

Effect of Olive Oil Massage on the Severity of Post-Cesarean Pain and Fatigue

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Abstract

Background: Cesarean section pain prevents mothers from bonding with their newborns, as well as interfering with correct breastfeeding positioning, self-care, newborn care, and everyday activities, Olive oil acts as pain killer, anti-inflammatory agent, besides its tranquilizing properties. **Aim:** this study aims to assess the effect of olive oil on the severity of pain and fatigue. **Methods:** A descriptive comparative study was used, study was conducted at postpartum unit, South Valley University's Hospital, Qena governorate., sample involved 132 post CS women., There were four tools involved in the study structured interview questionnaire, numerical rating scale for pain, Fatigue Severity Scale, and pain treatment satisfaction scale **Results:** there is highly differences in statistical significance between the study and control groups regarding level of pain immediately after massage, 1 hour after massage, pain treatment satisfaction and fatigue severity p-value are 0.002, 0.001, 0.001 and 0.001 respectively. **Conclusion:** Massage with olive oil may be a beneficial way to alleviate post CS pain and fatigue. **Recommendations:** All health-care workers, particularly nurses, should be made aware of the benefits of olive oil massage, and frequent training should be provided.

Keywords: *Olive Oil, Massage, Postoperative Cesarean Pain, Fatigue severity*

Introduction:

Pain and exhaustion are the most common complaints after a caesarean surgery, including in the postpartum term. For generations, massage therapy has been used to relieve pain. Massage has been demonstrated to be effective in the treatment of acute postoperative pain when combined with pharmaceutical treatment. It's been a part of nursing care for a long time (Ruşen Öztürka et al., 2018).

Post-Operative Pain after Caesarean is an acute pain that occurs as a result of a surgical operation. It occurs on the day of the caesarean section. It is induced by shifting from a supine to a sitting upright position (Peter et al., 2018). Statistics show

immediate postoperative pain incidence rates after cesarean sections reaching to 77.4% and 100%, with the pain being of high intensity (Natalia et al., 2017). Pain is considered the fifth vital sign and a subjective issue that is unique to each individual. A variety of factors influence it, including but not limited to age, gender, culture, prior experience, and personal coping skills. The combination of these factors makes it difficult to establish a standard for all patients who have varying degrees of pain following surgery (Aymen et al., 2018).

Postoperative pain typically contains nociceptive characteristics, indicating that it is caused by tissue or organ lesions with painful nociceptive stimuli. Neuropathic pain can occur as a result of a direct nerve damage, as well as tension or compression (Natalia et al., 2017). Inadequate postoperative pain management. It can cause surgery patients to become

morbid, delaying their recovery and ability to return to everyday activities. For a patient who is expected to care for her newborn quickly after an operational treatment, speedy recovery is critical (Kintu et al., 2019)

Additional losses for post-cesarean section women were a reduced capacity to care for their child, efficiently breastfeed, and interact with their newborn throughout the postpartum period. Furthermore, researchers claim that caesarean sections are the leading source of persistent pain in women (Natalia et al., 2017).

In surgical wards, pain management is a crucial part of healthcare quality. For pain management, there are two options: pharmaceutical interventions or comfort methods (nonpharmacological) (Aymen et al., 2018). Non-pharmacological techniques expanded the individual control feeling, diminished the sentiment of shortcoming, improved the action level and useful limit, and diminished the required measurement of pain relieving drugs accordingly diminishing the symptoms of the treatment (Khavandizadeh et al., 2015).

Massage is a cost-effective and widely used alternative therapy. Massage has a good effect on several biological systems and their functioning. Massage has recently been classified as a kind of aero-hydrotherapy. Massage aids in the improvement of local and general circulation, the promotion of immune function, the enhancement of natural healing abilities, and the maintenance of homeostasis (Nelson, 2017).

Because of the stimulation of the 'non painful' nerve fibres that interfere with pain transmission in the spinal cord, local massage may have systemic pain-modulating effects. The feet and hands are effective massage locations because they have a lot of mechanoreceptors, which stimulate non-painful nerve fibres and hence reduce pain (Zimpel et al., 2020).

Olive oil is extricated from the aged natural products. The organic products are handled multiple times. It contains supportive potential even it is thousand years old (Pruyadarsini & Revathi, 2021).

Olive oil is a medicinal herb with a long history in traditional medicine. Olive oil is a pain reliever and anti-inflammatory agent, as well as having calming qualities (Chauhan, et al., 2016). Olive oil contains olecanthal properties they are help full for relieve of pain. Olecanthal acts as a natural anti-inflammatory by inhibiting COX-2 enzymes in the same way ibuprofen does (Khatri M et al (2014). In the immediate post-caesarean section intervention, the nurse plays a critical role. The major responsibility is to assist post-caesarean section mothers in regaining their energy so that they can cope with the new motherhood responsibilities (Abdel Ghani & Abd Elmonem, 2018).

Significant of the study:

Pain is a typical indication of any condition that prompts people to seek medical help. Patients frequently inquire about the level of discomfort they may experience after surgery in surgical wards. However, post-operative pain treatment remains a source of concern for both physicians and patients, as various studies have revealed inadequate postoperative pain management procedures (Aymen et al., 2018). According to statistics, the incidence of immediate postoperative pain after caesarean sections is between 77.4 percent and 100 percent, with the pain being of moderate to severe intensity (Natalia et al., 2017).

Despite the advances in analgesia, post caesarian section women remain have a high levels of postoperative pain when compared with other surgeries (Hesse et al., 2018). Many studies looked at the efficacy of massage on its own and in combination with essential oils for pain and tiredness relief. However, few studies have been conducted to date on the effects of massage with olive oil (Abdel Ghani & Abd Elmonem., 2018). As a result, researchers are interested in learning more about the impact of olive oil massage on post-operative caesarean section discomfort and fatigue.

Aim of the study:

This study aims to assess the effect of olive oil on the severity of pain and fatigue.

Research hypothesis:

H0: After using olive oil massage, will improve post-operative caesarean section discomfort or weariness.

H1: After using olive oil massage, will improve post-operative caesarean section pain and fatigue.

Subject and Methods

This study was portrayed as follow

The subject and methods of the current study were showed into four designs (technical, operational, administrative, and statistical design).

Technical Design:

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

Research Design:

A quasi experimental design was used to achieve the current study.

Setting:

This study was conducted at postpartum unit, South Valley University's Hospital, Qena governorate. It serves Qena governorate only. Postpartum unit is find in the fourth floor of the hospital, it involved 7 room and 21 bed.

Sample type and size:

A purposive sample was used. This study was conducted on 132 post caesarean section women undergoing caesarean section with spinal anesthesia. Participated women were divided equally into two equal groups (control and study group).

Sample technique:

The study sample was divided into two equal groups; control group (66 post caesarean section women), who didn't receive olive oil massage, but received routine postpartum care. And study group (66 post caesarean section women), who received olive oil massage. To confirm randomization, the researcher prepared an equal numbers of sealed envelopes (66 contained a paper written on it "routine hospital care" and the other 66 contained a paper written on it "Olive oil massage"

$n = [DEFF * Np (1-p)] / [(d^2 / Z^2_{1-\alpha/2} * (N-1) + p * (1-p)]$
 DEFF (Design effect) = 1 N (population) = 2500
 p (Hypothesized %) = 10% +/- 5

d (tolerated margin of error) = 0.05

Z (level of confidence) = 1.96 α (Alpha) = 0.05

$n = [1 * 2500 * 10\% +/- 5 (1 - 10\% +/- 5) / [(0.05)^2 / (1.96)^2 - 1 - 0.05 * (2500 - 1) + 10\% +/- 5 (1 - 10\% +/- 5)]$

n = 132 postpartum women

Criteria of selection:

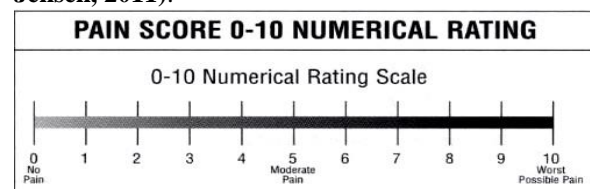
Postpartum women aged 15 to 40 years old, in term pregnancy, with intact skin in the massage areas (i.e. scalp, neck, upper shoulder, hands, and feet), no history of olive oil sensitivity, full consciousness after surgery, willingness to participate, and no medical disorders or post- caesarean section complications.

Tools of data collection:

There were four tools involved in the study:

Tool (I): Structured Interviewing questionnaire that was designed and developed by the researcher and included three parts; **Part one:** post- cesarean section women's personal characteristics as age, level of education, working status and residence. **Part two:** Past obstetric history as gravidity, parity, abortion and previous C.S before. **Part three:** it was included current C.S data as primary indication for caesarean, type of C.S, type of anesthesia used.

Tool (II): Numerical Rating Scale (NRS) for pain, patients are asked to verbalize the number between 0 and 10 that fits best to her pain intensity (Jensen & Jensen, 2011).



(Jensen, 2011).

NRS for pain scoring:

Zero (0) usually represents 'no pain at all' whereas (10) represents 'the worst pain ever possible. Pain from 0 to 3 considered mild and from 4 to 7 considered moderate and more than 7 considered severe pain (Jensen, 2011).

Tool (III): Fatigue Severity Scale (FSS): The fatigue effects on daily tasks are assessed using a seven-point Likert scale. There are nine statements on the scale. (Krupp, et al., 1989).

FSS scoring system:

The scale consists of nine statements (my motivation is lower when I am fatigued, exercise brings on my fatigue, I am easy fatigued, fatigue interferes with my physical functioning, fatigue causes frequent problems to me, fatigue prevents sustained physical functioning, fatigue interferes with certain duties and responsibilities, fatigue is among my three most disabling symptoms and interferes with my work interferes with my work). Each of which should be assessed on a range of one to seven, with women being asked to select the appropriate number. A score of one indicates significant disagreement, whereas a score of seven shows great agreement. A total score of less than 36 indicates that fatigue has little effect on women's activities (negative effect). Furthermore, a score of 36 or higher suggests that additional medical attention is required (positive effect). (Krupp, et al., 1989).

Tool (IV): Pain treatment satisfaction scale (PTSS): was included 5 items [how satisfied were you with (the overall treatment you received, staff warmth, kindness, and willingness to listen, the skills and competence of the staff, the ease of getting

appointments, would you recommend this treatment to others)] developed to assess patient satisfaction in both acute and chronic pain patients (Michael et al, 2003)

PTSS scoring system:

Each item from 5 taking a score from 0 (no satisfaction) to 10 (complete satisfaction), total score of them was ranged from 0 to 50. Satisfaction divided to three categories dissatisfied from (0-15) satisfied from (16-35) and very satisfied 35 or more.

Tools Validity:

A team of five professionals in obstetric and gynecological nursing at South Valley University's Faculty of Nursing evaluated the tools for comprehensiveness, accuracy, and clarity in language.

Tools Reliability:**Reliability coefficient of the study tools:**

Questionnaire Dimensions	Cronbach Alpha
Structured interview questionnaire.	0.842
Numerical Rating Scale (NRS) for pain	0.942
Fatigue Severity Scale (FSS)	0.898
Pain treatment satisfaction scale (PTSS)	0.759

Operational Design:

The operational design for this study was included two phases namely; pilot study and field work.

Pilot study:

Pilot study was included (10%) of the study sample that involved 14 post cesarean section women (7 from each group) to evaluate the efficiency; clarity of tools that was used in the study. The necessary modification was made according to the result of the pilot study as omission of some questions. The sample included in the pilot study was excluded from the study sample

Ethical considerations

The scientific study ethical committee at South Valley University's Faculty of Nursing gave their clearance. After explaining the study's goal to each lady, she gave her informed permission. The data collection tools did not take into account the moral, religious, ethical, or cultural aspects of women's lives. The researcher maintained confidentiality and discussed the situation.

Field work:

The study's data collecting ran around 11 months, commencing in early May 2020 and ending in late February 2021. It was divided into three stages, as follows:

Phase (1): (Pre intervention phase): for control and study group

- The researcher attended at South Valley University Hospital (postpartum unit) three days per week from 9am to 2pm

- The researcher introduced herself to pregnant woman then explained the aim of the study and ensures their cooperation. Then oral consent from participants was obtained.
- The researcher started to fill the structure interview questionnaire from the post cesarean section woman to assess personal characteristics, past obstetric data, and current C.S data. It took about 10 to 15 minutes.

Phase (2): (Implementation phase):

A) For control group:

- The post cesarean section woman received routine post cesarean section care.
- The researcher interviewed with each woman to assess level of pain using numerical rating scale and level of fatigue using FSS 8 hours after C.S that took about 10 minutes for each assessment.

B) For study group:

- The researcher interviewed with each woman to assess level of pain using numerical rating scale 8 hours after C.S. and level of fatigue using FSS 8 hours after C.S that took about 10 minutes for each assessment.
- The researcher then massaged the woman who had just had a caesarean delivery with olive oil. Women in the study group were assisted in getting out of bed. A pillow supported the woman's back, and two stairs supported her legs (i.e. in order to sit in a proper, comfort position). Each region of the woman's body was massaged with olive oil (5 ml) (i.e. scalp, neck, upper shoulder, hands, and feet).
- Massage was performed utilizing rotational friction movements while gripping the entire section of the hands (i.e. from the wrist to the fingers) and feet without focusing or pressing on a specific point (20

minutes, five minutes for each region). Neck and shoulder friction were applied (for 10 minutes, five minutes for each). A further five minutes of mild circular, upward and downward scalp massage was offered. Approximately 35 mills of oil were consumed throughout the massage session. The session lasted 35 minutes in total.

Phase (3): (Follow up phase) for control and study group:

- level of pain was assessed using numerical rating scale, immediately after receiving routine hospital care and one hour after receiving routine hospital (for control group) and after olive oil massage (for study group) that took about 10 minutes for each assessment.
- Also PTSS was assessed to the post cesarean section woman in the next day after C.S

Administrative Design:

Faculty of Nursing, South Valley University Dean was approved on title and protocol. Then ethical committee approved on protocol after that official written approval letter clarifying the purpose of the study was obtained from the director of South Valley University Hospital as an approval for data collection to conduct this study.

Statistical design:

Statistical Package for Social Sciences was used to organize, categorize, code, tabulate, and analyze the acquired data (SPSS). Numbers, percentages, averages, and standard deviation were used to portray data in tables and charts. The Pearson correlation between variables was employed, and the chi-square test was used to determine statistical significance. A P-value of 0.05 was declared statistically significant.

Results

Table (1): Distribution of studied sample according to their personnel characteristics in the study and control group n= (132):

Personnel characteristics	Study group		Control group		P-value
	N(66)	%	N(66)	%	
Age (years)					
• Less than 20 years	6	9.1	5	7.6	0.910
• 20- 35 years	51	77.3	53	80.3	
• More than 35 year	9	13.6	8	12.1	
Mean ±SD	27.33±5.28		28.52±5.05		
Occupation					
• Housewife	58	87.9	56	84.8	0.523
• Employed	8	12.1	10	15.2	
Residence					
• Urban	21	31.8	16	24.2	0.231
• Rural	45	68.2	50	75.8	
Educational level					
• Illiterate & read and write	3	4.5	7	10.6	0.274
• Basic education	15	22.7	12	18.2	
• Secondary education	38	57.6	34	51.5	
• University or higher	10	15.2	13	19.7	

Table (2): Distribution of studied sample according to their previous and current obstetrics data in the study and control group n= (132):

Obstetrics data	Study group		Control group		P-value
	N(66)	%	N(66)	%	
Gravidity					
• Primigravida	7	10.6	6	9.1	0.770
• Multigravida	59	89.4	60	90.9	
Parity					
• Primipara	2	3.0	3	4.5	0.648
• Multipara	64	97.0	63	95.5	
History of abortion					
• Yes	5	7.2	3	4.5	0.415
• No	61	92.4	63	95.5	
Previous C.S					
• One C.S	2	3.0	3	4.5	0.324
• 2 C.S	44	66.7	47	71.2	
• More than 2 C.S	20	30.3	18	27.3	
Indication for C.S:					
• Maternal	30	45.5	23	34.9	0.275
• Fetal	21	31.8	27	40.9	
• Companied	15	22.7	16	24.2	
Type of C.S					
• Planned	57	86.4	55	83.3	0.627
• Emergency	9	13.6	11	16.7	

Table (3): Distribution of studied sample according to their score of pain in the study and control group n= (132):

Variable	Study group		Control group		p-value
	N(66)	%	N(66)	%	
Level of pain before massage					
• Mild pain	3	4.5	5	7.6	0.536
• Moderate pain	15	22.7	17	25.7	
• Severe pain	48	72.8	44	66.7	
Level of pain immediately after massage					
• Mild pain	20	30.3	0	0.0	0.002**
• Moderate pain	46	69.7	56	84.8	
• Severe pain	0	0.0	10	15.2	
Level of pain 1 hour after massage					
• Mild pain	53	80.3	40	60.6	0.001**
• Moderate pain	13	19.7	16	24.2	
• Severe pain	0	0.0	10	15.2	

(**) Highly statistical significant difference

Table (4): Distribution of studied sample according to mean and standard deviation of their score of pain in the study and control group n= (132):

Variable	Study group	Control group	p-value
Mean \pm SD of pain before massage	7.48 \pm 1.77	6.98 \pm 1.64	0.540
Mean \pm SD of pain immediately after massage	4.38 \pm 1.48	5.69 \pm 0.84	0.003**
Mean \pm SD of pain 1 hour after massage	2.12 \pm 1.06	4.28 \pm 1.27	0.001**

(**) Highly statistical significant difference

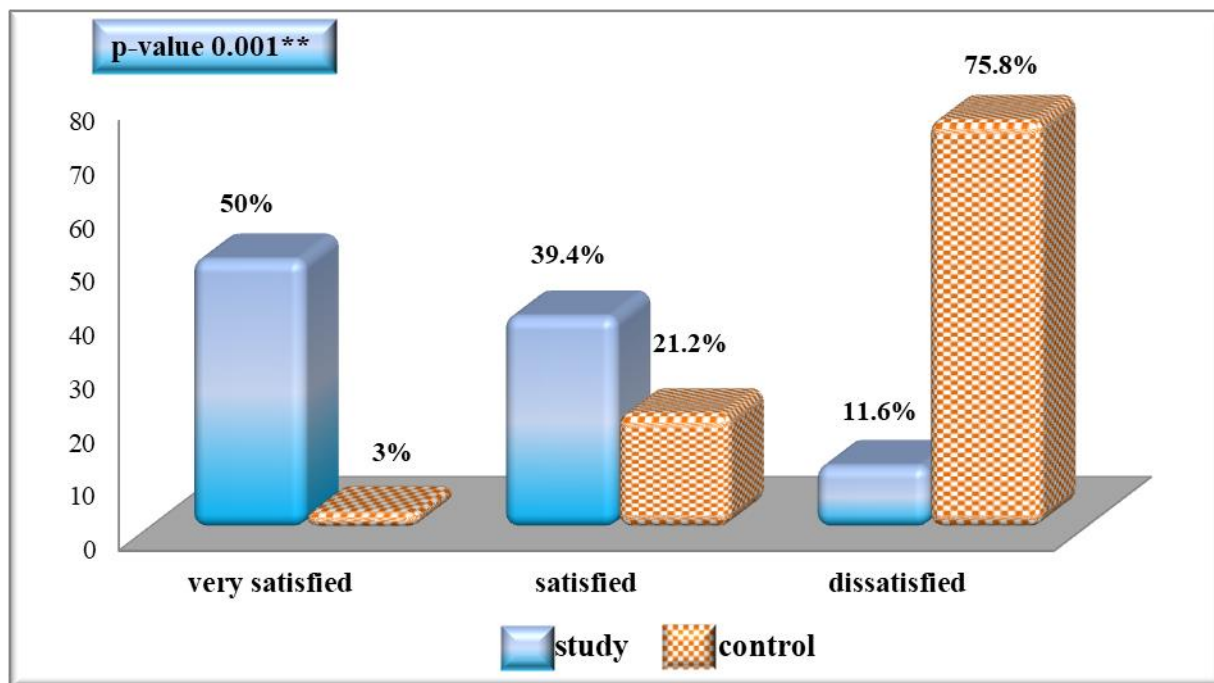


Figure (1): Distribution of studied sample according to their pain treatment satisfaction in the study and control group n= (132):

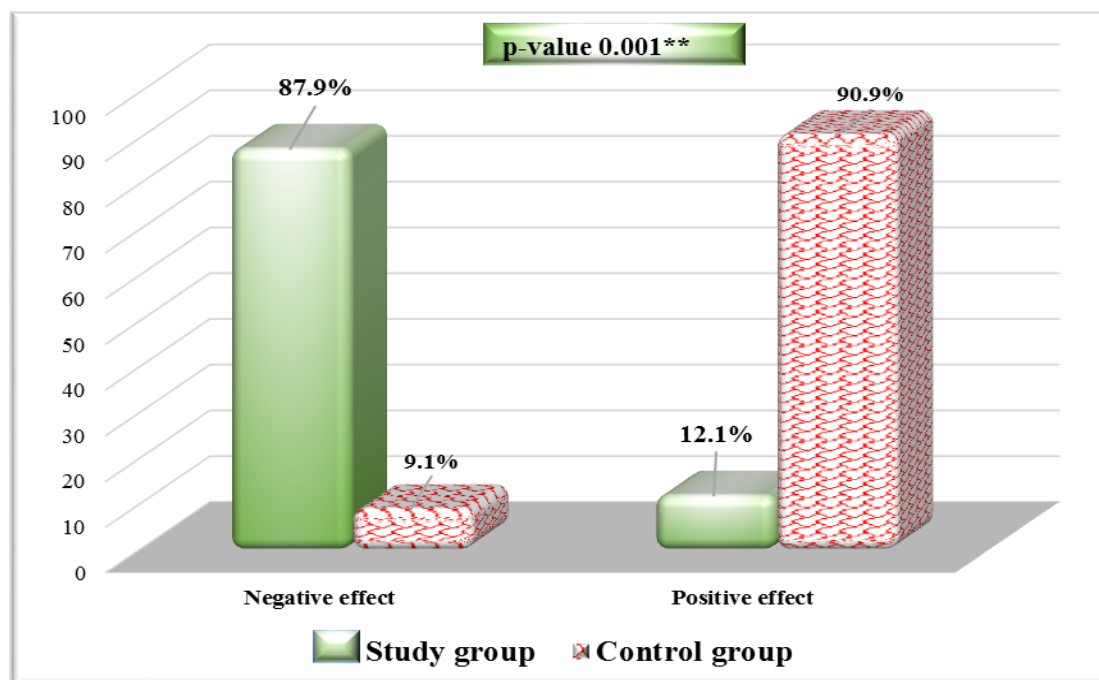


Figure (2): Distribution of studied sample according to their fatigue severity in the study and control group n= (132):

Table (5): relation between level of pain in the study and control group after massage socio demographic and obstetric data:

Socio demographic and obstetric data	level of pain after massage						p-value
	Study group			Control group			
	Mild N (%)	Moderate N (%)	Severe N (%)	Mild N (%)	Moderate N (%)	Severe N (%)	
Age (years) • Less than 20 years • 20- 35 years • More than 35 year	0(0.0) 44(86.3) 9(100.0)	6(100.0) 7(13.7) 0(0.0)	0(0.0) 0(0.0) 0(0.0)	1(20.0) 31(58.5) 8(100.0)	4(80.0) 12(22.6) 0(0.0)	0(0.0) 10(18.9) 0(0.0)	0.001**
Occupation • Housewife • Employed	45(77.6) 8(100.0)	13(22.4) 0(0.0)	0(0.0) 0(0.0)	36(64.3) 4(40.0)	14(25.0) 2(20.0)	6(10.7) 4(40.0)	0.063
Residence • Urban • Rural	15(71.4) 36(80.0)	6(28.6) 9(20.0)	0(0.0) 0(0.0)	7(43.8) 33(66.0)	9(56.2) 7(14.0)	0(0.0) 10(20.0)	0.008**
Educational level • Illiterate, read & write • Basic education • Secondary education • University or higher	0(0.0) 10(66.7) 33(82.6) 10(100.0)	3(100.0) 5(33.3) 5(17.4) 0(0.0)	0(0.0) 0(0.0) 0(0.0) 0(0.0)	1(14.3) 2(16.7) 26(76.5) 13(100.0)	2(28.6) 4(33.3) 8(23.5) 0(0.0)	4(57.1) 6(50.0) 0(0.0) 0(0.0)	0.001**
Gravidity • Primigravida • Multigravida	1(14.3) 52(88.1)	6(85.7) 7(11.9)	0(0.0) 0(0.0)	0(0.0) 40(66.7)	6(100.0) 10(16.7)	0(0.0) 10(16.7)	0.001**
Parity • Primipara • Multipara	1(50.0) 52(81.3)	1(50.0) 12(18.8)	0(0.0) 0(0.0)	0(0.0) 40(63.5)	3(100.0) 13(20.6)	0(0.0) 10(15.9)	0.006**
Previous C.S • One C.S • 2 C.S • More than 2 C.S	1(50.0) 37(84.1) 15(75.0)	1(50.0) 7(15.9) 5(25.0)	0(0.0) 0(0.0) 0(0.0)	1(33.3) 0(0.0) 39(82.9)	2(66.7) 10(55.6) 6(12.7)	0(0.0) 8(44.4) 2(4.2)	0.001**

(**) Highly statistical significant difference

Table (6): Relation between fatigue severity in the study and control group after massage socio demographic and obstetric data:

Socio demographic and obstetric data	Fatigue severity				p-value
	Study group		Control group		
	Negative N (%)	Positive N (%)	Negative N (%)	Positive N (%)	
Age (years) • Less than 20 years • 20- 35 years • More than 35 year	6(100.0) 43(84.3) 9(100.0)	0(0.0) 8(15.7) 0(0.0)	4(80.0) 2(3.8) 0(0.0)	1(20.0) 51(96.2) 8(100.0)	0.010**
Occupation • Housewife • Employed	52(89.7) 6(75.0)	6(10.3) 2(25.0)	4(7.1) 2(20.0)	52(92.9) 8(80.0)	0.054*
Residence • Urban • Rural	20(95.2) 38(84.4)	1(4.8) 7(15.6)	6(37.5) 0(0.0)	10(62.5) 50(100.0)	0.001**
Educational level • Illiterate & read and write • Basic education • Secondary education • University or higher	2(66.7) 9(60.0) 37(97.4) 10(100.0)	1(33.3) 6(40.0) 1 (0.7) 0(0.0)	0(0.0) 2(16.7) 4(11.8) 0(0.0)	7(100.0) 10(83.3) 30(88.2) 13(100.0)	0.115
Gravidity • Primigravida • Multigravida	6(85.7) 52(88.1)	1(14.3) 7(11.9)	6(100.0) 0(0.0)	0(0.0) 60(100.0)	0.001**

Socio demographic and obstetric data	Fatigue severity				p-value
	Study group		Control group		
	Negative N (%)	Positive N (%)	Negative N (%)	Positive N (%)	
Parity					0.151
• Primipara	1(50.0)	1(50.0)	3(100.0)	0(0.0)	
• Multipara	57(89.1)	7(10.9)	3(4.8)	60(95.2)	
Previous C.S					0.001**
• One C.S	2(100.0)	0(0.0)	1(33.3)	2(66.7)	
• 2 C.S	20(100.0)	0(0.0)	4(22.2)	14(77.8)	
• More than 2 C.S	36(81.8)	8(18.2)	1(2.1)	46(97.9)	

(*) Statistical significant difference

(**) Highly statistical significant difference

Table (1): Clarifies personal characteristics of studied sample in study and control group, and reports that 77.4%, 87.9% and 68.2 in study group have an age group between 20-30 years, housewives and lives in rural areas respectively. In control group about 80.3%, 84.8% and 75.8% of studied sample have an age group between 20-30 years, housewives and lives in rural areas respectively. With no statistical significance difference between study and control group p-value are 0.910, 0.523 and 0.231 respectively. Regarding level of education about 38% in study group and 51.5% in control group have a secondary level of education with no statistical significance difference between study and control group p-value 0.274

Table (2): Shows obstetric data of studied sample in study and control group, and finds that 89.4% in study group and 90.9% in control group are multigravida, 97% in study group and 95.5% in control group are multipara. Regarding abortion history 7.6% in study group and 4.5% in control group have previous abortion with no difference in statistical significance between study and control group regarding gravidity, parity and abortion p-value (0.648, 0.770, and 0.415) respectively. About 66.7% in study group and 71.2% in control group have previous 2 C.S, 45.5% in study group and 34.9% in control group performed C.S because of maternal causes. About 86.4% in study group and 83.3% in control group their C.S are planned previously. With no statistical significance difference in statistical significance between study and control p-value are 0.147, 0.275 and 0.627 respectively.

Table (3): Demonstrates level of pain in study and control group before, immediately after and 1 hour after massage, and shows that 72.8% in study group and 66.7% in control group have a severe level of pain before massage with no statistical significance difference between study and control group p-value 0.536. And there is highly difference in statistical significance between study and control group regarding level of pain immediately after massage

and 1 hour after massage p-value are 0.002 and 0.001 respectively.

Table (4): Illustrates mean and standard deviation of pain score in study and control group, and reports that there is no statistical significance difference between study and control group before massage p-value 0.540 and there is highly statistical significance difference between study and control group immediately after massage and 1 hour after massage p-value are 0.003 and 0.001 respectively.

Figure (1): Reveals that there is highly difference in statistical significance between study and control group regarding pain treatment satisfaction p-value 0.001.

Figure (2): Demonstrated that there is highly difference in statistical significance between study and control group regarding fatigue severity p-value 0.001.

Table (5): Demonstrates that there are relations between level of pain after massage in study and control group and age, residence, educational level, gravidity, parity and previous C.S p-value are 0.001, 0.008, 0.001, 0.001, 0.006, and 0.001 respectively.

Table (6): Illustrates that there are relations between fatigue severity in study and control group and age, occupation, residence, gravidity and previous C.S p-value are 0.010, 0.054, 0.001, 0.001 and 0.001 respectively.

Discussion:

The majority of people have trouble dealing with postoperative pain. Pain reduction is one of today's key challenges. Analgesics are necessary for postoperative pain management; however they may not always be enough to relieve the pain. According to reports, the administration is insufficient, despite the fact that new medications and methods for postoperative pain control have been developed in the last 20 years. As a non-pharmacological pain management has the capacity to palliate acute postoperative pain (Ruşen ztürka et al., 2018), complementary therapy and interventions become increasingly significant and needed. The goal of this

study was to see how olive oil massage affected post-operative caesarean section pain and fatigue level.

Concerning level of pain in control and study group, current study reveals that around two thirds of studied women in both group have a severe level of pain before massage (in study group) and routine care (in control group) with no statistical significance difference between both group p value 0.536. It also shows that there is statistical significance difference between study and control group regarding level of pain immediately after massage and 1 hour after massage p-value are 0.002 and 0.001 respectively. With obvious decrease in the level of pain in study group.

On the similar result to **Abdel Ghani & Abd Elmonem (2018)** who applied their study in Egypt to determine the effect of olive oil massage on postoperative caesarean pain and sleep quality, and found that there was no statistical significance difference between study and control groups in terms of pain level before intervention (routine care for control and massage for study group) p value 0.09, but there was statistical significance difference between study and control groups after intervention p value 0.005.

And **Natalia et al., (2017)** who carried out their study in Brazil to identify the incidence, intensity and quality of postoperative pain in women undergoing caesarean section, and found that more than half of studied women have a severe level of pain before care. Also **Pruyadarsini & Revathi (2021)** who implemented their study in India to evaluate the effect of olive oil massage on post caesarean pain and quality of sleep among primigravida mothers, and showed that there was significant difference between pre and posttest as more than half of studied women in pretest had a severe level of pain in pretest that decreased to zero in posttest after applying olive oil massage. This clearly concluded that olive oil massage applied to post CS mothers resulted in a significant reduction in the intensity of pain among them.

Regarding mean score of pain in study and control group, present study demonstrates that no statistical significance difference between study and control group regarding level of pain before intervention, but there is statistical significance difference between study and control group immediately and one hour after intervention p value 0.540, 0.003 and 0.001 respectively.

Abdel Ghani & Abd Elmonem (2018) agreed with previous results, illustrated that there was statistical significance difference between experimental and control group regarding mean and standard deviation of pain level p-value 0.001.

Also **Pruyadarsini & Revathi (2021)** clarified that there was statistical significance difference between pre and posttest group regarding mean and standard deviation of pain level p-value 0.001. This agreement shows the importance of encouraging of performing massage in reducing post CS pain.

Patient satisfaction with postoperative pain management is influenced by a number of factors, including the patient's expectations, the severity of the pain, the speed with which the acute pain service responds, the treatment's effect, and the attitude of health care providers (**Farooq et al., 2016**).

As regard pain treatment satisfaction, the actual study shows that half of study group are very satisfied by pain treatment while more than three quarter of studied women in control group are dissatisfied by pain treatment with statistical significance difference between both groups p-value 0.001.

This was similar to **Chauhan et al., (2016)** who carried out their study to determine the level of labour pain in primigravida mothers in the experimental group before and after receiving an olive oil back massage during the first stage of labour, and to conclude that olive oil massage may be able to modify pain intensity in the active phase and improve patient satisfaction.

Other opinion showed by **Mubita et al., (2020)** who conducted a study in the United Kingdom to assess patient satisfaction with pain relief following major abdominal surgery, and found that good communication and information transfer, good pain management, and an empathic presence throughout all influence patient satisfaction with pain management. This discrepancy can be traced back to differences in the interventions used in the two trials.

Postoperative cesarean section fatigue may be a result of many interrelated factors; pain, sleep disturbance, feeding the newborn and the limited women movement abilities first hours post operation (**Abdel Ghani & Abd Elmonem, 2018**). Various massage therapy approaches are thought to enhance circulation and lymphatic flow, which could hypothetically expedite the clearance of catabolites and so alleviate weariness (**Nunes et al., 2016**).

In terms of fatigue severity, the current study finds that the majority of the study group has a negative effect on fatigue, but the majority of the control group has a positive effect, with a statistically significant difference between the two groups (p-value 0.001).

This was agreed with **Abdel Ghani & Abd Elmonem (2018)** who clarified that there was with statistical significance difference between study and control group regarding fatigue severity p-value 0.005. Also **Nunes et al., (2016)**, who implemented their study in Brazil to test the effect of massage therapy on pain and perceived exhaustion in the

quadriceps of athletes, and showed that there were statistically significant differences between groups for pain and perceived fatigue after intervention. This similarity support importance of massage in reducing level fatigue and encourage generalization of massage technique after CS to help in reducing pain and fatigue.

As regard obstetric data, present study illustrates that the majority of studied women are primigravida, primipara, have no abortion before and their CS types are planned. Around two thirds of studied women in both groups have previous 2 or more CS and more than one third of them in both groups their indication to CS back to maternal causes. With no statistical significant difference between both group in all previous variables.

In line with earlier findings, **Youness & Ibrahim (2017)** conducted a study in Egypt to determine the impact of early and progressive exercises on C. S recovery in post-caesarean women, and found that the majority of women in both groups were multipara. In both groups, more than one half had two or more C.S. The primary indication of CS was maternal indication in more than half in both groups. More than three fifths in both groups their types of CS were elective.

Kintu et al., (2019) on the other hand, used their study in Uganda to measure the degree of post-C.S. pain and identify analgesic drugs used to treat post-C.S. pain and patient satisfaction, and showed that around one third of studied women were primipara, and the majority of them performed CS related to maternal causes. This difference back to different in culture and setting of both studies.

Concerning socio demographic data, current study reveals that the majority of studied women have an age group from 20-35 years, are housewives and live in rural areas. More than half of them have a secondary level of education.

On the same line, **Natalia et al., (2017)** who reported that the majority of studied women had an age group from 20-35 years, less than two thirds had a secondary level of education. That was differed from **Abdel Ghani & Abd Elmonem (2018)** who illustrated that less than three fifths of studied women were housewives less than one sixth of them had a secondary level of education. This dissimilarity back to different in culture and tradition between both setting.

Conclusion:

Olive oil massage have a faster effect of pain relive and reduce fatigue post cesarean section, no side effect easily used, available and nontoxic.

Recommendation:

- Local Olive oil massage application could be used safety in post cesarean section to relive pain and fatigue
- Holding conference about approaches and standardization of olive oil massage to relive pain and fatigue at hospitals.
- Future research should be done on larger populations and longer follow-up periods.
- A comparative study comparing olive oil massage to different interventions can be conducted.

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