

Effect of Benson's Relaxation Technique on Postoperative Pain and Quality of Sleeping among Women Undergoing Hysterectomy

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Abstract

Background: Benson's relaxation technique is one of the systematic techniques that could be utilized to relieve postoperative pain and improve sleep quality. It is an important component of nursing care for hysterectomized women. Aim: the study aimed to evaluate effect of Benson's relaxation technique on postoperative pain and quality of sleeping among women undergoing hysterectomy. Design: Quasi-experimental study design (two groups study & control) was utilized. Setting: The study was conducted at Obstetrics and Gynecological department in Benha University hospital. Sample: A purposive sample for women undergoing hysterectomy at a period of 6 months. Tools: Three tools were used. I: An interviewing questionnaire sheet (personal characteristics, current surgical data) II: visual analog scale and III: The Groningen Sleep Quality Scale. Results: There was a significant improvement in pain severity and sleep quality among women in study group compared with those in the control group, after application of Benson's relaxation technique. Moreover, there was highly negative statistical correlation between total pain severity and total sleep quality scores of studied group at pre and post-intervention phase. Conclusion: The application of Benson's relaxation technique was effective in reducing severity of post-operative pain and enhancing quality of sleeping among women undergoing hysterectomy. Recommendation: It was recommended that Benson's relaxation intervention should be offered as a part of standard nursing care for women undergoing hysterectomy in hospitals.

Key words: Benson's relaxation technique, hysterectomy, postoperative pain , quality of sleeping.

Introduction

Worldwide, women's reproductive health is an issue of vital importance and one that has wide spread implications on health, wellbeing and development of the entire population. Hysterectomy is one of the most common gynecological operations done throughout the world. The term of hysterectomy comes from two Greek words; first, one is "hystera" which means uterus, and the second one is "ectomy" which means removal, so hysterectomy is the surgical operation of removing the uterus, which usually includes the cervix (neck of the uterus) [8].

Nowadays, hysterectomy is one of the most common gynecological surgeries in many countries around the world. According to several reports in 2020, Approximately 600,000 hysterectomies are performed annually in the United States and about 27% women of Indian women had undergone hysterectomy by 50 years of age [1]. In Egypt, nearly 40% of all abdominal hysterectomy indications are due to uterine myomas, other indications includes endometriosis (12.8%), malignancy (12.6%), abnormal uterine bleeding (9.5%), pelvic inflammatory disease (3.7%) and uterine prolapse (3.0%) [27].

Concerning indications of hysterectomy, uterine fibroid, uterine dysfunctional bleeding, endometriosis cancer of the uterus, ovary, cervix, chronic pelvic pain, pelvic inflammatory disease, tubal and ovarian abscess, obstetrical hemorrhage, uterine prolapsed, leiomyoma, and other conditions are among the reason of hysterectomy. Gynecological illness are the conditions that

women are most concerned of, as they experience a variety of symptoms because of disorders [33].

A hysterectomy is generally very safe, but with any major surgery comes the risk of complications as for any surgical procedure, the general complications include risk of hemorrhage, infection, Postoperative pain and sleep disturbance, general anesthetic risk [4]. The specific complications of hysterectomy include damage to the bladder and/or the ureter, damage to the bowel, hemorrhage requiring blood transfusion, pelvic abscess/infection, venous thrombosis or pulmonary embolism, risk of death within 6 weeks (the main causes of death are pulmonary embolism and cardiac disease. Menopause may occur earlier (by 1-2 years) due to a change in the blood supply to the ovaries [34].

Pain is defined as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage". Pain is one of the most frequently problems and significant complaints experienced by women undergoing hysterectomy in the postoperative period. Pain is a complex multifaceted phenomena, it is a subjective unique experience with sensory, affective and evaluative qualities that may be difficult to describe or explain and often difficult for others to recognize, understand and assess [22].

Increasingly, sleep disturbances during the preoperative period are associated with anxiety, pain, the magnitude of the surgery, the type and duration of the procedure, and the severity of the disease. Sleep quality is important for general health, as it affects the quality of life and daytime

functioning. Sleep disturbances are prevalent among women undergoing hysterectomy, as loss of the uterus can be a major psychological trauma, decrease immune function, reduce wound healing, increase blood pressure, increase heart contractility, increase stress-induced hormone secretion, and negatively affect patient's QOL and physical activities [36].

The Benson relaxation technique is a behavioral, non-pharmacological approach to deal with pain and improve sleep quality. This method is easiest to learn and apply to a given patient [4]. This intervention is inexpensive, available, self-induced by the patient and free from side effects. BRT is a systematic technique to reduce stress, pain, improve sleep quality and attain a deep state of relaxation. BRT increases body's immunity and sense of well-being through muscle relaxation followed by focused breathing, endorphins release and focusing on relieving mental and physical stress and relieving anxiety [5].

The nurses play a significant role to apply educational intervention regarding hysterectomy and application of non-pharmacological methods as Benson's relaxation technique. Nurses' intervention begin before woman's hospitalization (with preoperative consultation), intra and post-operative care to minimize the incidence of post-operative complication as (postoperative pain and sleeping disturbance) after abdominal hysterectomy and reduce the woman stay in the hospital, and continue after discharge to ensure the woman satisfaction [24]. Additionally, the integration of the educational intervention is an opportunity to highlight the impact of nurses performance on the quality of perioperative care, as well as their direct influence on the surgical out comes to the woman [7].

Significance of the study:-

Hysterectomy is the second most common operative procedure performed worldwide following cesarean section. The incidence of hysterectomy varies significantly among countries. More than 600,000 hysterectomies in the United States and around 140,000 in Germany hysterectomies are performed each year, over 400,000 hysterectomies were performed in the European Union only in 2017 making it the second most common gynecological procedure worldwide [37]. The National Center for Health Statistics reports that the annual incidence rate for hysterectomies in Egypt was 165 per 100,000. The incidence of hysterectomy increased among gynecological operations to reach 240 cases, according to the annual statistics of Benha University hospital [10].

Full recovery after major abdominal surgery has been greatly improved by the introduction a series of evidence-based treatments covering postoperative period. Compared with traditional management, Benson's relaxation technique after surgery represents a fundamental shift in

postoperative care [22]. BRT reduces sympathetic nervous system activity and endogenous catecholamine levels. BRT causes muscle relaxation and decreased pain, tension, anxiety, sleep disturbance, and sadness. Benson's relaxation approach has also been linked to an increase in self-esteem. It is relatively simple, low, and take short time save for fetus and mother with no side effects [9].

Aim of the study

This study aimed to evaluate effect of Benson's relaxation technique on postoperative pain and quality of sleeping among women undergoing hysterectomy.

Research Hypotheses

- **H1:** Women who follow Benson's relaxation technique will have less postoperative pain than who don't.
- **H2:** Women who follow Benson's relaxation technique will have better postoperative sleep quality than who don't.

Subjects and Method

Study design:

A quasi-experiment study (two groups, study & control) was utilized to fulfill the aim of the study.

Setting of the study:

The study was conducted at Obstetrics and Gynecological Department at Benha University hospital in Benha city. **Sampling:**

Sampling type:

A Purposive sample was used in the study.

Sampling size:

122 women undergoing hysterectomy for a period of 6 months from time of starting data collection. The women were included in this study according to the following **inclusion criteria:**

- ✓ Women who undergoing abdominal hysterectomy.
- ✓ Women undergoing hysterectomy for benign conditions.
- ✓ Free from any medical, gynecological or malignant diseases.
- ✓ Willing and active participation for this study.

Tools of data collection:

Three main tools were utilized for data collection.

Tool I: An interviewing questionnaire sheet:

It was written in an Arabic language and included three parts:

Part (1): Personal characteristics such as (age, educational level, residence and occupation).

Part (2): Current surgical data Such as (type of hysterectomy, reasons of hysterectomy and type of anesthesia).

Tool II: Visual analog scale:

It is a standardized linear scale adopted from (McCaffery and Pasero 1999) to assess the severity of pain. The tool is a horizontal line divided by numbers from 0 (no pain) to 10 (worst pain) with equal distances (1 cm).

Scoring system:

- 0=No pain
- 1-3 = Mild
- 4-7 = Moderate
- 8-10= severe pain

Tool III: The Groningen Sleep Quality

Scale: It was adapted from (Meijman et al, 1988) to assess the overall quality of sleep. The scale contains fifteen dichotomous questions (yes or no) that evaluate the quality of sleep during the previous night. The patients scored "1" for the answer "yes" and they scored "0" for the answer "no". A higher total scale score indicates poor sleep quality during the night before. The total was calculated by summation of the scores of the items. The score of total sleep quality was classified as the following:

- Normal sleep if the score = 0
- Mild sleep disturbance if the score = 1 - 5
- Moderate sleep disturbance if the score = 6 - 10
- Severe sleep disturbance if the score = 11 - 15

Tools validity:

The validity of questionnaire was reviewed by 3 jury experts in the field of obstetrics and gynecological nursing to ascertain clarity, relevance, comprehensiveness and applicability of tools. Modifications were done such as adding, rephrasing and omitting some questions.

Tools reliability:

The Reliability of tools was tested by using Cranach's alpha coefficient test, which revealed that the tools consisted of relatively homogenous items as showed by the moderate to high reliability of each tool. Reliability results were 0.760 and 0.792, for Tool II and III, respectively.

Ethical considerations:

Ethical aspects were considered before starting the study as the following:

- The study approval was obtained from scientific research ethical committee of the faculty of nursing at Benha University for fulfillment of the study.
- An official permission from the selected study settings was obtained for the fulfillment of the study.
- Before applying the tools, the researcher explained the aim and importance of the study to gain women's confidence and trust.
- The researcher took oral consent from women to participate in the study and confidentiality were assured.

- The study was didn't have any physical, social or psychological risks on the women.
- All tools of data collection were burned after statistically analysis to promote confidentiality of the participating women.
- The study tools were ensured that the study didn't cause any harm for any women during data collection. Also, didn't include any immoral statements and respect human rights.
- The women were free to withdraw from study at any time.

Pilot study

The pilot study was conducted on 10% of the total subjects that is means it done on 12 women undergoing hysterectomy to check the simplicity, clarity, applicability and feasibility of the developed tools. Modifications were done according to the pilot results as paraphrasing some questions and pilot sample was excluded from the study.

Administrative design:

An official approval to conduct this study was obtained from Dean of Faculty of Nursing to Director of Benha University Hospital, then before starting the data collection, researcher interviewed each study participant and obtained an oral informed consent.

Fieldwork:

This study was conducted under the approval of the Faculty of Nursing Ethical Committee, Benha University hospital. A written official approval to conduct this study was obtained from the Dean of faculty nursing to director of Benha university hospital. Other written official letter was taken and delivered to the director of obstetrics and gynecology department, in order to obtain their agreement to conduct the study after explaining its purpose. An oral consent was taken from each woman for participation.

The study was carried out at the beginning of February 2022 to the end of July 2022 covering six months. The researcher visited the previously mentioned setting two days/ week (Saturday and Tuesday) from 9.00 am. to 12.00 pm. At the end of this study the brochure about hysterectomy, Benson's relaxation techniques was left in ward to be provided to all women, so the benefit is spread.

To fulfill the aim of this research, the following phases was adopted; preparatory phase, assessment and interviewing phase, planning phase, implementation phase, and evaluation phase.

Planning phase:

Based on the results that obtained during assessment phase, brochure about hysterectomy and Benson's relaxation techniques was developed by the researcher under guidance of supervisors. The brochure was designed specifically for hysterectomies women in simple Arabic language to suit the level of understanding and to satisfy the studied hysterectomy women's deficit knowledge regarding hysterectomy and to clarify technique of Benson's relaxation to overcome pain and promote sleep quality. The general objective was that by the end of the educational session, each woman will be able to practice Benson's relaxation technique effectively to overcome pain and promote the sleep quality.

Implementation phase:

For control group: The women in the control group received routine hospital care without intervention.

For study group: The researcher was conducted two educational sessions

- *The first session* (theoretical): On the day before operation, immediately after assessment phase was conducted to equip the women with

knowledge regarding hysterectomy such as (definition of hysterectomy, types, routes, reasons, immediate complications, psychological and sexual changes, instructions and important of contacting with healthcare and follow up).

- *The second session* (practical) : (24 after surgery) after collecting baseline data concerned with visual analog scale and the Groningen sleep quality scale(tool II and tool III) was conducted to train the hysterectomy women how to apply Benson's relaxation technique .

- **Before each session:** The researcher prepared the surrounding environment. The environment was quiet and free from any distraction as visitor & accompanying persons, well ventilated, cool, softly lighted, well cleaned and curtains were used to keep privacy. In addition, a comfortable bed with firm mattress and clean without wrinkled linen was used. On the other hand, the researcher prepared the study group through: welcomed each woman, asked woman to evacuate the urinary bladder and lose any tight clothing.

- **During the Benson's relaxation technique training session,** the researcher performed it in front of the women and requested to re-demonstrate until they mastered the technique as following :

- Positioning comfortably (according to the woman's preference).
- Close eyes lightly.
- Focus on gradually relaxing muscles, beginning with the soles of the feet and

progressing up to the face. Keeping them relaxed.

- Breathe in through nose and exhale through mouth gently, remaining aware of their breathing.

- When they breathe out, they say "one" to herself or the word (my God or my Allah) and continue to breathe naturally and easily.

- Continue these practices for 20 minutes. When they finish sit quietly with the eyes closed for several minutes and later with eyes opened.

- Don't worry about whether they are successful in achieving a deep level of relaxation. Maintain positive attitude and permit relaxation to occur at its own pace. When distracting thoughts occur, try to ignore them and dwelling upon them and return to repeating ((my God or my Allah))

- With practice the response should come with little effort. This technique should be performed for 15-20 minutes each day, twice daily (morning and evening on the second and third postoperative day) but not within two hours after any meal since the digestive process seems to interfere with the elicitation of the relaxation response.

- The best time to practice the relaxation response is first thing in the morning to counter act the stress response and bring about deep relaxation and inner peace.

- The researcher helped the women to sit comfortably in the bed from the beginning until the end of the Benson's relaxation technique session [32].

Evaluation phase:

After 48 hours of second session (after applying 4 times of Benson's relaxation technique), pain and sleep quality were re-evaluated using the same tool of pre-test (II and III) and considered as post-test.

Statistical analysis:

Table (1): shows personal characteristics of the studied groups. It was cleared that nearly half and more than half (49.2%) and (50.8%) of both study and control groups respectively were in age group of more than 50 years with a mean age of 46.93 ± 9.72 and 45.18 ± 9.80 years respectively. As regards the residence, more than half and less than two-thirds (55.7%) and (63.9%) of both study and control groups respectively lived in rural areas. Regarding the educational level, less than half and less than two-thirds (47.5%) and (62.3%) of them had secondary education respectively. Furthermore, less than two-thirds and more than half (63.9%) of study and (59.0%) of control were housewives. Additionally, no statistically difference was detected among both groups related to

personal characteristics, which mean that the two groups under study were homogenous.

Table (2): illustrates that, more than half (59.0%) and (52.5%) of both study and control groups respectively had total removal of the uterus and cervix. Concerning reasons for hysterectomy, more than two-fifths (42.6%) of the study group were due to heavy and irregular bleeding, while less than third (32.8%) of the control group were due to heavy and irregular bleeding. Additionally, the majority (95.1%) of study group and all (100%) of control group had general anesthesia. Additionally, there was no statistical significant different between two groups regarding current surgical history.

Table (3): elaborates that, in the study group, the total mean scores of pain severity was (7.196 ± 2.256 and 5.983 ± 2.327) before and after application of Benson's relaxation technique respectively with a statistically significant difference between them ($P \leq 0.05$). However, in the control group, the total mean score for pain severity before and after application of Benson's relaxation technique was (6.639 ± 2.191 and 6.426 ± 2.438) respectively with no statistically significant difference ($P > 0.05$). Additionally, there was a significant improvement in pain severity among women in study group compared with those in the control group, after application of Benson's relaxation technique.

4. Results

Table (1) Distribution of the studied groups according to personal characteristics (n=122).

Personal characteristics	Study group n=61		Control group n=61		X ²	p-value
	No	%	No	%		
Age (years)						
25>35	6	9.8	10	16.4	1.57	0.456
35-50	25	41.0	20	32.8		
> 50	30	49.2	31	50.8		
Mean \pmSD=	46.93 \pm 9.72		45.18 \pm 9.80			
Residence						
Rural	34	55.7	39	63.9	0.853	0.356
Urban	27	42.3	22	36.1		
Educational level						
Not read and write	7	11.5	3	4.9	3.38	0.336
Basic education	12	19.7	10	16.4		
Secondary education	29	47.5	38	62.3		
High education	13	21.3	10	16.4		
Occupation						
Housewife	39	63.9	36	59.0	0.311	0.577
Employed	22	36.1	25	41.0		

Table (4): illustrates that, in the study group, there was a statistical significant difference in Sleep quality before and after application of Benson's relaxation technique with ($P \leq 0.05$). However, in the control group, there was no statistically significant difference before and after application of Benson's relaxation technique with ($P > 0.05$). Additionally there was a significant improvement in Sleep quality among women in study group compared with those in control group, after application of Benson's relaxation technique.

Table (5): clarifies that, in both control and study groups; there was a highly negative statistical correlation between total pain severity and total sleep quality scores of studied groups at pre-and post-intervention phase ($p \leq 0.001$).

Figure (1) shows that that more than half of study group and less than half of control group had severe pain before intervention. Meanwhile, after intervention, more than third of study group had severe pain compared with more than two-fifths of the control group.

Figure (2): shows that less than two-thirds of study group and more than half of control group had severe sleep disturbance before intervention. Meanwhile, after intervention, less than third of study group had severe sleep disturbance compared with more than half of the control group.

Table (2) Distribution of the studied groups according to current surgical history (n=122).

Current surgical history	Study group n=61		Control group n=61		X ²	p-value
	No	%	No	%		
Type of hysterectomy						
Partial hysterectomy (above the cervix)	20	32.8	22	36.0	0.664	0.718
Total removal of the uterus and cervix	36	59.0	32	52.5		
Radical hysterectomy	5	8.2	7	11.5		
Reasons for hysterectomy						
Heavy and irregular bleeding	26	42.6	20	32.8	5.11	0.402
Uterine prolapse	9	14.8	10	16.4		
Uterine rupture	3	4.9	5	8.2		
Ectopic pregnancy	1	1.6	0	0.0		
Uterine fibroids	20	32.8	26	42.6		
Pelvic infections or endometritis	2	3.3	0	0.0		
Type of anesthesia						
General anesthesia	58	95.1	61	100.0	3.07	0.079
Spinal anesthesia	3	4.9	0	0.0		

Table (3) Distribution of the studied groups according to severity of pain after hysterectomy at pre and post-intervention phases (n=122).

Severity of pain	Control group n=61				X2	(P- value)	Study group n=61				X2	(P- value)
	Pre – intervention (24h after surgery)		Post – intervention (48h after first intervention)				Pre – intervention (24h after surgery)		Post – intervention (48h after first intervention)			
	No	%	No	%			No	%	No	%		
No pain	0	0.0	0	0.0	0.318	0.853	0	0.0	0	0.0	7.64	0.002*
Mild	6	9.8	7	11.5			4	6.6	11	18.0		
Moderate	27	44.3	29	47.5			21	34.4	28	45.9		
Severe	28	45.9	25	41.0			36	59.0	22	36.1		
Mean ±SD=	6.639±2.191		6.426±2.438		Paired t test 0.732	0.467	7.196±2.256		5.983±2.327		Paired t test 2.532	0.014*

Table (4) Distribution of the studied groups according to Sleep quality during the previous night using the Groningen Sleep Quality Scale at pre and post-intervention phases (n=122).

Groningen Sleep Quality Scale items	Control group n=61								X2	P- value	Study group n=61								X2	p-value
	Before intervention				After intervention						Before intervention				After intervention					
	Yes		No		Yes		No				Yes		No		Yes		No			
	No	%	No	%	No	%	No	%			No	%	No	%	No	%	No	%		
I didn't sleep deeply last night.	40	65.6	21	34.4	39	63.9	22	36.1	0.036	0.850	44	72.1	17	27.9	32	52.5	29	47.5	5.02	0.025*
I feel like I slept poorly last night.	48	78.7	13	21.3	45	73.8	16	26.2	0.407	0.523	50	82.0	11	18.0	36	59.0	25	41.0	7.72	0.005*
It took me over half an hour to fall asleep last night.	39	63.9	22	36.1	40	65.6	21	34.4	0.036	0.850	41	67.2	20	32.8	28	45.9	33	54.1	5.63	0.018*
I woke up several times last night.	58	95.1	3	4.9	55	90.2	6	9.8	1.080	0.299	56	91.8	5	8.2	43	70.5	18	29.5	9.05	0.003*
I felt tired after waking up this morning.	50	82.0	11	18.0	51	83.6	10	16.4	0.058	0.810	52	85.2	9	14.8	40	65.6	21	34.4	6.36	0.012*

I feel like I didn't get enough sleep last night.	56	91.8	5	8.2	54	88.5	7	11.5	0.370	0.543	58	95.1	3	4.9	44	72.1	17	27.9	1.72	0.001**
I woke up in the middle of the night.	49	80.3	12	19.7	50	82.0	11	18.0	0.054	0.817	48	78.7	13	21.3	31	50.8	30	49.2	10.37	0.001**
I didn't feel comfortable after waking up this morning.	54	88.5	7	11.5	55	90.2	6	9.8	0.086	0.769	57	93.4	4	6.6	46	75.4	15	24.6	7.54	0.006*
I feel like I only had two hours of sleep last night.	48	78.7	13	21.3	47	77.0	14	23.0	0.048	0.827	49	80.3	12	19.7	36	59.0	25	41.0	6.55	0.010*
I didn't sleep for the blink of an eye last night.	32	52.5	29	47.5	30	49.2	31	50.8	0.131	0.717	32	52.5	29	47.5	20	32.8	41	67.2	4.82	0.028*
I found it hard to sleep last night.	43	70.5	18	29.5	40	65.6	21	34.4	0.339	0.560	43	70.5	18	29.5	27	44.3	34	55.7	8.58	0.003*
After I woke up last night, I had trouble sleeping again.	51	83.6	10	16.4	48	78.7	13	21.3	0.482	0.487	51	83.6	10	16.4	36	59.0	25	41.0	9.01	0.003*
I flipped and turned all last night.	32	52.5	28	45.9	30	49.2	31	50.8	0.131	0.717	35	57.4	26	42.6	21	34.4	40	65.6	6.47	0.011*
I didn't sleep more than 5 hours last night.	61	100.0	0	0.0	60	98.4	1	1.6	1.008	0.315	61	100.0	0	0.0	52	85.2	9	14.8	9.71	0.002*
I woke up earlier than usual in the morning.	44	72.1	17	27.9	40	65.6	21	34.4	0.612	0.434	47	77.0	14	23.0	35	57.4	26	42.6	5.35	0.021
Mean ±SD=	9.93±3.311				9.79±3.337				Paired t test	0.009*	10.33±3.280				8.51±3.682				Paired t test	0.009*
									1.417										2.690	

Table (5) Correlation coefficient between total pain scores and sleep quality scores of studied groups at pre and post- intervention phases (n=61)

Variables	Total pain severity							
	Control group				Study group			
	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention
	r	p-value	r	p-value	r	p-value	r	p-value
Total sleep quality	- 0.601	0.000**	- 0.554	0.000**	- 0.415	0.001**	- 0.623	0.000**

Table (5): clarifies that, in both control and study groups; there was a highly negative statistical correlation between total pain severity and total sleep quality scores of studied groups at pre-and post-intervention phase (p<0.001).

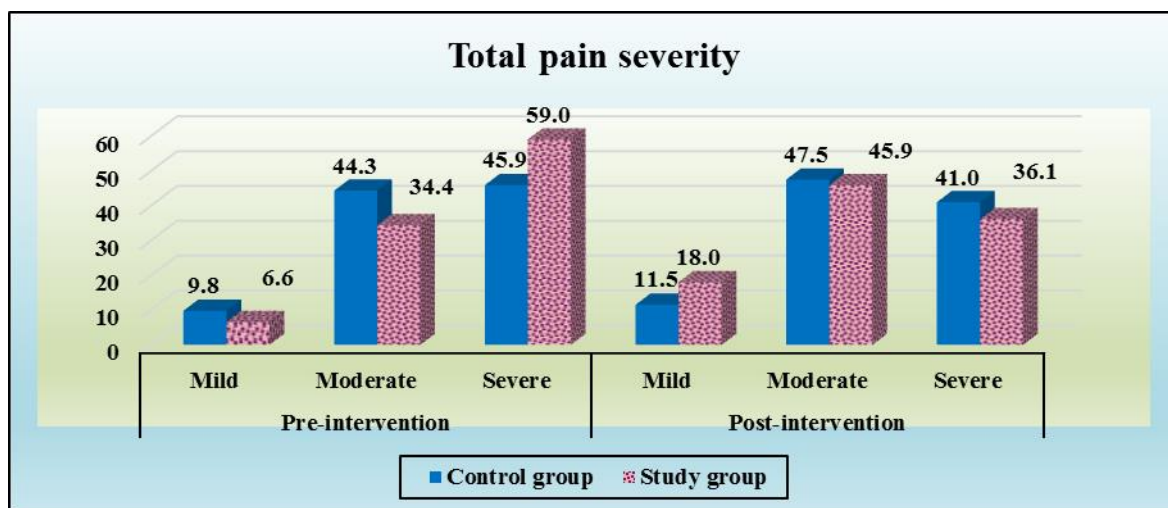


Fig. (1) Percentage distribution of studied groups regarding total severity of pain after hysterectomy at pre and post-intervention phases.

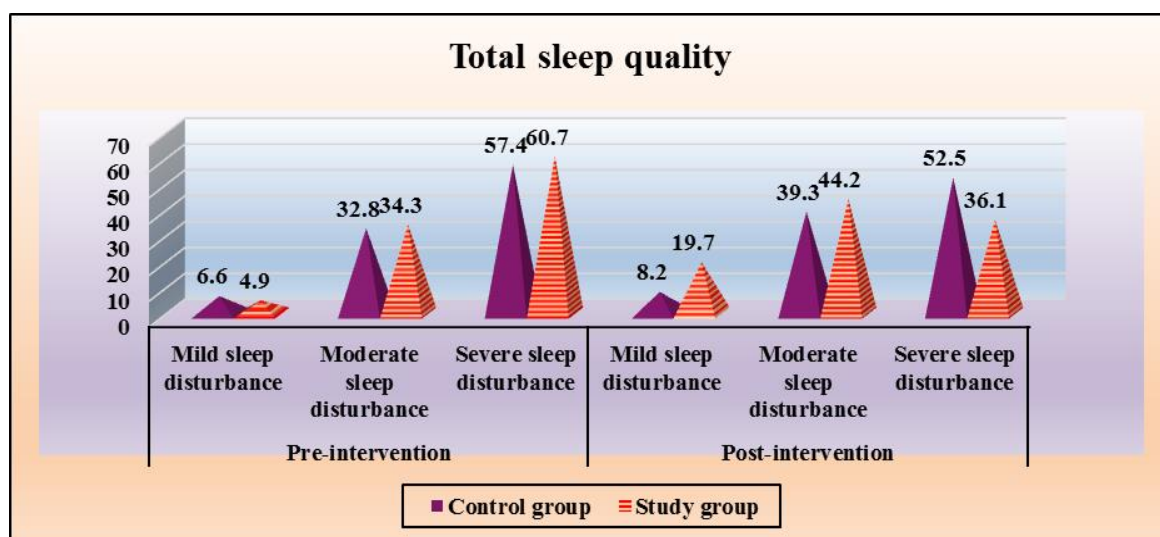


Fig. (2) Percentage distribution of studied groups regarding total sleep quality after hysterectomy at pre and post-intervention phases.

Discussion

Hysterectomy is the surgical removal of the uterus and its surrounding structures .Uterine fibroid, uterine dysfunctional bleeding, endometriosis, cancer of the uterus, ovary, cervix, chronic pelvic pain, obstetrical hemorrhage, uterine prolapsed, leiomyoma,

and other conditions are among the reasons for hysterectomy (*Elsaqa et al ., 11*).

The present study aimed to evaluate effect of Benson's relaxation technique on postoperative pain and sleeping quality in women undergoing hysterectomy, the data would be collected by assessing pain and sleep quality using perceived Visual analog scale

and The Groningen Sleep Quality Scale on the second postoperative day (after 24 h of the surgery) and considered as the pre-test. The intervention was given as Benson's relaxation technique twice a day in study group contribute to reduce pain and improve sleep quality in study group. After 48h of second session (after applying 4 times of Benson's relaxation technique), the women's knowledge, pain, and sleep quality will be re-evaluated using the same tool of pre-test (women's knowledge questionnaire, Visual analog scale and The Groningen Sleep Quality Scale) and considered as post-test .

Personal characteristics of studied women such as age, residence, educational level, occupation could affect post-operative pain and sleep quality among women undergoing hysterectomy. Therefore, these factors should be determined for the studied sample. The finding of the current study cleared that less than half and more than half of both study and control groups respectively were in age group > 50 years with a mean age of 46.93 ± 9.72 and 45.18 ± 9.80 years respectively. As regards the residence, more than half and less than two-thirds of both study and control groups respectively lived in rural areas. Regarding the educational level, less than half and less than two-thirds of them had secondary education respectively. Furthermore, less than two-thirds and more than half of study and control were homemakers. No statistically, difference was detected between both groups related to personal characteristics, which mean that the two groups under study were homogenous.

This result was consistent with **Taksande and Shendre, [21]** in the study entitled "Effect of Benson's Relaxation Technique on post-operative stress and pain among women undergone abdominal hysterectomy" in India, Clarified that, more than one third and nearly half of both control and study groups were respectively in age group (≥ 50 years) with a mean age of 49.76 ± 6.58 years and 50.45 ± 7.85 years. Concerning level of education, it was clear that three-fifths and approximately two fifths of the control group and study group had secondary education. According to occupation three-fifths and more than half of the control group and study group were housewives. Almost two thirds and more than two thirds of both control and study groups lived in urban area respectively. There was no statistical difference between control and study groups regarding personal characteristics ($p > 0.05$) that reflected group homogeneity.

These results were in agreement with **Elsaqa et al., [11]** in the study entitled "Effect of progressive muscle relaxation technique on pain intensity and physiological

parameters among post hysterectomies women" in Alexandria University stated that 40% & 45% of the study group and 50% & 42.5% of the control group aged 40- $<$ 50 & 50-60 years old respectively. In addition, level of education manifested that three-fifths of the study group had secondary and university or more levels, compared to less than two-fifths of the control group. Moreover, occupation showed that three-quarters and more of the control and the study groups respectively were housewives. Furthermore, the residence clarified that 45% & 55% of the study and the control groups respectively were rural dwellers. However, socio-demographic characteristics of both groups were more or less similar without any statistically significant differences.

Also, these results agreed with **Öztürk et al., [28]** who studied "The effects of relaxation technique on anxiety and pain in patients after abdominal hysterectomy" in İzmir found that the female patients' average age was 47.23 ± 4.71 (min: 37, max: 57) years. There was no statistically meaningful difference between the socio-demographic characteristics of the experimental and control groups in the chi-square analyses carried out to determine the homogeneity of the groups. This similarity in results may be related to the similarities of community features and convergence in sample size.

This outcome supported with a study by **Ali et al., [8]** who conducted a study about "Effect of Designed Nursing Care Protocol On Minimizing Post Hysterectomy Complications " in Egypt stated that less than half of the sample age being studied were ranged between 40 to less than 50 years old respectively and the mean age were 48.1 ± 12 and 47.7 ± 13.2 respectively. No significant difference between two groups.

Moreover, **Essa et al., [13]** in the study entitled "Effect of progressive relaxation technique on stress, anxiety, and depression after hysterectomy" in Damanhur, Albehera Governorate mentioned that no significant difference between the two groups in socio-demographic data. Where, the majority among both the study and control groups were 45 or more years old. Around one- half of the study and control groups respectively, had primary or preparatory level of education. Three quarters of both the study & control groups were housewives. The majority (77.5% & 80%) of the study and control groups respectively, were rural residents. This congruence can be explained by convergence in residence of studied subjects live in urban area more than subject in this study and their level of education was higher.

A carefully obtained surgical history is a key factor in timely and accurate diagnosis of

illness and leads to improved outcomes. In addition, surgical history is important for two main reasons. First, it enables the nurse to obtain a picture of the whole woman and to make baseline observations on which care plan will be developed and subsequent progress will be assessed. Secondly, provide the health care provider with useful clues to the patient's health risks (**Sakko et al, [33]**).

In relation to surgical history, the current study result clarified that, more than half and of both study and control groups respectively had total removal of the uterus and cervix. Concerning reasons for hysterectomy, more than two-fifths of the study group were due to heavy and irregular bleeding, while less than third of the control group were due to heavy and irregular bleeding. Additionally, the majority of study group and all of control group had general anesthesia.

These findings agreed with **Elsaqa et al., [11]** who showed that reasons of hysterectomy was mainly uterine fibroids as reported more than three-fifths of both the study and control groups respectively. In addition, total hysterectomy was the main type performed for three-fifths and more than three-fifths of both the study and control groups respectively, while subtotal hysterectomy was carried out for two-fifths and less (40% & 37.5%) of the study and the control groups respectively. The relationship was found to be not statistically significant between the two groups regarding current gynecological surgery.

The result of the current study was consistent with **Bayumi et al., [6]** who studied "A golden technique in sexual health Status and urinary incontinence among women with hysterectomy" in South valley University Hospital found that more than half of the studied sample had total hysterectomy. Additionally, The result of present study came in the same harmony with **Shekhar et al., [35]** who found that the reasons reported frequently for hysterectomy were excessive menstrual bleeding/pain (56%), followed by fibroids/cysts (20%).

Also, **Heeba et al., [17]** who studied "Clinical pathways of postoperative nursing care for women undergoing gynecological operations at Port Said Hospitals" founded that, the majority of women were done total abdominal hysterectomy surgery.

This result is concurrent with **Oseki and Osaikhuwumwan, [30]** who reviewed "A review of indications and outcome of total abdominal hysterectomy at a tertiary public health facility in Southern Nigeria " reported that, uterine fibroid represented the most common indication for abdominal hysterectomy.

Furthermore, this finding was coinciding with **Yilmaz et al., [40]** who conducted study entitled "Enhanced recovery after surgery versus conventional postoperative care in patients undergoing abdominal hysterectomies in Turkey " founded that, the majority of women in both studied groups were done hystosalpingo - oophorectomy surgery. The observed convergence in the current study finding and the other studies regarding type of hysterectomy could be attributed to the convergence indications for hysterectomy among the studies sample.

In the researcher point of view, it is noticeable that abnormal uterine bleeding is the commonest symptom which brings a woman to the hospital because this complain significantly impact women's health, finances, social engagement, and overall quality of life. Increasingly, the uterine fibroids is functional disorders can cause abnormal uterine bleeding which may lead to anemia which in turn, impair work capacity and quality of life. In addition, sexual health may be significantly affected.

Pain is an unpleasant sensory and emotional experience accompanied with existing or potential tissue damage, or described in terms of such damage according to the International Association for the Study of Pain **[8]**.

Owing to the effect of BRT on postoperative pain among women undergoing abdominal hysterectomy, the present study elaborated that in the study group, the total mean scores of pain severity was (7.196±2.256 and 5.983±2.327) before and after application of Benson's relaxation technique respectively with a statistically significant difference. However, in the control group, the total mean score for pain severity before and after application of Benson's relaxation technique (6.639±2.191 and 6.426±2.438) respectively with no statistically significant difference. Additionally, there was a significant improvement in pain severity among women in study group compared with those in the control group after application of Benson's relaxation technique. Increasingly, it was revealed that more than half of study group and less than half of control group had severe pain before intervention. Meanwhile, after intervention, more than third of study group had severe pain compared with more than two-fifths of the control group.

From the researcher's view of point, Benson's relaxation technique is a proper way to relieve postoperative pain and reduce the consumption of analgesics on post-operative period. Also BRT helped women overcome the worrying feelings and enhance the quality of life during postoperative period through

improving sleep quality and reducing stress & anxiety.

The result of the current study was in the same horizon with **Taksande and shendre, [21]** cleared that the experimental group's mean pain score was seventy five percent in pre-test, whereas the control group's was seventy six percent. In the post-test, the mean pain score in the experimental group was seventeen percent, compared to thirty one percent in the control group.

These findings agreed with **Elsaqa et al., [11]** that clarified highly statistically significant differences among the study group before and after intervention in each of the 5 sessions ($P < 0.0001$). Therefore, there may be a need for an alternative sleep-friendly pain-management approach, particularly in cases with poor sleep. So, Benson's relaxation technique the best technique to reduce postoperative pain.

This finding was supported with study conducted by **Ibrahim et al., [19]** who conducted "The effect of Jacobson's Progressive relaxation technique on postoperative pain, activity tolerance, and sleeping quality in patients undergoing gynecological surgery" in Damanhour educational institute, Elbehira showed that a significant reduction in pain mean scores in the intervention group compared to the control group after Jacobson's Progressive Relaxation Technique (JPRT) ($F_1 = 119.13$, $p < 0.001$). When taking a per-test as a reference, the pain score significantly decreased ($F_1 = 55.70$, $p < 0.001$) within the intervention group after JPRT, and 33% of the pain reduction was due to JPRT. About 51% of the differences between the two groups was due to JPRT.

Moreover, these findings were agreed with **Hasanpour-Dehkordi et al., [15]** who conducted a study in Iran titled "Effect of progressive muscle relaxation with analgesic on anxiety status and pain in surgical patients" concluded that progressive muscle relaxation (PMR) could increase the pain threshold, stress and anxiety tolerance and adaptation level in surgical patients. Therefore, using this technique could be an appropriate way to reduce analgesic drug consumption. They also added that a statistically significant difference was detected in the vital signs, pain intensity and anxiety between the two groups.

Also, these results agreed with **Öztürk et al., [29]** who stated that the average pain score of the experimental group was statistically lower than that of the control group at 30 and 60 min (after relaxation technique).

On the other hand, the present findings relatively don't harmonize with a systematic review and meta-analysis accomplished by **Ju et al., [20]** in China, 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" where reported that progressive muscle relaxation (PMR) proved effective in relieving acute postoperative pain among postoperative patients (included post-hysterectomies women). Although these, they also concluded that the overall quality of the studies was not high. On the whole, despite trials demonstrating the benefits of relaxation therapy for immediate pain relief in patient's post-abdominal surgery, there is lack of high-quality scientific evidence substantiating its routine use. From research point of view, there is a need for more robust randomized control trials (RCTs) utilizing standardized relaxation protocols to provide further evidence on this subject.

Sleep quality is important for general health, as it affects the quality of life and daytime functioning [38]. Sleep disturbance causes many physical and mental consequences such as decreased concentration, memory disorder, and general weakness in the women undergoing hysterectomy [31].

Regarding sleep quality, the findings of the present study indicated that a statistical significant difference in sleep quality before and after application of Benson's relaxation technique. However, in the control group, there was no statistically significant difference before and after application of Benson's relaxation technique. Additionally there was a significant improvement in sleep quality among women in study group compared with those in control group, after application of Benson's relaxation technique. In other words, less than two-thirds of study group and more than half of control group had severe sleep disturbance before intervention. Meanwhile, after intervention, less than third of study group had severe sleep disturbance compared with more than half of the control group. These results may be attributed to the fact that the BR technique improves sleep quality by relaxing the body, keeping blood pressure normal, stimulating blood circulation, and ensuring muscle relaxation.

The result of the current study was consistent with **Elsayed et al., [21]** who studied "The impact of Benson's relaxation technique on anxiety, depression and sleep quality of elderly patients undergoing hemodialysis, in Egypt", the results showed that relaxation training two times per day had a positive impact on the overall sleep quality of the surgical technologists in all dimensions.

In the same context, **Habibollahpour et al., [14]** who studied, "The impact of Benson's relaxation technique on the quality of sleep in the elderly" who showed that

Benson's relaxation technique can result in improvement of the quality of sleep in general and in some of its subscales (subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, and the daytime dysfunction) among community- dwelling elderly adults.

The result of current study matched with **Ibrahim et al., [19]** who illustrated that the sleeping quality mean score improved significantly in the intervention group compared to the control group. The quality of sleep the first night after abdominal hysterectomy is an important factor for recovery. BRT improves the sleeping quality of women undergoing hysterectomy, reduces the need for opioids postoperatively and to use strategies that diminish other factors which may interfere negatively with sleep, that badly effect on recovery and wound healing.

In addition, current study results agreed with **Ahmed and Masry et al., [2]** who studied "Effect of Benson's relaxation technique on night pain and sleep quality among adults and elderly patients undergoing joints replacement surgery" in Menoufia university hospital concluded that Benson relaxation technique was effective and had an influence to decrease pain intensity among study group than control group. Sleep quality was improved among study group than control group post implementing the Benson relaxation.

As well as, the current finding were in consistent with **Rambod et al., [32]** who studied "The effect of Benson's relaxation technique on the quality of sleep of Iranian hemodialysis patients" emphasized that the importance of relaxation techniques in improvement of sleep quality in the patients on hemodialysis patients. Therefore, it is suggested that healthcare providers arrange educational relaxation training programs, which are cost effective and are easily implemented in dialysis centers.

The presented study results agreed with **Bagheri et al., [5]** who researches "Effect of Benson and progressive muscle relaxation techniques on sleep quality after coronary artery bypass graft" found that within-group comparison in the BR and the PMR group showed that the overall sleep quality showed a significant improvement after the intervention when compared to baseline. The comparison between-group showed that both the BR and PMR groups showed significant improvements in subjective sleep quality, habitual sleep efficiency, and overall sleep quality when compared to the control group after the intervention.

Concerning, Correlation coefficient between total pain scores and sleep quality scores; the finding of current study clarified that, in both control and study groups; there

was a highly negative statistical correlation between total pain severity and total sleep quality scores of studied sample at pre-and post-intervention phase.

Our results matched with **Nowakowski et al., [28]** in the study entitled "Association of preoperative sleep pattern with post hysterectomy pain" in Texas who showed preoperative total sleep time was inversely correlated with postoperative pain intensity. Preoperative wake after sleep onset was positively correlated with postoperative pain intensity. Preoperative insomnia severity and insomnia risk were positively associated with postoperative pain and pain behaviour's. Finally, preoperative sleep efficiency was positively associated with overall satisfaction with hysterectomy.

Also, **He et al., [22]** who conducted a study on "Evaluation of the efficacy and safety of intradermal needle therapy on the sleep quality of patients following laparoscopic hysterectomy: study protocol for a randomized controlled trial" in China showed that a number of negative outcomes are associated with reduced postoperative sleep quality, including altered pain perception, cognitive impairment, mood disturbances, delirium, metabolic dysregulation, inflammation, fatigue and sleep disturbances. Improving the perioperative sleep quality of patients undergoing surgery can improve patient outcomes and reduce the incidence of adverse events.

These findings interpret the significant association postoperative between sleep and post hysterectomy pain and satisfaction. That poor postoperative sleep quantity and/or quality is associated with worse postoperative pain perception among women undergoing invasive hysterectomy for benign indications. So, improving sleep quality leads to reduced pain after hysterectomy.

In the view of the findings of current study, the research hypotheses, (H1: "women who follow Benson's relaxation technique will have less postoperative pain than who don't", H2: "women who follow Benson's relaxation technique will have better postoperative sleep quality than who don't") were supported and the study aim was achieved.

Conclusion

Based on the findings of the present study, it was concluded that, the application of Benson's relaxation technique was effective in reducing severity of post-operative pain and enhancing quality of sleeping among women undergoing hysterectomy, where there was a significant in reducing severity of pain and improvement quality of sleep among women in the study group compared to those in the control group, after application of Benson's

relaxation technique. Finally, there was a highly negative statistical correlation between total pain severity and total sleep quality scores of studied sample at pre-and post-intervention phase. Therefore, the study hypotheses were supported and the study aim was achieved.

Recommendations

In the light of current study findings, the following recommendations was suggested:

- It recommended that Bensons relaxation intervention be offered as a part of standard nursing care for patients undergoing hysterectomy in hospitals.
- Booklets and brochures containing sufficient knowledge about hysterectomy and Benson's relaxation technique should be printed and kept in obstetrics and gynecological department in hospitals and given to all women undergoing hysterectomy.

Further researches:

- Further researches should be applied to replicate the present study in different geographical areas, a larger sample, and other gynecological operation types to validate its result.
- Exploration of the effect of Benson's relaxation technique on management of the different gynecological and reproductive surgery conditions as: fistula repair, displacement of the pelvic organs and caesarian section.
- In service training programs as workshops and conferences should be carried out periodically for nurses to ensure that they are aware about Benson's relaxation technique, its advantages and how to apply it.

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