



# Postoperative Pain Reduction in “Cesarean Mothers” with Hand and Foot Massage

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J Health Allied Sci<sup>NU</sup> 2024;14(Suppl S1):S18–S20.

## Abstract

**Objective** Experiencing the miracle of childbirth is a profound and joyous moment for every woman. However, amidst this happiness, it is important to acknowledge the physical pain associated with childbirth. As a result, there is a pressing need to address the imperative of alleviating pain in women undergoing cesarean sections. A significant number of women choose cesarean section as a means to circumvent the challenges associated with the labor process.

**Method** A quasi-experimental nonequivalent control group pretest and posttest design was adopted in this study. Using the purposive sampling method, 60 mothers who underwent cesarean-section were selected and randomly assigned to the intervention and control groups. Data were collected using the baseline proforma and Numerical Pain Rating Scale. A pretest was carried out for both groups using the Numerical Pain Rating Scale. The intervention group received hand and foot massages for 20 minutes twice daily (morning and evening) for 3 days. After 5 minutes of intervention, both groups underwent a posttest.

**Results** The mean preintervention pain score on day 1 was  $8.10 \pm 0.61$ , and the mean percentage was 81, whereas the posttest mean score was  $7.00 \pm 0.64$  and the mean percentage was 70. There was a decline in the pretest and posttest from day 2 onward. Between the pretest and posttest, pain scores showed a significant difference in the intervention group ( $F$ -value  $(_{11\&319}) = 498.32, p = 0.001$ ).

**Conclusion** Mothers who underwent cesarean section benefited from hand and foot massage.

**Clinical Significance** This article holds significance in the contemporary landscape, wherein a substantial number of women opt for cesarean sections due to either pregnancy complications or personal choice. The latest research outcomes contribute to mitigating pain through the implementation of nonpharmacological approaches.

## Keywords

- ▶ hand and foot massage
- ▶ cesarean section
- ▶ nonpharmacological methods
- ▶ cesarean pain

## Introduction

Pregnancy is a unique experience for women; each pregnancy brings a new feeling of joy and adaptation.<sup>1</sup> Pregnancy is a

novel, empowering, and usually an ecstatic moment in a woman's life, highlighting the woman's amazingly creative and continuing forces while allowing an augmentation of what is to come. Pregnancy and childbirth are significant

article published online  
May 23, 2024

DOI <https://doi.org/10.1055/s-0044-1782637>.  
ISSN 2582-4287.

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Thieme Medical and Scientific Publishers Pvt. Ltd., A-12, 2nd Floor, Sector 2, Noida-201301 UP, India

events in every woman's life for which she aspires and longs with great expectations. It does not matter if the child is the first, second, or the third.<sup>2</sup>

Many women undergo a cesarean section for healthy childbirth. Such a woman requires surgical care to prevent postoperative complications from optimizing her health.<sup>3</sup> Early movement from the bed may help reduce postsurgical pain and adhesions.<sup>4</sup> There are various ways to alleviate pain. Postcesarean pain can be better managed by the obstetric nurse using nonpharmacological methods. A variety of complementary therapies are available in modern society, such as massage, relaxation practices, calming music, mind-body practices, herbal remedies, and mentalist hand therapeutic touch. Such approaches have soothed pain levels.<sup>5</sup>

The use of hand and foot massages to relief pain among mothers who have undergone cesarean sections is one of the most affordable and money-saving methods. A foot and hand massage releases pain-relieving endorphins from stimulating nerve fibers.<sup>2</sup>

A hand massage stimulates nerve endings in various, organs believed to reside in the hands through the use of fingertips, knuckles, and blunts. Foot and hand massage relieves stress and pain by relaxing the feet and hands.<sup>6</sup>

Introducing complementary therapies such as hand and foot massage into nursing practice is quite knotty due to little empirical evidence to sustain the use. At present, many are opting for cesarean section to minimize labor pain. Hence, this study aimed to provide empirical evidence and efficiency in reducing postoperative pain among mothers with cesarean pain.

## Objectives

The purpose of the study was to assess the level of pain among postcesarean mothers and to evaluate the effectiveness of hand and foot massages in reducing pain and their association with baseline variables.

## Subjects and Methods

A quasi-experimental, time series nonequivalent control group study was conducted among 60 cesarean section mothers in a tertiary care center in Mangaluru, Karnataka, India. Sample size was calculated based on the findings from previous studies, the power of 80% at 95% confidence interval at 0.05 level. A purposive sampling technique was used to recruit participants for the study. The first 30 mothers who met the inclusion criteria were assigned to the intervention group, while the next 30 mothers were assigned to the control group. The inclusion criteria were (1) postcesarean mothers from the first postoperative day of surgery and first 3 days of hospitalizations and (2) 1 hour before the administration of pain medications. Institutional Ethics Committee (FMIEC/CCM/128/2020) clearance was obtained, along with permission from the relevant authorities within the hospital. The study participants provided written consent informed in accordance with the study protocol.

A self-developed semi-structured interview schedule was used to record the baseline proforma of the subjects. On the

first postoperative day, the pretest data were collected by using a standardized numerical pain intensity scale for both groups and scored as "0: no pain," "1 to 3: mild pain," "4 to 6: moderate pain," and "7 to 10: severe pain." With the aid of liquid paraffin, the intervention group was given a 20-minute hand-and-foot massage consisting of stroking, effleurage, pulling, squeezing, and arch pressing. The massage was given twice a day (morning and evening) 1 hour before administration of pain medication. For both the intervention and control groups, posttests were performed using the same scale.

*Statistical test used:* Analyzing qualitative and categorical data, the mean and standard deviations were presented as percentages. Repeated measures analysis of variance (ANOVA) was used to compare the effectiveness between the two groups. A chi-squared test was used to determine significance. The statistical package used for this study was IBM Statistical Package for the Social Sciences (SPSS), version 23.0.

## Results

Baseline characteristics show that the mean age was  $26.33 \pm 4.16$  and  $28.13 \pm 5.22$  years in the intervention and control groups, respectively. In all, 56.75% of the mothers in the intervention group and 43.3% in the control group had higher secondary education. In the intervention group, 63.3% mothers were primipara, whereas primipara and multipara mothers were equally distributed in the control group. In the intervention group, 20% of the mothers had a previous history of lower segment cesarean section (LSCS); whereas, 30% in the control group.

In the intervention group, 33.3% of the mothers had moderate pain and 66.7% had severe pain on the first day, whereas on day 2, equal number of mothers had mild and moderate pain. All the mothers had severe pain on the first day, whereas 60% of the mothers had severe pain on day 2 in the control group. In the evening of the third day, 70% had moderate pain.

Pre and post cesarean section pain score in the intervention group was determined by repeated measures of ANOVA, which showed a significant difference ( $F_{(11,319)} = 498.32$ ;  $p = 0.001$ ).

An intragroup comparison showed a difference in the pain score after hand and foot massage for all the days ( $p = 0.001$ ; **► Supplementary Table S1**, available in the online version). It was concluded that the hand and foot massage reduced the pain experienced by the mothers in the intervention group after a cesarean section. The preintervention pain score was not significantly correlated with selected baseline variables. There was no significant association between preintervention pain score and selected baseline variables in both the groups ( $p > 0.05$ ).

## Discussion

In the present study, 46.7 and 36.7% of the participants in the intervention and control groups, respectively, were in the age group of 26 to 30 years. These findings were congruent to the findings of the study conducted by Nesami et al., (2014),

which showed 36.70% participants each in the experimental and control groups were in the age of 26 to 30 years.<sup>7</sup>

In this study, about 73.3% of the participants in the intervention group and 66.7% in the control group were unemployed. The study supported and revealed that about 76.67% in the experimental group and 66.67% in the control group were unemployed. A study conducted on women who undergo elective cesarean section respond to foot reflexology in terms of pain and anxiety reported that 66.7% and 63.3% were primi and multi-gravidas and 75% of the mothers did not had previous history of cesarean section in both the groups.<sup>8</sup>

In the intervention group, about 66.7% of the mothers had intense pain on the first day and 33.3% of them had moderate pain on the second day. In contrast, 60% of the mothers had severe pain on day 2 and 70% had moderate pain on the third evening. The study supported and determined the effects of foot reflexology on postcesarean pain, and showed that 76.67% of participants in the experimental group and 60% in the control group had severe pain. However, in the experimental group, the posttest showed 60% of the participants had mild pain and 56.67% in the control group had a moderate pain.<sup>9</sup>

The pre-pain score and post-pain scores (after cesarean before intervention and after intervention) of the intervention group were highly significant. The calculated *F*-value of 498.32 was significantly more than the table value ( $p=0.001$ ). These results were supported by a study conducted in Iran to determine the effect of reflexology after a cesarean delivery on pain severity. It showed that the calculated *F*-value of 564.09 was significantly more than the table value ( $p=0.001$ ).<sup>10</sup>

In the current study, there was a difference in the pain score after hand and foot massage for all the days ( $p=0.001$ ; **Supplementary Table S1**). Similar results were found in a previous study that showed a significant difference in the pain score in the experimental and control groups.<sup>11</sup>

There is no association between preintervention pain score and selected baseline variables. The study found that there was no association between pain level and age ( $\chi^2=1.45$ ), education ( $\chi^2=3.23$ ), and previous history of LSCS ( $\chi^2=1.84$ ).<sup>7</sup>

## Limitations

Even though, we found a positive effect on pain in cesarian mothers after reflexology, our study was limited to only cesarean mothers' pain.

## Conclusion

Management of postcesarean pain is a one of the challenges in obstetric nursing. As a comprehensive approach and a nursing intervention that supports traditional care, reflexology can be

used in medical treatments. Giving massage to the hand and foot is a practical, simple, noninvasive, cost-effective method that can be used easily without any side effects.

## Clinical Significance

The article is relevant in the present context where the majority of women are opting for cesarean section due to complication during pregnancy or by choice. The findings of the current study can contribute to reduce the pain among cesarean mothers, thus use of nonpharmacological strategies will reduce the consumption of pain killers medications.

## Funding

None.

## Conflict of Interest

None declared.

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