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Application of Foot Massage Therapy to Reduce Pain in Post-Caesarean Section Patients

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Abstract: Caesarean section (C-section) is a surgical procedure involving an incision through the abdominal and uterine walls to deliver the fetus. This procedure disrupts tissues, blood vessels, and nerves, often resulting in postoperative pain. Pain management strategies include both pharmacological and non-pharmacological interventions. Foot massage is one non-pharmacological approach involving skin stimulation techniques. To examine the application of foot massage therapy in reducing pain among post-C-section patients. This research used a descriptive case study design and was conducted at RSUD Labuang Baji Hospital, Makassar, over six days. Two participants who met the inclusion criteria (first-day post-C-section, aged 20–30, moderate pain level) were selected. Exclusion criteria included uncooperative behavior, loss of consciousness, or severe bleeding. Data collection involved interviews, observations, and documentation. Instruments included a standard operating procedure (SOP) for foot massage and the Numeric Rating Scale (NRS) for pain assessment. Results were presented in narrative and tabular formats. Both participants showed a reduction in pain levels after receiving foot massage therapy. Participant N reported pain decreasing from 6 to 2 over three days, while participant S experienced a decrease from 5 to 3. The decrease was more significant in participant N, who received consistent family support and practiced the therapy more regularly. Conclusion: Foot massage therapy may help reduce pain in post-C-section patients. It is recommended as a supportive, non-pharmacological option in postoperative care.

Keywords: Foot Massage; Pain; Caesarean Section; Non-Pharmacological Therapy

1. Introduction

Labor refers to the physiological process during which a pregnant woman delivers the fetus, either through the vaginal canal or via a surgical procedure known as Caesarean section (C-section). A C-section involves incising the abdominal and uterine walls to extract the fetus from the uterus. (Oktarina, 2020)

Postoperative pain is a common issue following C-section procedures. Despite the availability of effective analgesics, approximately 60% of C-section patients continue to experience significant pain within the first 24 hours postpartum. If not properly managed, this pain may hinder maternal recovery and cause substantial discomfort. (Damayanti & Nurrohmah, 2023)

Among non-pharmacological strategies for pain management, foot massage has emerged as a simple and low-risk intervention. Typically administered within 24–48 hours postoperatively, foot massage stimulates sensory nerves and is believed to close the pain gates in the posterior horn of the spinal cord, thereby inhibiting pain signals from reaching the central nervous system. (lian, 2023)

The incidence of C-sections has been increasing globally. According to the World Health Organization (WHO), the recommended C-section rate is between 5% and 15% per 1,000 live births. However, data from 2018–2019 indicate that C-section rates in Asia reached over 110,000 cases. (Muliani et al, 2020)

In Indonesia, the 2018 Basic Health Research (Riskesdas) reported that the national C-section rate stood at 15.3%, slightly exceeding WHO's recommendation, based on a sample of 20,591 women who gave birth in the previous five years across 33 provinces. (Damayanti & Nurrohmah, 2023).

Specifically, in South Sulawesi Province, the Makassar City Health Office reported 323,629 C-section deliveries in 2016 (Novianti & Mato, 2019). At Labuang Baji Hospital Makassar, the number of C-section births increased from 85 cases in 2009 to 112 in 2010 and 125 in 2011 (Wardani & Marlina, 2022)

Previous research has demonstrated the benefits of foot massage in postoperative pain reduction. A study by Sasri (2020) involving 27 post-C-section mothers found that a 20-minute foot massage administered over two consecutive days reduced pain levels from moderate to mild. Similarly, Sari and Rumhaeni (2020) reported that foot massage applied for 20 minutes over two days significantly reduced pain intensity in patients after abdominal or laparotomy surgery.

Additional findings by (Caesarea, 2024) revealed that post-intervention evaluation after 48 hours of foot massage therapy showed a reduction in pain scores from 5 to 2, accompanied by stable vital signs and visible relaxation in patients.

Based on the above evidence, foot massage therapy appears to offer a safe and effective non-pharmacological option for managing pain in post-C-section patients. This study therefore aims to explore the application of foot massage therapy in reducing postoperative pain in this population.

2. Methods

This study employed a descriptive case study design and was conducted at Labuang Baji Hospital, Makassar, over a period of six days from April 22 to 27, 2024. The participants, identified as Mrs. "N" and Mrs. "S," were selected based on the following inclusion criteria: first-day post-C-section status, moderate pain level as per the Numeric Rating Scale (NRS), and age between 20 and 30 years. Exclusion criteria included patients who were uncooperative during the study, experienced sudden loss of consciousness, or had severe bleeding conditions.

The research involved two participants. Data collection was carried out through interviews, direct observation, and documentation review. The instruments used included a standard operating procedure (SOP) for foot massage and the NRS observation sheet. The collected data were analyzed and presented in both tabular and narrative forms..

3. Results and Discussion

The results of the Case Study are presented below:

3.1. Subjek I (Participant "N")

Age : 31

Gender : Female
Last education : High School
Occupation : Housewife

Table 1. Observation Results of Foot Massage Therapy in Participant "N".

NO	Date	Implementation	Pain Level		
			Hours	Pretest	Posttest
1.	April 22 2024	Foot massage therapy	09.00-09.30	Moderate pain (6)	Moderate pain (5)
2.	April 23 2024	Foot massage therapy	09.00-09.30	Moderate pain (5)	Moderate pain (4)
3	April 24 2024	Foot massage therapy	09.00-09.30	Mild pain (3)	Mild pain (2)

Table 1. shows that on the first day, Participant "N" reported moderate pain with a score of 6 before receiving foot massage therapy, which decreased to a score of 5 after the intervention. On the second day, the pain level decreased from 5 to 4 following the massage. By the third day, the participant experienced mild pain, decreasing from a score of 3 to 2 after receiving foot massage therapy.

3.2 *Subjek II (Participant "S")*
Age : 22
Gender : Female
Last education : High School
Occupation : Housewife

Table 2. Observation Results of Foot Massage Therapy in Participant "S".

NO	Date	Implementation	Pain Level		
			Hours	Pretest	Posttest
1.	April 25 2024	Foot massage therapy	09.00-09.30	Moderate pain (5)	Moderate pain (4)
2.	April 26 2024	Foot massage therapy	09.00-09.30	Moderate pain (5)	Moderate pain (4)
3	April 27 2024	Foot massage therapy	09.00-09.30	Moderate pain (4)	Mild pain (2)

Table 2. shows that on the first day, Participant "S" experienced moderate pain with a score of 5 before receiving foot massage therapy, which decreased to a score of 4 afterward. On the second day, the pain level remained the same, decreasing again from 5 to 4 following the massage. On the third day, the participant reported a decrease in pain from a score of 4 (mild pain) to 3 after the intervention.

3.2 *Discussion*
This case study, conducted over six days from April 22 to 27, 2024, involved two participants who were assessed before and after receiving foot massage therapy. Pain levels were measured using a standardized questionnaire based on the Numeric Rating Scale (NRS). The intervention was administered in accordance with a structured protocol designed for post-Caesarean section patients.

At the initial assessment, Participant "N" reported moderate pain (score 6), which decreased to 5 after receiving the therapy. Participant "S" reported moderate pain (score 5), which also decreased to 4 following the intervention. These initial results suggest that foot massage had a measurable effect in reducing pain, even after the first session.

On the second day, Participant "N" continued to show improvement, with pain decreasing from 5 to 4. Similarly, Participant "S" experienced a consistent reduction from 5 to 4. It is important to note that Participant "N" consistently performed foot massage twice daily, with support from family members, while Participant "S" was less cooperative and only engaged in therapy sessions during the researcher's visits.

By the third day, Participant "N" reported mild pain, decreasing from a score of 3 to 2, while Participant "S" reported a reduction from 4 to 3. The greater improvement observed in Participant "N" appears to be related to higher compliance with the intervention protocol and the presence of family support. In contrast, Participant "S" lacked both consistent participation and caregiver involvement, which may have limited the effectiveness of the therapy.

These findings highlight the role of adherence and social support in enhancing non-pharmacological pain management. Similar results were reported by Sindi and Syahruramdhani (2023), who found that foot massage reduced pain levels in post-C-section patients but did not completely eliminate pain due to the gradual nature of surgical wound healing. Liestanto and Fithriana (2020) also confirmed the effectiveness of foot massage in decreasing pain after abdominal surgery.

Moreover, Rumhaeni et al. (2018) noted that 30-minute foot massage sessions performed one to two times daily were effective in lowering postoperative pain scores. However, they also emphasized the need for continuous monitoring, particularly if pain levels remain above a threshold of 3.

Overall, the present study reinforces the potential benefits of foot massage therapy as a complementary intervention for managing pain in post-C-section patients. The variation in outcomes between the two participants underscores the importance of patient engagement and family involvement in optimizing therapy outcomes.

4. Conclusions

Based on the case studies conducted with Participants "N" and "S" at Labuang Baji Hospital Makassar over a six-day period, it can be concluded that foot massage therapy contributes to a reduction in postoperative pain levels among patients recovering from Caesarean section surgery. The intervention proved more effective when applied consistently and supported by caregivers.

Foot massage therapy is recommended as a supportive non-pharmacological strategy in the pain management of post-Caesarean section patients. Further research with larger sample sizes is encouraged to validate these findings and explore broader clinical applications.

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