Effectiveness of Applying Jacobson's Progressive Relaxation Technique on Post Cesarean Section Pain and Sleep Quality

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ABSTRACT

Background: The most common complaints of women after a caesarian section are pain and sleep difficulties. Pharmacological and non-pharmacological treatments can be used to treat post-operative pain and poor sleep quality. **Aim**: to evaluate the effectiveness of applying Jacobson's progressive relaxation technique on post – cesarean section pain and sleep quality. **Subject and method: Design:** A quasi-experimental design was utilized. **Setting:** The research was carried out at the Al-Azhar university hospital's post-partum ward in New Damietta, Egypt. **Subjects:** A convenience sample of 100 women, 50 for the study group and 50 for the control group **Tools**: Five tools were used before and after applying Jacobson's progressive muscle relaxation technique on post – cesarean section. Including, Women's interview questionnaire sheet, Visual analogue pain scale To assess pain severity, To evaluate the intensity of sensory and affective components of pain, a modified version of the Johansson Pain-O-Meter was developed. To assess subjective sleep quality, the Groningen Sleep Quality. **Results**: When compared to the control group, Progressive relaxation technique significantly reduced pain severity in the Visual analogue pain scale and the Modified Version of Johanson pain O_ Meter, and fewer than a quarter (16%) of the study group had poor sleep quality compared to 90% of the control group. **Conclusion**: progressive relaxation technique had improvements in women's knowledge and practice, as evidenced by a reduction in pain and an improvement in sleep quality. **Recommendation**: progressive relaxation technique should be included in normal postoperative nursing care for women who have had a caesarean section.

Key words: Jacobson's, Progressive Relaxation, Post Cesarean Section, Pain, Sleep Quality

INTRODUCTION

Cesarean section is one of the most common abdominal surgeries, and it is also one of the most painful. Surgery, in general, jeopardises the integrity of the body physically, psychologically, socially, and spiritually, resulting in discomfort and anguish. As a result, a caesarean section (C-section) is a common obstetric procedure for saving women's and newborns' lives from pregnancy and birthing difficulties. (Lee, Nagarajan, Tan & Sng, 2019).

Although Cs marks the end of pregnancy-related physical and psychological issues, it also marks the start of new physical and psychological issues following Cs. Incision discomfort, sleep difficulties, activity limitation, gastrointestinal disturbances, and anesthetic complications are examples of physical issues, whereas psychological issues include anxiety, depression, loss of control, and a negative body image. (Quinlan, 2019).

Because pain and sleep are linked and associated, when pain rises, so do sleep disruptions, and vice versa. Other studies by Shuchi, Lovereen, and Mina (2019) found that the total duration of sleep decreased by 80% in patients the first night after surgery, and they had sleep-related problems, with pain being the most important factor. Pain contributes to unfavorable outcomes in the pattern and quality of sleep due to care-treatment procedures, being in a foreign environment, inability to rest in 2-3 hour intervals due to nursing, and inability to keep regular routines (Köybaş & Oskay , 2019).

According to the WHO, the number of C-sections has increased in the United States (32.8 percent) in Northern America, while the rate of C-sections in Egypt has increased from 6.6 percent in 1995 to 51.8 percent in 2014. (Ministry of Health and Population [Egypt], 2017). Furthermore, one in every five mothers suffers from significant acute post-C-section pain, which can progress to chronic pain. Chronic pain that persists after a C-section can affect nearly 10% to 50% of post-C-section mothers, causing major worry about the condition of post-C-section mothers. (Sun & Pan, 2019).

As a result, starting the first day after a caesarean section, care and treatment should be adjusted based on pain levels and sleep/wakefulness cycles using methods that determine pain intensity and early-stage sleep problems in women, such as the visual analogue scale (VAS) in pain and The Form of Factors that Affect Sleep Pattern (FFASP), which aimed to evaluate the quantitative and qualitative quality of sleep in the mornings of the first day after a caesarean section., These tools are in charge of determining the requirement for and type of pain alleviation. (Baird & Sheffield, 2019).

However, while administering analgesics is an important part of nursing practise, non-pharmacological interventions for the reduction of post-operative pain are gradually gaining popularity. As a result, relaxation therapy can be considered a method of post-operative pain management, and Jacobson's technique is one of the relaxation techniques that can be learned in a short amount of time. (Yimer & Woldie, 2019).

Progressive Muscle Relaxation (PMR) is a technique that involves systemic sequential muscle tension (for 5-7 seconds) followed by relaxation to achieve a deep state of relaxation (for 10-12seconds). The goal of this technique or intervention, which was created by Edmund Jacobson and first published in the literature in 1938, is to help the person gain mindful awareness into the contrasts between tension and relaxation sensations in the same muscle region. This will assist the woman in achieving a level of deep muscle relaxation in all muscles as well as understanding the benefits of this state of relaxation. (Peciuliene, Perminas, Gustainiene & Jarasiunaite, 2018 ; Jacobson, 1938). Therefore, Maternity nurses must have an important role to meet the needs of women after Cs which is summarized in acting as an advocate and educator for women by teaching them to cope with the pain and sleep disorders, and training of PMR techniques **.(**(Ju, Ren, Chen, & Du, 2019).

In addition, it is necessary for Maternity nurses to have a recognized process of assessing post CS pain and quality of sleep , and a reliable tools to be used to measure intensity of pain and early-stage sleep problems in women efficiently, rather than to base clinical decisions on their own subjective opinion and experience, which predispose CS women to the complications of misclassification of pain. That is why there is an interest to conduct such type of research, which might safeguard this category of patients against these serious complications (Paine, et al., 2021).

Significance of the study:

The most typical problems in the early post-Cs phase are pain and sleep difficulties. They are frequently treated solely with pharmaceutical measures. To aid in post-cesarean pain alleviation and improve sleep quality, non-pharmacological techniques based on reliable research findings are required. When comparing the costs and benefits of non-pharmacological management to pharmacological management, non-pharmacological management is less expensive and has no side effects. The hypothalamic reaction of Jacobson's approach reduces sympathetic arousal and muscular tone.. This technique aids in the relief of pain and sleep disruptions. Relaxation techniques can help to divert attention away from a painful body part, reduce anxiety, and establish a sense of control over pain

(Windartik, 2019). As a result, Maternity nurses have an important role to meet the needs of women after Cs. The role of nurses is acting as an advocate and educator for women by teaching them to cope with the pain and sleep disorders, and training progressive muscle relaxation technique techniques Ismail and Elgzar (2018).

AIM OF THE STUDY

This study aimed to evaluate the effectiveness of applying Jacobson's progressive muscle relaxation technique on post – cesarean section pain and sleep quality.

Research Hypotheses:

1- Post Cs women who practiced Jacobson's progressive muscle relaxation technique had the same pain, quality of sleep and physical activities as those who do not practice it.
2- Post Cs women who practiced Jacobson's progressive muscle relaxation technique had a lower pain intensity than those who do not practice it.
3- Post Cs women who practiced Jacobson's progressive muscle relaxation technique had higher quality of sleep than those who do not practice it.

SUBJECT AND METHOD

Research Design:

This research used a quasi-experimental design.

Setting:

The research was conducted at the Al-Azhar university hospital's post-partum unit in New Damietta, Egypt. This hospital selected because they provide low cost and high quality health service for women with obstetrics problems and the delivery turnover for the study is satisfactory

Subjects:

The study selected a convenience sample of 100 women who had a scheduled caesarean section during the data collecting period, divided them alternatively into two equal groups, fifty women in each group.

Group one: The study group received Jacobson's progressive muscle relaxation technique with routine care of the hospital after cesarean section to relief post-operative pain and sleep quality.

Group two: The control group received routine hospital care only to relief post-operative pain and sleep quality.

*** Inclusion criteria:*

All primiparas women who were 20-35 years old (appropriate reproductive age), had a normal pregnancy, were undergoing elective Cs with spinal anesthetic, and agreed to participate in the study were included.

Tools:

Tool 1: Interview questionnaire sheet for women (pre, post)

After researching the relevant literature, the researcher created it in a simple Arabic language. It is made up of 23 multiple choice questions that the researcher gathered from nurses during an interview to measure their knowledge of Jacobson's progressive relaxation technique. It was divided into three sections.

Part (1): Concerned about the personal data, such as their name, address, age, education, and occupation in the post-partum unit

Part (2): Concerned about the obstetric history, which included gravidity, parity, and the number of abortions, as well as the history of the current pregnancy

Part (3): Concerned with mothers' knowledge about Jacobson's progressive muscular relaxation approach, as well as post-CS pain and sleep quality

Scoring system

A grading method was used to interpret mothers' knowledge assessments based on the answers received from post-CS women. According to the results, the studied mothers' answers were checked and compared to a pre-designed model answer, and their knowledge was divided into three categories: correct complete answers received a score of three, correct incomplete answers received a score of two, and incorrect, missed, or unknown answers received a score of one (Ibrahim, Elgzar& Hablas, 2021). The total score of the studied mothers' knowledge was 69, It was divided into four categories based on the median score (35): into:

• If the acquired score is less than 35, you have poor knowledge.

• Sufficient knowledge if the score obtained is equal to or greater than 35, which was classified as

- If the obtained score falls between 23 and 52, it is considered fair.

- Good If o score falls between 52 and 69.

TOOL (II): Jacobson's progressive muscles relaxation technique

It was adapted from Edmund Jacobson and translated into Arabic by the researcher, who gathered the necessary information through direct observation of post-CS women while using concurrent checklists. Deep breathing exercise, starting or progressing technique site, muscles contraction phase, muscles relaxation phase, as well as frequent comparisons and re-demonstration for giving muscle feeling during contraction and relaxation were the four main things.

Scoring system

Scores were calculated to assess women's performance levels in relation to Jacobson's progressive muscles relaxation technique during two phases of training implementation (pre and post); each step completed completely received a score of three, while incompletely correct steps received a score of two, and both not completed items received a score of one (Ibrahim, Elgzar& Hablas, 2021). The total grade for the studied mothers' practice was 132. which was divided into two categories based on the median score (66):
• unsatisfactory performance if the acquired score was less than 66; and
• satisfactory performance if the achieved score is equal to or greater than 66; good if the acquired score is between 44 and less than 99; competent if the received score is between 99 and 132

Tool III: Visual analogue pain scale (VAS) to assess pain intensity:

Melzack was the one who came up with it (1994). after examining the related literature, the researcher adapted it in simple Arabic language to evaluate women's level of pain intensity based on clinical data before and after implementation of the study training technique program. It's a standardized self-reporting device that consists of a horizontal line with five subscales as follows: There are four levels of pain: no discomfort, mild pain, moderate pain, severe pain, and intolerable pain.

Scoring system

Scores were distributed for measuring the severity of pain according to (Melzack, 1994) during two phases of the training implementation (pre, post) through direct observation by the researcher for the post CS ladies, utilizing concurrent scale sub items; each sub-item was scored from 0 to 10. Score (0) indicates no pain, whereas scores 1 through 3 indicate mild pain, score 4 through 6 indicates moderate pain, and score 7 through 9

indicates severe pain. Finally, a score of ten indicates the most terrible suffering. The subject will be asked to choose a number from a 10-point numerical continuum that reflects her felt pain intensity.

ToolIV: Modified version of Johansson Pain-O-Meter (MJPOM). Johansson was the one who came up with the idea (1985). After analyzing the related literature, the researcher adapted it in simple Arabic language to quantify the intensity of sensory and affective components of pain based on clinical data before and after implementation of the study training technique program. It is made up of ten sensory and eleven emotional pain descriptors, as follows:

Part 1, affective pain words include: Cutting, Tearing, Sharp, Burning, Cramping,Pressing, Aching, Gnawing, Pinching, Stinging and Sore

Part2, sensory pain words include: Torturing, Killing, Suffocating, Terrifying, Dreadful, Fearful, Troublesome, Tiring, Irritating, Nagging**.**

Scoring system

According to Johansson, 1985, scores were distributed for measuring the intensity of sensory and affective components of pain during two phases of the training implementation (pre, post) through direct observation for post CS women by the researcher, using concurrent scale sub items; each pain word was scored from 0 to 5score. The following are the ratings for sensory pain words: cutting (5), ripping (5), sharp (5), scorching (4), cramping (4), pressing (4), aching (4), gnawing (3), pinching (3), stinging (2), pricking (2), and sore (4) are some of the words that come to mind (1) Affective pain terms, on the other hand, are ranked as follows: torturous (5), suffocating (5), terrible (5), dreadful (4), fearful (4), annoying (3), weary (3), irritating (2), nagging (1), and glad or happy (0). The subject will be asked to choose from a list of pain terms that indicate her perception of pain intensity..

Tool V: The Groningen Sleep Quality Scale: (GSQS)

It was created by **Meijman, Vries-Griever, and de Vries in 1988** and adapted by the researcher, who translated it into plain Arabic after examining the relevant literature to measure subjective sleep quality using clinical data before and after the study training technique program was implemented. It consists of 15 yes or no questions to assess the quality of sleep the previous night.

Scoring system

Scores were distributed for measuring subjective sleep quality according to Meijman, Vries-Griever, and de Vries (1988) during two phases of the training implementation

(pre, post) through direct observation for post CS women by the researcher, using concurrent scale sub items; the first question does not account for the total score. If the woman responded yes to questions 2,3,4,5,6,7,9,11,14,15, she receives one point; if she said no to questions 8,10,12, she receives one point. The total number of points ranged from 0 to 14. A higher score on the scale indicates a lower subjective sleep quality.

II OPERATIONAL DESIGN

The operational design, the second phase of the present study, During this phase, the researcher reviewed local and international literature to get more knowledge about the study. This helped in designing the study tools

1-Preparatory phase

This phase included a review of the past and current related literature and studies, using

Available books, periodicals, magazines and articles to get acquainted with the various aspects of the study research problems and develop the study tool.

Validity of tools:

A panel of 7 specialists in the field of obstetrics and gynecological medicine and nursing faculty personnel evaluated and corrected the study instruments' content validity for clarity, content, sequence of items, and relevance or irrelevance of content. The tools were then adjusted based upon the recommendations of these experts.

Reliability of the tools:

The internal consistency of the developed tools was tested by using Cronbach's alpha coefficient test by a statistician to assess reliability of the tools; for whole questionnaire. Tool 1 was reliable as r = .767 tool II was reliable as r = .987, tool III was reliable as r = .865, tool IV was reliable as r = .943 and tool V was reliable as r = .88

Pilot Study:

After the tools were finalized, a pilot study was conducted on 10% of the total subject population (10 moms, 5 women in each group) to demonstrate the tools' feasibility and applicability. Because no significant changes to the research tool were required, the subjects of the pilot study were included in the whole sample.

Field work:

- Data collection began on January 1, 2021, and lasted for 11 months, from January 1 to November 30, 2021.

- A woman who fulfilled the inclusion criteria was selected. The control group was selected first and exposed to routine hospital care, then the study group to prevent data contamination.

- The researcher began by introducing herself to the mothers and providing a brief overview of the study's purpose and scope.

- In order to collect women's data base line and obstetric history utilizing the study tool(I) part, each woman was interviewed individually before applying the training and educational guidelines (1, 2)

- Assessment of mothers' knowledge and practice about Jacobson's progressive muscle relaxation technique using a tool (I) part (3)& tool (II)

- Assessment of mothers' level of pain intensity, intensity of sensory and affective components of pain and subjective sleep quality was performed by using tool (III), (IV) and (V)

- The women who were studied were separated into eight groups, each with six to eight mothers. Four sessions were planned by the researcher for the mothers to provide them with practical knowledge about Jacobson's progressive muscle relaxation technique and post cesarean section pain and sleep disturbances prevention.

- Each didactic sessions took between 20 – 30minutes to discuss its items, taking into consideration attention span of mother

- Each practical sessions took between 30 – 90 minutes to discuss its items, taking into consideration attention span of mother

- The researcher used questions, discussion, and various teaching approaches such as group discussion, brain storming, demonstration, and re-demonstration during the interview. A variety of didactic aids were employed, including a handout guideline and a power point presentation.

- After the training program, each mother was questioned independently to assess her knowledge and practice using part (2) of tool (I) and tool (II) (II). This was accomplished by comparing the pretest and posttest results immediately after the program was implemented to ascertain the influence of Jacobson's progressive muscle relaxation technique.

- A colorful guidebook describing Jacobson's progressive muscle relaxation technique was handed to each nurse following the assessment phase (after the first session) to draw her attention, motivate her, and assist her in reviewing its material as needed..

The researcher used concise, straightforward, and simple terms during each interview, and at the end of each session, the researcher provided a brief summary.

III ADMINISTRATIVE DESIGN

• An official permission was granted by submission of an official letters from the Faculty of Nursing, Port- Said University were addressed to the general director of Al-Azhar university hospital at New Damietta. Then verbal consent was obtained from women with cesarean section in order to conduct the study after providing an explanation for them.

Ethical considerations

The researcher followed ethical research principles as the following:

Following an explanation of the study's goal, each participant (women) gave their informed consent before the trial began. The research and ethical committee at Port Said University's Faculty of Nursing approved the study protocol. While moms were advised of their ability to refuse or withdraw from the program at any time without offering a reason. The study causes no medical or psychological harm to women, according to the researcher. Throughout the study, the privacy and confidentiality of the acquired data were ensured, and every participant had the choice to withdraw from the study at any moment without incurring any liability

Limitation of the study

Women suffering from unbearable extreme pain find it difficult to finish the questionnaire sheet, which necessitates extra work and time on their part.

RESULT:

Table (1): revealed t hat 56, 58 percent of the study and control groups were between the ages of 20 and 25, with mean ages of 23.763.26, 22.843.62 for the study and control groups, respectively. In terms of education, the research and control groups included 34 and 26 percent of mothers with a university education, respectively. Furthermore, the vast majority of the study and control groups (88 and 94 percent, respectively) were housewives. As a result, rural areas accounted for 64 percent of the study group and 58 percent of the control group, respectively, with no significant differences between the two groups.

Table (2): showed the comparison of the studied group of women's knowledge levels before and after intervention According to this table, 84% of the studied women had poor knowledge before the intervention, but this percentage was reduced to 10% after the

intervention, with a highly statistically significant difference in level of knowledge between the studied women before and after the intervention at p value 0.001.

Table (3): illustrated the number and percentage of women in the study group who used Jacobson's progressive muscle relaxation technique before and after the intervention. According to this table, 82% of the studied women had unsatisfactory practise prior to the intervention, but this percentage was reduced to 6% after the intervention, with a highly statistically significant difference in level of practise of studied women before and after the intervention at p value 0.001.

Table (4): With respect to pain severity for the study and control groups by visual analogue scale (VAS), According to the findings, 66% of the study group had the most unbearable pain before the intervention and 4% of them had the most intolerable pain after the intervention, compared to 20% and 40% of the control group, who had the most severe pain before and after the intervention, respectively. The difference in pain severity between the study group before and after the intervention, as measured by the VAS scoring system, was statistically significant (P 0.001). The difference between the control group and the experimental group was likewise statistically significant at (P 0.043). Additionally, the difference between the study and control groups following the intervention was statistically significant at (P0.001).

Table (5) indicated in the present study that, The majority of the study group (92%) had poor sleep quality compared to the vast majority of the control group (96%) before the intervention, with no statistically significant difference between them, while the higher percentage of the study group with poor sleep quality decreased to 16% after the intervention. Furthermore, the difference in the study group's sleep patterns before and after the intervention was statistically significant (P0.001).

Table (6): n terms of the relationship between average VAS, JPOM, sleep, and demographic features of the study group after intervention, the current findings revealed that there was a negative relationship between job, crowding index, and VAS, JPOM, and sleep quality after intervention.

Figure (1) portrayed that, there was a significant positive association between VAS score and sleep score of both group after intervention at (P <0.001)

Table (1): Distribution of the studied mothers according to their demographic characteristics (N=50 in each group)

Characteristics	Study group (50)		Control group (50)		Significant test
	No	%	No	%	
Age (years)					χ^2=1.339, MEP 0.775
< 20	4	8.0	7	14.0	
20-	28	56.0	29	58.0	
25-	14	28.0	11	22.0	
3 30 – 35	4	8.0	3	6.0	
	23.76±3.26		22.84±3.62		t=1.335,P0.185
Education					
Not read nor write	0	0.0	0	0.0	
Read and write	0	0.0	0	0.0	χ^2=1.152, MEP 0.562
Primary	6	12.0	9	18.0	
Basic	27	54.0	28	58.0	
University	17	34.0	13	26.0	
Job:					
House wife	44	88.0	47	94.0	FET, P 0.487
Working	6	12.0	3	6.0	
Type of work					
Worker	43	86	31	62	χ^2=3.020,
Teacher	7	14	19	38	P 0.067
Residence					
Rural	32	64.0	29	58.0	χ^2=0.378,
Urban	18	36.0	21	42.0	P 0.539
Income					
Enough	40	80.0	44	88.0	χ^2=1.190,
Not enough	10	20.0	6	12.0	P 0.275

Table (2): Comparison of knowledge level about Jacobson's progressive muscle relaxation technique and post CSpain and sleep quality among the study group of women before and after the intervention

Knowledge level	Values	Before program		After program	
		No	%	No	%
Poor	< 50.0%	42	84	5	10
Fair	50.0 - < 75.0%	4	8	14	28
Good	≥ 75.0- 100%	4	8	31	62
Significance test		χ^2=87.63, P<0.001			

Table (3): Number and percentage distribution of women in study group practice level about Jacobson's progressive muscle relaxation technique before and after intervention

observational steps level	Values	Before program		After program	
		No	%	No	%
un satisfactory	< 50.0%	41	82	3	6
Satisfactory	50.0 - < 75.0%	5	10	10	20
Competent satisfactory	75.0- 100%	4	8	37	74
Significance test		χ^2=76.57, P<0.001			

**Table (4):** Distribution of pain severity for the study and control groups by visual analogue scale (VAS)

VAS Score	Study group (50)		Control group (50)		Significant test
Before	9.66 ± 0.48		9.74 ± 0.56		t=0.764,P0.447
After	7.58 ± 1.51		9.02 ± 1.02		t=5.580,P<0.001
Significant test	t=11.123,P<0.001		t=8.381,P<0.001		
VAS level	**Study group (50)**		**Control group (50)**		**Significant test**
	No	%	No	%	
Before					
0	0	0.0	0	0.0	χ^2=2.481,
1-3	0	0.0	0	0.0	P 0.115
4-6	0	0.0	0	0.0	
7-9	17	34.0	10	20.0	
10	33	66.0	40	80.0	
After					
0	0	0.0	0	0.0	
1-3	0	0.0	0	0.0	χ^2=38.951,
4-6	15	30.0	1	2.0	P <0.001
7-9	33	66.0	20	40.0	
10	2	4.0	29	58.0	
Significance test	χ^2=47.581, P <0.001		χ^2=6.091, P 0.043		

Table (5): Distribution of the studied mothers with CS (both group)regarding their Sleep quality before and after intervention

Sleep pattern	Study group (50)		Control group (50)		Significant test
	No	%	No	%	
Before					
Good quality (0-4)	0	0.0	0	0.0	$\chi^2$0.711,
Fair quality (5-9)	4	8.0	2	4.0	P 0.399
Poor quality (10-14)	46	92.0	48	96.0	
After					
Good quality (0-4)	4	8.0	0	0.0	
Fair quality (5-9)	38	76.0	5	10.0	χ^2=55.161,
Poor quality (10-14)	8	16.0	45	90.0	P <0.001
Significance test	χ^2=58.261, P <0.001		χ^2=1.381, P 0.239		

Table (6): Relationship between average scores of VAS, JPOM, sleep and demographic characteristics of the study group after intervention

Characteristics	No	VAS Score	JPOM	Sleep Score
Age (years)				
< 20	4	7.00 ± 2.17	7.25 ± 2.06	6.75 ± 3.09
20-	28	7.50 ± 1.50	7.64 ± 1.22	7.07 ± 2.29
25-	14	7.57 ± 1.22	7.43 ± 1.16	7.21 ± 1.63
30- 35	4	8.75 ± 1.89	8.75 ± 1.89.	8.25 ± 2.35
Significance test		F=1.021,P0.392	F=1.162,P0.335	F=0.388,P0.762
Education				
Primary	6	7.33 ± 1.21	7.50 ± 1.05	6.50 ± 1.64
Basic	27	7.85 ± 1.66	7.89 ± 1.45	7.48 ± 2.14
University	17	7.24 ± 1.35	7.29 ± 1.21	6.94 ± 2.38
Significance test		F=0.955,P0.392	F=1.074,P0.350	F=0.653,P0.525
Job:				
House wife	44	7.55 ± 1.53	7.64 ± 1.33	6.98 ± 2.15
Working	6	7.83 ± 1.47	7.67 ± 1.50	8.67 ± 1.75
Significance test		t=0.434,P0.667	t=0.052,P0.959	t=2.152,P0.067
Residence				
Rural	32	7.34 ± 1.40	7.50 ± 1.19	7.09 ± 1.78
Urban	18	8.00 ± 1.64	7.89 ± 1.57	7.33 ± 2.76
Significance test		t=1.490,P0.143	t=0.987,P0.328	t=0.373,P0.711
Income				
Enough	40	7.60 ± 1.56	7.65 ± 1.33	7.08 ± 2.22
Not enough	10	7.50 ± 1.35	7.60 ± 1.43	7.60 ± 1.96
Significance test		t=0.185,P0.854	t=0.105,P0.917	t=0.683,P0.498
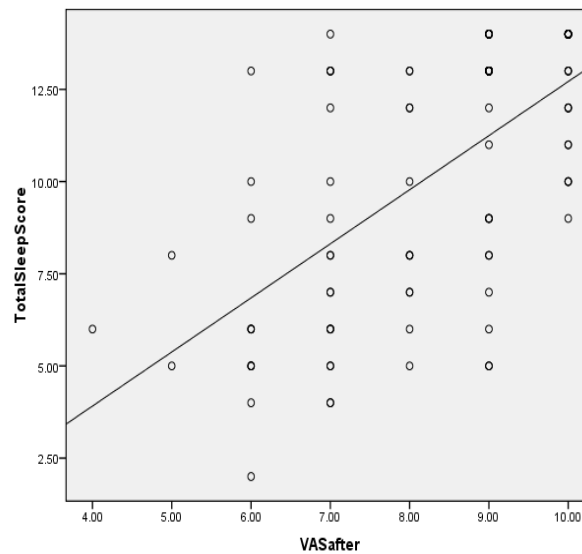
Figure (1): Correlation between VAS score and sleep score after intervention (r=+0.627,P<0.001)

DISCUSSION:

In fact, the rate of caesarean section (CS) is suddenly increasing all over the world, with pain and sleep disturbances being the most common complaints of women following a Cesarean Section. As a result, this increase in the rate of Cesarean Section necessitates the development of effective and safe measures to assist women in quickly resuming their

normal lives. Nursing intervention for women post-Cesarean section are complicated, and it must be targeted to each of the small discomforts, as these discomforts, if appropriately handled, will have a favorable impact on all of the other issues. (Gitanjali & Sreehari, 2018).

Regarding characteristics of the studied women, the current study revealed that more than a third of the study group and more than a quarter of the control group had completed a university degree, with no significant differences between the two groups. This finding matched that of Devi and Saharia (2017), who investigated the "Effect of PMR on post-operative analgesia" among patients undergoing abdominal surgery in India during the first two days after surgery and discovered that the majority of the study and control groups were housewives and married, respectively. This finding differed from that of Ismail and Elgzar (2018), who conducted a study titled "The Effect of Progressive Muscle Relaxation on Post Cesarean Section Pain, Quality of Sleep, and Physical Activity Limitation" and found that nearly equal percentages of both groups (32.5 percent and 35 percent) have secondary education. Furthermore, the study and control groups both had a large percentage of housewives with no significant differences between the two groups.

In terms of comparing the knowledge levels of the women in the study group pre and post intervention. This finding indicated that the majority of the studied women had poor knowledge prior to the intervention, but that this percentage was reduced to a small minority of them (10%) post the intervention, with a highly statistically significant difference in level of knowledge between pre and post the intervention at p value 0.001. This result was consistent with the findings of Ju, Ren, Chen, and Du (2019). who conducted a study titled "Efficacy of relaxation therapy as an effective nursing intervention for post-operative pain relief in patients undergoing abdominal surgery: A systematic review and meta-analysis," which showed that the vast majority of women had poor knowledge of Jacobson's progressive muscle relaxation technique before the program, but that their knowledge level improved to a higher level after the program, in which the vast majority of them had good knowledge. These findings could be explained by the fact that appropriate health education and instruction for women improves their level of understanding.

In relation to, number and percentage distribution of women in study group practice level about Jacobson's progressive muscle relaxation technique pre and post intervention. This finding

indicated that the majority of the studied women had poor practice prior to the intervention, but this percentage was reduced to 6% post the intervention, with a highly statistically significant difference in level of practice of studied women pre and post the intervention at p value 0.001. These findings matched with Yousefi and Taraghi (2021), those of a study titled "Progressive muscle relaxation and sleep quality: a literature review," which found that once the program was implemented, the vast majority of mothers had an acceptable practice of Jacobson's progressive muscle relaxation technique.

In relation to mean visual analogue scale (VAS), it was observed that, pre the intervention, the study group's VAS mean score was lower than the control group's (9.66 0.48 and 9.74 0.56, respectively), but there was no statistically significant difference between the two groups (P=0.447). The study group's VAS mean score was lower than the control group's following the intervention, with a highly statistically significant difference between the two groups at (P0.001). Furthermore, the difference between the means of the VAS scoring system among the study group before and after the intervention was statistically significant (P0.001), as was the difference between the control group. This finding differed with that of Ismail and Elgzar, (2018), who said that the difference in VAS mean score between the study group before and after the intervention was statistically significant (P=0.000). The difference between the control group and the experimental group was not statistically significant (P=0.088).

The majority of the study group had poor sleep quality compared to the vast majority of the control group before the intervention, with no statistically significant difference between them, while the higher percentage of the study group with poor sleep quality decreased to less than one quarter after the intervention. Furthermore, there was a statistically significant variation in sleep patterns between the study group before and after the intervention. A similar result was observed in Windartik, Yuniarti, and Akbar (2019) who, investigated the "Effectiveness of Relaxation Handheld Finger Technique and Benson Relaxation to the Changes Level of Post-Operative Pain Cesarean Section in Rsi Sakinag Mojokerto" and found that after the intervention, the vast majority of the study group had poor sleep quality, compared to more than two-thirds of the control group, with a statistically significant difference between them. This result, according to the researcher, revealed a possible good effect of progressive muscles relaxation technique on improving sleeping quality among women following Cesarean Section since

it supports the transition to the parasympathetic nervous system, which ensures physical and mental rest..

Regarding relationship between average scores of VAS, JPOM, sleep and demographic characteristics of the study group after intervention, the current study explained that, there was a negative relations between job, crowding index and VAS, JPOM, sleep quality. This finding was in contrary to Ashrafinia et al., (2019), who studied "The effects of Pilates exercise on sleep quality in postpartum women" and reported that, there was a significant statistically relations between job of the studied group and pain severity by Visual Analogue Scale(VAS) , Johanson pain_O_ Meter(JPOM) as well sleep pattern at P= 0.00.

The present study portrayed that, there was a significant association between Visual Analogue Scale score and sleep score of both group post intervention at (P <0.001). This finding was consistent with Varghese (2018),who studied "the effectiveness of progressive muscle relaxation therapy on postoperative pain" and clarified that, the correlation between sleep pattern among the intervention and control group after progressive muscle relaxation therapy was statistically significant at (P<0.001) . These results may be attributed to the fact that when the severity of post-operative pain reduced the quality of sleep was improved which related to Jacobson's progressive relaxation technique(JPRT) that improves sleep quality by relaxing the body, keeping blood pressure normal, stimulating blood circulation, and ensuring muscle relaxation.

CONCLUSION:

It was concluded that, there was an improvements in the post cesarean section women' knowledge and practices about Jacobson's progressive muscle relaxation technique after implementation of the intervention program than before its implementation. Additionally, the intervention - nursing technique of Jacobson's progressive muscle relaxation had a positive effect on post cesarean section women as represented by a decrease in percentages of the studied post cesarean section group who had a worst intolerable pain before the intervention implementation to 4% of them had such pain intensity after the intervention implementation, while the higher percentage of the study group, who had poor quality of sleep before the intervention implementation reduced to be 16% after the intervention .

RECOMMENDATION:

The following recommendation should be considered based on the finding of this study:

A. For the nurses:

Providing in-service training, up-to-dated, regular educational programs or refresher courses about post cesarean section pain and sleep disturbances and preventive Jacobson's progressive muscle relaxation technique should be developed for nurses.

This should provide them with up-dated knowledge, which can be translated in to practice. Programs should be directed at all levels of health care providers including women, family or caregivers.

B. For the post cesarean women:

Before application of the progressive muscle relaxation technique PMR technique, the environment and the mother should be prepared; the environment must be quiet and non-distracting in order to relax, well ventilated, softly lighted and well cleaned. Post discharge follow up of those women is needed to look for long-term effect of Jacobson's progressive muscle relaxation technique on quality of life for them.

C. For further study:

Replication of the study using a large probability sample from a broad geographical area to allow greater generalization of the results and compare for differences between Egypt and other countries.

Study exploration of the effect of Jacobson's progressive muscle relaxation technique PMR on stress, fatigue, and quality of life during postpartum.

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فاعلية تطبيق تقنية الاسترخاء العضلي لجاكبسون علي آلام ما بعد الولادة القيصرية وجودة النوم

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الخلاصـــــة

الألم واضطرابات النوم من اكثر المتاعب التي تعاني منها النساء بعد الولادة القيصرية. يمكن السيطرة على آلام ما بعد الولادة وانخفاض جودة النوم بطرق دوائية وغير دوائية و الأساليب الغير دوائية هي عباره عن أجزاء من العلاج البديل والتكميلي ، حيث تعتبر تقنية الاسترخاء التقدمي لجاكوبسون أحد التدخلات غير الدوائية. لذلك تهدف هذه الدراسة إلى تقييم فعالية تطبيق تقنية الاسترخاء التقدمي لجاكوبسون على آلام ما بعد الولادة القيصرية وجودة النوم. تم استخدام تصميم بحثي شبه تجريبي. وقد أجريت هذه الدراسة في قسم التوليد التابعة لمستشفى جامعة الأزهر ، بدمياط الجديدة. وشتملت الدراسة علي عينة مكونة من 100 سيدة خضعن لعملية قيصرية أثناء فترة جمع البيانات خلال 11 شهرًا بدات من اول يناير 2021 حتى نهاية نوفمبر 2021. .كما تم استخدام خمس أدوات لجمع البيانات التي شملت ، ورقة استبيان مقابلة للنساء ،استمارة ملاحظة المستخدمة لتحديد أداء النساء فيما يتعلق بتقنية الاسترخاء العضلي لجاكوبسون ، مقياس الألم التناظري البصري (VAS) لتقييم شدة الألم ، نسخة معدلة من مقياس الالم لجونسون لقياس شدة المكونات الحسية والعاطفية للألم ، مقياس جرونينجن لجودة النوم لقياس جودة النوم الشخصية. وقد أظهرت النتائج أن مستويات الألم قلت بعد إجراء تقنية الاسترخاء التقدمي لجاكوبسون بشكل كبير بين مجموعة الدراسة بمقياس الألم البصري التناظري ، والنسخة المعدلة من مقياس الألم لجونسون مقارنة بالمجموعة الضابطة ، بينما أقل من ربع (16٪) مجموعة الدراسة كانو يعانون من قلةجودة النوم مقارنة بـ 90٪ من المجموعة الضابطة. وقد خلصت الدراسة الي : كان لتقنية الاسترخاء العضلي لجاكبسون تأثير إيجابي على معرفة السيدة وأدائها كما يتضح من انخفاض شدة الألم وتحسين نوعية النوم بين النساء الخاضعات للدراسة بعد العملية القيصرية. لذلك اوصت الدراسة بوضع برامج صحية لتقديم تقنية الاسترخاء التقدمي لجاكوبسون كجزء من الرعاية التمريضية للسيدات بعد الولادة القيصرية.

الكلمات المرشدة: الاسترخاء العضلي لجاكوبسون ، ما بعد الولادة القيصرية ، الألم ، جودة النوم