



Effect of Benson Muscle Relaxation Technique on Incisional Pain, Fatigue, and Anxiety Levels among Patients Post Abdominal Surgery

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Abstract

Background: Trans-abdominal incisions are used in abdominal surgery. Persistent postoperative discomfort is a well-known side effect of this operation. Benson's Muscle Relaxation Technique is an effective complementary and non-pharmacological technique used to reduce incisional pain, fatigue, and anxiety levels. **Aim:** To determine the effect of Benson Muscle Relaxation Technique on incisional pain, fatigue, and anxiety levels among patients post abdominal surgery. **Design:** A quasi-experimental design was used to conduct this study. **Setting:** The study was conducted in the surgical adult department affiliated with Ain Shims University Hospital. **Subject:** A non-probability purposive sampling technique was used to recruit 100 post-abdominal surgery patients who were randomly assigned into two groups, 50 for each of the study and control groups. **Tools:** (I) a structured interview questionnaire, (II) a numerical pain rating scale, (III) a fatigue assessment scale, and (IV) an anxiety rating scale. **Results:** The findings demonstrated that there was a statistically significant difference between mean pretest and posttest scores in the study group regarding pain level at the $p < 0.05$ level. Furthermore, there were highly statistically significant differences in fatigue scores in the study group compared to the control group pain ($P < 0.05$). Highly statistically significant differences were found between both groups as regards anxiety levels. **Conclusion:** The Benson Muscle Relaxation Technique was found to be useful in reducing

Keywords: Anxiety level, Benson Muscle Relaxation Technique, Fatigue level Incisional Pain, Patients post abdominal surgery.

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Abdominal surgery is an invasive procedure that requires a bodily incision and is frequently associated with blood, pain, and the risk of morbidity and mortality. As a result, the time before surgery is stressful for surgical patients. In the operative care of adult patients, pain is seen as a challenging condition to address. The majority of adult patients who were scheduled for surgery complained of pain and an increase in their anxiety level (**Kaur et al., 2019**).

Pain is one of the most common symptoms of postoperative patients all over the world. Despite the drugs and anesthetic treatments that are available, postoperative discomfort is common. Despite the use of sedatives, around 41% of postoperative patients experienced moderate to severe pain (**Hisato and Umemoto, 2017**). According to a large survey, 86 % of 300 patients experienced postoperative pain, with 75 % experiencing moderate/severe pain immediately after surgery. Even though around 88 % were given pain medications, 80 % reported side effects and 39 % continued to experience moderate/severe pain after taking them (**Gan et al., 2017**).

Furthermore, acute postoperative pain is typically undertreated. Poor postoperative pain management may increase the risk of patients having physiological pain responses that have unfavorable effects on the body following surgery or, in some sensitive people, acquiring chronic pain problems. For example, 74% of 300 surgical patients were still in agonizing pain after being discharged from the hospital (**Asadizaker et al., 2017**).

Fatigue is one of the most common and debilitating side effects of cancer diagnosis and treatment. Generalized weakness, poor

Introduction:

mental concentration, insomnia or hypersomnia, and emotional changes are among the clinical symptoms of fatigue that significantly reduce patients' overall quality of life during and after treatment (**Armstrong & Gilbert, 2018**).

Pain and fatigue are unpleasant symptoms that most women endure throughout the postoperative period. Effective pain and fatigue management can lead to increased comfort, improved life quality, a faster return to normal life, shorter hospital stays, and cheaper expenditures (**Chanif et al., 2019**).

High levels of anxiety have been linked to poorer outcomes in people with abdominal surgery. Anxiety is defined as a state in which a person feels apprehensive and their autonomous nervous system is activated in response to a vague and unclear threat. High levels of anxiety have been linked to a reduced immunological response as well as changes in body function (**Noe, 2020**).

The employment of nonpharmacological and complementary approaches appears to be suitable (**Harorani et al., 2020**). Music therapy, yoga, biofeedback, mind distraction techniques, relaxation, lifestyle changes, time management, guided imagery, and cognitive restructuring are examples of common complementary and nonpharmacological therapies. The relaxation approach is a safe and effective nursing intervention that has been proposed as a complementary and non-pharmacological method (**Yilmaz & Arslan, 2019**). To reduce the adverse effects of abdominal surgery, complementary and non-pharmacological intervention has been advised. According to the findings of recent studies, complementary and non-pharmacological interventions are more efficient, less invasive, and more accessible than other treatments, reducing stress over its



effect on physical and psychological symptoms such as anxiety, pain, depression, mood, self-esteem, and improving the quality of life of these patients (Yoon & Park, 2019 and Van et al., 2016).

Benson's Relaxation Technique (BRT) is one of the most effective muscular relaxation procedures for cancer patients receiving chemotherapy. Herbert Benson (1975) established this technique, stating that it can generate a relaxation response by lowering autonomic nervous system activity (Benson & Klipper, 2018). It is the most effective and simple technique of nurse intervention. It involves mindfulness practices that affect a wide range of physical and psychological problems in patients due to the influence of total muscular relaxation. Increasing patients' comfort is one of the goals for which nurses strive, and complementary and non-pharmacological interventions help to attain this goal (Jordan et al., 2018).

Medical-surgical nurses play an important role in post-abdominal surgery patient counseling, education, and advising to ensure the technique's efficacy. Also, play an important role in providing support to patients to help them minimize and improve their pain, exhaustion, and anxiety levels. Non-pharmacological therapeutic tactics and interventions used to ease pain include pharmaceutical therapy, information, distraction, attention focusing, and relaxation treatments (Lilly and Dakshayani, 2018)

Significance of the study:

All nurses who care for patients following surgery are concerned with ensuring safe and effective pain management. Nurses at all levels of practice are primarily patient advocates who play an essential role in postoperative pain management (Ward, 2015). BRT can be used to increase patients' comfort, and it is critical to avoid and manage side effects to maintain patients' quality of life

and allow them to continue safely (Schiessel & Baracos, 2018). Complementary and non-pharmacological intervention is more efficient, less invasive, and more accessible than other treatments, according to the latest research findings and best nursing practice.

Furthermore, it lowers treatment expenses.

Aim of the study

This study aimed to determine the effect of Benson Muscle Relaxation Technique on incisional pain, fatigue, and anxiety levels among patients post abdominal surgery through:

- Assessing pain level among post abdominal surgery patients.
- Assessing fatigue level among post abdominal surgery patients.
- Assessing anxiety level among post abdominal surgery patients.
- Evaluating the effect of Benson Muscle Relaxation Technique on incisional pain, fatigue, and anxiety levels among patients post abdominal surgery.

Research hypothesis:

There will be a statistically significant difference and reduction in the pain, fatigue, and anxiety levels among post-abdominal surgery patients in the study group as compared to the control group.

Subjects and Methods:

Research design:

To achieve the study's aim, A quasi-experimental design was used to conduct this study.

Setting:

The study was conducted in the surgical adult department affiliated to Ain Shims University Hospital. This hospital is one of the largest public teaching hospitals in the Egypt region, with a big number of patients from various socioeconomic and educational levels coming from all over regions to receive health care.



Subjects:

A non-probability purposive sampling technique was utilized to choose a sample of 100 post-abdominal surgery patients who were randomly assigned to one of two groups, 50 for the study group (who underwent Benson Muscle Relaxation Technique) and 50 for the control group (who received the routine care only). They were chosen during a six-month period, commencing in June 2021, and ending in November 2021. They were split into two equal groups based on their hospitalization admission code number.

Sample size calculation:

The sample size was computed using the level of significance of power analysis of 0.95(=1-0.95=0.5) at alpha. The significance was set at .05 (one-sided) with a big effect size (0.5), and the high significance was set at 0.001.

Inclusion criteria included: Adult patients, male and female, their age of 18 and above, they are not suffering from chronic disease, going for abdominal surgery, and agreed to take part in our study

Exclusion criteria included: Patients are having other chronic or mental diseases, patients with history of chronic pain, and patients who disagreed to participate in the study.

Tools of data collection:

Four tools were used in the current study as follows:

Tool (I): A structured interview questionnaire: Was developed by the

researchers after reviewing related literature.

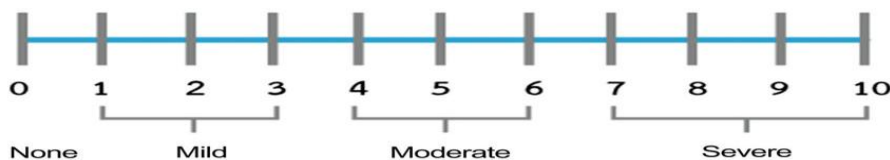
It was composed of two parts:

Part (1): It included demographic data which involved four items related to age, gender, educational level, and residence.

Part (2): It included the medical history of patients; it consisted of 4 items about previous hospitalization, previous surgery, type of surgery, and history of analgesic consumption.

Tool (II):- Numeric Rating Scale (NRS) for pain: (McCaffery, 1999):

The Numeric Rating Scale (NRS) is a common standardized pain assessment scale for determining pain severity. However, literate patients ($r = 0.94$) outperformed uneducated ones ($r = 0.71$). The Numeric Rating Scale (NRS) is used a single 11-point numeric scale to allow respondents to select a value between 0 and 10 to describe the intensity of their pain. NRS has good test-retest reliability in both literate and illiterate patients ($r = 0.96$ & 0.95 , respectively). As a result, NRS was used to quantify pain severity before and after each massage session in this study, with patients asked to select a number that matched their level of discomfort. The NRS uses a 0-10 scale. The NRS has a 0-10 scale that can be used to describe pain severity as no pain (0), mild pain (1-3), moderate pain (4-6), and severe pain (7-8). (7-10).



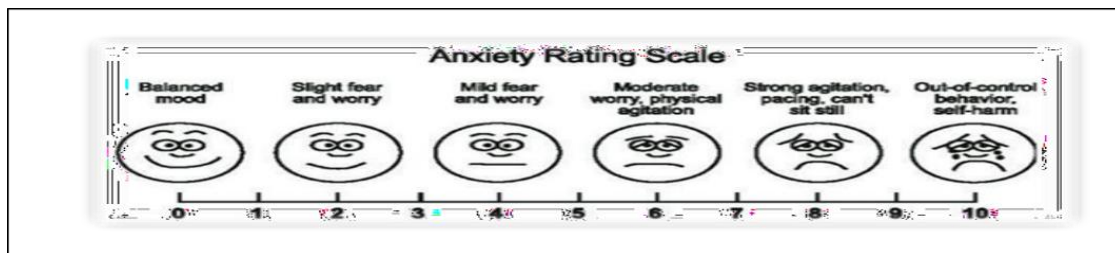
Tool III: Fatigue assessment scale:

This tool was adapted from Kleijn et al. (2011) and consisted of a self-developed rating scale of ten items (which assesses the fatigue level of individuals during various activities in a week in terms of physical, social, psychological, and spiritual domains and its relationship with time of the day). The



scores ranged from 0 (no weariness) to 10, with a total score range of 0 to 100. No fatigue, very little fatigue, light, moderate, severe, and worst are denoted by 0, 1-9, 10-30, 31-60, 61-80, and 81-100, respectively. The scale's reliability is deemed good, with a Cronbach's alpha of 0.81 for the overall score.

Tool IV- Anxiety Rating Scale: This was developed by (Bloch, 2009) to assess the level of anxiety experienced by the patient post abdominal surgery. It is a straight line, the ends of which are defined as the extreme limits of the sensation to be measured from 0 (balanced mood) to 10 (out of control). The anxiety rating scale scoring was divided into six main parts: the first part graded 0 which indicated balanced mood, the second part from 1-2 reflecting slight fear and worry, the third part from 3-4 indicating mild fear, and the fourth part graded 5 indicating moderate fear, the fifth part from 6-7 reflect strong agitation and the six-part from 8-10 indicate out of control behavior.



Validity and Reliability of the tools:

The content validity of the tools and the instructional guideline, their clarity, comprehensiveness, appropriateness, and relevance were reviewed by five expert professors: in the medical-surgical nursing field. Modifications were made according to the panel judgment to ensure sentence clarity and content appropriateness.

The reliability of tools was tested by using Cronbach's alpha coefficient test, which revealed that the tools consisted of relatively homogenous items as shown by the moderate to high reliability of each tool. The test-retest reliability coefficient of tool I was 0.89, tool II was 0.95, tool III has been demonstrated as $r = 0.81$, and tool IV was 0.79. To assess the clarity and feasibility of the research method. A pilot study was conducted on 10% (10 patients) of the entire sample. To produce the final form of the tools, no modifications were made. Patients involved in the pilot were excluded from the study

Ethical considerations:

Before beginning the study, the researchers met with the medical and nursing directors of the chosen facilities to explain the study's aim and gain their agreement. Patients' written agreement was gained in exchange for their cooperation. To secure authorization for data collection, the purpose of the study was stated, as well as the expected outcomes from its implementation. The study's aim was presented to the participants. The patients were informed that participation in the study was entirely voluntary, and they were free to decline from the study at any time, without giving any reason. Patients were told that their information would be kept private and utilized for research purposes only.

Procedure of data collection:

The study included 100 patients with abdominal surgery. The researchers visited the previously selected settings two days / a week from 9 am to 1 pm on the morning shift (Sunday and Monday). Data were collected within six months, from the beginning of July 2021 to the end of December 2021. Approximately, 40-50 minutes were taken with each participant to complete each interview tool.



Two of the researchers met -abdominal surgery patients individually at previously selected settings and explain the aim of the study after introducing themselves to patients. The researchers used face-to-face interviews and they read the questions and possible answers to the patients to help them fill their responses in the tools.

The post-abdominal surgery patients were met over three consecutive days to do the following:

For the first time, the researchers - complete the questionnaires and interviewed each patient before applying the technique to collect baseline data (demographic and medical history, pain NRS, Fatigue assessment scale, and Anxiety Rating Scale), and do the first application of Benson's relaxation technique, which is followed by the NRS, Fatigue assessment scale and Anxiety Rating Scale.

The second time, the researchers re- complete the pain NRS, Fatigue assessment scale, and Anxiety Rating Scale pre & post-application of Benson's relaxation technique post-surgery.

In the third time, the researchers re- complete the pain NRS, Fatigue assessment scale, and Anxiety Rating Scale pre & post-application of Benson's relaxation technique, two days post-surgery.

The researchers instructed the - patients to practice the relaxation technique correctly twice a day in the morning and evening for 20 min, for two months in their homes

Intervention

The instruction of Benson's relaxation technique included the following steps:

-Sit in a comfortable position.

-Close the eyes.

-Relax all muscles beginning from the soles of the feet to the top of the head moving forward up, and relax all parts of the body.

-Take a breath from the nose. Exhale from the mouth whenever exhaling, repeat one word or number (as Allah or one) inhale, and exhale with comfort and confidence.

-Do this for 20 minutes. Try to keep the body and muscles relaxed and repeat the desired word in their mind. Then open the eyes slowly and do not move or stand up for a few minutes.

Patients in the control group received routine hospital care only such as examination, wound dressing, and medication administration.

Administrative design:

Administrative permission was obtained through an issued letter affiliated to Ain Shims University Hospital Directors of the previously selected department to achieve this study.

Statistical analysis:

The data were examined using SPSS statistical software version 20. Continuous data were gathered before and after the massage for three days and expressed as mean standard deviation (SD). Categorical data were expressed using numbers and percentages. The independent t-test was used to compare the two groups, while the paired t-test was employed to compare the differences in each group before and after a massage session. Changes in pain, exhaustion, and anxiety levels were examined using a one-way repeated-measures analysis of variance (ANOVA). The Mann-Whitney test was used for variables that did not match the parametric assumptions. To investigate the association between the two variables, the chi-square test was used. In the instance of noncontiguous data, the chi-square test was performed to examine the connection



between two variables. Statistical significance was defined as a P value of less than 0.05.

Results:

Table (1) shows the demographic characteristics of the studied post-abdominal surgery patients. It was observed that post-abdominal surgery patients' mean age in the study group was 42.13 ± 12.46 , whereas in the control group it was 41.12 ± 7.43 years, 54% and 56% of the studied patients in both groups were females. Regarding the level of education, more over half of the post-abdominal surgery patients in the study group (56%) had secondary education, compared to 52% in the control group. In terms of residence, the same table revealed that (70%) of the studied patients in the studied group lived in urban areas, compared to 74% in the control group. In terms of sociodemographic variables, there was no statistically significant difference between the study and control groups.

From **table 2**, it was clear that (76% and 70%) of post-abdominal surgery patients in both the study group and the control group respectively were not previously hospitalized. Regarding previous surgery, 74% of the studied patients in the study group were and had not had previous surgery compared to 68% in the control group. Both the study and the control groups (66% and 60%) respectively not had a history of analgesic consumption and (40% and 42%) of them had a higher prevalence of hepato-biliary.

Figure 1: Revealed that during the pretest, 82% and 84% of post-abdominal

surgery patients in the study and control groups, respectively, reported moderate pain. During the posttest, all of the post-abdominal surgery patients (94) experienced minor discomfort, compared to 56% of the control group.

Table (3): Illustrates that there was a significant difference and improvement in fatigue level among the studied patients with a decrease in the fatigue level scores pre and post-Benson's relaxation technique implementation.

From **table 4**, it was observed that there was a highly statistically significant ($P < 0.001$) decrease in fatigue mean score among the studied patients post-Benson's relaxation technique implementation ($n=100$).

Table (5) displays the mean anxiety scores of the patients in the study and control groups following abdominal surgery. The results showed that there was no statistically significant difference between the study and control groups prior to the application of Benson's relaxing technique. There was a reduction in anxiety scores following the implementation of Benson's relaxation technique, with a highly statistically significant difference between the study and control groups ($P < 0.001$).

This figure (2) reveals that (68%) of the patients in the study had severe anxiety following abdominal surgery prior to using Benson's relaxation technique, compared to 15% of them after implementing Benson's relaxation technique.



Table (1): Frequency and percentage distribution of the studied post-abdominal surgery patients according to their demographic characteristics:

Item	Study group (n=50)		Control group (n=50)		X ²	P - value
	No.	%	No.	%		
Patients' age						
18 < 40 -	29	58.0	30	60	3	0.5 ^{NS}
40 ≤ 60 -	21	42.0	20	40		
Mean ± Stander deviation	42.13 ± 12.46		41.12 ± 7.43			
Gender						
Male -	23	46	22	44	4	0.5 ^{NS}
Female -	27	54	28	56		
Patients' education						
-Primary education	10	20.0	11	22	3	0.7 ^{NS}
-Secondary education	28	56.0	26	52		
-University education	12	24.0	13	26		
Residence:						
-Urban	35	70	37	74	2	1.6 ^{NS}
-Rural	15	30	13	26		

NS-non-significant

Table (2): Frequency and percentage distribution of the studied post-abdominal surgery patients according to their medical history

Medical history	Study group (n=50)		Control group (n=50)		X ²	p-value
	No.	%	No.	%		
Previous hospitalization						
Yes -	12	24.0	15	30.0	1	0.06
No -	38	76.0	30	70.0		
Previous surgery						
Yes -	13	26.0	16	32	1	0.04
No -	37	74.0	34	68		
History of analgesic consumption						
Yes -	17	34.0	20	40	1	0.7
No -	33	66.0	30	60		
Type of surgery						
- Hernia	40	22.0	46	20	2	2.3
- Gastrointestinal	36	16.0	30	18		
- Hepato-biliary	84	40.0	80	42		
- others	40	22.0	44	20		



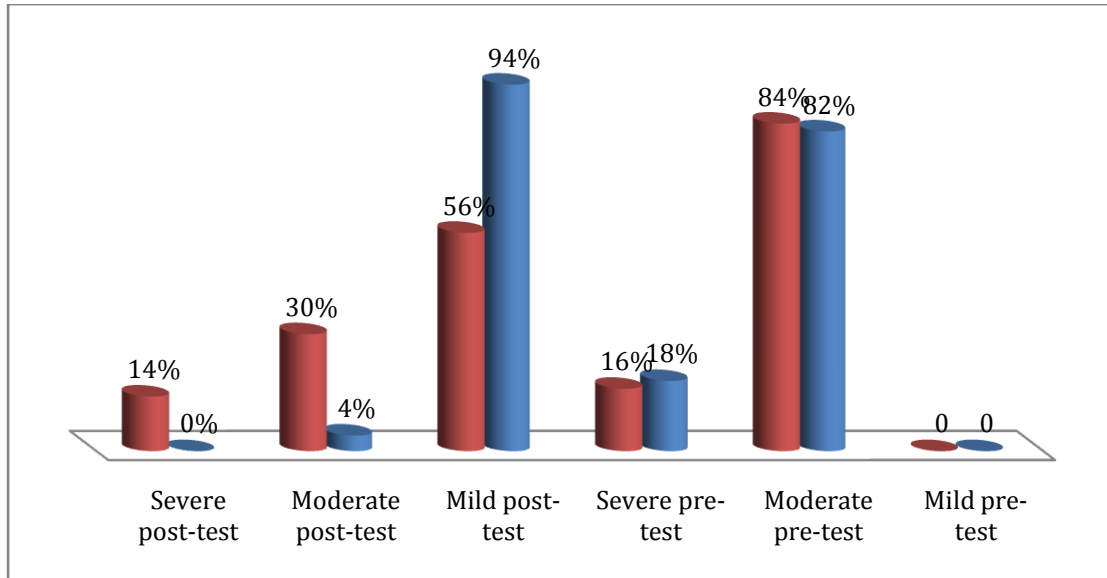


Figure 1: Percentage distribution of the studied post abdominal surgery patients in study and control group according to pretest and post-test level of incisional pain (N=100)

Table (3): Frequency and percentage distribution of fatigue level of the studied patient's pre and post- Benson's relaxation technique implementation (n=100)

Fatigue level	Control group (n=50)		Study group (n=50)		T	P-value
	No	%	No	%		
No fatigue (0)	0	0.0	2	4	17.024	<0.001*
Very little (1-9)	0	0.0	10	20		
Mild (10-30)	0	0.0	28	56		
Moderate (3- 60)	20	40	10	20		
Severe (61-80)	16	32	0	0.0		
Worst (81-100)	14	28	0	0.0		

Table (4): Differences between adult patients' fatigue mean scores post- Benson's relaxation technique implementation (n=100)

Items	Control group (n=50)	Study group (n=50)	P- value
Fatigue score	47.33+ 3.06	20.01+ 2.24	0.127 (<0.001*)

*highly Significance at 0.0001 levels

Table (5): Differences between the studied patients' fatigue mean scores post- Benson's relaxation technique implementation (n=100)

Anxiety assessment	Control group n=50	Study group n=50	t-test	P-value
	Mean ±SD	Mean ±SD		
Level of anxiety after Benson's relaxation technique implementation.				
Pre Benson's relaxation technique implementation	6.69±.93	6.54±.94	1.08	>0.05



Post Benson's relaxation technique implementation	6.46±.73	2.63±0.64	17.73	<0.001* *
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A Statistical significant $p \leq 0.05$ Highly Statistical significant $p \leq 0.001$

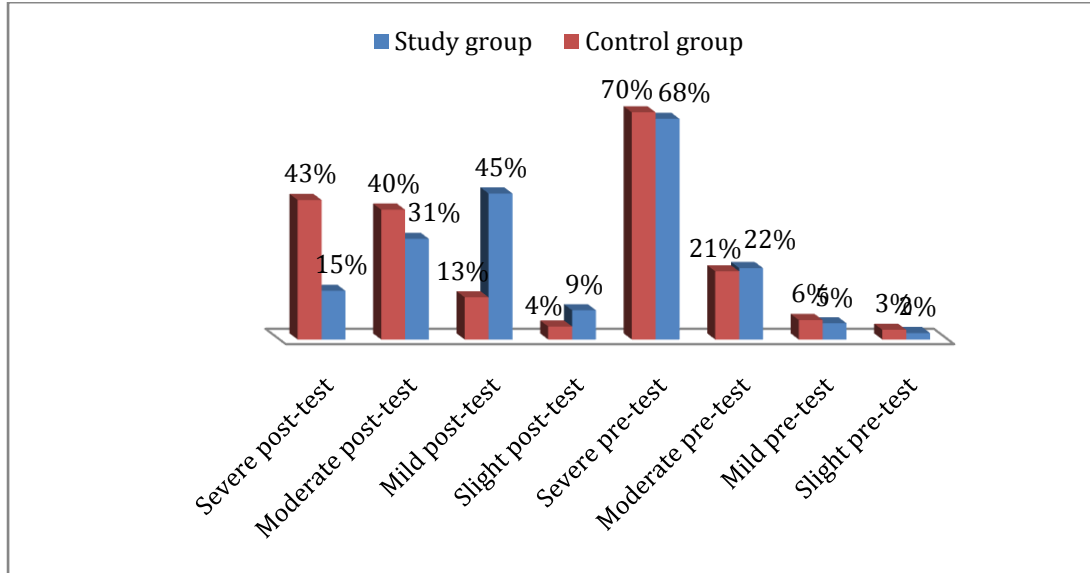


Figure 2: Distribution of the studied patients in the study and control group according to the level of anxiety pre and post-Benson's relaxation technique implementation (n=100)

Discussion:

Pain is one of the most common symptoms described by people suffering from acute and chronic illnesses. Nurses have an important role in postoperative pain treatment. Fatigue is the most prevalent post-abdominal surgical symptom, and it is characterised as a severe, persistent, and subjective sense of physical, emotional, and/or cognitive exhaustion that interferes with normal functioning (Bower, 2014). Anxiety increases pain perception and contributes significantly to discomfort. The two most common ways to pain management are pharmacologic and non-pharmacologic. On the other hand, the pharmaceutical treatment may not entirely alleviate all elements of postoperative pain. As a result, non-pharmacological treatments such as massage may aid in the relief of postoperative pain (Chanif et al., 2019). As one of the alternative therapies, the Benson Muscle Relaxation Technique has been shown

to improve postoperative pain, exhaustion, and anxiety in postoperative patients, whether actual or imagined. The current study found that the mean age of post-abdominal surgery patients in the study group was 42.13 12.46 years, whereas it was 41.12 7.43 years in the control group, that more than half of the studied patients in both groups were females, that more than half of patients in both groups had secondary education, and that the majority of them lived in urban areas in both groups. In terms of sociodemographic variables, there was no statistically significant difference between the study and control groups. In terms of sociodemographic traits, the two groups were similar. This could be due to the study sample being selected by planned random sampling. This was beneficial to the current investigation since it ensured homogeneity of the two study populations, generalization of the study



results, and avoiding the confounding variables' effect.

According to the study's findings, more than half of the post-abdominal surgery patients in both the study and control groups were female. This could be because males and females respond to pain differently, with females being more sensitive to pain. These variations appear to be related to female sex hormones (**Bartley & Fillingim, 2018**). Furthermore, women experienced discomfort in more anatomical areas and for a longer amount of time than men (**Campesi et al., 2017**).

According to the findings of this study, the majority of post-abdominal surgery patients in both the study and control groups were not previously hospitalized, and there was no significant difference in their medical data between the two groups. According to the researchers, this outcome indicates that the baseline levels of pain, exhaustion, and anxiety were the same in both groups. Such findings were also reported in **Neeta's (2021)** study, "A Quasi-Experimental Study to Evaluate the Effects of Foot Massage on Incisional Pain in Post-surgery Patients Admitted to Selected Hospitals in Hoshiarpur, Punjab."

The current study found that during the pretest, the majority of post-abdominal surgery patients in both the study and control groups experienced significant discomfort. **Lorentzen et al. (2017)** concluded in their study titled Prospective examination of pain experience, beliefs and attitudes, and pain treatment of a cohort of Danish surgical patients that the majority of post-patients in both experimental and control groups reported a moderate level of pain.

The current study's findings revealed that practically all post-abdominal surgery patients had a mild level of pain in the study after foot

massage application during the post-test. According to the researchers, this finding demonstrates the favourable effect of relaxation application, which satisfies the needs of the patients and needs in pain reduction.

This finding is similar to that of Wang and Keck (2014), who investigated "Foot and hand massage as an intervention for postoperative pain" and discovered that 20 minutes of foot and hand massage on the first postoperative day significantly reduced both pain intensity and pain distress in postoperative patients.

Similarly, **Chithra and D'Almeida (2014)** discovered a significant reduction in pain in the study group following relaxation technique compared to the control group in women who had a hysterectomy when they studied "The effect of relaxation technique on pain in women who have had an abdominal hysterectomy at Mangalore's selected hospitals."

Furthermore, the findings are consistent with the findings of **Kaur et al., (2017)**, who investigated "The effects of hand-foot massage on postoperative pain in patients who have had open-heart surgery" and discovered that relaxation techniques were effective in decreasing postoperative pain in open-heart surgery patients.

This finding is consistent with the findings of **Joy et al., (2016)**, who studied and assessed the effect of relaxation techniques on pain in post-abdominal surgery patients in Delhi and discovered that the mean score of pain intensity was significantly lower in the study group that received the intervention compared to the control group.

The current study results demonstrated that there was a statistically significant difference between the mean pretest and post-test



scores of post-abdominal surgery patients regarding the amount of pain in the study group at the p0.05 level. According to the researchers, it demonstrated the safe effects of foot massage application in pain relief.

These findings are consistent with those of **Wei et al., (2020)**, who investigated the "Efficacy of an Educational Intervention on Levels of Pain, Anxiety, and Self-Efficacy for Patients with Cancer in an Internal Medicine Clinic" and discovered that patients receiving intervention therapy experienced a significant decrease in pain.

The current study's findings demonstrated a significant benefit of Benson's relaxation technique on pain levels in patients following abdominal surgery, supporting the study's goal and hypothesis. These findings are consistent with **Taylor et al., (2017)**, who investigated the effects of adjunctive Swedish massage on postoperative patients and discovered that on postoperative day 2, massage was more effective than usual care for affective and sensory pain, and confirmed a remarkable reduction in pain and improvement.

The current study's findings revealed a substantial difference and improvement in fatigue level among the analyzed patients, with lower fatigue level scores pre and post-relaxation Benson's technique application. According to the researchers, it demonstrated the positive influence of Benson's relaxation approach on fatigue levels (**Yilmaz & Arslan, 2019**).

The current study findings revealed that there was a reduction in anxiety scores following the implementation of Benson's relaxation technique, with a highly statistically significant difference between the study and control groups. It confirmed the efficiency of this

relaxing strategy, according to the researchers.

Patients undergoing abdominal surgery frequently endure high levels of psychological stress, anxiety, and despair (**Harorani et al., 2020**). Cortisol is the first stress hormone generated by the adrenal glands (**Sahraikhil et al., 2017**). BRT (Benson's relaxation method) reduces anxiety by lowering muscle tension and cortisol secretion. It has an impact on heart rate, respiratory function, and cardiac workload as well (**Elsayed, et al., 2018**). This method regulates the hypothalamus and exerts its effects by decreasing sympathetic nervous system stimulation and increasing parasympathetic nervous system activation (**Kapogiannis et al., 2018**). Nonpharmacological treatments such as Benson's relaxation technique can be useful for minimizing and regulating patients' issues and providing them with more psychological improvement to assist them cope with their physical condition (**Noruzi zamenjani et al., 2019**).

On the contrary, **Kurniasari et al. (2016)** did a study in Yogyakarta on "The Effect Benson Relaxation Technique with Anxiety in Hemodialysis Patients" and found that Benson's relaxation technique has no effect on anxiety ratings in hemodialysis patients.

Conclusion:

Based on the results and hypotheses of the present study, the study findings concluded that Benson Muscle Relaxation Technique was found to be useful in reducing incisional pain, fatigue, and anxiety levels among patients post abdominal surgery. The study revealed that there was a difference between mean pretest and post-test scores were found statistically significant at $p < 0.05$ level in the study group regarding pain, fatigue, and anxiety levels.

Recommendations:



Benson Muscle Relaxation Technique is recommended alongside treatment for post-abdominal surgery patients to reduce incisional pain, fatigue, and anxiety level as a simple, effective, and applicable strategy for pain control, fatigue, and anxiety - improvement plan. Incorporate a systematic pain assessment into their daily routine. Nurses. An educational programme must be implemented to increase nurses' understanding of pain and how to manage it with non-pharmacological techniques. An increase in nurses' awareness of the need of providing massage following surgery helps alleviate many of these patients' emotions of pain, weariness, and worry. Nurses can also help post-operative patients and caregivers improve their knowledge and abilities by teaching them how to apply the Benson Muscle Relaxation Technique to decrease pain, exhaustion, and anxiety following surgery. Further studies and replication of the current study with a larger sample of nurses in different settings are required for generalizing the results.

References:

Tahmasbi, H. and Hasani, S. Effect of Benson's relaxation technique on the anxiety of patients undergoing coronary angiography: A randomized control trial. *Journal of Nursing and Midwifery Sciences*. 2016; 3(1): 8-14. DOI: [10.18869/acadpub.jnms.3.1.8](https://doi.org/10.18869/acadpub.jnms.3.1.8)

Armstrong, T.S., & Gilbert, M.R. (2018): Practical strategies for management of fatigue and sleep disorders in people with brain tumors. *Neuro-Oncol*; 14(suppl 4):i65-72. doi:10.1093/neurons/nos210

Benson H. and Klipper MZ. The relaxation response. New York: HarperCollins. 2017; 1975. Book.

Bloch, D. (2009): Healing from Depression, Anxiety Rating Scale, 1st, Celestial arts, California, p; 386. DOI: [10.1176/appi.psy.43.5.386](https://doi.org/10.1176/appi.psy.43.5.386)

Chanif, C., Petpichetchian, W., & Chongchareon, W. (2013). Does Foot Massage Relieve Acute Postoperative Pain? A Literature Review. *Nurse Media Journal of Nursing*, 3(1), 483 - 497. <https://doi.org/10.14710/nmjn.v3i1.4452>

Elsayed EB, Radwan EH, Elashri NI., and El-Gilany AH. The Effect of Benson's Relaxation Technique on Anxiety, Depression and Sleep Quality of Elderly Patients Undergoing Hemodialysis. *International journal of nursing didactics* 2019; 9: (02), Available at <https://doi.org/10.15520/ijnd.v9i02.2443>, 2019

Gan TJ, Habib AS, Miller TE, White W, Apfelbaum JL. (2017): Incidence, patient satisfaction, and perceptions of post-surgical pain: Results from a US national survey. *Current Medical Research and Opinion*, Jan 1; 30(1):149-60. DOI: [10.1185/03007995.2013.860019](https://doi.org/10.1185/03007995.2013.860019)

Harorani M, Davodabadya F, Farahania Z, hezavec, AK, and Rafieid, F. The effect of Benson's relaxation response on sleep quality and anorexia in cancer patients undergoing chemotherapy: A randomized controlled trial. *Complementary Therapies in Medicine*. 2020; 50, (5), 102344. <https://doi.org/10.1016/j.ctim.2020.102344>.

Hisato Takagi TA, Umemoto T. (2017): Perioperative Depression or Anxiety and Postoperative Mortality in Cardiac Surgery: A Systematic Review and Meta-analysis, Springer. DOI: [10.1007/s00380-017-1022-3](https://doi.org/10.1007/s00380-017-1022-3)

Jordan K, Gralla R, Jahn, F. and Molassiotis A. International antiemetic guidelines on chemotherapy-induced nausea and vomiting (CINV): content and implementation in daily routine practice. *Eur. J. Pharmacol*. 2018; 722, 197-202. doi: 10.1016/j.ejphar.2013.09.073.

Kapogiannis A, Tsoli S. and Chrousos G. Investigating the effects of the progressive muscle relaxation-guided imagery combination on patients with Cancer Receiving chemotherapy treatment: A systematic review of randomized controlled



trials. EXPLORE. 2018; 14(2):137–143.
DOI: [10.1016/j.explore.2017.10.008](https://doi.org/10.1016/j.explore.2017.10.008)

Kaur S, Lobo DJ, Latha T. (2019): Role of foot and hand massage on the anxiety for post-operative open-heart surgery patients: A Randomized Control Trial. International Journal of Nursing Education, Jul 1; 5(2):205.
Kleijn, W., De, V. J., Wijnen, P., & Drent, M. (2011): Minimal (clinically) important differences for the Fatigue Assessment Scale in sarcoidosis. Respir Med; 105: 1388-95.
DOI: [10.1016/j.rmed.2011.05.004](https://doi.org/10.1016/j.rmed.2011.05.004)

Kurniasari A N, Kustanti A. and Harmilah H. The Effect Benson Relaxation Technique with Anxiety in Hemodialysis Patients in Yogyakarta. Indonesian Journal of Nursing Practices. 2016; 1(1), 40-47.
DOI: [10.18196/ijnp.1149](https://doi.org/10.18196/ijnp.1149)

Lilly AE, Dakshayani B. (2018): Effect of preoperative teaching on the anxiety level of patients with neurosurgery. *Indian J Psychiatr Nurs*; 15(2):1. doi:10.4103/2231-1505.262432

McCaffery M. Pain management: problems and progress. In: McCaffery M, Pasero CL. Pain: clinical manual. 2nd ed. St. Louis: Mosby; 1999:1–14. 1.
<https://doi.org/10.1046/j.1365-2702.2000.0374c.x>

Noe, C. E. (2020): Pain Management for Clinicians, 1st, Springer, Switzerland, p; 88. Book.

Noruzi zamenjani M, Masmouei B, Harorani M, Ghafarzadegan, R., Davodabady, F., Zahedi, S. and Davodabady, Z.. The effect of progressive muscle relaxation on cancer patient's self-efficacy. *Complement Ther Clin Pract*. 2019;34:70–75.
DOI: [10.1016/j.ctcp.2018.10.014](https://doi.org/10.1016/j.ctcp.2018.10.014)

Sahrakhil, M, Nasrabadi, T. and Ebrahimi Abyaneh, E. Effects of Benson's relaxation technique on the comfort level of patients before coronary artery bypass grafting (A clinical trial) *Medical-Surgical Nursing Journal*. 2017, 5(4): 60-65.

Schiessel DL. And Baracos VE. Barriers to cancer nutrition therapy: excess catabolism of muscle and adipose tissues induced by tumor products and chemotherapy. *Proc Nutr Soc*. 2018; 77(4):394-402. DOI: [10.1017/s0029665118000186](https://doi.org/10.1017/s0029665118000186) PMID: 29708079

Van Dijk JF, Vervoort SC, Van Wijck AJ, Kalkman CJ, Schuurmans MJ. (2016): Postoperative patients' perspectives on rating pain: A qualitative study. *International journal of nursing studies*, Jan 31; 53:260-9.
DOI: [10.1016/j.ijnurstu.2015.08.007](https://doi.org/10.1016/j.ijnurstu.2015.08.007)

Ward CW. (2015): A decision tree model for postoperative pain management. *Urologic Nursing*, Sep 1; 35(5):251-7. doi: [10.1097/01.NURSE.0000456385.48273](https://doi.org/10.1097/01.NURSE.0000456385.48273)

Wei C, Joshua H, Uhr BA, Mishra BS. and Albert Y. Effectiveness of an educational intervention on levels of pain, anxiety, and self-efficacy for patients with cancer among Patients in an Internal Medicine Clinic. *JAMA oncology*. 2020; 134(4):424-431. DOI: [10.1001/jamaoncol.6212](https://doi.org/10.1001/jamaoncol.6212)

Yilmaz SG. and Arslan S. Effects of progressive relaxation exercises on anxiety and comfort of Turkish breast cancer patients receiving chemotherapy. *Asian Pacific Journal of Cancer Prevention*. 2019; 16 (1): 217-20.
DOI: [10.7314/apjcp.2019.16.1.217](https://doi.org/10.7314/apjcp.2019.16.1.217)

Yoon HG. And Park H. The effect of auricular acupressure on sleep in breast cancer patients undergoing chemotherapy: A single-blind, randomized controlled trial. *Appl Nurs Res*. 2019; 48:45–51.
DOI: [10.1016/j.apnr.2019.05.009](https://doi.org/10.1016/j.apnr.2019.05.009)

