

Effectiveness of Progressive Muscle Relaxation Technique on Anxiety and Sleep Pattern among Newly Women with Breast Cancer

Reham El Ashery Ashery¹, Soma Ibrahim Ali², Omaima ezzat Mahmoud³, Ghada Ahmed Ghazi⁴ & Hoda Attia Abdel Naby⁵

¹. Lecturer in Medical-Surgical Nursing Department, Faculty of Nursing, Fayoum University, Egypt

². Lecturer of Psychiatric Nursing and Mental Health, Faculty of Nursing, PortSaid University, Egypt

³. Assistant Professor of Psychiatric Mental Health Nursing, Faculty of Nursing, Beni-Suef University, Egypt

⁴. Assistant Professor of Psychiatric Nursing and Mental Health, Faculty of Nursing, Alexandria University, Egypt

⁵. Lecturer in Medical-Surgical Nursing Department, Faculty of Nursing, Beni-Suef University, Egypt

Abstract

Background: Advanced nursing interventions for patients diagnosed with cancer included progressive muscle relaxation (PMR) training that has positive effects on anxiety and sleep pattern. **Aim:** To evaluate the effect of progressive muscle relaxation technique on anxiety and sleep pattern among newly women with breast cancer.

Design: A quasi-experimental research design with a pretest-posttest was used in this study. **Sample:** A convenient sample of 80 women newly diagnosed with breast cancer that equally was divided into two groups. **Setting:** This study was conducted at the inpatient and outpatient clinic of Fayoum Oncology Center and University Hospital.

Tools: Three tools were used: (I) an Interview Structured Questionnaire, (II) Spielberger State-Trait Anxiety Scale (STAI), and (III) Sleep State Self-Rating Scale (SRSS). **Results:** The results of the present study indicated that the mean age of the women was 46.51 ± 12.03 years. There were significant differences in anxiety score and improvement in sleep quality score after the intervention ($p < 0.05$) of the progressive muscle relaxation.

Conclusion: The current study concluded that progressive muscle relaxation has been found to reduce anxiety and improve sleep pattern among women who are newly diagnosed with breast cancer. **Recommendations:** Providing an educational program to women who are newly diagnosed with breast cancer regarding progressive muscle relaxation technique and how to perform and its benefit.

Keywords: *Anxiety, Breast cancer, Progressive muscle relaxation, Sleep & Women.*

Introduction:

Breast cancer is considered a serious health topic, and it is the second of most common diseases in many countries around the world. Breast cancer accounts for about 45.1% of all cancers among women and is considered the second leading cause of death among women after lung cancer (Sathian et al., 2014). Breast cancer also causes emotional trauma and health complaints that indicate the need for supportive care needs for these patients. To be able to maintain these needs, it is important to identify women's needs at the time they arise (Tariman et al., 2014).

Today, understanding is directed towards the importance of involving women with breast cancer in decision making about their care and with that understanding provide them with diagnosis, prognosis, and treatment options to support them and their families in making informed decisions (SheaBudge et al., 2014). Patients with breast cancer have many problems during the diagnosis and treatment process such as changes in body image, sexual life, and pain, psychological effects as anxiety and sleep disturbances, impaired social life, and

lymphedema (Enache, 2012), That lead to an increasing in the anxiety level and a reduced sleep quality among the women (Inan & Ustun, 2013).

The progressive muscle relaxation technique is considered one of the non-pharmacological interventions is used to relieve these problems; it reduces stress by its effect on mental and physical conditions (Frederiksen et al. 2017). The progressive muscle relaxation technique is the easiest one to be learned and administered, inexpensive, available at any time, self-induced by the patient, and without side effects. It increases the body's immunity and sense of well-being through endorphins release (Krupinska & Kulmatycki, 2014).

The progressive muscle relaxation technique was developed by Jackson in 1929, it involves voluntary tensing and relaxation of major muscle groups progressively in a pattern for defined time duration and its benefits include stress reduction, improved sleep quality, relieving pain, and muscle tension. The need for using PMR therapy as an alternative therapy for reducing anxiety, fatigue, and improving the quality of sleep among patients was felt imperative. Complementary therapies such as PMR are helping

women newly diagnosed with breast cancer to recover from the complications. PMRT has a great impact on improving sleep quality and minimizing anxiety (Dehkordi et al., 2019).

Medical-surgical nurses have an important role in counseling, education, and advising women who are newly diagnosed with breast cancer to achieve the effect of the technique after the intervention. Also, psychiatric health nurses play an important role in providing psychological support to reduce anxiety levels and help them in improving the quality of sleep for women who are newly diagnosed with breast cancer. Therefore, the researchers aimed to evaluate the effect of using progressive muscle relaxation techniques on anxiety and sleep pattern among women newly diagnosed with breast cancer.

Significance of the study:

It is predicted that the incidence of breast cancer worldwide to rise to 2.3 million by 2030, knowing the patients about what they want from their healthcare providers is a very important step in addressing their concerns and meeting their psychosocial needs (Harding et al., 2013). Women are more liable for anxiety due to a lack of knowledge and explanation about the disease. Anxiety and sleep disturbances can be managed by two methods; using non-pharmacological methods such as progressive muscle relaxation technique, reflexology, relaxation, and using pharmacological methods (Dehkordi & Rastar, 2016)

The study aim:

To evaluate the effect of progressive muscle relaxation technique on anxiety and sleep pattern among newly women with breast cancer.

Research hypothesis:

H1: Women diagnosed with breast cancer who will receive progressive muscle relaxation, their anxiety level will be decreased than women who will not.

H2: For women who are newly diagnosed with breast cancer will receive progressive muscle relaxation, their sleep quality will be improved than women who will not.

Subjects and Methods:

Research design:

A quasi-experimental research design with a pre and post-test was used to achieve the aim of this study.

Setting:

This study was conducted at the inpatient and outpatient clinic of Fayoum Oncology Center and University Hospital.

Subjects:

- A convenient sample was used to include all 80 women who are newly diagnosed with breast cancer

undergoing breast surgery within six months, radiotherapy or chemotherapy, and aged from 18-60 from the beginning of September 2020 till the end of February 2021. They were assigned into two equal groups (intervention and control groups).

- Forty women in the intervention group who received PMR and routine care

- Forty women in the control group received routine care only.

Data collection tools:

There were three tools used to collect data of the study:

Tool I: A structured interview questionnaire was developed by the researchers after reviewing the related literature and research studies (Cheng et al., 2013), it included two parts:

Part (1): It included demographic data of women such as age, educational level, occupation, and residence.

Part (2): It included medical data related items such as duration of disease, stages of the disease, treatment received, type of tumor, family history, and types of complaints.

Tool (II): State-Trait Anxiety Inventory (STAI) questionnaire: it was developed by (Spielberger, 1977) in English language and translated into Arabic language by Abdel- Khalek (1992). The State-Trait Anxiety Inventory (STAI) used a measure of trait and state anxiety. It consisted of 20 items used for assessing trait anxiety and 20 for state anxiety. State anxiety items include: "I am tense; I am worried" and "I feel calm; I feel secure." Trait anxiety items include: "I worry too much over something that doesn't matter" and "I am content; I am a steady person." All items are rated on a 4-point scale (e.g., from "Rarely" to "Almost Always"). Higher scores indicate greater anxiety. The STAI is appropriate for those who have at least a sixth-grade reading level.

Scoring system:

Score ranges of the STAI questionnaire were from 20 to 80 points and it was divided into three groups: no anxiety (less than or equal to 20), mild (20-40), moderate (41-60), and severe anxiety (61-80). Internal consistency coefficients for the scale have ranged from .86 to .95; test-retest reliability coefficients have ranged from .65 to .75 over a 2-month interval. Test-retest coefficients for this measure in the present study ranged from .69 to .89. Considerable evidence attests to the construct and concurrent validity of the scale.

Tool III: The Sleep Condition Self-Assessment Scale (SRSS) (Li et al., 2000). It was designed to assess the sleep quality of hospitalized patients. It consists of 10 items in total. Each item is rated on a 5-point scale (1-5). A high score of 5 indicates, more serious the sleep problem. This scale has a minimum

score of 10 (no sleep problems) and a maximum score of 50 (most severe).

Designed manual booklet about progressive muscle relaxation technique: This booklet was contained illustrative colored pictures and the main points of each training session.

Title: Progressive muscle relaxation technique

Outlines of the booklet:

- 1- Introduction about progressive muscle relaxation technique
- 2- Meaning of progressive muscle relaxation technique
- 3- Benefits and Importance of progressive muscle relaxation technique
- 4- The technique of progressive muscle relaxation technique

Validity of the tools:

The validity of the tool was ascertained by a Jury of five experts in the medical-surgical nursing and psychiatric health nursing field who reviewed the instruments for content validity. They were asked also to judge the items for completeness and clarity. No modifications were added to the instrument.

Reliability of the tools

Reliability was applied by the researchers to test the internal consistency of the tool. The Reliability of the structured interview questionnaire (a tool I) through Cronbach's alpha test $\alpha = 95\%$ and the reliability coefficients' α of SRSS (tool III) was 0.85.

Methods:

- Approval of the Ethical Research Committee of Fayoum Faculty of Nursing was obtained before conducting the study.
- Official permission was obtained through an issued letter from the Dean of Faculty of Nursing, El-Fayoum University, to conduct this study and the directors of the inpatient and outpatient clinic of Fayoum Oncology Center, Egypt. The aim of the study was explained to obtain permission to collect the research data from the hospital.
- A pilot study was conducted on 10% of the women (8 women) to test clarity and testing of the feasibility of the research process, no modifications were carried out. Women involved in the pilot were excluded from the study.

The procedure of data collection:

- Data Collection was within six months from the beginning of September 2020 till the end of February 2021. The participants were equally divided into two experimental and control groups (forty women in each).
- Researchers attended the previously mentioned setting for data collection two days per week, from 9 am to 12 Pm.

- Implementation of the study included three phases (assessment phase, implementation phase, and evaluation phase).

Assessment phase:

An explanation was done about the aim and content of the study. Participants of both groups were asked to fill the questionnaires which include (socio-demographic data and medical data, state-trait anxiety inventory, and the sleep condition self-assessment scale). Each participant was interviewed individually in a structured interview for about 25-30 minutes.

Implementation Phase:

For study group:

- In the experimental group, the researchers interviewed each woman individually for about one hour according to the women' level of understanding and their comfort; the researchers introduced themselves to the woman and explained the aim of the study then demographic and medical data, State-Trait Anxiety Inventory, and sleep condition self-assessment scale was collected from the women with the application of the PMR technique.
- Forty women in the experimental group were received progressive muscle relaxation and routine care.
- Teaching methods included group discussion, demonstration and re-demonstration, and pictures (progressive muscle relaxation technique).
- Women followed the researcher's oral instructions at home. Continuation of doing exercises was followed by phone calls.
- After the relaxation implementation, the researchers demonstrated each step of the PMR technique then asked women to re-demonstrate it. The researchers then asked them to re-demonstrate all the steps and repeat the technique three to four times until they masters it.

For control group:

In the control group, the researchers interviewed each woman individually for about 30 minutes; the researchers introduced themselves to them and explained the aim of the study as well as oral consent was obtained from them then demographic, State-Trait Anxiety Inventory, and Sleep Condition Self-Assessment Scale was collected from the women without application of the progressive muscle relaxation technique. No practice other than the patients received routine hospital care only as taking medication according to doctor prescription.

Evaluation phase:

In both experimental and control groups, the researchers reassess anxiety and the sleep quality levels after four weeks of PMR technique implementation using the same tools used in the pretest (tools II and III as post-test).

Ethical considerations:

The aim of the study was explained to woman and their oral consent was obtained. The researcher informed the participants that, the study was voluntary, they were allowed to refuse to participate and they had the right to withdraw from the study at any time, without giving any reason. Moreover, they were assured that their information would be confidential and used for research purposes only.

Statistical analysis:

Data entry was performed using SPSS for Windows, version 18. Data were presented by using descriptive statistics in the form of frequencies and percentages for quantitative variables and mean and SDs for qualitative variables. Differences between two means (t-test) were used. Chi-square (χ^2) test of significance was used, statistical significance was considered when P -value <0.05 .

Results:

Table (1): Frequency distribution of the studied women in both groups regarding their demographic characteristics (n=80)

Item	Experimental group (40)		Control group (40)		X2	p-value
	No.	%	No	%		
Women ' age in years						
21 ≤ 40 years	12	30	10	25	2.19	>0.05
40 ≤ 60 years	28	70	30	75		
Women ' education						
Illiterate	6	15.0	2	5	2.78	>0.05
Elementary	18	45.0	26	65		
Higher	16	40.0	12	30		
Occupation						
Working	15	38.0	13	33	2.92	>0.05
Not working	25	62.0	27	67		
Residence						
- Rural	11	28	12	30	2.68	>0.05
- Urban	29	72	28	70		

Not significance P value >0.05

Table (2): Frequency distribution of the studied women in both groups regarding their medical history (n=80)

Item	Experimental group (40)		Control group (40)		X2	P-value
	No.	%	No	%		
Duration of disease:						
< one year	27	67	26	65	3.1	>0.05
≥ one year	13	33	14	35		
Stages of disease						
Stage 1	6	15	5	12.5	2.16	>0.05
Stage 2	14	35	14	35		
Stage 3	12	30	10	25		
Stage 4	8	20	11	27.5		
Treatment received						
Radiotherapy	3	7	3	7	3.4	>0.05
Chemotherapy	15	38	13	33		
Chemotherapy and surgery	10	25	12	30		
Surgery	12	30	12	30		

Not significance P value >0.05

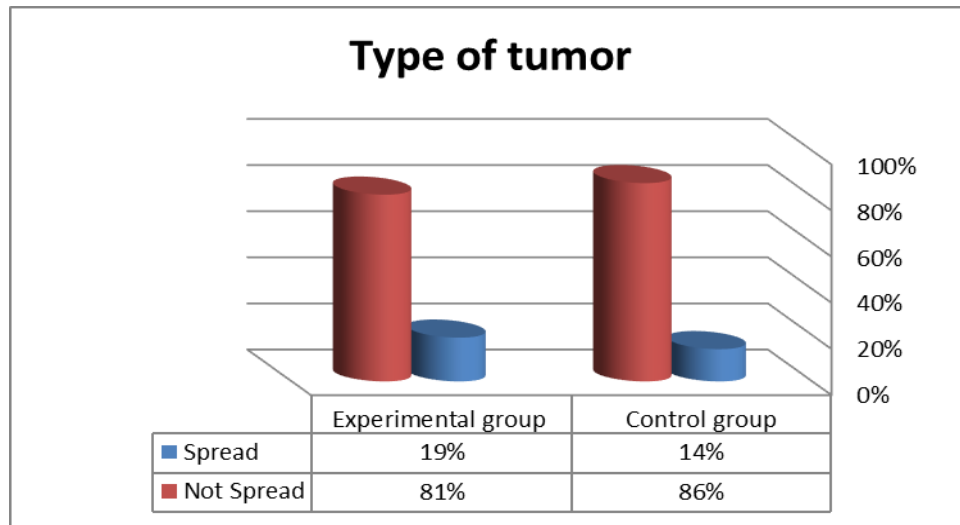


Figure (1): Frequency distribution of the studied women in both studied groups regarding their type of tumor (n=80)

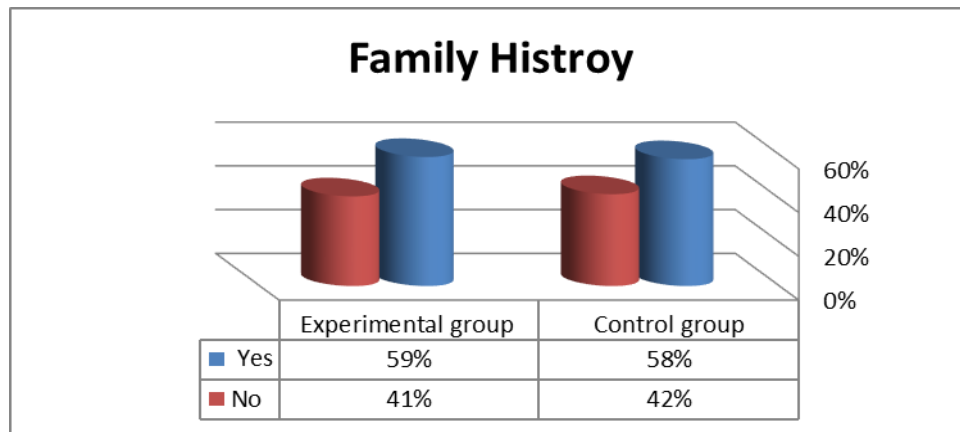


Figure (2): Frequency distribution of the studied women in both studied groups regarding their family history (n=80)

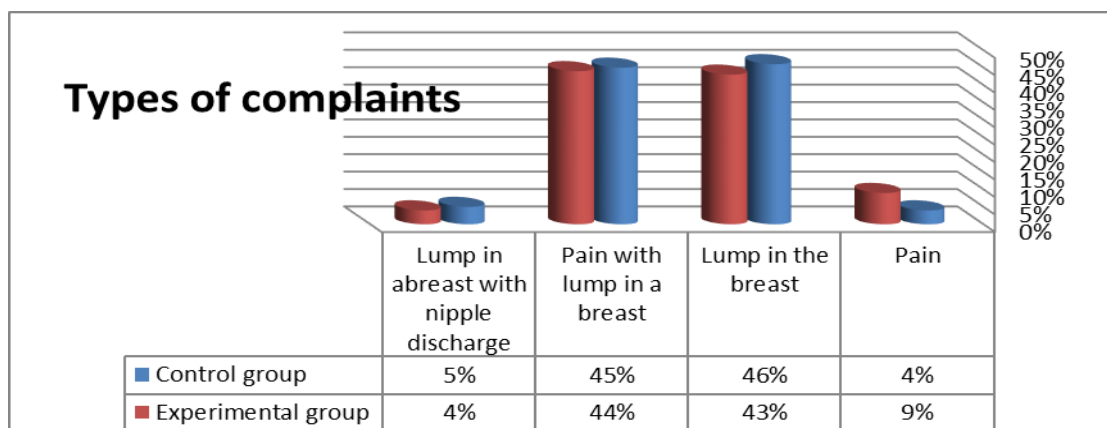


Figure (3): Frequency distribution of the studied women in both studied groups regarding their types of complaints (n=80)

Table (3): Comparison of the mean State-Trait Anxiety Inventory in the control and experimental groups pre and post-progressive muscle relaxation intervention (n=80)

State-Trait Anxiety Inventory	Experimental group (40)	Control group (40)	t- test	P-value
State of anxiety (Pre-test)	42.68 ± 7.51	45.20 ± 5.82	1.614	0.113
Trait Anxiety (Pre-test)	42.88 ± 9.51	45.30 ± 6.82	1.783	0.063
State of anxiety (Post-test)	36.21 ± 7.22	43.52 ± 8.74	-3.472	0.001
Trait Anxiety (Post-test)	32.65 ± 7.51	42.42 ± 5.72	2.802	0.005

*Statistically significant level at $P < .001$

Table (4): Comparison of the anxiety levels between the control and experimental groups pre and post-progressive muscle relaxation intervention (n=80)

Anxiety levels	Pre – intervention				post- intervention			
	Experimental group (40)		Control group (40)		Experimental group (40)		Control group (40)	
	No	%	No	%	No	%	No	%
Mild Anxiety	14	36	15	38	24	60	20	50
Moderate Anxiety	21	52	20	50	14	34	16	41
Severe Anxiety	5	12	5	12	2	5	4	9
t- test and P-value	t= 183 and P-1.000				t= 0.442 and P-0.918			

*Statistically significant level at $P \leq 0.05$

Table (5): Comparison of the mean the Sleep Condition Self-Assessment Scale in the control and experimental groups pre and post-progressive muscle relaxation intervention (n=80)

The Sleep Condition Self-Assessment Scale	Experimental group (40)	Control group (40)	P-value
Before the intervention	25.05 ± 3.76	23.74 ± 2.82	0.824 N.S
After the intervention	17.65 ± 3.17	23.34 ± 2.61	P < 0.001

*Significance at 0.001 levels

Table (6): Correlation between anxiety levels and progressive relaxation technique pre and post intervention (n=80)

	Anxiety levels			
	Pre – intervention		Post- intervention	
	r	P	r	P
Progressive relaxation technique	0.092	0.03*	0.495	0.000*

*Statistically significant difference ($P < 0.05$).

Table (1): Showed that women were mostly aged 40 ≤ 60 years, both in the experimental (study) group (70%) and the control group (75 %). Less than half of them in the experimental group (45%) and (65%) in the control had elementary education levels. in the experimental group (62%) of women were not working and in the control group were (67%). Also, the same table illustrated that (69%) of women in the experimental group and (70%) of the control group were from urban areas. there no statistically significant difference was found between the experimental group and control group variables regarding demographic data ($p > 0.05$).

Table (2): Showed that all the studied women in both groups have cancer from < one year, (35%) of the studied women were in stage 2 of the disease in the intervention group compared to 35 % in the control

group, regarding types of treatment of cancer (38%, 33%) in the intervention and control groups of the studied women received chemotherapy. No statistically significant difference was observed between both control and experimental groups regarding demographic data ($p > 0.05$).

Figure (1): Illustrated that the majority (81%) of women in the intervention group and (86%) of the control group had a non-spreading tumor.

Figure (2): Showed that more than half (59%) of women in the intervention group and (58%) of the control group were having a family history of cancer

Figure (3): Highlighted that (43%) of women in the experimental group and (46%) in the control group lumped a breast while (45%) of women in the experimental group and (44%) in the control group were had pain with a lump in the breast.

Table (3): Illustrated that the mean state of anxiety pre-test score of the experimental and control group included in the study was compared, the mean state of anxiety pre-test score was 42.68 ± 7.51 in the experimental group and 45.20 ± 5.82 in the control group before progressive muscle relaxation technique intervention. No statistically significant difference was found in the mean pre-test score of the state of anxiety inventory between the experimental and control group patients ($p > 0.05$). The mean trait anxiety pre-test score of the experimental and control group patients included in the study was 42.88 ± 9.51 in the experimental group and 45.30 ± 6.82 in the control group; there no statistically significant difference was found ($p > 0.05$). The difference in the mean post-test score of state of anxiety inventory between the experimental and control group patients was statistically significant ($p < 0.05$). The difference in the mean post-test score of trait of anxiety inventory between the experimental and control group patients was statistically significant ($p < 0.05$) after progressive muscle relaxation technique intervention.

Table (4): Portrayed (52% and 50%) of the studied women in both experimental and control group had moderate anxiety level and only 12% of them had severe anxiety level. Also, no statistically significant difference between both groups before the intervention $p = 0.824$. while after the PMR intervention, 60% and 50% of the studied women in both experimental and control group had mild anxiety level and a statistically significant difference was detected between the two groups ($P = 0.918$).

Table (5): Revealed no statistically significant difference in SRSS scores between both groups before the intervention $p = 0.824$, while after the PMR intervention, a statistically significant difference was detected in SRSS mean scores between the 2 groups ($P = 0.001$). The SRSS mean scores in the intervention group were reduced than in the control group after the implementation of the PMR technique.

Table (6): Illustrated that; there was statistically significant positive correlation between total anxiety levels and total progressive relaxation technique pre- and post-intervention ($P < 0.05$) of the studied women.

Discussion:

Progressive muscle relaxation is an effective method that helps for reducing anxiety and improves sleep patterns and quality; it can be done after simple training. Jacobson's progressive muscle relaxation technique is considered one of the best complementary management which can be easily learned, inexpensive, and do not require special equipment (Alwan et al., 2018). Hence, the researchers were aimed to evaluate the effect of using progressive muscle relaxation (PMR) technique on

anxiety and sleep pattern among women newly diagnosed with breast cancer.

Results of the present study indicated that no statistically significant difference was found in the mean pre-test score of the state of anxiety inventory between the experimental and control group patients ($p > 0.05$), and the same no differences in the mean trait anxiety pre-test score of the experimental and control group. And the difference in the mean post-test score of trait anxiety inventory between the experimental and control group patients was statistically significant ($p < 0.05$) after progressive muscle relaxation technique intervention. This reflects the need to introducing PMR for patients to reduce anxiety.

These findings are supported by Park et al, (2019) conducted a study about progressive muscle relaxation intervention to decrease dental anxiety and reported that relaxation technique intervention can effectively minimize the anxiety and the tension of dental patients (Li et al, 2018).

Results of the present study indicated that the difference in the mean post-test score of state anxiety inventory between the experimental and control group patients was statistically significant ($p < 0.05$). This may be indicated the importance of implementing the PMR that can lead to anxiety minimizing. This result is in the same line with Kruahong, (2013) who evaluated the effect of PMR among cardiac surgery patients and found that PMR was effective in decreasing anxiety.

The result is parallel to the present study. The study by Cheng et al., (2013) concluded that the relaxation exercises reduced the levels of anxiety and depression in patients with breast and colorectal cancers.

Results of the present study indicated that the practice of PMR led to a significant reduction of anxiety levels. This is indicated the positive effect of PMR. Furthermore, this result is matched with Song et al. (2013) who conducted a study with 50 intervention and 50 control patients diagnosed with breast cancer, underwent a radical mastectomy, and perform progressive relaxation exercises, and concluded that the PMR reduced the anxiety level among the patients with breast and colorectal cancers.

Similarly, Charalambous (2011) reported in his study that the PMR reduced anxiety levels among prostatic cancer patients. Also, Mishra et al. (2012) examined the effect of an exercise intervention on quality of life among patients with cancer receiving chemotherapy and found that these exercises were most effective in the breast cancer patient group and reduced sleeping disorders, and fatigue among patients. Isa et al. (2013) studied research with prostatic cancer patients and reported that the PMR improved their quality of sleep.

Results of the present study revealed no statistically significant difference in SRSS scores between both groups before the intervention $p=0.824$, while after the PMR intervention, a statistically significant difference was detected in SRSS mean scores among both groups ($P=0.001$). The SRSS mean scores in the intervention group were reduced than in the control group after the implementation of the PMR technique. This result indicates the positive effect and importance of a PMR technique for improving sleep quality among women with breast cancer.

These results are supported by the study of **Akgun et al., (2015)** and found in their study about a statistically significant improvement in the sleep quality of patients after 6 weeks in the study group as compared to control group.

Also, the result is in the line with **Rajeswari & Sanjeeva (2019) & Gok et al., (2019)** who found that PMR was an effective and positive way to decrease anxiety and promote sleep quality in patients with COVID-19 and reduce anxiety levels among young women in early breast cancer. PMR can minimize complications and improve the sleep quality of fractured patients (**Xie et al., 2019**).

Similarly, **Xiao, et al., (2020)** studied progressive muscle relaxation intervention effects regarding negative emotions and sleep quality in patients with COVID-19 and stated that progressive muscle relaxation improved the anxiety level and quality of sleep in patients with COVID-19 during isolation.

The results are similar to a study conducted by **Annal et al (2014)** regarding sleep disturbances that occurred among children, adolescents, and adults diagnosed with psychomotor impairment: impact on sleep and found that relaxation technique has a good effect on promoting quality of sleep and anxiety minimizing among patients. This is related to progressive muscle relaxation which can make the body relaxed, which can effectively decrease and relieve anxiety and promote quality of sleep (**Liu et al., 2020**).

Similarly, **Seyedi, et al., (2019)** revealed that PMR can decrease fatigue and improve sleep quality among patients with chronic obstructive pulmonary disease COPD. PMR training may be decreased the effect on the sympathetic nervous system and adverse effects of anxiety (**Ferendiuk, et al., 2019**). **Masih et al., (2019)** found that the effectiveness of PMR on improving sleep quality among emergency trauma patients.

Result indicates the positive effects of relaxation techniques on the reduction of anxiety levels among children. This result is agreed with **De et al., (2019)**, who studied "The effectiveness of relaxation technique and interactive guided imagery as a pain-decreasing intervention in patients with cancer" and

reported that progressive relaxation intervention can decrease anxiety level. **Meyer et al., (2016)** in their study about progressive muscle relaxation which reduces the migraine frequency and normalizes amplitudes of contingent negative variation and found that the observation group's means scores were less than those of the control group.

On other hand, this result disagrees with **Masih et al., (2019)** who done a study about the effect of this technique post-exposure to an acute stressor on subsequent energy intake and found that no significant difference was detected between the groups regarding the practice of progressive muscle relaxation. Also, **Hasanpour et al., (2019)** who studied the effect of relaxation technique in addition to analgesic on anxiety status and pain in surgical patients and found that no method was effective. The disagreement may be related to differences in the study group.

Result of the present study indicated that, there was statistically significant positive correlation between total anxiety levels and total progressive relaxation technique pre- and post-intervention ($P<0.05$) of the studied women. This reflected the success of PMR technique intervention and its positive effect in minimizing anxiety levels.

Conclusions:

The findings of this study concluded that progressive muscle relaxation has been found to reduce anxiety and improve sleep pattern among women who are newly diagnosed with breast cancer. There was statistically significant difference in the mean post-test score of state of anxiety inventory between the experimental and control group patients ($p<0.05$). There was statistically significant difference in the mean post-test score of trait of anxiety inventory between the experimental and control group patients ($p<0.05$) after progressive muscle relaxation technique intervention. A statistically significant difference was detected in SRSS mean scores between both experiential and control groups ($P=0.001$). The SRSS mean scores in the intervention group were reduced than in the control group after the implementation of the PMR technique.

Recommendations:

The findings of this study recommended that:

- Providing an educational program to women who are newly diagnosed with breast cancer regarding progressive muscle relaxation technique and how to perform and its benefit.
- Nurses should integrate PMR in their routine care to reduce the psychological effects and dependence on pharmacological measures

- Encouragement training programs for medical-surgical and psychiatric nurses departments about the utilization of PMR techniques are recommended.
- Future research includes replication of the current study on a large group.
- Compares the effect of PMR technique on patients care with other methods.

References:

- **Abdel- Khalek, A. (1992):** STAI Manual for the State-Trait Arabic version Cairo. Angola Egyptian bookshop.
- **Akgun, Z., & Dayapoglu, N. (2015):** Effect of Progressive Relaxation Exercises on Fatigue and Sleep Quality in Patients with Chronic Obstructive Lung Disease (COPD). *Complement Ther Clin Pract*; 21(4): 277–281
- **Alwan, M., Zakaria, A., Abdul Rahim, M., Abdul Hamid, N., & Fuad, M. (2018):** Comparison between two relaxation methods on competitive state anxiety among college soccer teams during the pre-competition stage. *International Journal Advanced Sports Science Research*; 1:90-104. †
- **Annal, L., Boris, Z., Erik, M., & Markus, B. (2014):** Sleep disturbances in children, adolescents, and young adults with severe psychomotor impairment: impact on parental quality of life and sleep, *Developmental Medicine and Child Neurology*, 56: 1187–1193, DOI: 10.1111/dmcn.12530
- **Charalambous, A. (2011):** The Effect of Progressive Muscle Relaxation and Guided Imagery in Improving Psychological Well-Being and Quality-Of-Life For Breast and Prostate Cancer Patients: Initial Report, *Eur J Integrative Med*, 3, 125-1.
- **Cheng, K.F., Ang, N., & Chan, N. (2013):** The effects of Relaxation Training Program on Anxiety and Depression for Older Patients with Breast and Colorectal Cancer, 13th International Society of Geriatric Oncology Annual Conference, Copenhagen, 24, 91.
- **De, G., Naccarato, A., & Cibelli, F. (2019):** The effectiveness of progressive muscle relaxation and interactive guided imagery as a pain-reducing intervention in advanced cancer patients: a multicentre randomized controlled non-pharmacological trial. *Complement Ther Clin Pract*; 34:280–7.
- **Dehkordi, A., Hasanpour, K., Solati, S.S., & Tali, (2019):** Effect of Progressive Muscle Relaxation with Analgesic on Anxiety Status and Pain in Surgical Patients, *Br. J. Nurs.* 28, 174–178.
- **Dehkordi, A.H., & Rastar, A.A. (2016):** Effect of Progressive Muscle Relaxation on Social Performance and Quality of Life in Aging. *Salmand*; 11(2): 244–249
- **Enache, R.G. (2012):** The relationship Between Anxiety, Depression and Self-Esteem in Women with Breast Cancer After Surgery, *Social and Behavioral Science*, 33, 124-7.
- **Ferendiuk, J.M. Bieganska, P., & Kazana, (2019):** Progressive Muscle Relaxation According to Jacobson in Treatment of The Patients with Temporomandibular Joint Disorders, *Folia Med. Cracov.* 59, 113–122.
- **Frederiksen, Y., O'Toole, M.S., & Mehlsen, M. (2017):** The Effect of Expressive Writing Intervention for Infertile Couples: A Randomized Controlled Trial. *Hum Reprod*; 32(2):391–402. [PubMed] [Google Scholar].
- **Harding, V., Afshar, M., Krell, J., Ramaswami, R., Twelves, C., & Stebbing, J., (2013):** Being There for Women with Metastatic Breast Cancer: A Pan-European Patient Survey, *British Journal of Cancer* Vol. 109: pp1543– 1548
- **Hasanpour, A., Solati, K., & Tali, S.S. (2019):** Effect of progressive muscle relaxation with analgesic on anxiety status and pain in surgical patients, *Br J Nurs.* 2019; 28:174-178, Doi: 10.12968/bjon.28.3.174.
- **Hayama, Y., & Inoue, T. (2012):** The Effect of Deep Breathing on 'Tension-Anxiety' and Fatigue in Cancer Patients Undergoing Adjuvant Chemotherapy, *Complementary Therapies Clinical Practice*, 18, 94-8.
- **Inan, S., & Ustun, B. (2013):** Biopsychosocial Changes in the Period after Treatment of Breast Cancer, *J Breast Health*, 9, 48-1.
- **Isa, R.M., Moy, F.M., Razack, & A.H.A., (2013):** Impact of Applied Progressive Deep Muscle Relaxation on The Health-Related Quality of Life Among Prostate Cancer Patient- A Quasi-Experimental Trial, *Prev Med*, 57, 37-0.
- **Kruahong, K. (2013):** The Effects of Progressive Muscle Relaxation on Acute Pain and Distress in Open Heart Surgery Patients, *J Sakon Nakhon Hosp*; 15(2): 22-31.
- **Krupinska, K., & Kulmatycki, L. (2014):** Effectiveness of Progressive Muscle Relaxation (Pmr) in Alleviating Psychophysical Disorders-A Systematic Review (1982-2012). *GJRA- Global Journal for Research Analysis*; 3(10): 113-115.
- **Li, J., Yin, S., & Duan J., (2000):** Self-Rating Sleep Status Inventory (SRSS), *Journal of Health Psychology*, 8 (3), pp.353-354.
- **Li, M.F., Ji, H.J., & Liang, H.J. (2018):** Effects of progressive muscle relaxation training on sleep in

- patients without convulsion. *Chin Gen Pract Nurs*; 16:1607–9.
- **Liu, K., Chen, Y., Wu, D., Lin, R., Wang, Z., & Pan, L., (2020):** Effects of progressive muscle relaxation on anxiety and sleep quality in patients with COVID-19, *Complementary Therapies in Clinical Practice*.
 - **Masih, J.A. Dimmock, K.J. & Guelfi, A. (2019):** The Effect of A Single, Brief Practice of Progressive Muscle Relaxation After Exposure to An Acute Stressor on Subsequent Energy Intake, *Stress Health* 35, 595–606, <https://doi.org/10.1002/smi.2891>.
 - **Meyer, B., Keller, A., & Wöller, B. (2016):** Progressive muscle relaxation reduces migraine frequency and normalizes amplitudes of contingent negative variation (CNV), *J Headache Pain*; 17:37.
 - **Mishra, S.I., Scherer, R.W., & Snyder, C., (2012):** Exercise Interventions on Health-Related Quality of Life for People with Cancer During Active Treatment. *Cochrane Database Syst Rev*, 15, 8.
 - **Park, E.S., Yim, H.W., & Lee, K.S. (2019):** Progressive muscle relaxation therapy to relieve dental anxiety: a randomized controlled trial. *Eur J Oral Sci*; 127:45–51.
 - **Rajeswari, N. & Sanjeeva, R. (2019):** Efficacy of Progressive Muscle Relaxation on Pregnancy Outcome Among Anxious Indian Primi Mothers, *Iran. J. Nurs. Midwifery Res.* 25, 23–30, https://doi.org/10.4103/ijnmr.IJNMR_207_18.
 - **Sathian, B., Nagaraja, S.B., & Banerjee, I., (2014):** Awareness of Breast Cancer Warning Signs and Screening Methods among Female Residents of Pokhara valley, Nepal, *Asian Pac J Cancer Prev*, 15, 4723-26.
 - **Seyedi, M., Gholami, A., & Azargoon, (2019):** The Effect of Progressive Muscle Relaxation on The Management of Fatigue and Quality of Sleep in Patients with Chronic Obstructive Pulmonary Disease: A Randomized Controlled Clinical Trial, *Compl. Ther. Clin. Pract.* 31, 64–70, <https://doi.org/10.1016/j.ctcp.01.010>.
 - **SheaBudgell, M., Kostaras, X., Myhill, K., & Hagen, N., (2014):** Information Needs and Sources of Information for Patients during Cancer Follow-Up, *Curr Oncol*, Vol. 21 (4): pp 165 –173.
 - **Song, Q., Xu, R., & Hai, Q., (2013):** Relaxation Training During Chemotherapy for Breast Cancer Improves Mental Health and Lessens Adverse Event, *Int J Clin Exp Med*, 6, 979-4.
 - **Tariman, J., Doorenbos, A., Schepp, K., Singhal, S., & Berry, D. (2014):** Information Needs Priorities in Patients Diagnosed with Cancer: A Systematic Review, Vol.5 (2): pp115 – 122.
 - **Xiao, A., Chun-Xiu, M., Yan-Juan, L., & Ren-Qin, L. (2020):** Effects of progressive muscle relaxation training on negative emotions and sleep quality in COVID-19 patients, *A clinical observational study Medicine*, 99:47, <http://dx.doi.org/10.1097/MD.00000000000023185>,
 - **Xie, Y.L. Deng, J.P. & Zhang, (2019):** Effects of Progressive Muscle Relaxation Intervention in Extremity Fracture Surgery Patients, *West. J. Nurs, Res.* 38, 155–168, <https://doi.org/10.1177/0193945914551509>.