

Effect of Topical Application of Breast Milk on Episiotomy Wound Healing: A Quasi-experimental Study

ANJALI PATEL¹, ANGELINA MAKWANA², ANJALI TIWARI³

ABSTRACT

Introduction: Many mothers are given an episiotomy during a normal vaginal delivery. There are many alternative interventions used by the community to heal the episiotomy wound. Applying breast milk topically to a wound is simple, free of charge and has no side-effects. Breast milk contains therapeutic qualities that aid in the healing of wounds.

Aim: To evaluate the effect of topical breast milk application on postpartum women's episiotomy wound healing.

Materials and Methods: This pretest, post-test quasi-experimental study was conducted in three selected health centres of Central Gujarat from February 2022 to March 2022. Using a pretest, post-test control group design, the quantitative quasi-experimental study design was used. A total of 40 postnatal women were recruited for experimental (20) and control group (20). Intervention of topical application of breast milk was offered two times a day for seven continuous days in experimental group and routine

care was provided to participants in control group. Participants of experimental and control group was assessed using Redness, Edema, Ecchymosis, Discharge and Approximation (REEDA) scale on 1st, 3rd, 5th and 7th day. Descriptive and inferential statistics was applied to analyse the data.

Results: A total 40 postnatal mothers participated in the present study with mean age of 23.05±3.80 years. Topical application of breast milk displayed positive effect on episiotomy wound healing in experimental group. The result exhibited that the experimental group's episiotomy wound healing significantly improved (before: 14.75±0.55, after: 4.55±1.32) as compared to the control group (before: 14.65±0.59, after: 9.35±1.46).

Conclusion: The study proved that there was a significant gradual healing of episiotomy wound after the use of breast milk topically in postpartum women. This also indicates that human breast milk can be an alternative strategy for accelerating episiotomy wound healing process.

Keywords: Birth injury, Breastfeeding, Dehiscence, Perineal wound, Topical administration, Trauma

INTRODUCTION

Labour is a set of events that occur in the genital organs in order to remove the viable products of conception (foetus, placenta, and membranes) from the womb and into the outside world via the genital canal [1]. In vaginal birth, the skin of the rectum and anal sphincter is damaged due to genital organ damage and tears, which causes many major complications [2]. An episiotomy is recommended to prevent the pelvic floor muscle trauma caused by the process of childbirth. According to sample registration system 2016-18, maternal mortality of India is 113 per 1,00,000 live births and in Gujarat it is 75 per 1,00,000 live births [3]. Episiotomies are currently performed at a rate of around 10%, as suggested by the World Health Organisation (WHO) in many European countries [4]. With a total episiotomy rate of 70%, episiotomies are frequently performed incisions in women giving birth in India's tertiary level public institutions [5].

The postnatal period is the time right after delivery when evaluation is crucial because women experience various shocks and might not heal completely. The postpartum body assessment offers details on how the body is adjusting to changes after childbirth and recuperating after the labour process [6]. Puerperal infections can result from physiological and psychological changes caused by infection on an episiotomy wound. The primary factor contributing to maternal death and morbidity is perinatal infections [7]. Episiotomy care starts immediately after performing the episiotomy incision. Mother's breast milk has natural antimicrobial properties due to which it helps in healing many skin conditions like cuts and scrapes [8]. The antibody Immunoglobulin A (IgA) helps to expedite healing by preventing germs from developing on the wound [9]. Breast milk comprises of many nutritional substances, like antibodies, omega-3

fatty acids, and stem cells, which can be beneficial when used in different forms other than food source [10].

Based on the personal experience performing clinical activities and a survey of the literature [11-14], the researcher found that every hospital has a different policy for treating episiotomy wounds. Also, topical application of breast milk on episiotomy wound was remarkable because it is affordable and readily available. Now-a-days cost of the medical treatment is very high. The main objective of the medical treatment is to render cost-effective care to the client. The appropriate way for the midwives to render care is to improve their daily practises and use alternative and complementary treatments for better episiotomy wound healing. Breast milk is cost-effective, and readily available, which fasten the wound healing process [15-17].

Admasari Y et al., performed the study on 30 mothers with perineal lacerations and found that mothers' breast milk was better than 10% povidone iodine in the perineal wound healing process [18]. Seifi B et al., did the study on total 30 infants with diaper dermatitis and showed that 20% of the case group's infants failed to respond with mild erythema, while 80% of them had no erythema. Because of the long healing time, 73.3 percent of the neonates in the control group received standard care [19]. Previous studies were performed on perineal wound and diaper dermatitis [18,19], but no study was conducted regarding the breast milk application on episiotomy wound in Gujarat, India. Hence, present study was done to evaluate the effect of topical breast milk application on postpartum women's episiotomy wound healing.

MATERIALS AND METHODS

This pretest post-test quasi-experimental study was conducted in three selected health centres of Central Gujarat, India from February 2022 to March 2022. The Institutional Ethical Committee (IEC) of

Charotar University of Science and Technology (CHARUSAT), Gujarat provided the permission (Ethical Clearance Reference Number: CHA/IEC/ADM/21/11/1642).

Inclusion criteria: Postnatal women, aged between 18 to 32 years, who were primipara or multipara and have undergone full term singleton vaginal delivery with any type of episiotomy and who have delivered within 48 hours and gave informed consent were included in the study.

Exclusion criteria: Postnatal women, who had lactation failure, who were undertaking any other treatment for episiotomy wound healing, who were diagnosed to have breast complications like mastitis and breast abscess, who were having perineal tear during delivery, who were diagnosed with complications related to puerperium like puerperal sepsis, postpartum haemorrhage, who were having medical disorders like diabetes, coagulation related disorders, who had a lower segment caesarean section and who were diagnosed with urogenital infection, were excluded from the study.

Sample size: In accordance with the review of related literature [13,14], to achieve a power of 80% and a level of significance of 5%, and to confidently proclaim that the experimental group was superior to the active control group at -0.1 margin of superiority. The required sample size was 31 for each group (for a total sample size of 62). Using convenient sampling technique, 40 postpartum women were selected and then randomly allocated into two groups: the experimental group 20 participants, and the control group 20 participants.

Data collection: It consists of two sections.

Section A: Performa to collect the data for socio-demographic and obstetrical variables including age, Body Mass Index (BMI), education, gravidity, parity, type of family, food habit, mode of delivery, type of episiotomy, type of suture, number of sutures and postpartum day.

Section B: REEDA scale by Davidson has components, including REEDA. Episiotomy wound healing score ranges from 0-15, scoring of 0 to 5 score will come under good healing, 6 to 10 score will come under average healing and 11 to 15 score will come under poor healing [16].

Before the intervention, data collection tools were used to determine the episiotomy wound in the experimental and control groups. For seven sequential days in the experimental group, freshly expressed breast milk from the participant was collected in a sterile bowl and applied two times a day on the episiotomy site using sterile cotton. As experimental group received breast milk application only while control group received standard care. On the 1st, 3rd, 5th, and 7th days, episiotomy wounds in the experimental and control groups were evaluated using REEDA scale by Davidson tool.

STATISTICAL ANALYSIS

Statistical Package for the Social Sciences (SPSS) version 20.0 was employed to organise and analyse the study data. The findings of postnatal women in both groups, socio-demographic and obstetrical variables were expressed in frequency and percentage (%). Unpaired t-test was applied to evaluate the effect of topical application of breast milk on episiotomy wound healing.

RESULTS

The majority of participants 9 (45%) of experimental group and 10 (50%) of control group were between the ages of 18 to 22 years. The experimental group had 17 (80%) and the control group had 14 (70%) postnatal women with healthy BMI categories. Majority, 8 (40%) were secondary gravida in the experimental group, while 11 (55%) were primigravida in the control group. A total of 9 (45%) and 12 (60%) postnatal women were primiparous in the experimental and control groups, respectively. Both the experimental group's 17 (85%) and the control group's 12 (60%) postpartum women were vegetarians. An 18 (90%) had spontaneous vaginal deliveries in the both groups [Table/Fig-1].

Socio-demographic and obstetrical variables	Experimental group	Control group	p-value
	N (%)	N (%)	
Age (years)			
a) 18-22	9 (45)	10 (50)	0.328
b) 23-27	8 (40)	8 (40)	
c) 28-32	3 (15)	2 (10)	
Body Mass Index (BMI) (kg/m²)			
a) <18.5	1 (10)	4 (20)	0.164
b) 18.5-24.9	17 (80)	14 (70)	
c) 25-29.9	2 (10)	2 (10)	
d) >30.0	0	0	
Education			
a) No formal education	2 (10)	6 (30)	0.415
b) Primary education	15 (75)	7 (35)	
c) Secondary or higher secondary education	3 (15)	6 (30)	
d) Graduate or above	0	1 (5)	
Gravidity			
a) 1	7 (35)	11 (55)	0.182
b) 2	8 (40)	5 (25)	
c) 3	2 (10)	2 (10)	
d) >3	3 (15)	2 (10)	
Parity			
a) 1	9 (45)	12 (60)	0.202
b) 2	7 (35)	5 (25)	
c) 3	2 (10)	2 (10)	
d) >3	2 (10)	1 (5)	
Type of family			
a) Nuclear family	2 (10)	0	0.273
b) Joint family	13 (65)	15 (75)	
c) Extended family	5 (25)	5 (25)	
Food habit			
a) Vegetarian	12 (60)	17 (85)	0.040
b) Non vegetarian	8 (40)	3 (15)	
Mode of delivery			
a) Spontaneous vaginal delivery	18 (90)	18 (90)	0.50
b) Assisted vaginal delivery	2 (10)	2 (10)	
Type of episiotomy			
a) Midline	1 (5)	0	0.042
b) Medio-lateral	19 (5)	18 (90)	
c) Lateral	0	2 (90)	
d) J-shaped	0	0	
Type of suture			
a) Chromic catgut	3 (15)	11 (55)	0.003
b) Vicryl	17 (85)	9 (45)	
Number of sutures			
a) 3-4	9 (45)	9 (45)	0.291
b) 5-6	3 (15)	5 (25)	
c) 7-8	4 (15)	4 (20)	
d) 9-10	4 (20)	2 (10)	
Postpartum day			
a) 1 st	11 (55)	12 (60)	0.378
b) 2 nd	9 (45)	8 (40)	

[Table/Fig-1]: Frequency and percentage distribution of socio-demographic and obstetrical variables.

The mean REEDA scores of the both the groups, experimental and control group decreased significantly from day 1 to day 7, but the scores in experimental group were significantly lesser than control group from day 3 to 7 [Table/Fig-2].

REEDA assessment days	Experimental group	Control group	p-value
	Score (Mean±SD)	Score (Mean±SD)	
REEDA Day 1	14.75±0.55	14.65±0.59	0.291
REEDA Day 3	10.6±1.43	13.15±0.88	<0.00001
REEDA Day 5	7.7±0.92	11.25±1.33	<0.00001
REEDA Day 7	4.55±1.32	9.35±1.46	<0.00001

[Table/Fig-2]: Mean and SD of episiotomy wound healing (Day wise).
Level of significant p-value <0.05

In the experimental group and control groups, REEDA scores decreased significantly from day 1 to day 7 (p-value was <0.00001) [Table/Fig-3].

Group	Day	Mean±SD	Paired t-test value	df	p-value
Experimental	Day 1	14.75±0.55	34.00	19	<0.00001
	Day 7	4.55±1.32			
Control	Day 1	14.65±0.59	14.34	19	<0.00001
	Day 7	9.35±1.46			

[Table/Fig-3]: Comparison of episiotomy wound healing score within group.
Level of significant p-value <0.05

On comparing the mean difference values from day 1 to day 7 between experimental and control groups, significant difference was found with p-value <0.00001. It suggests that topical breast milk treatment has a considerable impact on episiotomy wound healing [Table/Fig-4].

Groups	Mean difference Day 1-Day 7	SD	Unpaired t-test value	df	p-value
Experimental	10.2	1.28	10.71	38	<0.00001
Control	5.3	1.59			

[Table/Fig-4]: Effect of topical application of breast milk on episiotomy wound healing.
Level of significant p-value <0.05

DISCUSSION

The present small scale study was performed to examine the impact of topical breast milk administration on postpartum women’s episiotomy wound healing and was compared with other studies as shown in [Table/Fig-5] [17,18].

Larger number of postnatal women of experimental group belonged to 18-22 years (45%) and 23-27 years (40%) age group while in control group most participants belonged to 18-22 years (50%)

Authors name (ref no.)	Place/publication year	Sample size	Findings
Patel A et al., (Present study)	Gujarat, India/2023	40	Breast milk applied topically had a beneficial impact on the healing of episiotomy wounds in the experimental group. The outcome showed that, in comparison to the control group (before: 14.65±0.59, after: 9.35±1.46), the experimental group’s episiotomy wound healing significantly improved (before: 14.75±0.55, after: 4.55±1.32).
Nuraini S et al., [17]	Mangkubum, Tasikmalaya/2019	60	Assessment of the intervention group after seven days revealed that they have better wound healing than the control group. Findings demonstrated that the intervention group’s perineal wound healing score was 66.7% as opposed to the control group’s score of 36.7% (p-value=0.039).

Admasari Y et al., [18]	Kediri Regency, Indonesia/2017	30	The intervention group’s effective wound healing process was evident, in contrast to the control group’s slow wound healing. The results showed that the intervention group’s mean score for the perineal wound process was 11.23 compared to the control group’s mean score of 19.77 (p-value=0.002).
-------------------------	--------------------------------	----	--

[Table/Fig-5]: Comparison of findings of previous studies with present study [17,18].

and 23-27 years (40%). Similar results were found in a study by Admasari Y et al., where the vast majority of participants, 15, in both the experimental and control groups, did not fall within the risk age range [18]. These results demonstrated that in Indonesia, caretakers considered providing high-quality services and acknowledging women’s risk for danger as crucial. For the mother’s and the baby’s health, it is better to choose an appropriate reproductive age. Creating pregnancy at this time frame also lowers the likelihood of negative effects on the mother and foetus. In the present study, 17 (80%) and 14 (70%) postnatal women had healthy category of BMI. A study conducted by Admasari Y et al., discovered comparable outcomes and showed that, 9 (60%) participants had stable weight, particularly in comparison to 8 (53.3%) in the control group were overweight [18]. The WHO has implemented regulations and policies, including one with a surcharge on sweetened beverages and front-pack labels that can enable communication in identifying unhealthy foodstuffs and choosing healthy nutritional recommendations, as evidenced by the fact that the number of obese people in Indonesia has been skyrocketing over the past 20 years. Obese persons are more likely to get surgical or incisional infections overall.

Present study was conducted on 40 postnatal women and findings showed that when compared to the control group’s episiotomy wound healing (before: 14.65±0.59, after: 9.35±1.46), the experimental group’s episiotomy wound healing (before: 14.75±0.55, after: 4.55±1.32) considerably improved. Similar study was conducted by Nuraini S et al., on 70 postnatal mothers and findings showed that perineal wound healing score among interventional group was 66.7% compared to 36.7% score of control group (p-value is 0.039) [17]. This finding suggests that breastfeeding formula could be used in combination to other medications to prevent the growth of microbes on lesions and to speed up recovery. Same study was conducted by Admasari Y et al., on 30 mothers and findings showed that intervention group mean score was 11.23 compared to 19.77 mean score of control group (p-value 0.002) in perineal wound process [18]. This outcome was generated by the pharmaceutical and antibacterial qualities of lactation, which aid in maintaining the wound’s surface devoid of microorganisms.

Study findings showed that postnatal women of experimental group had good wound healing process. Various studies were found regarding healing properties of breast milk. It helps to treat various diseases like diaper dermatitis, atopic eczema, traumatic nipple and neonatal conjunctivitis [19-22]. Postnatal women of experimental group have fastened episiotomy wound healing process in contrast to control group (p-value <0.05).

Limitation(s)

This present study was conducted on small sample size. The present study was limited to postnatal women with episiotomy of selected health centres of Central Gujarat, India. To get better results of the effect topical breast milk application on episiotomy wound healing, further studies are required in larger number of postnatal women and different area.

CONCLUSION(S)

The study found that, in contrast to the control group, the experimental group’s episiotomy wound healing score was found to

be significantly improved by topical breast milk administration. The outcome of topical breast milk application on episiotomy wound healing must be understood by the community and midwives. It is simple, inexpensive, and easily accessible to speed up the healing process. Similar study can be done on a large sample size and can be blended with other alternative methods to promote episiotomy wound healing. Comparative study can be done to determine the effect of topical application of breast milk and other complimentary measures on episiotomy wound healing.

Acknowledgement

The Manikaka Topawala Institute of Nursing, CHARUSAT is acknowledged by the authors for supporting them throughout this investigation.

REFERENCES

- [1] Dutta DC. Textbook of Obstetrics. 8th ed. New Delhi: Jaypee Brothers Medical Publishers (P) Ltd; 2015. Pp. 134, 648-51.
- [2] Aasheim V, Nilsen ABV, Reinar LM, Lukasse M. Perineal techniques during the second stage of labour for reducing perineal trauma. *Cochrane Database Syst Rev* [Internet]. 2017;6(6):CD006672. Available from: https://www.cochrane.org/CD006672/PREG_perineal-techniques-during-second-stage-labour-reducing-perineal-trauma.
- [3] SRS- Maternal mortality bulletin [Internet]. Gov.in. [cited 2022 Jun 3]. Available from: <https://censusindia.gov.in/census.website/data/SRSMMB>.
- [4] Graham ID, Carroli G, Davies C, Medves JM. Episiotomy rates around the world: An update. *Birth*. 2005;32(3):219-23. Available from: https://www.researchgate.net/publication/7631877_Episiotomy_Rates_Around_the_World_An_Update.
- [5] Singh S, Thakur T, Chandhiok N, Dhillon BS. Pattern of episiotomy use & its immediate complications among vaginal deliveries in 18 tertiary care hospitals in India. *Indian J Med Res*. 2016;143(4):474-80. Available from: <https://www.ijmr.org.in/article.asp?issn=0971-5916;year=2016;volume=143;issue=4;spage=474;epage=480;aulast=Singh>.
- [6] Nair A. Postnatal examination: Purpose, check-ups, questions to ask [Internet]. *Firststory.com*. 2018 [cited 2021 May 30]. Available from: <https://parenting.firststory.com/articles/your-postnatal-examination-what-to-expect/>.
- [7] Puerperal Sepsis. In: *Questions for the Final FFICM Structured Oral Examination*. Cambridge University Press; 2018. Pp. 362-65. Available from: <https://www.nhp.gov.in/disease/gynaecology-and-obstetrics/puerperal-sepsis>.
- [8] Witkowska-Zimny M, Kamińska-EI-Hassan E, Wróbel E. Milk therapy: Unexpected uses for human breast milk. *Nutrients*. 2019;11(5):944.
- [9] 6 amazing uses for breast milk (besides feeding the baby) [Internet]. *Earth911.com*. 2014 [cited 2021 May 15]. Available from: <https://earth911.com/health/6-amazing-uses-for-breast-milk-besides-feeding-baby/>.
- [10] Ballard O, Morrow AL. Human milk composition: Nutrients and bioactive factors. *Pediatr Clin North Am* [Internet]. 2013;60(1):49-74. Available from: <http://dx.doi.org/10.1016/j.pcl.2012.10.002>.
- [11] Borah J, Ridhwaanah S. Licensed under creative commons attribution CC BY A study to assess the effectiveness of normal saline application on episiotomy wound healing among postnatal mothers at gauhati medical college & hospital, Guwahati, Assam. *Int J Sci Res (Raipur)* [Internet]. Available from: <https://www.ijsr.net/archive/v11i3/SR22316140933.pdf>.
- [12] Eghdampour F, Jahdie F, Kheyrikhah M, Taghizadeh M, Naghizadeh S, Hagani H. The impact of aloe vera and Calendula on perineal healing after episiotomy in primiparous women: A randomized clinical trial. *J Caring Sci* [Internet]. 2013;2(4):279-86. Available from: <http://dx.doi.org/10.5681/jcs.2013.033>.
- [13] Romina S, Ramezani F, Falah N, Mafi M, Ranjkesh F. Effect of perineal massage with Ostrich oil on the episiotomy and lacerations in nulliparous women: A randomized controlled clinical trial. *Iran J Nurs Midwifery Res* [Internet]. 2020 [cited 2023;25(2):134-38. Available from: http://dx.doi.org/10.4103/ijnmr.IJNMR_76_19.
- [14] Kalaivani. A study to evaluate the effectiveness of Sitz bath on episiotomy wound healing among postnatal mothers in Aravindan hospital at Coimbatore. *Int J Nurs Educ Res* [Internet]. 2021;9(3):281-86. Available from: <https://ijneronline.com/AbstractView.aspx?PID=2021-9-3-8>.
- [15] Lyons KE, Ryan CA, Dempsey EM, Ross RP, Stanton C. Breast milk, a source of beneficial microbes and associated benefits for infant health. *Nutrients*. 2020;12(4):1039. Doi: 10.3390/nu12041039.
- [16] Jameela S. Effectiveness of sodium chloride application on episiotomy wound healing among postnatal mothers at Government Rajaji Hospital, Madurai (Doctoral dissertation, College of Nursing, Madurai Medical College, Madurai). Available from: <http://repository-tnmgrmu.ac.in/11648/1/300327518jameela.pdf>.
- [17] Nuraini S, Saadah S, Rismawati S. The effect of breastmilk topical on perineal wound healing on 1-7 days postpartum mother. *Midwifery Nurs Res*. 2019;1(2):68-75. Available from: <http://ejournal.poltekkes-smg.ac.id/ojs/index.php/MANR/article/view/5288/1342>.
- [18] Admasari Y, Santoso B, Suherni T, Mashoedi ID, Mardiyono M. Breast milk as an alternative for postpartum perineal care. *Belitung Nurs J*. 2017;3(3):238-45. Available from: https://www.researchgate.net/publication/331215614_BREAST_MILK_AS_AN_ALTERNATIVE_FOR_POSTPARTUM_PERINEAL_CARE.
- [19] Seifi B, Jalali S, Heidari M. Assessment effect of breast milk on diaper dermatitis. *Dermatol Rep*. 2017;9(1):7044. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5472239/>.
- [20] Kasrae H, Amirifarhani L, Yousefi P. Efficacy of topical application of human breast milk on atopic eczema healing among infants: A randomized clinical trial. *Int J Dermatol*. 2015;54(8):966-71. Available from: <https://onlinelibrary.wiley.com/doi/full/10.1111/ijd.12764>.
- [21] Ismail NI, Hafez SK, Ghaly AS. Effect of breast milk, peppermint water and breast shell on treatment of traumatic nipple in puerperal lactating mothers. *Int J Novel Res Healthcare Nurs*. 2019;6(3):692-709. Available from: <https://kuatra.com.tr/Images/Urunler/4a08a194dfb14c679c0dbdf1a564a026.pdf>.
- [22] Ghaemi S, Navaei P, Rahimirad S, Behjati M, Kelishadi R. Evaluation of preventive effects of colostrum against neonatal conjunctivitis: A randomized clinical trial. *J Educ Health Promot*. 2014;3:63. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4114003/>.

PARTICULARS OF CONTRIBUTORS:

1. Postgraduate Nursing Student, Department of Obstetrics and Gynaecological Nursing, Manikaka Topawala Institute of Nursing, Anand, Gujarat, India.
2. Nursing Tutor, Department of Obstetrics and Gynaecological Nursing, Manikaka Topawala Institute of Nursing, Anand, Gujarat, India.
3. Assistant Professor and Head, Department of Obstetrics and Gynaecological Nursing, Manikaka Topawala Institute of Nursing, Anand, Gujarat, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Ms. Anjali Patel,
At. PO. Kachigam (Bhenka Faliya), Valsad, Gujarat, India.
E-mail: anjali Patel1605@gmail.com

PLAGIARISM CHECKING METHODS: [Jain H et al.]

- Plagiarism X-checker: Sep 22, 2022
- Manual Googling: Feb 10, 2023
- iThenticate Software: Mar 06, 2023 (9%)

ETYMOLOGY: Author Origin

AUTHOR DECLARATION:

- Financial or Other Competing Interests: None
- Was Ethics Committee Approval obtained for this study? Yes
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. NA

Date of Submission: **Sep 20, 2022**
Date of Peer Review: **Dec 22, 2022**
Date of Acceptance: **Mar 10, 2023**
Date of Publishing: **May 01, 2023**