

## Effect of Finger Handheld Relaxation Technique on Incisional Pain Intensity among Post Caesarean Women

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### Abstract

**Background:** One of the most bothersome complaints from women after a caesarean section is pain (C.S). A possible method for reducing this pain is the use of non-pharmacological approaches like the finger handheld relaxation technique. **Aim of this study** was to assess the effect of finger handheld relaxation technique on incisional pain intensity among post caesarean women. **Subjects and Method. Study design:** -Quasi experimental design study & control group was utilized in the current study. **Setting:** The study was conducted at the postpartum unit- maternity hospital at zagazig University Hospital, **Subjects:** A purposive sample of totally one hundred and two (102) postnatal women were recruited to participate in the study using a purposive sampling technique, 51 women as experimental group and 51 women as control group. **Tools of data collection:** Three tools were used for data collection; structured interviewing questionnaire, numerical rating scale & Likert Scale. **Results:** Indicated that; after the intervention, finger handheld relaxation technique significantly decreased pain intensity among post cesarean women in the experimental group compared to the control group. **Conclusion:** The study concluded that; the finger handheld relaxation technique was effective, inexpensive and simple method available to help post-c-section women with pain management. **Recommendations:** Based on the findings of the current study the following recommendation is suggested: finger handheld relaxation technique should be integrated into the post-C.S. nursing intervention protocols.

**Keywords:** *Finger handheld relaxation, Intensity, Pain & Post cesarean section.*

### Introduction

A woman's life is significantly impacted by the painful bio-psycho-social experience of childbirth. This experience describes how the mother will feel about the baby, think positively about herself, change in a healthy way to be a mother, and gain experience for future pregnancies. The most significant event in a woman's life is giving birth, whether it occurs vaginally or via surgical caesarean section. The main objectives are to save the mother's life and deliver the baby without risk (Preethi Jaznams, Jebakumari, 2016).

An incision is made in front of the uterus during the caesarean section delivery process. Prolonged deliveries, problems from hypertension, preeclampsia, and failure during induction labour are some causes for a caesarean section (Robertson & White, 2021). Up to 32% of deliveries in the United States in 2007 were performed via caesarean section, which is a common procedure (Menacker & Halmilton, 2010). The estimated CS rate for the three years prior to the study was 55.1%, with Behira having the highest rate at 67.8% and Assiut having the lowest at 49.0%. The percentage of CSs in Egypt has been rising consistently over the past few years

and has now alarmingly reached a certain point. 51.8% of respondents in the 2014 Egyptian Demographic Health Survey (EDHS) had CSs, which is four times the WHO's maximum criterion (2013). In 6 governorates studied, the rate was high (34.8–56%) and reached 43.8% in the 2015 Egypt Health Issue Survey Wahdan et al., (2022).

Mothers who undergo a caesarean section report more intense pain throughout the early stages of labour and ongoing discomfort for six to a year following delivery compared to mothers who give birth vaginally. Pain, a complicated issue, is one of the numerous worries that women who have caesarean births have. Somatic and visceral pain are the two types of post-c-section pain mechanisms. Somatic pain coming from neural receptors inside the abdominal wound contains both coriaceous and deep substances. Visceral uterine neural impulses are another source of pain signals. The T10-L1 spinal fibres are used by both techniques to transmit pain to the spinal cord. Visceral pain is recognized as being diffuse, whereas somatic pain is confined, making these two pains very different from one another (Henriksen et al., 2017).

Daily functioning is impacted by post-cesarean pain,

which also contributes to ongoing postoperative discomfort. But even after C.S., women still have the greatest need for effective pain treatment. It will create dependence, worry, stress, loss of control, distorted body image, and sleep issues if it is not adequately controlled. This makes it necessary for nurses to look for a pain-reduction solution right away (**Sutton & Carvalho, 2017**).

Painkillers can lessen the perception of pain. Pharmacological or non-pharmacological treatments are also options. Obstetric nurses' ability to give care is significantly limited by post-caesarean methods for pharmacological pain control. As a result of the negative effects of widespread pharmaceutical use, which include nausea, vomiting, and a delay in hospital discharge. Additionally, medications that can be used to treat pain can be released in breast milk and sedate the newborn as well (**Roger Chou, et al., 2016**).

Consequently, it is crucial that the method used to manage post-caesarean Pain is efficient, safe, and does not restrict the mother's mobility or capacity to care for her baby. Breastfeeding mothers' neonates shouldn't be impacted. Therefore, it is essential to treat this particular type of pain with safe, simple, and effective pain-relieving methods supported by empirical data (**Abdel-Aziz, 2014**).

Complementary treatment is a cutting-edge way for treating pain that includes hypnosis, cutaneous stimulation, massage, cold and heat therapy, transcutaneous electrical nerve stimulation (TENS), and relaxation techniques. In many cultures around the world, massage treatment has a long history. Nowadays, people use numerous types of massage therapy to boost their health in a variety of ways. A natural kind of mild contact, massage involves rubbing every part of the body in order to provide comfort on a physical and psychological level, as well as general relaxation and reduce pain perception, it affects the cardiovascular, neurological, and locomotor systems as well as the nervous system (**Massage - Physiopedia, 2021**).

Relaxation is one of the ways to decrease pain or to prevent the presence of pain by decreasing muscle tension. It is an effort to minimize the pain stimulation by resting or relaxing body muscles. This technique is easy to be learnt by mothers with post-partum. They simply take a few slow, deep breaths while maintaining a regular breathing pattern, relax, and the body releases endorphins or relaxes naturally under normal circumstances. Fingerhold relaxation technique is an easy way to manage emotion and to develop emotional intelligence. **Cane, 2013 & Potter; Perry (2006)** stated that Patients were able to control their emotions and physical tension when using relaxation techniques when they felt

uncomfortable or painful (**Habid et al.,(2020)**).

Finger hand relaxation technique is an easy way to manage emotions and develop emotional intelligence. Along our fingers there is energy meridians or channels that connect to different organs and emotions. The reflection points on the hand cause an instinctive response to be triggered when gripping. The stimulus will result in a shock wave or the loss of brain electricity. The wave enters the brain, where it is quickly processed before reaching the injured body organs' nerves, removing the obstruction in the energy flow. Energy will be absorbed by the human body, which can also control its temperature, heart rate, blood pressure, and muscle tension. This finger hand-held technique is quite helpful in everyday life since it can make us more composed and alert so that we can react or act in the best way possible (**Astuti et al., 2018**).

Finger handheld relaxation also helps the mother to feel comfortable and reduce anxiety so that the pain is reduced in a relaxed state, naturally will trigger the release of the hormone endorphins which are natural analgesics from the body, so that it can reduce pain.

Patients who practice relaxation techniques are better able to manage their feelings and discomfort. After a caesarean section, rubbing the hands and activating the neurons can help to relieve pain and reduce anxiety (**Rosmala et al., 2020**).

The nurse participates in the medical management of pain and plays a critical role in the care of post-caesarean section women. So, she must be knowledgeable about the pharmacological effects and adverse effects of these medications. It is advisable to use sedation and pain medication both during and for at least two hours after a caesarean section. Finger handheld relaxation technique is a non-pharmacological Pain medication that is conveniently accessible, affordable, and safe for nursing mothers (**Kintu et al., 2019**).

### **Significance of the study:**

Pain is one of the most frequent problems in the early post-CS period. Typically, only pharmacological approaches are used to treat it. Non-pharmacological methods supported by credible research findings are needed to aid in the treatment of post-c-section pain. Pharmacological management has side effects and is more expensive than non-pharmacological care. When finger handling relaxation therapy is included in the postsurgical (post-Cesarean) routine, less pharmacological treatment may be sought with the added benefit of nearly no side effects (**Renuka et al., 2020**). Since Egypt is a major country with less resources and facilities, it is advised to use low-cost pain relief techniques. Therefore, the present study was conducted to assess the effect of finger handheld

relaxation technique on incisional pain intensity among post cesarean section women in an attempt to provide sound research findings in relation to using new nursing strategies to help mothers post-cesarean to retrieve their maternal role of caring for their newborns, families and themselves.

#### **Aim of the Study**

The aim of this study was to assess the effect of finger handheld relaxation technique on incisional pain intensity among post caesarean women .

#### **The objective of the present study was to:**

- To assess the level of pain among post-caesarean women in experimental and control group before and after finger handheld relaxation technique.
- To assess the level of satisfaction and attitude among post-caesarean women in experimental and control group before and after finger handheld relaxation technique.
- To explore common conditions that aggravating post CS pain among women in both groups.
- Determine the source of women information for reliving pain.

#### **Research Hypothesis: -**

**To achieve the aim of this study, the following research hypothesis was formulated:**

Women who will receive finger handheld relaxation technique (independent variable) will show decreased post-cesarean incisional pain intensity (dependent variable) than who received the routine post cesarean section hospital therapy.

### **Subjects and Methods**

#### **Technical Design**

The technical design included description of the research design, study setting, subjects, sample size, and tools for data collection.

#### **Research Design:**

**Quasi experimental design study & control group** was utilized in the current study to investigate the effectiveness of the treatment through the difference between experimental and control groups.

#### **Study setting:**

The current research study was conducted in the postpartum unit- maternity hospital and at Zagazig University hospital. This hospital is one of the largest public teaching hospitals in the Sharqiyah, where a great number of patients from different sociodemographic and economic characteristics come to receive health care from different regions.

#### **Subjects**

In this study, a non-probability purposive sampling technique was adopted. The researchers totally enrolled 102 post cesarean mothers in the postnatal period that fulfilled the inclusive criteria at the

maternity hospital/ zagazig University then they were equally divided into two groups (51 as experimental group and 51 as control group). The experimental group receives finger handheld relaxation treatment program, and the control group received the post cesarean section routine hospital care for management of pain.

#### **Sample size:**

Assuming incidence of moderate intensity pain post intervention of study in control group was (42.3%), Whereas incidence of moderate intensity pain post intervention in experimental group which managed via finger handheld relaxation technique was (11.5%) (**Dinengish & Suciarmi, 2017**). Confidence level is 95% with power of study 95%. Sample size calculated using open epi is 51 women in each group.

#### **Inclusion criteria: -**

The following inclusion criteria which guarantee homogeneity of the sample: -

- Women who have undergone cesarean section delivery.
- Women within the first 24 hours after C.S delivery.
- Free from any chronic diseases.
- Women without any complication ex Diabetic, bleeding, puerperal sepsis.
- Who are not getting analgesic
- Healthy extremities (hands) and free from burn wound, injury, inflammation and eczema.
- The patients who are conscious and willing to be respondents.

#### **Variables**

The independent, dependent, and demographic variables used in this study are all present.

**Independent variable:** Finger handheld relaxation technique.

**Dependent variable:** Incisional pain intensity among post caesarean women.

**Demographic variables:** General Information: Age, educational status, residence and occupation. Obstetrical Information: Parity, gestational age and previous C.S.

#### **Tools of data collection:**

**Tool (I): Structured interview schedule:** Was developed by the researchers after reviewing related literature (**WHO, 2021; Robertson & White, 2021**); It was composed of **three parts:**

**Part (1):** It includes demographic data which consisted of 4 items related to age, educational level, occupation, and residence.

**Part (2):** It includes the obstetrics history of patients; it consisted of 3 items about parity, gestational week and previous cesarean history.

**Part (3): Mother's knowledge concerning post cesarean pain:** assessment of women' knowledge about pain relief measures post cesarean section and source of their information.

**Pain intensity was evaluated by using following tool:**

**Tool (II): Numerical Rating Scale(NRS)** NRS is an assessment scale with Patients are instructed to indicate a point on the linear line indicating the severity of pain, which has marks spaced 1 cm apart and ranges from 0 (no pain) to 10 (worst pain possible). It is favored by many national and international scientists because it may be used to accurately assess patients' levels of pain (**Duncan, Bushnell, and Lavigne, 1989**).

The following pain levels are represented by the values on the pain scale.

**0 - No Pain**

**1 - 3 - Mild Pain**

**4 - 6 - Moderate pain**

**7 - 10 - Severe pain**

**0-10 NUMERIC PAIN RATING SCALE**



**Toll (III): -5- point Likert Scale:**

The Likert scale is a five (or seven) point scale which is used to allow the individual to express how much they agree or disagree with a particular statement. It (typically) provides five possible answers to a statement or question that allows respondents to indicate their positive-to-negative strength of agreement or strength of feeling regarding the question or statement. In the present study at 12 hours after a caesarean section, it was used to assess mothers' satisfaction and attitude regarding pain management among women in both groups. According to the scale by (**Allen et al., 2007**),

**Satisfied = 2,**

**Mildly satisfied = 1**

**Dissatisfied = 0.**

**Operational design:**

The preparatory phase, validity, reliability, administrative design, ethical consideration, pilot study, and fieldwork were all covered in the operational design.

**Preparatory phase**

Using books, journals, the internet, newspapers, magazines, other studies conducted in the same field, and theoretical understanding of many aspects of the research subjects, the researchers revised recent linked literature. All this assisted in the development

of the date collection tools.

**Tools validity and reliability:**

Three specialists in the field of obstetrics and gynecological nursing evaluated the tools' content validity, clarity, comprehensiveness, appropriateness, and relevance. To ensure clarity and content suitability for the internal consistency of the tools, modifications were made in accordance with the panel's verdict.

**Administrative Design.**

An official permission was obtained by submitting an official letter from Zagazig University's Faculty of Nursing to the study setting's responsible authorities to obtain their permission for data collection.

**Ethical consideration**

All ethical issues were taken into account while writing the report and the researchers made sure the subjects' confidentiality and privacy were upheld. After the researchers introduced themselves to the mothers and gave a brief explanation of the investigation's nature and goal, the women gave their verbal consent to participate in the study. Additionally, mothers were made aware that all data collected throughout the trial will be kept private and utilized only for research.

**Pilot study:-**

Pilot study was conducted on 10% of the study subjects (10 subjects) who were selected and fulfilled the inclusion criteria. Oral consent was obtained from the subjects for participating in the study. Pilot study aims to insure that the study tools clear, simple and to estimate time need to fill it. Findings of the pilot study demonstrated that the study was feasible and practicable.

**Field work:**

**The field work was achieved through the following sequences:**

The study site was visited by the researchers repeatedly until the required sample size was attained. They have visited the previously selected setting three days/ a week (Saturday, Monday and Wednesday). On the day of the operation, the researchers conducted individual 15-minute interviews with each woman. They initially established up a friendly rapport with the post-cesarean women by having brief conversations. They introduced themselves to the woman and explained the purpose of the study as well as oral consent was obtained then tool 1 (part 1,2) was collected from the woman. Then researchers interviewed the woman after the operation by three hours. Data was collected within 3 months, from the beginning of March, 2022 to the end of May, 2022. The researchers used face-to-face interviews.

Then the intervention achieved through the following sequences.

**- Finger handheld relaxation technique:**

A finger handheld relaxation also known as finger hold it is a relaxation technique used to relieve or reduce the intensity of postoperative pain. It is an easy way to manage emotions and develop emotional intelligence (Moomina & Suprajitno, 2017). There are energy pathways, or meridians, that run the length of our fingers and are linked to numerous bodily functions and emotions. The main specialized intervention technique included holding each of the five fingers one by one, thumb to little/pinky finger about 3 to 5 minutes each finger when the patient felt pain. Since the grip of the finger warms the sites of entry and entry of energy to the meridians (energy channels) on our fingertips, holding a finger while breathing deeply (relaxation) can help to reduce and heal bodily and mental strain (Haniyah & Adriani, 2019).



**Picture: Finger Hand Held Relaxation**

The mother was informed about the procedure. The researchers were recruited 2 mothers per day and worked individually with each one. Firstly, the control group was selected according to the previously mentioned sample criteria. Secondly, the intervention group was chosen according to the previously mentioned sample criteria. The procedure was given by lying on the bed with closed eyes and deep breathing and the researchers, after washing their hands and cleaning the patient's hands with a wet towel, performed the finger handheld intervention. The unpleasant reported feelings caused by CS delivery before and after intervention were observed by the researchers. Handheld finger relaxation technique was conducted for 30-50 minutes post cesarean section. It is given every 6 and 12 hours. In the control group, in the other hand, the researchers went to the women's bedside for 30 minutes, and had an informal chat with them.

Both groups were examined at three hours following surgery; the researchers used a numerical rating scale to assess each participant's level of pain (pretest). The control group was left for routine hospital care, and the intervention was applied to **the experimental group**. To determine the ratio of sensitivity before and after treatment, the assessment of pain level was repeated (posttest) for both groups. The degree of satisfaction and attitude was also assessed for both

groups after 12 hours.

**Evaluation phase:**

The mothers in the experimental and control groups were assessed and rated on their "self-reported" pain levels using the pain scale (posttest) every 6 and 12 hours at the end of the intervention. In addition, after 12 hours the level of women's satisfaction in both groups was measured. The researchers met with each mother for 30 minutes to evaluate her progress and document their findings on an evaluation form.

**Statistical analysis**

All data were collected, tabulated and statistically analyzed using IBM Corp. Released 2015 (IBM Corp, 2015). IBM SPSS Statistics for Windows, Version

23.0. Armonk, NY: IBM Corp. Quantitative data were expressed as the mean  $\pm$  SD, (range), and qualitative data were expressed as number & (percentage). t test was used to compare between two groups of normally distributed variables.

. Percent of categorical variables was compared using Chi-square test all tests were two sided. p-value < 0.05 was considered statistically significant, p-value < 0.001 was considered statistically highly significant, p-value  $\geq$  0.05 was considered statistically insignificant.

Results

Table (1): Distribution of the studied women according to their Socio demographic characteristics (n = 102).

Variables	Experimental group (n=51)		Control group (n=51)		χ <sup>2</sup>	p-value
	No.	%	No.	%		
<b>Age per years</b>						
<25 years	13	25.5	12	23.5	0.34	0.84
25-34 years	32	62.7	31	60.8		
=>35 years	6	11.8	8	15.7		
<b>Mean ±SD</b>	28.2±5.1		29.1±4.9			
<b>Range</b>	20-41		20-40			
<b>Patients ' education</b>						
Primary	26	51.0	23	45.1	3.4	0.18
Secondary	22	43.1	19	37.3		
University	3	5.9	9	17.6		
<b>Occupation</b>						
Working	12	23.5	19	37.3	2.3	0.13
House wives	39	76.5	32	62.7		
<b>Residence</b>						
Urban	15	29.4	16	31.4	0.046	0.83
Rural	36	70.6	35	68.6		

χ<sup>2</sup>: Chi square test p-value < 0.05 significant, p-value ≥ 0.05 insignificant.

Table (2): Distribution of the studied women according to their obstetric history (n = 102).

Variables	Experimental group (n=51)		Control group (n=51)		χ <sup>2</sup>	p-value
	No.	%	No.	%		
<b>Parity</b>						
<3	24	47.1	20	39.2	0.64	0.42
≥3	27	52.9	31	60.8		
<b>Previous cesarean section</b>						
Yes	30	58.8	27	52.9	1.4	0.23
No	21	41.2	24	47.1		
<b>Gestational age per weeks</b>						
<b>Mean ±SD</b>	38.9±1.0		38.5±1.5		1.96	0.052
<b>Range</b>	38-40		37-41			

χ<sup>2</sup>: Chi square test p-value < 0.05 significant, p-value ≥ 0.05 insignificant.

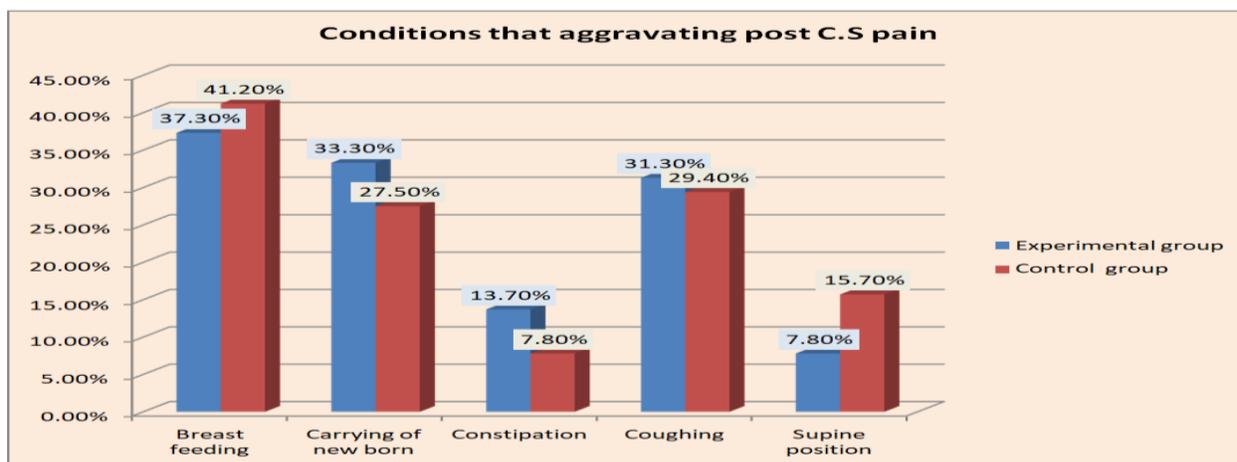


Figure (1): Distribution of the studied women according to Conditions that aggravatingpain n= (102)

**Table (3): Distribution of the studied women according to Observed mother's behaviors immediately post cesarean section (n=102).**

Variable	Experimental group (n=51)		Control group (n=51)		$\chi^2$	p-value
	No.	%	No.	%		
<b>Observed mother's behaviors immediately post cesarean section due to pain</b>						
Immobilization	19	37.3	15	29.4	10.5	0.11
Hugging of her mother	10	19.6	4	7.8		
Lip pitting	7	13.7	8	15.7		
Clenched teeth	6	11.8	5	9.8		
Crying	4	7.8	3	5.9		
Moaning	3	5.8	14	27.5		
Restlessness	2	3.9	2	3.9		

 $\chi^2$ : Chi square test p-value < 0.05significant, p-value  $\geq$  0.05 insignificant.**Table (4): Distribution of women' Knowledge about posts Cesarean Section pain = (102).**

Variable	Experimental group(n=51)		Control group(n=51)		$\chi^2$	p-value
	No.	%	No.	%		
<b>Woman's knowledge regarding pain relief measures post C.S:-</b>					1.01	0.003*
Correct	32	62.7	27	52.9		
Incorrect	19	37.3	24	47.1		
<b>Methods of pain relievers</b>					1.11	0.775
Analgesics	20	39.2	13	25.5		
Hot drinks	15	29.4	9	17.6		
Rest	7	13.7	8	15.7		
Massage/ relaxation exercises	18	35.3	12	23.5		
<b>Source of information regarding C.S relieving pain</b>					0.69	0.95
printed media	19	37.3	17	33.3		
Electronic media	13	25.5	12	23.5		
Health professionals	12	23.5	13	25.5		
Friends/relatives	7	13.7	9	17.6		

 $\chi^2$ : Chi square test p-value < 0.05significant, p-value  $\geq$  0.05 insignificant.**Table (5): Distribution of the studied women according to the Severity of pain before and after finger handheld relaxation technique (n= 102).**

Variable	Experimental group		P1	Control group		P2	Between groups	
	Pre	Post		Pre	Post		P3	P4
Severity of pain								
Mild	4(7.8)	22(43.1)	0.0001 (HS)	3(5.9)	3(5.9)	0.001 (HS)	0.92(NS)	0.0001 (HS)
Moderate	22(43.1)	22(43.1)		22(43.1)	32(62.7)			
Severe	25(49.0)	7(13.7)		26(51.0)	16(31.4)			

P1 compare (pre &amp; post experimental group), P2 compare (pre &amp; post control group),

P3 compare (pre experimental group &amp; control group), P4 compare (post experimental group &amp; control group),

HS: highly significant  $p < 0.001$ . S: significant  $p < 0.05$ ., NS: no significant  $p > 0.05$ .

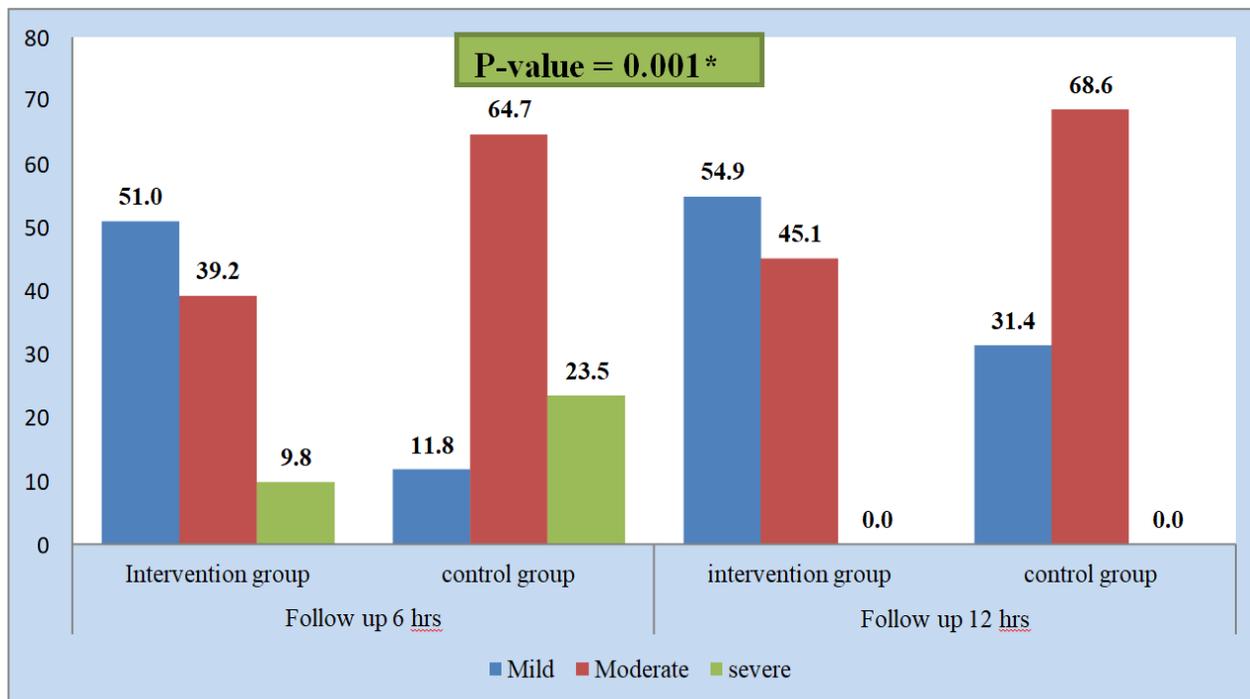


Figure (2): Distribution of the studied women according to assessment of the level of pain (6 h) and (12 h) after finger handheld relaxation technique (n= 102).

Table (6): Comparison between Experimental and control groups to mother's satisfaction and their attitude regarding pain relief measures post Cesarean section n=(102).

Variables	Experimental group		Control group		$\chi^2$	p-value
	No.	%	No.	%		
<b>Post cesarean incisional pain management</b>						
Satisfied	30	58.8	12	23.5		
Slightly Satisfied	15	29.4	23	45.1	14.5	0.001**
Not satisfied	6	11.8	16	31.4		

$\chi^2$ : Chi square test p-value < 0.05 significant,

Table (7): Relation between Pain level among experimental group immediately after finger handheld relaxation intervention and their basic characters. N=51

Variables	Pain level immediately after intervention						N	$\chi^2$	P
	Mild pain n.22		Moderate pain n.22		Severe pain n.7				
	No.	%	No.	%	No.	%			
<b>Age group</b>									
<25 years	8	61.5	5	38.5	0	.0	13	9.9	0.042*
25-34 years	13	40.6	15	46.9	4	12.5	32		
≥ 35 years	1	16.7	2	33.3	3	50.0	6		
<b>Education</b>									
Primary	15	57.7	6	23.1	5	19.2	26	10.8	0.029*
Secondary	5	22.7	15	68.2	2	9.1	22		
University	2	66.7	1	33.3	0	.0	3		
<b>Occupation</b>									
Working	2	16.7	10	83.3	0	.0	12	10.6	0.005*
House wives	20	51.3	12	30.8	7	17.9	39		

Variables	Pain level immediately after intervention						N	χ <sup>2</sup>	P
	Mild pain n.22		Moderate pain n.22		Severe pain n.7				
	No.	%	No.	%	No.	%			
<b>Residence</b>									
Urban	3	20.0	12	80.0	0	.0	15	12.2	0.002*
Rural	19	52.8	10	27.8	7	19.4	36		
<b>Parity</b>									
1-2	10	41.7	11	45.8	3	12.5	24	0.18	0.93
≥3	12	44.4	11	40.7	4	14.8	27		
<b>Previous Cs</b>									
Yes	9	30.0	18	60.0	3	10.0	30	8.4	0.015*
No	13	61.9	4	19.0	4	19.0	21		

χ<sup>2</sup>: Chi square test, \*p-value < 0.05 significant

**Table (1):** Presents the distribution of the studied women according to their demographic characteristics. It reveals that there was no significant statistically difference among two groups related to their sociodemographic characteristics (P=0.84).

**Table (2):** Shows that there was no statistically significant difference between the two groups regarding their obstetrical history. As more than half of women in the experimental group (52.9%) had a number of parity 3 times or more compared to three fifth (60.8%) in the control group. Nearly three fifth (58.8%) of women in the experimental group had previous cesarean section compared to more than half (52.9%) in the control group. In addition; the mean gestational age shows no statistically significant difference (P = 0.052).

**Figure (1):** Shows that, breast feeding, carrying the baby and coughing were the most common conditions that aggravating post cs pain among women in both groups with no statistically difference (p=.058).

**Table (3):** Reveals that, there were different observations of mother’s behaviors such as lip pitting, crying, restlessness, hugging of her mother and moaning that were experienced by women during their pain and the immobilization was the most common observed behavior. There were no significant differences between the two groups (p=0.11).

**Table (4):** Shows that, there was a significant difference in mother’s correct knowledge in both groups regarding the measures of pain relieve (p=0.003\*), Meanwhile; it shows no significant difference between the two groups concerning methods for pain relieve and in the sources of their information (p=0.775 & p=0.95) respectively. It reveals that, printed media was the most common source of information among women in both groups followed by electronic media and health professionals.

**Table (5):** Regarding severity of pain among the studied women as mentioned in experimental and

control groups showed highly significant (p<0.001) difference between pre and post phase. Where, 49% of experimental group had severe pain in pre phase compared to 13.7% in post phase. Also, 51% of control group had severe pain in pre phase compared to 31.4% in post phase. The difference between both groups in pre phase was non-significant (p>0.05). While, the difference between both groups in post phase was highly significant (p<0.001)

**Figure (2):** Shows that, there was a statistically significant difference in the pain level among study groups at 6 and 12 hours after finger handheld relaxation (p<0.001). At 6 hours after delivery, the pain level was (51.0 % mild, 39.2% moderate and 9.8 % severe) in the experimental group versus (11.8% mild, 64.7% moderate and 23.5% severe) in control group. After 12 hours after delivery, the pain level was (54.9 % mild, 45.1% moderate and 0.0 % severe) in experimental group versus (31.4% mild, 68.6% moderate and 0.0% severe) in control group.

**Table (6):** Shows statistical significant difference between two groups related woman’s satisfaction and attitude regarding pain relief measures as 58.8% of experimental group satisfied with post cesarean incisional pain management versus 23.5% in control group p=(0.001\*\*).

**Table (7):** Shows that there was statistically significant relation between post pain level after finger handheld relaxation technique and basic characteristics among experimental group in respect to age, education, occupation, residence and previous history of CS (p=0.042\*, 0.029\*, 0.005\*, 0.002\* & 0.015\*) respectively.

**Discussion**

The findings of the present study demonstrated that the finger handheld relaxation technique was a successful intervention for reducing the level of pain intensity following a caesarean operation. Finger hand held relaxation therapy is easy technique to

control emotion. The emotion like energy wave which moves through our body, thought, and soul which helps in pain relief (Abbaspoor et al., 2014).

This research was conducted on purposive sample of 102 post cesarean woman to determine the effect of finger handheld relaxation technique on incisional pain intensity among post cesarean women by using quasi experimental study design & control group. This aim was significantly achieved as the study result revealed that there was a highly statistically significant difference in the intensity of pain between control and experimental group at different assessment times. This difference demonstrated that finger handheld relaxation reduced post cesarean incisional pain intensity.

The current study's findings showed that there was no significant difference between the two groups **regarding their demographic characteristics**. According to the present study findings, demographic qualitative variables such as age, level of education, occupational status and residence, were not significantly different in the two groups ( $P > 0.05$ ). This was consistent with the study conducted by Eittah et al., (2021) who studied "Effect of Foot Massage on Fatigue and Incisional Pain among Post Cesarean Women" reported that there was no significant difference was detected in the demographic and medical data of the two groups. From the perspective of the researchers, this shows that the two groups' baseline pain levels were similar.

**Regarding the Conditions that aggravating pain post cesarean section** the present study findings reported that breast feeding, carrying the baby and coughing were the most common conditions among women in both groups with no statistically difference ( $p = 0.058$ ). This was contradicted with Abd Elhaleem et al., 2013 who mentioned that, there was a statistical significant difference between the two groups regards to the conditions that aggravate pain especially in area of carrying the newborn and breastfeeding ( $p = 0.002$  and  $p = 0.008$  respectively). This may be attributed to the difference in the study setting and sample.

**Concerning Observed mother's behaviors immediately post cesarean section;** the present study findings reported that there were different observations of mother's behaviors such as lip pitting, crying, restlessness, hugging of her mother and moaning that were experienced by women during their pain with no significant differences between the two groups ( $p = 0.11$ ). This was in conformity with Abd Elhaleem et al., 2013 who conducted a study "EFFECT OF FOOT MASSAGE ON RELIEVING MOTHER'S POST CESAREAN SECTION INCISIONAL PAIN" at Benha university also reported that, there was no significant differences between the two groups regarding observations

concerning post cesarean pain ( $p = 0.043$ ). This may be explained with the fact that; the response and the reactions of women to the effect of post cesarean pain is similar.

**Concerning the woman's knowledge regarding pain relief measures** post cesarean section the present study found that; three fifths of women in experimental group had answered on pain relieve measures correctly compared to the half in control group with statistically significant difference  $p (0.003^*)$ . This was in conformity with Marfuah, Dewi et al., (2019) who found that more than half of women in the intervention group had correct information about pain relief measures compared to 46% of women in the control group however they didn't receive any preparation before surgery. Moreover; Marcus et al., 2014 found that nearly the half and more than two fifths of control and intervention groups respectively reported that they had information about pain relief measures post Cesarean section. The rationale for this finding may have to do with the fact that there are many different means of knowledge transmission, like TV and videos, which have the advantages of quick and easy communication and convenient information access.

**In regards to the sources of information about pain relief measures post cesarean section;** the present study findings reported that printed media was the most common source of information among the studied groups followed by electronic media, health professionals. This result was contradicted with Andrew et al., (2019). Who found that the sources of information in their study were midwife followed by friends and family. In addition; Bjørnstad, & Ræder, (2020) mentioned that; mothers in their groups reported that their families and friends were the main sources of information for pain relief measures. From the researchers' point of view, this dispensary of data may be related to the difference in setting and study sample and difference in ability for using technology programs and apps like Facebook, WhatsApp and Messenger among people.

The postoperative period is painful for the majority of women, which is unfortunate. Comfort, an improvement in life quality, a quicker return to regular activities, shorter hospital stays, and lower costs can all be obtained from effective pain treatment. Additionally, during the postpartum period, discomfort may make it challenging for moms to give their newborns the optimum care and nutrition. (Torabi et al., 2016)

The objective of the present study was to **assess the level of pain in incision site among post-cesarean mothers;** according to the findings of the current study, it showed that the pain level was presented with severe to moderate degree among half of women

in both groups **before the intervention**. This was in the agreement of **Mahdiyah, 2017** in her study “Effectiveness Of Relaxation Techniques To Decrease Handheld Finger Pain Intensity Post Cesarean Section At Dr. H. Moch. Ansari Saleh Hospital In Banjarmasin” reported that (40%) of the participants had severe degree of pain level and a small part of them (6,6%) had moderate level before the intervention. In addition; this was also in partially agreement with **Eittah et al., 2021** who reported that during the pretest, the majority of post cesarean women in both the experimental and control groups felt a severe level of pain. In addition, this was similar to the study of **Kintu et al., (2019)** demonstrated in their study on pain experience and pain management in surgical patients that the majority of post- operative patients in both the experimental and control groups during the pretest pain assessment reported a severe level of pain. This may be explained by the fact that pain as a result of cesarean section affected women similarly.

**Regarding post intervention pain level** among the studied groups the results of the current study indicated that; pain level presented with moderate to severe degree among control group while mild degree was presented among women in the experimental group. The difference between both groups in post phase was highly significant ( $p < 0.001$ ). This was in consistent with **Eittah et al., 2021** reported in their study that; postfinger handheld technique majority of the post cesarean women in the experimental group had a mild level of pain. Furthermore; it was matched with the study of **Renuka et al., 2020** who found that less than one percent had mild pain and none of them had worst pain after finger relaxation intervention. Moreover; **Atun, 2020** reported that there was a significant different of pain scale after implemented with finger handheld relaxation in experimental group compared to control group ( $p = 0.001$ ).

Also **Ariani et al, 2020** reported in their study “Effectiveness of Finger Held Relaxation on the Decrease in Intensity of Pain in Patient of Post-Sectio Caesarea in RSUD Sorong Regency” that; at the time of finger handheld relaxation to their respondents had assessed pain intensity and after being given stimulation majority of the respondents experienced a decrease in mild pain intensity. Beside this; they also reported that statistical test results obtained it showed the effectiveness of finger handheld relaxation on changes in the intensity pain of post-CS patients ( $p = \text{Value } 0,000$ ). This ensured the effectiveness of the intervention.

**Concerning the assessment of pain throughout the assessment times 6&12hrs**; the present study result found that; there was a statistically significant difference in the pain level among the studied groups

at 6 hours and 12 hours after application of finger hand held relaxation ( $p < 0.001$ ). This result was in accordance with **Caes et al., 2021** who reported that, the mean of post cesarean section pain among women in the studied groups was slightly higher at 6hours than 12 hours after using finger handheld relaxation with statistically significant difference also ( $p < 0.001$ ). Moreover; **Buhagiar et al., (2011)** reported in their study titled by “Postoperative pain in women undergoing caesarean section” that there was a significantly improvement in the mean scores attributed to the intensity of pain 12hours after the end of the surgical procedure among the study groups and presented with mild degree (6.18), similar to this research. This ensured the effectiveness of the applied nursing intervention on relieving the intensity of pain. Additionally, it was in the same line of with **Chithra & D’Almeida, (2014)**, who reported that a significant reduction in pain was observed in the experimental group following finger handheld massage and they have a positive effect among post- operative patients on minimizing acute postoperative pain.

In addition; the results of the present study reflected the success and positive effect of finger handheld relaxation technique in decreasing pain level among post-cesarean women which supported the aim and hypotheses of the present study. These results are similar with **Tütün Yümin et al., (2017)** with the title of “The Effectiveness of Fingerhld Relaxation Technique towards the Decrease of Pain Intensity on Patients with Laparotomy Post Operation”, the result showed that there was an effect between fingerhold relaxation technique to the decrease of pain intensity on laparotomy post operation patients with  $p$  value  $0,000$  ( $p < \alpha$ ). This ensured the effectiveness of finger handheld relaxation technique on relieving the intensity of pain after any surgical operation such CS deliveries.

On the other hand, a study by **Hulme et al., 2014** evaluated the effect of foot and hand massage on patients’ perception of care following laparoscopic sterilization as an intervention for postoperative pain reported that there was no significant association of pain intensity scores from 5 minutes, It implied that the duration of the relaxation intervention might have a significant impact on how it affected postoperative pain.

**Concerning mother's satisfaction and their attitude regarding pain relief measures post Cesarean section** the present study findings shows statistically significant difference between two groups related woman’s satisfaction regarding pain relief measures as nearly three fifth of women in the experimental group satisfied with post cesarean incisional pain management versus more than one fifth in the control group  $p = (0.001^{**})$ . This was in the

agreement with **Abd Elhaleem et al., 2013** who found in their study a statistical significant difference between two groups  $p = (0.001^{**})$ . In addition, **Chithra & D'Almeida, (2014)**, also reported a high level of patient satisfaction in the intervention group than the control group after finger hand held relaxation treatment  $p = (0.001^*)$ . This ensured the effectiveness of the applied nursing intervention on relieving pain intensity post cesarean section.

With regards to the **relation between pain level after finger handhold relaxation and the basic characters among experimental group**. The present study indicated a significant relation was found between pain level with respect to age, occupation, residence and previous C.S among women in the experimental group with (p=0.042\*,0.029\*,0.005\*,0.002\*&0.015\*) respectively. This was contradicted with **Shindogi et al., 2021** who found in their study which was conducted in India that there was no statistical association between pain scores of post-caesarean mothers of experimental group with their selected demographic variables at (0.05) level of significance. This may be related to the difference in study setting and sampling techniques.

### Conclusion

Based on the result of the present study, it can be concluded that the finger handheld relaxation technique had a highly statistically significant positive effect on reducing intensity level of pain among post Cs women in experimental group than the control group. Moreover, finger hand held relaxation results in a high level of satisfaction among the majority of women in the experimental group compared to control group.

### Recommendations

- Designing a health education training program for nurses on the finger-handling relaxation technique, which is a cheap pain treatment method, with no harm to the mothers.
- Post-c-section mothers must be given brochures regarding finger handheld relaxation technique to be a guide for them after hospital discharge.
- Replication of the current study in more contexts and with a bigger sample size.
- Raising awareness among post-c-section women of the benefits of finger handheld relaxation technique in easing pain

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