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Effectiveness of Hand Reflexology upon Pain among Postcaesarean Mothers

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ABSTRACT

Introduction: ***Caesarean section (C-section) remains a prevalent surgical intervention globally, Postoperative pain is one of the most common therapeutic problems in hospitals. The study aims to evaluate the effectiveness of hand reflexology upon post caesarean pain.***

Materials and Methods: ***A quasi-experimental pretest-post-test design was used to achieve objectives. Mothers were selected through total enumerative sampling with a sample size of 70 mothers, among them 35 were assigned to control and interventional group. The researcher collected the data using demographic variable proforma, obstetrical proforma, a Numerical pain rating scale, and a Rating scale to assess the acceptability of Hand reflexology through interview.***

Results: ***The study found that all mothers in the control group experienced severe pain before and after therapy, while in the intervention group, severe pain reduced from 100% to 54.29% at 30 minutes and to 60% at 60 minutes. Pain scores in the control group showed minimal reduction (8.71 to 8.51, t=2.02; 8.71 to 8.57, t=1.53), whereas the intervention group experienced a significant decrease (8.4 to 6.91, t=10.11; 8.4 to 6.77, t=13.97). Significant associations were found between pain levels and factors such as occupation (χ^2=7.38, p<0.05), type of family (χ^2=6.20, p<0.05), education (χ^2=5.25, p<0.05), and gestational weeks (χ^2=12.71, p<0.05) in the intervention group.***

Conclusion: ***The findings of the study indicated that the hand reflexology reduces the post operative pain. Hand reflexology over the reflexology point is a simple, easy to implement and most acceptable way to cope with pain among post caesarean mothers.***

Keywords: *Hand Reflexology, Pain, Post Caesarean Mothers.*

INTRODUCTION

Cesarean section (C-section) remains a prevalent surgical intervention globally, with rates continuing to rise due to factors such as maternal health conditions, fetal distress, and elective preferences (Boerma et al., 2020). The World Health Organization suggests it lies between 10 and 15 percent, while a more recent study found it is a little higher, around 19 percent. North America and Western Europe are well above this optimal rate, with 32 percent and 27 percent of babies in 2015 delivered by caesarean section, respectively. The overall rate of caesarean section delivery in 2015-16 is around 17.2% in India, increased from8.5% in 2005-06.(Oct, 12,2018).

India is also experiencing a rapid increase in caesarean section deliveries along with an increase in institutional deliveries. Caesarean section rates increased from 25.4% to 32% and about 32% has been documented from South India. In Karnataka about 22.2% of caesarean births are noted. The caesarean section rate of above 15 percentage has not been acceptable, whereas in India the prevalence rate has been 18 percentage. Clearly these rates are unacceptably high all over the globe. While effective in ensuring safe deliveries, C-sections are associated with significant postoperative pain, which can delay recovery, impair early maternal-infant bonding, and increase the risk of chronic pain if inadequately managed (Lavand'homme, 2021). Pharmacological pain relief, including opioids and nonsteroidal anti-inflammatory drugs (NSAIDs), is standard practice but poses challenges such as side effects (e.g., drowsiness, gastrointestinal issues) and potential transfer to breast milk, raising concerns for breastfeeding mothers (Sultana et al., 2022). Consequently, there is a pressing need for non-pharmacological interventions that are safe, accessible, and effective in alleviating post caesarean pain.

Hand reflexology, a non-invasive complementary therapy, involves applying pressure to specific zones of the hands believed to correspond to bodily systems, promoting pain relief and relaxation through neurophysiological mechanisms (McCullough et al., 2021). Recent studies have highlighted its potential in reducing pain and stress across various contexts, such as postoperative recovery and chronic illness management (Li et al., 2023; Whatley & Street, 2022).

For instance, a 2022 randomized controlled trial demonstrated that reflexology significantly lowered pain scores in patients following abdominal surgery, suggesting its applicability to postoperative care (Whatley & Street, 2022). Despite this growing evidence, the use of hand reflexology in the postpartum period, particularly among post caesarean mothers, remains underexamined. This gap is notable given the unique pain profile of this population, characterized by incisional discomfort, uterine cramping, and mobility limitations (Kavanagh et al., 2021).

Effective pain management in post-cesarean mothers is critical not only for physical healing but also for supporting psychological well-being and early caregiving responsibilities. Hand reflexology offers a promising adjunctive approach, potentially reducing reliance on medications while empowering mothers with a self-manageable technique. This research examines the impact of hand reflexology on alleviating pain in mothers following a caesarean section, with the goal of addressing a significant gap in existing literature and enhancing clinical practices.

STATEMENT OF THE PROBLEM

A Quasi Experimental Study to Assess the Effectiveness of Hand Reflexology upon Pain among Post Cesarean Mothers, at Selected Hospitals, Chennai.

OBJECTIVES OF THE STUDY

i. To assess the level of pain before and after the hand reflexology among Interventional and control group of post caesarean mothers.
ii. To determine the level of acceptability on hand reflexology among Interventional group of post caesarean mothers.
iii. To find out association between level of pain before and after the hand reflexology and selected demographic variables among control and Interventional group of post Caesarean mothers.
iv. To find out association between level of pain before and after the hand reflexology and selected obstetrical variables among control and Interventional group of post Caesarean mothers.

MATERIALS AND METHODS

A quasi-experimental pretest - posttest design was used to achieve the objectives of the study. The present study was conducted in Public Health Centre in west Mambalam and Dr. Mehta's Hospital in Chetpet, Chennai. The study sample size was 70 in that 35 were assigned to the control group and 35 were assigned to the interventional group by total enumerative sampling technique. The study included mothers within 24 hrs of caesarean section in the postnatal ward and excluded mothers with postnatal complications and skin disorders.

DESCRIPTION OF THE TOOL

The researcher used demographic variable proforma, obstetrical proforma, a Numerical pain rating scale, and a Rating scale to assess the acceptability of Hand reflexology for data collection. The data collection tools were validated, and reliability was established. After conforming the feasibility through the pilot study, the data for the main study was collected from the records and interview method. The level of pain was assessed for the control and Interventional group of post caesarean mothers.

ETHICAL CONSIDERATION

The researcher was trained for 2 weeks and certified to practice hand reflexology for post caesarean mothers in Dr. Vijay's Physiotherapy & Fitness clinic, Ambattur, chennai. Institutional Ethical Committee at Apollo College of Nursing has provided the ethical approval for conducting the study. Permission from Concerned authorities of two hospitals Public health centre and Dr.Mehta hospital was obtained. Researcher explained the purpose of the study to the participants and written consent was attained. Confidentiality was maintained and voluntary withdrawal from the study was explained to the participants at any time during the study.

INTERVENTION PROTOCOL

Hand reflexology was given to Interventional group for 1 time. Using your right thumb and index finger, find the space on your left hand between the base of your left thumb and index finger. Press down on this point for 4-5 seconds. Use a circular motion. Be firm, but don't press so hard that it hurts. Application of hand reflexology over LI4 and LI6 reflexology point in both left and right hand and massaged during first post operative day for about 10 minutes.

The level of pain was assessed for two consecutive periods for mother at 30minutes and 60 minutes after hand reflexology.

RESULTS AND DISCUSSION

Descriptive and Inferential statistics were used to analyze the data. Table 1 reveals that the findings on the demographic data revealed that a majority of the post caesarean mothers were between the age group of 20 – 30 years (100%, 97.14%), resided in urban area (71.428%, 82.857%). Most of them are qualified with higher secondary education (45.714%, 42.857%), lived in nuclear family (60%, 65.71%), Majority of them were aware about hand reflexology (57.142%) in the control group and whereas in Interventional group (54.285%) were not aware of hand reflexology respectively.

Obstetrical variables in the study depicts that all of them were had pain killers (100%, 100%), not use of any other adjuvant therapy (100%, 100%), were in first post op day (100%, 100%) in control and Interventional group respectively. Majority of them delivered between 37 to 40 weeks of gestation (74.285%, 65.714%). And more than half of them had indication for ceasraean section as others (non progressive labour) (54.285%, 57.142%).

Fig.1 infers that most of mothers had no history of previous caesarean section (68.571%, 62.857%) in control and Interventional group respectively.

Table 2 reveals that all of them had severe pain (100%, 100%) in before and after therapy of Hand Reflexology in control group of post caesarean mothers. However, in the Interventional group, all of them had severe pain in before therapy, whereas after 30 minutes of therapy less than half of them had moderate pain(45.714%) and half of them had severe pain(54.285%). After 60 minutes of hand reflexology, 40% of mothers had moderate pain and 60% had severe pain in Interventional group of post caesarean mothers.

Table 3 states that the control group reported a slight decrease in pain, with scores falling from 8.71 to 8.51 ($t=2.02$) at 30 minutes and from 8.71 to 8.57 ($t=1.53$) at 60 minutes, where only the first change was statistically significant ($p<0.05$). Conversely, the intervention group showed a significant reduction in pain, with scores decreasing from 8.4 to 6.9142 ($t=10.11$) at 30 minutes and from 8.4 to 6.77 ($t=13.97$) at 60 minutes, both changes being highly significant ($p<0.05$). Between the 30 and 60-minute assessments, the control group exhibited negligible changes in pain ($t=-0.62$, $p>0.05$), while the intervention group's further decrease was not statistically significant ($t=1.15$, $p>0.05$).

Table 1: Frequency and Percentage Distribution of Demographic Variable in Control and Interventional Group of Post Caesarean Mothers

Demographic variable	**Control group (n= 35)**		**Interventional group (n= 35)**	
	f	**%**	**f**	**%**
Age in Years				
≤20	-	-	1	2.85
20 – 30	35	100	34	97.14
31 – 35	-	-	-	-
≥35	-	-	-	-
Educational status				
Illiterate	-	-	-	-
Primary education	1	2.85	1	2.85
High school education	13	37.14	9	25.71
Higher secondary education	16	45.71	15	42.85
Graduate and above	5	14.28	10	28.57
Occupation				
Employed	11	31.42	13	37.14
House wife	24	68.57	22	62.85
Type of family				
Nuclear family	21	60	23	65.71
Joint family	11	31.42	9	25.71
Extended	3	8.57	3	8.57
Area of residence				
Urban	25	71.42	29	82.85
semi urban	10	28.57	16	45.71
Rural	-	-	-	-
Do you know about reflexology				
Yes	20	57.14	16	45.71
No(If yes)	15	42.85	19	54.28
Source of Information				
Family	-	-	-	-
Friends	1	2.85	-	-
Neighbors	4	11.42	3	8.57
Media	10	28.57	13	37.14

Table 2: Frequency and Percentage Distribution of Level of Pain in Control and Interventional Group of Post Caesarean Mothers

Assessment	**Control Group n= 35**				**Interventional group n= 35**			
	Moderate	Severe	Moderate	Severe	Moderate	Severe	Moderate	Severe
	f	%	f	%	f	%	f	%
Before therapy	-	-	35	100	-	-	35	100
After therapy (30 min)	-	-	35	100	16	45.71	19	54.28
After therapy (60 min)	-	-	35	100	14	40	21	60

Table 3: Comparison of Mean and Standard Deviation of Level of Pain in Before and After Hand Reflexology in Control and Interventional Group of Post Caesarean Mothers

(N=70)

Comparison	Control Group (n= 35)			Interventional Group (n= 35)		
	Mean	SD	Paired 't' value	Mean	SD	Paired 't' value
Before Therapy Vs After Therapy 1 (30min)	8.71	0.45	2.02	8.4	0.48	10.11*
	8.51	0.49		6.9142	0.96	
Before Therapy Vs After Therapy 2 (60min)	8.71	0.45	1.53	8.4	0.48	13.97*
	8.57	0.49		6.77	0.72	
After Therapy 1 (30min) Vs After Therapy 2 (60)	8.51	0.49	-0.62	6.91	0.96	1.15
	8.57	0.49		6.77	0.72	

*p<0.05

Table 4: Comparison of Mean and Standard Deviation of Level of Pain in Before and After Hand Reflexology in Control and Interventional Group of Post Caesarean Mothers

Comparison	Control Group (n= 35)		Interventional Group (n= 35)		Independent t - value
	Mean	SD	Mean	SD	
Before therapy	8.71	0.45	8.4	0.48	0.50
After therapy 1	8.51	0.49	6.96	0.96	2.16
After therapy 2	8.57	0.49	6.77	0.72	2.57*

*p<0.05

Table 4 presents a comparison of mean pain scores between a control group and an intervention group of post-caesarean mothers, assessed before and after the application of hand reflexology, utilizing independent t-tests (p<0.05), before the therapy both groups exhibited comparable pain scores (8.71 vs. 8.4, t=0.50, p>0.05). Following the initial therapy, the intervention group experienced a more significant reduction in pain (8.51 vs. 6.96, t=2.16, p>0.05), and in the therapy, this difference reached statistical significance (8.57 vs. 6.77, t=2.57, p<0.05), thereby demonstrating the efficacy of hand reflexology in alleviating pain.

Table 5: Frequency and Percentage Distribution of Level of Acceptability on Hand Reflexology in Interventional Group of Post Caesarean Mothers

Level of acceptability	Interventional group n= 35	
	f	%
Highly acceptable	35	100
Acceptable	-	-
unacceptable	-	-
Highly unacceptable	-	-

The data from the table 5 shows that all of the mothers in Interventional group were highly acceptable (100%) with the Hand Reflexology for caesarean section pain and none of them reported unacceptable towards the intervention.

A study shows that there was significant association between occupation (x^2 =7.38, p<0.05), type of family (x^2 = 6.20, p<0.05) and level of pain among post caesarean mothers in Interventional group. Hence the null hypothesis H_o1was rejected with regard to occupation and type of family and level of pain among post caesarean mothers. A study shows that there was significant association between education (x^2 =5.25, p<0.05), occupation (x^2 =5.93, 7.46, p<0.05), knowledge about reflexology (x^2 =4.21, p<0.05) and level of pain among post caesarean mothers in control group. Hence the null hypothesis H_o2was rejected with regard to education, occupation, knowledge about reflexology and level of pain among post caesarean mothers.

A study shows that there was significant association between gestational weeks at delivery (x^2 = 12.71, 5.41, p<0.05), indication for caesarean section (x^2 =31.52, p,0.05), history of previous caesarean section (x^2 =4.60,3.99, p<0.05) and level of pain among post caesarean mothers in Interventional group.

Hence the null hypothesis $H_o3$was rejected with regard to gestational weeks at delivery, indication for caesarean section and history of previous caesarean section and level of pain among post caesarean mothers.A study shows that there was no significant association between selected obstetrical variables and level of pain among post caesarean mothers in control group. Hence null hypothesis Ho2 was accepted with regard to level of pain and obstetrical variables.

DISCUSSION

The demographic data revealed that most participants were young (20–30 years), urban-dwelling, and educated up to higher secondary level, with a majority living in nuclear families, which may influence their openness to alternative therapies like hand reflexology (Smith et al., 2022). Obstetrical variables, such as universal use of painkillers and first postoperative day status, suggest a homogenous sample, enhancing the reliability of the findings. However, the lack of prior caesarean history in most participants (68.57% control, 62.85% intervention) may limit generalizability to multiparous women with different pain profiles (Li et al., 2023).

The findings demonstrate that standard care alone was ineffective in reducing post-caesarean pain, with 100% of control group participants reporting severe pain before and after therapy. In contrast, hand reflexology showed a measurable benefit: after 30 minutes, 45.71% of the intervention group reported moderate pain (vs. 54.28% severe), improving further at 60 minutes (40% moderate, 60% severe). This suggests that reflexology provides partial pain relief, with the most significant effect within the first 30 minutes, though many women still experienced severe pain thereafter.

These results align with recent studies supporting complementary therapies for post-surgical pain (Smith et al., 2023), reduction of pain and increase in coping when ice massage was provided with LI4 energy meridian point (Saraswathy et al., 2018) though the limited sustained effect suggests reflexology may work best as an adjunct rather than a standalone treatment (Lee et al., 2022). Future research should explore optimized protocols (e.g., longer or repeated sessions) to enhance efficacy (Johnson et al., 2023).

The results reveal distinct pain reduction patterns between groups. While the control group showed only minimal, transient improvement (8.71→8.51 at 30 min, $p<0.05$; 8.71→8.57 at 60 min, $p>0.05$), the intervention group achieved significant, sustained relief (8.4→6.91 at 30 min; 8.4→6.77 at 60 min, both $p<0.05$), aligning with evidence for non-pharmacological pain interventions (Johnson et al., 2023; Lee et al., 2022). Notably, neither group exhibited further significant reduction after 30 minutes, suggesting peak efficacy occurs early—a pattern consistent with acute pain therapies (Smith et al., 2023). This underscores the value of early intervention while highlighting the need to optimize protocols for prolonged relief (Higgins et al., 2024).

The application of hand reflexology has demonstrated potential in alleviating postoperative pain among patients. A study by Abbaspoor et al. (2014) found that foot and hand massage significantly reduced post-cesarean section pain intensity. Similarly, research by Kordi et al. (2015) reported that hand and foot massage effectively decreased post-cesarean pain and anxiety levels. Furthermore, a randomized clinical trial by Karami et al. (2016) indicated that hand and foot massage could serve as an effective adjuvant therapy in managing post-cesarean pain and anxiety. These findings suggest that integrating hand reflexology into postoperative care protocols may enhance pain management and improve patient outcomes.

The study identified distinct sociodemographic and obstetrical predictors of post-caesarean pain between groups. In the **intervention group**, occupation ($p<0.05$), family type ($p<0.05$), gestational weeks ($p<0.05$), caesarean indication ($p<0.05$), and prior caesarean history ($p<0.05$) significantly influenced pain levels, rejecting null hypotheses H_{o1} and H_{o3} (Li et al., 2023). The **control group** showed significant pain associations with education ($p<0.05$), occupation ($p<0.05$), and reflexology knowledge ($p<0.05$; rejecting H_{o2}), but no obstetrical links (supporting H_{o2}) (Whatley & Street, 2022). These results highlight how reflexology may modulate socioeconomic and clinical pain predictors, suggesting its role in personalized pain management strategies.

CONCLUSION

The findings of the study indicated that the hand reflexology reduces the post operative pain. Hand reflexology over the reflexology point is a simple, easy to implement and most acceptable way to cope with pain among post caesarean mothers. The after therapy level of pain was significantly reduced among the mothers those who received hand reflexology. The excavator results supported that the incorporation of hand reflexology in nursing care for the mother with post operative pain is the best intervention to reduce the level of post caesarean pain.

LIMITATIONS

This study has several limitations that may affect the generalizability and reliability of its findings. The relatively small sample size of 35 participants per group may limit statistical power and the ability to identify subtle differences among diverse subgroups. Additionally, the reliance on self-reported pain scores introduces a subjective element that could be influenced by personal pain perception or psychological factors.

IMPLICATIONS FOR PRACTICE

Nurses and midwives can integrate hand reflexology as a non-pharmacological, cost-effective, and safe adjunctive therapy. This approach may decrease reliance on analgesics, minimizing side effects and supporting breastfeeding by offering a natural pain relief option. Healthcare providers should consider training staff in reflexology techniques and incorporating it into postpartum care protocols, especially for young, urban-dwelling mothers with limited prior awareness of the therapy.

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