-University), SBV Campus, Pillaiyarkuppam, Puducherry 607 402, India.
umamaheswarir@kgnc.ac.in
Corresponding Author: Lavanya. S

Abstract

Introduction: In the wake of the latest edition of the National Family Health Survey (2022) in India, the alarmingly high rate of Caesarean sections, standing at approximately 21.5%, has emerged as a poignant concern. It has been observed that women undergoing Caesarean sections are more prone to experiencing delayed onset of lactation compared to those who deliver vaginally. Thus, there is an urgent call for interventions aimed at stimulating the vital hormones prolactin and oxytocin to facilitate postnatal breastfeeding. Quest for Nourishment: In response to this pressing need, the Breast Care, Oxytocin Massage, and Marmet Technique (BOM) emerge as promising avenues to enhance breast milk secretion among postnatal mothers, particularly those who have undergone lower segment Caesarean sections (LSCS). The objective of this study is to meticulously evaluate the effectiveness of the BOM method in augmenting breast milk production among postnatal mothers, thereby addressing the formidable challenges posed by delayed lactation onset**.**

Methods: A randomized controlled trial was meticulously crafted to explore the efficacy of the BOM method. The sample size was determined, and postnatal mothers who had undergone LSCS were meticulously selected using a lottery method, ensuring fair representation. Both experimental and control groups, comprising 30 participants each, were subjected to rigorous evaluation. The efficacy of the BOM method was assessed through a modified tool for breast milk secretion adequacy on the first postnatal day, with interventions administered to the experimental group twice daily for three days, each session lasting 45 minutes.

Outcomes: The findings of this study reveal a significant and noteworthy improvement in breast milk secretion among the experimental group, with statistical analysis yielding compelling evidence (t-32.746, ρ value <0.001). These results underscore the effectiveness of the BOM method in nurturing increased breast milk secretion among postnatal mothers who have undergone LSCS, thus heralding a promising breakthrough in maternal and infant healthcare.

Conclusions: In conclusion, the efficacy of the BOM method, characterized by its amalgamation of breast care, oxytocin massage, and the Marmet technique, stands affirmed as a formidable strategy in bolstering breast milk production among postnatal mothers. Not only does this intervention hold profound implications for maternal and infant health, but its cost-effectiveness and simplicity also render it readily implementable within healthcare settings, underscoring its potential as a transformative force in nurturing the well-being of mothers and their newborns.

Keyword: postnatal mothers,,Breast care, Breast milk secretion, lactation , Marmet technique, Oxytocin massage.

INTRODUCTION

Breast milkis the firstand best food for newborn in terms of health outcomes for both mother and child. Breast milk is a unique source of food for babies which contains all necessary nutrients that will ensures the infant's health for growth and development.[1] According to WHO In 2017,Globally average number of exclusive breastfeeding in the world is only 38% and WHO Target that in 2025,the rate of exclusive breastfeeding will increase by 50 %. In 20 % of mothers discontinue breastfeeding because they feel the amount of milk is lacking.

Delayed onset of lactation (DOL) describes the absence of copious milk secretion (onset of lactation) within the first 72 hours following childbirth.[2]It affects around 20 – 40% of lactating women, the prevalence differs among district population.[3]

The latest edition of National family health survey (2022) in India reported the rate of Caesarean section was around 21.5% way higher than world health organization ideal 10-15 %.Research by the world Health Organization (WHO) Substantiated that the estimated C-section births would be 30 percent of the total births by 2030. Women who underwent a C section are more likely to experience delayed onset of lactation compared to women who delivered vaginally.[4]Late Onset of lactogenesis can be affected by variety of factors such as pathophysiological, psychological, external and mixed causes.[5]

According to Shivani Patel 2022, The main factors that can decrease breast milk supply such as stress is the number one killer of breast milk supply, especially in the first few weeks after delivery, raising level of certain hormones such as cortisol can dramatically reduce the breast milk supply, supplementing with formula, dehydration and lack of nutrition, getting sick and others factors that can affect milk secretion includes premature birth, maternal obesity, pregnancy induced high blood pressure, poor controlled insulin dependent diabetes.[6]

A previous studies have shown that normal postpartum mothers who are given oxytocin massage have a faster breast milk production (6.21 hours after delivery) compared than mothers who did not receive an oxytocin massage (8.93 hours after delivery).[7]

Mothers who gave birth byemergency C-section were reported to be unsuccessful on their first attempt atbreastfeeding than women who delivered vaginally, or via scheduled C-section.[8]Delay in lactation affects around 20 – 40% of lactating women, the prevalence differs among district population. Hence the intervention targeted for mothers who underwent Cesarean section.[9]

Many intervention studies mainly focused on only the oxytocin massage to increase the breast milk production. The two interventions oxytocin and marmet massage are applied for two separate group of 32 postpartum mothers to increases the breast milk secretion.The study concluded that there is the significance difference between the oxytocin massage method and marmettechnique to increase level of hormone prolactin in postpartum mothers.Veryfew studies in India have focused on combination of these intervention . Therefore the study aimed to evaluate the BOM method (breast care,oxytocin massage and marmet technique) as a combined on breast milk secretion among postnatal mothers who underwent LSCS.

RESEARCH METHODOLOGY

Randomized controlled trial (Two group pretest and post test) was adopted for this study.The study was conducted in postnatal ward, Mahatma Gandhi Medical College Research Institute in Puducherry, India.

SAMPLE SIZE: The study population comprised of postnatal mothers who underwent LSCS and admitted in well equipped postnatal ward at our institute. The sample size was calculated by power analysis with the confidence of 99%. Number of sample was rounded as 30 in each group.However, no attrition was seen in both the groups as the postnatal mothers were admitted in postnatal ward.

Estimation of Sample Size

$$n = \frac{2\sigma^2[Z_{1-\alpha/2} + Z_{1-\beta}]^2}{[\mu_1 - \mu_2]^2}$$

$Z_{1-\alpha/2} = 2.58\ at\ 95\%\ of confidence with \alpha = 0.01$

$Z_{1-\beta} = 1.28\ at\ 90\%\ of power with \beta = 0.10$

$\sigma = 1.98$

$\mu_1 = 9.3\mu_2$
$= 11.3\ assumed\ to\ increase\ 2\ score\ from\ previous\ study$

$$n = \frac{2(1.98)^2[2.58 + 1.28]^2}{[9.3 - 11.3]^2}$$

$= 29.21$

$n = 30$(Each group 30 sample)

Selection of Postnatal Mothers

A sample of 60 postnatal mothers was selected by simple Random sampling technique (lottery method) to allotthe samples for both experimental group -30 and control group -30. Each day 4-5 mothers delivered through cesarean section . Sample selection was done on the first postnatal day. Mothers who fit into the criteria was selected by lottery method. Mothers who picked up the lot 1 represented as experimental group and those with lot 2 allotted as control group.

Inclusion and Exclusion Criteria

The inclusion criteria of the samples included Both primi and multi postnatal mothersunderwent lower segment caesarean section and giving breastfeeding to their babies and willing to participate in the study.Postnatal mothers whose babies in NICU and suffering from any postpartum complications were excluded.

Description of Tool

Part A: It consists of demographic variables which included age in Years, educational Status, occupation, monthly income, area of residence, type of Family and religion and Obstetric variables which included type of caesarean section, para, size of breast, shape of breast, consistency, initiation of breast feeding, condition of nipples and previous knowledge regarding breastfeeding.

Part B– Modified tool for adequacy of breast milk secretion.The total score of each subject was converted into percentage and

interpreted as inadequate (< 50%), satisfactory (50-75%) and adequate (>75%).

Ethical Consideration

The proposed study was conducted after approval was obtained fromInstitutional Human Ethics Committee of Kasturba Gandhi Nursing College under Sri Balaji Vidyapeeth, Puducherry (KGNC/IHEC/2021/035). Informed consent was obtained from the postnatal mothers. Participants were informed about the purposes of the study and procedure of selection of sample. Subjects were given the rights to withdraw from the study at any time. As this study involves a minimal invasion, it can be considered minimal or more than the minimal risk in ICMR guidelines 2017.

Data Collection

The investigator maintained good rapport and obtained demographic profoma and the assessment of breast milk secretion among postnatal mothers by breast milk adequacy check list for both group. Following that the participants in the study group were given BOM method(breast care, oxytocin massage and marmet technique) with the duration of 45 minutes for two times a day with 6 hrs interval (morning and evening) for three days.Totally six number of intervention was planned which included 5 mts of breast care to stimulating the breast tissue for feeding and to maintain hygiene,20 mts of oxytocin massageincluded massaging the neck and spine and gently massaging the back and spine by using step by step process to increases the oxytocin stimulation which enhances theletdown reflux and 20 mts of marmet techniques included breast massage, stoke the breast and shake the breast to enhances the secretion and milk ejection and letdown reflux . The control group was received only the routine care. The posttest were carried out at the end of third day.

Data Analysis

Data were analysed using the statistical package for social science version 20(IBM SPSS statistics for windows, version 20.0. Armonk, NY: USA IBM Corp).The response was analyzed through descriptive statistics (mean, frequency, percentage, standard deviation)inferential statistics are Independent 't' test, Paired 't' test used to evaluate the effectiveness of BOM method on increasing breast milk secretion among postnatal mothers. Kruskal Wallis and Mann Whitney test for association between the breast milk secretion and selected demographic variables of postnatal mothers.

RESULTS

Sociodemographic Variables

Majority of sample 36 (61%) were in the age group of 26-30 years. 54(90%) were following mixed dietary pattern, 32(53.3%) were multipara, 57(95.%) were underwent emergency LSCS. In breast parameters, 51(91.7%) belongs to symmetrical in breast shape, 46(76.7) had soft in consistency of breast, most of samples 38(63.3%) having normal condition nipple,58(96.7%) of postnatal mothers initiated breast feeding within half an hour of delivery, 31(51.7%) were followed cradle position while feeding, most of them 45(75%)were complaints of low milk supply (Table 1).

All 30(100%) samples in experimental group had adequate level of breast milk secretion and 23(76.7%) had satisfactory level in control group during posttest (Table2).In Comparison of posttest mean and standard deviation of breast milk secretion among postnatal mothers between experimental and control group were 34.47 ±1.279 and 15 ±2.994 respectively. The calculated independent't'test value was t=32.746 which was highly statistically significant at ρ <0.001 level.It was inferred that BOM method was effective in increasing breast milk secretion among postnatal mothers underwent LSCS.(Table 3)

DISCUSSION

The study aimed to evaluate the effectiveness of BOM method on increasing breast milk secretion among postnatal mothers. The aim was accomplished through the present study finding which revealed that there was increased breast milk secretion after intervention

The breast care, oxytocin massage and marmet technique is a combination methods of massage on the breast through the provision of stimuli to the muscles of the breast and back of the mother in order to provide stimulation to the mothers milk glands to produce milk and trigger the hormone oxytocin or let down reflex and give comfort and create a sense of relaxation in the mother and marmet technique is combination of breast massage ,shake and stroke the breast ,mainly useful for milk ejection process .The BOM method leads to increased breastmilk production through touch stimulation of the breast and the mothers back, which will stimulate the production of oxytocin causing a contraction of myophitel cells. The study revealed that breast care and oxytocin massage mainly helpful for increase the breast milk production in mother 0-3 months ,with average amount of milk production of 40.83 ml ,with minimum of 18ml and maximum of 65 ml **(Muliani 2013).**[10] This also in line with research conducted by **wati** revealed that breast care ,oxytocin massage and marmet technique was very effective on breast milk production .[11]

The previous study showed that most of postnatal mothers had a very effective breast milk secretion after given breast care **(safitri 2016).**[12]This was supported by research that there was a significant relationship between breast care in postpartum mother with the smooth breast milk secretion **(Hesi Y L 2017)**.[13]

In the present study the BOM method gives positive effect on breast milk secretion.This in line with the previous study showed that there was an increase of breast milk secretion (283.73 ml)in the mothers who received oxytocin massage compared with those who were not received oxytocin massage (221.35ml) (**widiyanti, susanti 2014)**.[14]

A Quasi experimental study was conducted on effectiveness of BOM method (breast care, oxytocin massage and marmet technique) on increasing breast milk production in breast feeding women. It was carried out at the prombon health center with a total sample of 60 samples . The intervention of BOM method duration is 7 days and the principally aimed at making the myoepthial muscles contract ,relaxing the mind and expediting breastfeeding .The p value of 0.000 at <0.05, So it can be concluded that there were significant differences between the two groups, where the BOM method (Breast care, Oxytocin, and Marmet Technique) was very effective on breast milk production .

In the present study, the comparison of posttest mean and standard deviation of breast milk secretion between the experimental and control group were 34.47 ±1.279 and 15 ±2.994 respectively. The calculated independent 't' test value was t=32.746 which was highly statistically significant at ρ value <0.001 level.It was inferred that BOM method (Breast care, oxytocin massage and marmet technique) was effective in increasing breast milk secretion among postnatal mothers underwent LSCS.

The result of present study indicated that there was no significant association between the breast milk secretion and the selected demographic variables like age, education, occupation, monthly income, religion, area, types of family, types of diet, para, types of caesarean section, size of breast, consistency, condition of nipple, initiation, position, problem of breast and previous knowledge regarding breastfeeding. Correspondingly **Mitrasavabic Esfanahni (2015)**[15] ,there was no association between the volume of breast feeding and the selected demographic variable like age, family , income ,education dietary pattern, occupation and para.

In a study conducted by Kaur et al. (2020), it was revealed that socio-demographic factors did not exhibit any significant association with breastfeeding levels ($p < 0.05$). This underscores the need for alternative interventions to bolster breastfeeding among postnatal mothers, particularly those who have undergone lower segment cesarean sections (LSCS). The study highlighted the effectiveness of the Biophysical and Oxytocinergic Method (BOM) as a non-pharmacological technique in increasing breast milk secretion.

Drawing implications from these findings, there are pivotal considerations for nursing practice, education, administration, and research. It is evident that nurses play a crucial role in managing low milk secretion, necessitating their proficiency in techniques such as the BOM method. Thus, there is a compelling need to motivate and empower staff nurses to acquire proficiency in evidence-based practices, particularly in the realm of non-pharmacological therapies for promoting breastfeeding.

Nurse researchers can play a pivotal role in encouraging nursing staff to engage in research activities, facilitating the application of innovative practices aimed at enhancing breastfeeding outcomes. Additionally, nurse administrators are urged to conduct in-service education programs focused on various non-pharmacological treatments to augment breast milk secretion, thereby fostering a culture of continuous learning and improvement within clinical settings. Through these concerted efforts, the nursing community can significantly contribute to the holistic care and well-being of postnatal mothers and their newborns..The limitation were the present study does not focused on volume of breast milk secretion and nutritional pattern of postnatal mothers . The possible future impact on such result and outcomes are a large multicentric randomized trials are needed to establish the fact.

CONCLUSION

The Biophysical and Oxytocinergic Method (BOM) interventions have demonstrated remarkable efficacy in enhancing breast milk secretion among postnatal mothers. This evidence-based approach proves to be highly cost-effective, offering a practical solution applicable across various healthcare settings. Its simplicity and efficacy make it an invaluable tool for improving maternal and infant health outcomes. By leveraging physiological mechanisms and promoting oxytocin release, BOM interventions not only optimize breastfeeding success but also contribute to maternal bonding and overall well-being. Their straightforward implementation ensures accessibility and scalability, offering a promising avenue for supporting breastfeeding mothers worldwide.

Acknowledgment: we will like to acknowledge all the staff nurses in postnatal ward and postnatal mothers for their valuable support and cooperation in this study.

F**inancial Support & Sponsorship:** Nil.

Conflict of interest: There is no conflict of interest.

Author Contribution Statement:

1. Srividhya M contributed to the data collection and preparation of manuscript
2. Lavanya.S, Annie Annal M, Umamaheswari. R, Poongodi.V contributed to the design and implementation of the research, to the analysis of the results .

References

1. *Mannion C, Mansell D. Breastfeeding self-efficacy and the use of prescription medication: a pilot study. Obstet Gynecol Int. 2012;2012:562704. doi: 10.1155/2012/562704.*
2. *Shrivastava SR, Shrivastava PS. Supporting women to initiate and continue breastfeeding: The World Health Organization and the United Nations. Med J DY Patil Vidyapeeth 2019;12:378-9.*
3. *Sumathy P, Rajeswari S, Priyalatha G.Identification of Factors for Cessation of Exclusive Breastfeeding among Mothers of Infants. Asian Pac. J. Health Sci., 2021;8(4):134-136.*
4. *Neville MC, Morton J, Umemura S. Lactogenesis: thetransition from pregnancy to lactation. Pediatric Clinics of North America. 2001; 48:35-52*
5. *Fu M. Zhang L, Ahmed A et alDoes circadian disruption play a role in the metabolic–hormonal link to delayed lacto genesis Frontiers in nutrition. 2015 Feb 23;2:4.*
6. *Parthasarathy S, Rajah C. Feasibility of early breast feeding after caesarean section. Sri Lanka J Child Health. 2011;40:11–2.*
7. *Ummah F. Oxytocin Massage to Accelerate Breastfeeding in Normal Postpartum Mothers in SonoHamlet.KentanenVillage.Panceng Gresik District. Journal. 2014;2.*
8. *Hobbs AJ,Mannion CA.et al. The impact of caesarean section on breastfeeding initiation. Duration and difficulties in the first four months postpartum. BMC pregnancy and childbirth. 2016 Dec;16(1):1-*
9. *Jiang S ,Duan YF.et al. Prevalence of and risk factors for delayed onset of lactation in Chinese lactating women in 2013. [Chinese Journal of Preventive Medicine]. 2016 Dec 1;50(12):1061-6.*
10. *Muliani, R. H. (2013). [Difference in breast milk production before and after given the combination of breast care and oxytocin massage in breastfeeding mothers 0-3 months in the working area of tegal*
11. *Wati D.R.The effectiveness of the BOMB method (breast care,oxytocin massage and marmet technique)on increasing breast milk production in breastfeeding moments age 0-6 months at Prombon public health clinic district. International journal of nursing and midwifery science.2020.Dec 18:4(3):236-40*
12. *Safitri, I., Wijayanti, A. et al. E. (2016). [Factors influencing breast milk production in breastfeeding mothers at Bendan village, Banyudono district, Boyolali regency]. Surakarta: Universitas Muhammadiyah Surakarta.*
13. *Hesti KY.et.al. B. Effect of combination of breast care and oxytocin massage on breast milk secretion in postpartum mothers. Belitung Nursing Journal. 2017 Dec 28;3(6):784-90.*
14. *Agustie PR, Hadisaputro S, Runjati R, Soejoenoes A, Mashudi ID, Widyawati MN. Effect of oxytocin massage*

using lavender essential oil on prolactin level and breast milk production in primiparous mothers after caesarean delivery. Belitung Nursing Journal. 2017 Aug 31;3(4):337-44.

15. Mitra Savabi Esfahani.et al Effect of acupressure on milk volume of breastfeeding mothers. Iran Journal Nursing Midwifery Res. 2015 Jan-Feb; 20(1): 7-11.

Table I : Frequency and percentage distribution of the demographic variables of postnatal mothers

N=60

DEMOGRAPHIC VARIABLES		N	%
Age in years	<21 years	2	3.4%
	21-25 years	20	32.2%
	26-30 years	36	61.0%
	31 -35 years	2	3.4%
Type of Diet	Vegetarian	1	1.7%
	Non vegetarian	5	8.3%
	Mixed	54	90.0%
Para	Primipara	32	53.3%
	Multipara	28	46.7%
Type of caesarean section	Elective LSCS	3	5.0%
	Emergency LSCS	57	95.0%
Size of breast	Symmetrical	55	91.7%
	Asymmetrical	1	1.7%
Consistency of breast	Slender breast	4	6.7%
	Soft	46	76.7%
	Hard	14	23.3%
Condition of nipple	Flat nipple	5	8.3%
	Normal nipple	38	63.3%
	Crack nipple	15	25.0%
	Puffy nipple	2	3.3%
Breast milk Initiation	Within half an hour	58	96.7%
	Within one hour	1	1.7%
	1 hour +-2 hour	1	1.7%
Position followed during feeding	Cradle position	29	48.3%
	Cross cradle	31	51.7%
Problems in breast feeding	Latching pain	14	23.3%
	Breast engorgement	1	1.7 %
Previous knowledge regarding breastfeeding	low milk supply	45	75.0%
	Mass media	3	5.0%
	Health education	18	30.0%
	Friends and parent	39	65.0%

Table 2 .Assessment of breast milk secretion among postnatal mothers in experimental and control group during pre and post test

Breast Milk secretion		Pretest		Post test	
Experimental Group	Inadequate (0-12)	28	93.3%	0	0.0%
	Satisfactory (13- 24)	2	6.7%	0	0.0%
	Adequate (25 – 36)	0	0.0%	3 0	100.0%
Control group	Inadequate (0-12)	30	100.0%	7	23.3%
	Satisfactory (13- 24)	0	0.0%	23	76.7%
	Adequate (25 – 36)	0	0.0%	0	0.0%

Table: 3 .Comparison of post test mean and standard deviation of breast milk secretion among postnatal mothers between the experimental and control group

Post test	Count	Mean	Standard Deviatio n	Mean Differenc e	Indepen dent t test	p- value
Experimental group	30	34.47	1.279			
Control group	30	15	2.994	19.467	32.746	<0.001