‘‘Effectiveness Of Progressive Muscle Relaxation Therapy And Guided Imagery On Functional Well Being, Selected Physical And Psychological Parameters Among Cancer Patients Receiving Chemotherapy’’. Evaluation Of Pilot Study

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Abstract

Background: To test the effectiveness of progressive muscle relaxation therapy (PMR) and guided imagery (GI) as effects on physical and psychological parameters reducing interventions in patients with cancer who undergo chemotherapy.

Methods: Patients were randomly assigned to the groups either control group or the intervention group (PMR and GI). Patients were observed for a total duration of 4 weeks and assessed with the standardised tools for physical and psychological parameters. (Trial registration number: CTRI/2021/12/038985.

Results: According to inclusion criteria 15 patients were randomised to the control group and 15 to the intervention group. Intervention’s mean functional assessment of cancer therapy score, Pain score, nausea and vomiting score, anxiety score and stress score changes were significantly different compared to the control group.
Conclusions: The findings showed that patients with cancer undergoing chemotherapy treatment can benefit from PMR and GI sessions to reduce their functional assessment of cancer therapy, physical and psychological parameters.

Keywords: Progressive Muscle relaxation therapy, Guided Imagery, Cancer patients, Physical and psychological parameters and Functional wellbeing

INTRODUCTION

Cancer is one of the second leading largest killer diseases next to cardiac diseases. It is a disease process that begins when an abnormal cell is transformed by a genetic mutation of the cellular DNA and begins to proliferate abnormally Cancer has afflicted humans throughout the recorded history.[1]

The global cancer burden is estimated to have risen to 18.1 million new cases and 9.6 million deaths in 2018. One in 6 women and one in 5 men worldwide develop cancer in their lifetime, and one in 8 men and one in 11 women die from the disease. It is estimated to be 43.8 million people in worldwide, the total number of people who are alive below 5 years of a cancer diagnosis. The increasing cancer burden is due to several conditions, including population growth and ageing as well as the changing prevalence of certain causes of cancer linked to social and economic development. This is exceptionally true in rapidly growing economies, where a shift is observed from cancers related to poverty and infections to cancers associated with lifestyles more representative of industrialized countries.[2]

Cancer is the second prime cause of death globally, and is responsible for an estimated 9.6 million deaths in 2018. Globally, at about 1 in 6 deaths is from cancer. Round about 70% of deaths from cancer occur in low- and middle-income countries. Around one third of deaths from cancer occurs 5 leading behavioural and dietary risks: high body mass index, low fruit and vegetable intake, lack of physical activity, tobacco use, and alcohol use. [3]

Tobacco use is the most important risk factor for cancer and is responsible for approximately 22% of cancer deaths. Cancer causing infections, such as human papilloma virus (HPV) and hepatitis, is responsible for up to 25% of cancer patients in low- and middle-income countries. Late-stage presentation and inaccessible diagnosis and treatment are common.[4]

METHODS

Research Approach: Quantitative Evaluative Approach.
Research Design: Quasi experimental time series design.
Setting of the Study: Ashirwad Hospital Bagalkot at Bagalkot.

Overview of Intervention

Groups	Pre-test Day 1(O1)	Intervention from day 1 to day 30	Post intervention assessment Post-test -1
Experimental group	(O_1) (Assessment of functional assessment of cancer therapy, physical and psychological parameters)	**Progressive muscle relation therapy and Guided imagery**	Day 30 (O_2)
Control Group	(O_1) (Assessment of functional assessment of cancer therapy, physical and psychological parameters)	No intervention	Day 30 (O_2)

INTERVENTION: Progressive Muscle Relaxation Therapy and Guided Imagery.
DURATION: Progressive Muscle Relaxation Therapy: 15-20 minutes **Guided Imagery:** 15-20 minutes. **FREQUENCY: 3**0 Days daily Morning **APPROACH:** Individual and Group approach. **PLACE OF INTERVENTION:** Ashirwad hospital Bagalkot.

DESCRIPTION AND FREQUENCY OF INTERVENTION:

The "**Progressive Muscle Relaxation Therapy and Guided Imagery** will be administered for 30 days in Supervised and Unsupervised Sessions. The intervention: Progressive relaxation technique and guided imagery will be taught to subjects of experimental group on initial two days. The subjects will be asked to perform the intervention once in a day from day 3 to day 30.

The intervention was done with the following schedule:20 minutes for gathering and adjusting for environment. 20 minutes progressive muscle relaxation therapy will be administered.20 minutes of guided imagery.

SUPERVISED AND UNSUPERVISED SESSIONS:

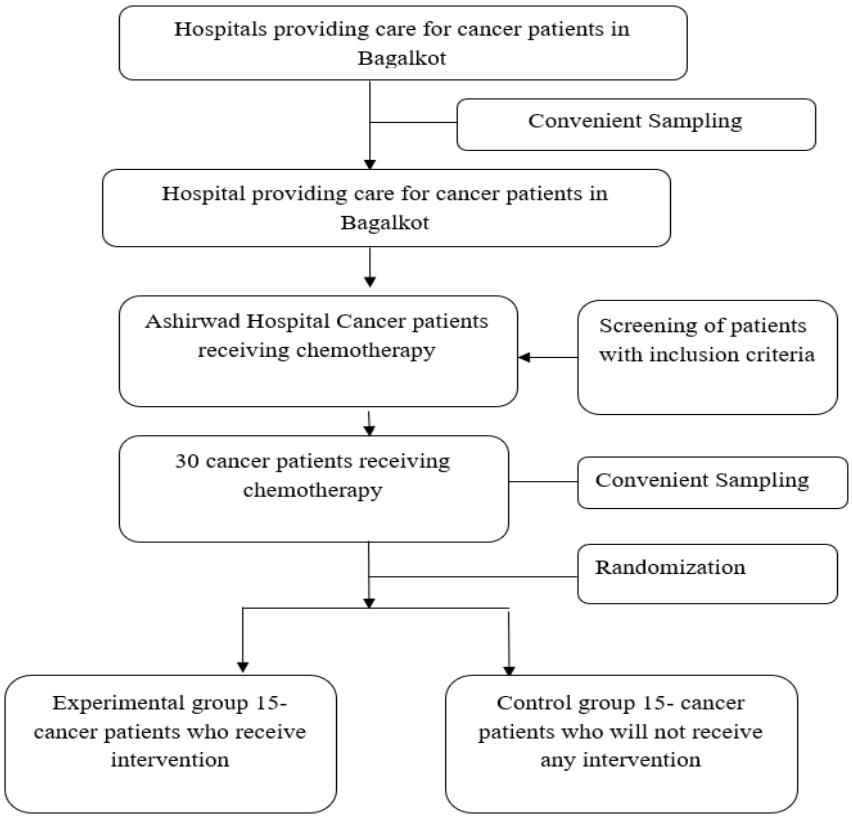
Supervised session: Supervised sessions were conducted when the cancer patients are in hospital came for receiving chemotherapy. The researcher went to hospital; direct observation is done by doing demonstration and re-demonstration of Progressive Muscle Relaxation Therapy and Guided Imagery every morning.

Unsupervised session: Unsupervised sessions are conducted when the cancer patients are in home. The researcher contacted patients every morning through phone calls or SMS before and after the performance of intervention for asking experience and also for reminding of Progressive Muscle Relaxation Therapy and Guided imagery.

DATA COLLECTION METHOD:

SAMPLE: The samples of study are Cancer patients who are receiving chemotherapy at Ashirwad Hospital Bagalkot, who fulfil sampling criteria. **SAMPLE SIZE:** 30 Cancer Patients who are receiving chemotherapy **Sampling Technique**: Convenient Sampling Technique. **Population: Target Population:** In the present study target population include all Cancer patients receiving chemotherapy in Hospitals of Bagalkot District. **Accessible Population:** In the present study accessible population include cancer patients receiving chemotherapy at Ashirwad hospitals of Bagalkot.

SCHEMATIC PRESENTATION OF SELECTION OF SAMPLE



VARIABLES UNDER STUDY:

Independent Variable: Progressive Muscle Relaxation Therapy and Guided Imagery

Dependent Variable:

- Functional Well Being
- Physical Parameters- Pain, Nausea and Vomiting.
- Psychological Parameters- Stress and Anxiety.

Selected Socio demographic Variables: Age, Gender, Duration, Type of cancer, Education, Occupation, Marital status, Religion, Number of members in the family, Type of treatment, Numbers of treatment of cycle, Side effects of cancer treatment, Have you practiced any relaxation therapies at home? If yes How many times /day /week and what therapy, Source of information of any relaxation therapies.

Data Collection Instruments:

Section I: Includes items related to selected socio demographic characteristics of cancer patients.

Section II: Functional Well Being: The Functional Well Being is measured by FACT-G which comprises 27 items featuring general questions divided into four domains:

Section III: Pain: The level of pain is assessed with the use of a numeric pain scale

Nausea and Vomiting: The nausea and vomiting is measured by Standardised MASCC Antiemesis Tool (MAT) an instrument.

Section IV: Stress: Stress is measured by Cohen's perceived stress scale. **Anxiety:** The degree of anxiety will be measured by Zung self-rating anxiety scale (SAS).

Ethical Clearance: Institutional Ethical Clearance Certificate: - SUBMITTED (Ref No.32/SIONS-IEC/2018-19 Date: -20-12-2018)

ANALYSIS AND INTERPRETATION OF DATA

Pilot study was conducted from 26-07-2021 to 30-11-2021 with samples of cancer patients receiving chemotherapy from Ashirwad Hospital Bagalkot. Selected with the help of convenient Sampling Technique. Screened the patients by keeping in mind of inclusion and exclusion criteria.30 cancer patients receiving chemotherapy were selected by convenient sampling. Through the randomization lottery method, the samples divided in to 15 cancer patients for experimental group and 15 cancer patients for control group. Data was collected with the help of standardized tool. Results showed that there is highly reliable was found thus the study is found to be visible.

DATA COLLECTION PROCEDURE:

Prior to actual data Collection, the investigator obtained permission from the Hospital administrator of Ashirwad hospital Bagalkot. And also, the investigator took the permission from principle of Sajjalashree institute of nursing science's Bagalkot before conducting the study. Participant's consent is taken for willing in research study. Data was collected with the help of standardized tools and administered intervention for experimental group for 30 days where as simultaneously administered standardized tools for control group without intervention. which begins from 26-07-2021 to 30-08-2021. The cancer patients were administered intervention from 7am to 5pm, based on their availability and convenience. Every day cancer patients were administered intervention and co-operation was obtained from the subjects and it made easier for the investigator to gather the necessary information.

The study was begun with selection of 30 cancer patients receiving chemotherapy at Ashirwad Hospital Bagalkot, Karnataka. 15 in experimental group and 15 in control group. The data was analyzed using SPSS statistics package. The analysis was carried out according to objectives of the study. Descriptive statistical measures were used for the description of variables. Specific Inferential statistical measures were used as per requirement. The analysis of the data was carried out considering the following objectives,

TESTING OF THE TOOL: **Content Validity:** Content validity of the tool was established by obtaining the suggestions from experts. The tool was validated by 12 experts. Two was the consulting oncologist, one is clinical psychologist and remaining were the faculty of Doctorate's in the field of community health nursing and Medical surgical nursing. Minor modifications were made on the basis of recommendations suggestions of experts and modified the final tools. After consulting guide the final tool was reframed. It was found to be valid and suitable for cancer patients receiving chemotherapy at Bagalkot.

PRETESTING: Pretesting was done by administering the instrument to 5 cancer patients receiving chemotherapy at Ashirwad hospital, in the form of structured interview schedule. Cancer patients did not present any difficulty in understanding the questions and the data was obtained easily. All the items were retained in sections without any modification.

SCORING: The items did not have any scoring as they were meant to collect the factual information regarding the sample.

RELIABILITY OF THE TOOL: The coefficient of internal consistency was completed for Standardized tools by using split half technique and test and retest method of technique for 10 cancer patients receiving chemotherapy at Ashirwad hospital Bagalkot. The reliability of the test was found out by using Karl Pearson's co-efficient of correlation formula and Spearman's Brown prophecy formula. The reliability co-efficient obtained for following items and there results are as follows…...

Table 1: Details of reliability result of each tool

SL. No	Standardized Tools	Reliability Result
1]	Functional assesment of cancer therapy (FACT-G)	0.94
2]	Numeric pain scale	0.83
3]	MASCC Antiemesis Tool (MAT)	0.95
4]	Cohen's perceived stress scale	0.91
5]	Zung self-rating scale	0.75

Statical Analysis: The data was decoded, organised and entered in Microsoft excel worksheet. The data analysis was done with SPSS package version-16.

a) **Descriptive Statistics:** Frequency, percentage distribution, means, standard deviation is used to summarize the data.
b) **Inferential Statistics:** **Mann Whitney U test** was used to determine the significant of difference of functional assessment of cancer therapy, pain, nausea vomiting, stress and anxiety scores before and after intervention among experimental and control group. The data was tested for normalcy and it was found that the data was not normally distributed hence qualitative test (Mann Whitney U test**)** was used.

RESULTS

FINDINGS OF DATA ANALYSIS ARE PRESENTED UNDER FOLLOWING SECTIONS

Section 01: Distribution & description of socio demographic factors of Cancer patients.
Section 02: Distribution & description of subjects according to their Functional assessment of cancer therapy
Section 03: Distribution and description of subjects according to their Clinical Parameters such as Pain, Nausea and Vomiting.
Section 04: Distribution and description of subjects according to their psychological parameters such as Stress and Anxiety.
Section 05: Assessment of effectiveness of Progressive muscle relaxation therapy and Guided imagery by comparing pre-test and post-test Functional assessment of cancer therapy difference scores and its clinical parameters differences score and psychological parameters differences score of experimental group & control group.

Section 01: Distribution & Description Of Socio Demographic Factors Of Cancer Patients.

TABLE 2: Description of study group and control group according to their Socio demographic characteristics. **(N_1=15) (N_2=15)**

SI. No.	Socio Demographic factors	Score	Character	Experimental Group (N_1=15)		Control Group (N_2=15)		P Value	DF
				F	%	F	%		
1	Age In Years	**1**	18-28 Years	5	33.3%	2	13.3%	0.001	5
		2	29-38 Years	6	40%	6	40%		
		3	39 Years and above	4	26.7%	7	46.7%		
2	Gender	**1**	Male	7	46.6%	7	46.7%	0.01	4
		2	Female	8	53.4%	8	53.3%		
3	Education	**1**	Illiterate	2	13.4%	0	0%	0.01	7
		2	Primary	4	26.6%	2	13.3%		
		3	Secondary	4	26.6%	4	26.7%		
		4	PUC	2	13.4%	5	33.3%		
		5	Graduation & above	3	20%	4	26.7%		
4	Occupation	**1**	House-maker	5	33.2%	2	13.3%	0.01	6
		2	Agriculture	4	26.7%	5	33.3%		
		3	Business	4	26.7%	3	20%		
		4	Employee	1	6.7%	5	33.3%		
		5	Others	1	6.7%	0	0%		
5	Marital Status	**1**	Married	11	73.3%	12	80%	0.001	3
		2	Unmarried	4	26.7%	3	20%		
6	Religion	**1**	Hindu	9	60%	10	66.7%	0.01	5
		2	Muslim	5	33.3%	4	26.7%		
		3	Christian	1	6.7%	1	6.7%		
7	Number of members in the family	**1**	1	0	0%	0	0%	0.01	3
		2	2	3	20%	2	13.4%		
		3	3	7	46.6%	10	66.6%		
		4	4 or more	5	33.4%	3	20%		
8	Duration of disease	**1**	Less then 1 year	3	20%	2	13.4%	0.001	9
		2	1-3 years	7	46.7%	5	33.3%		
		3	3-6 years	2	13.3%	3	20%		
		4	6 years or above	3	20%	5	33.3%		
9	Type of cancer	**1**	Benign	3	20%	2	13.3%	0.01	3
		2	Malignant	12	80%	13	86.7%		
10	Type of treatment	**1**	Chemotherapy	15	100%	15	100%	0.01	1
		2	Radiation therapy	0	0%	0	0%		
		3	Surgery	0	0%	0	0%		
		4	Others	0	0%	0	0%		
11	Number of treatment cycle of cancer	**1**	2-3 cycles	0	0%	2	13.3%	0.01	7
		2	3-4 cycles	6	40%	5	33.3%		
		3	4-5 cycles	3	20%	3	20%		
		4	5-6 cycles	2	13.3%	3	20%		
		5	6-7 cycles	4	26.7%	1	6.7%		
		6	7-8 cycles or above	0	0%	1	6.7%		
12	Side effects of cancer treatment	**1**	Pain	0	0%	0	0%	0.01	1
		2	Nausea and Vomiting	0	0%	0	0%		
		3	Stress	0	0%	0	0%		
		4	Anxiety	0	0%	0	0%		
		5	All the above	15	100%	15	100%		
13	Practice of relaxation therapy at home	**1**	Yes	5	33.3%	4	26.7%	0.01	3
		2	No	10	66.7%	11	73.3%		
14	Source of information	**1**	TV	5	33.3%	9	60%	0.01	4
		2	Internet	8	53.3%	3	20%		
		3	Books/ Journals	2	13.3%	3	20%		
		4	Youth clubs/ Others	0	0%	0	0%		
		5	No information	0	0%	0	0%		

P ≤0.05 Two tailed and DF-Difference frequency

Table 2: Revives that normalcy between study group and control group among sociodemographic data. And the data shows that it is normally distributed among study group and control group.

Section 02: Distribution & Description Of Subjects According To Their Functional Well-Being.

Table 3 a: Distribution & description of Subjects According to their Functional assessment of cancer therapy**.**
(N1=15) (N2=15)

GROUPS	PRETEST		POSTTEST	
	Mean	**Standard deviation**	**Mean**	**Standard deviation**
Study group	16.7	4.9	13.4	4.5
Control group	16.5	2.74	16.45	3.75

Table 3 a: reveals about the description and distribution of Functional assessment of cancer therapy was assessed among cancer patients of study group and control group. In pre-test the study group mean FACT-G scores was 16.7±4.9, which has positively decreased to 13.4±4.5 after the intervention of progressive muscle relaxation therapy and guided imagery. Where as in control group the pre-test mean FACT-G score was 16.5±2.74 but there is no noticeable change in post-test mean score which was slightly negatively increased 16.45±3.75. There was a substantial improvement in the Functional assessment of cancer therapy scores of cancer patients after intervention of progressive muscle relaxation therapy and guided imagery.

Table 3 b: Description of subjects according to their Functional assessment of cancer therapy domain wise scores of Experimental group.

(N_1=15) (N_2=15)

DOMAINS	STUDY GROUP					
	PRETEST			POSTTEST		
	Mean	**SD**	**Range**	**Mean**	**SD**	**Range**
Physical well-being	21.3	1.49	6.0	11.46	2.85	10.0
Social well-being	16.7	2.34	9.0	11.80	3.25	12.0
Emotional well-being	19.8	1.01	3.0	10.60	2.38	8.0
Functional well-being	9.20	1.74	5.0	19.80	1.65	5.0

Table 3 c: Description of subjects according to their Functional assessment of cancer therapy domain wise scores of Control group.

(N_1=15) (N_2=15)

DOMAINS	CONTROL GROUP					
	PRETEST			POSTTEST		
	Mean	**SD**	**Range**	**Mean**	**SD**	**Range**
Physical well-being	18.8	1.85	6.0	20.0	2.13	8.0
Social well-being	18.0	1.41	4.0	18.06	2.21	8.0
Emotional well-being	15.9	1.43	5.0	15.46	2.55	8.0
Functional well-being	13.2	2.12	8.0	12.26	2.71	10.0

Table No. 3 b and 3 c: reveals about the description and distribution of cancer patients according to their Functional assessment of cancer therapy domain wise scores. In study group the pretest mean score of physical domains was 21.3 with SD ±1.49 range is 6, and posttest mean score was 11.46 with SD ±2.85 range is 10. Whereas in control group, pretest mean score of physical domain was 18.8 with SD ±1.85 range is 6, and posttest mean score was 20 with SD ±2.13 range is 8. In study group pretest mean score of social domain was 16.7 with SD was ±2.34 range is 9, and post-test mean score was 11.08 with SD ±3.25 range is 12. Whereas in control group pretest mean of social domain was 18 with SD ±1.41 range is 4, and posttest mean score was 18.6 with SD ±2.21 range is 8. In study group pretest mean score of emotional domain was 19.8 with SD ±1.01 range is 3, and posttest score was 10.6 with SD ±2.38 range is 8. Whereas in control group pretest mean score was 15.9 with SD ±1.43 range is 5, and posttest mean score was 15.46 with SD ±2.55 range is 8. In study group pretest mean score of functional domains was 9.2 with SD ±1.74 range is 5, and posttest mean score was 19.80 with SD ±1.65 range is 5. Whereas n control group pretest mean score was 13.2 with SD ±2.12 range is 8, and posttest mean score was 12.26 with SD ±2.71 range is 10.

Section 03: Distribution and description of subjects according to their Clinical Parameters such as Pain, Nausea and Vomiting.

4 a: Description of subjects according to their overall Numeric Pain scores.

Table 5: Description of subjects according to their overall Pain scores.

(N_1=15) (N_2=15)

GROUPS	PRETEST		POSTTEST	
	Mean	Standard deviation	Mean	Standard deviation
Study group	8.0	1.13	2.33	0.97
Control group	6.8	1.18	6.60	1.35

Table 5: reveals about the description and distribution of numeric pain score was assessed among cancer patients of study group and control group. In pre-test the study group mean pain scores was 8.0±1.13, which has positively decreased to 2.33±0.97 after the intervention of progressive muscle relaxation therapy and guided imagery. Whereas in control group the pre-test mean pain score was 6.8±1.18 but there is no noticeable change in post-test mean score 6.60±1.35. There was a substantial improvement in the pain scores of cancer patients after intervention of progressive muscle relaxation therapy and guided imagery.

4 b: Description of subjects according to their overall MASCC Antiemesis Nausea and Vomiting scores.

Table 6: Description of subjects according to their overall nausea and vomiting scores

(N_1=15) (N_2=15)

GROUPS	PRETEST		POSTTEST	
	Mean	Standard deviation	Mean	Standard deviation
Study group	23.9	3.12	3.06	2.34
Control group	19.13	3.18	17.33	2.63

Table 6: reveals about the description and distribution of MASCC Antiemesis Nausea and Vomiting scores was assessed among cancer patients of study group and control group. In pre-test the study group mean Nausea and Vomiting scores was 23.9±3.12, which has positively decreased to 3.06±2.34 after the intervention of progressive muscle relaxation therapy and guided imagery. Where as in control group the pre-test mean Nausea and Vomiting score was 19.13±3.18 but there is no noticeable change in post-test mean score 17.33±2.63. There was a substantial improvement in the Nausea and Vomiting scores of cancer patients after intervention of progressive muscle relaxation therapy and guided imagery.

Section 04: Distribution and description of subjects according to their Psychological parameters such as Stress and Anxiety.

4 a: Description of subjects according to their overall Cohen's perceived stress scores.

Table 7: Description of subjects according to their overall Stress scores.

(N_1=15) (N_2=15)

GROUPS	PRETEST		POSTTEST	
	Mean	Standard deviation	Mean	Standard deviation
Study group	31.06	3.49	31.46	3.75
Control group	31.6	3.94	30	5.29

Table 7: reveals about the description and distribution of Cohen's perceived stress scores was assessed among cancer patients of study group and control group. In pre-test the study group mean stress scores was 31.6±3.49, which has positively decreased to 31.46±3.75 after the intervention of progressive muscle relaxation therapy and guided imagery. Where as in control group the pre-test mean stress score was 31.6±3.94 but there is no noticeable change in post-test mean score 30±5.29. There was a substantial improvement in the stress scores of cancer patients after intervention of progressive muscle relaxation therapy and guided imagery.

4 b: Description of subjects according to their Zung self-rating anxiety scores.

Table 8: Description of subjects according to their overall Anxiety scores.

(N_1=15) (N_2=15)

GROUPS	PRETEST		POSTTEST	
	Mean	Standard deviation	Mean	Standard deviation
Study group	56.8	4.30	40.2	2.45
Control group	58.4	5.06	57.6	3.29

Table 8: reveals about the description and distribution of Zung self-rating anxiety scores was assessed among cancer patients of study group and control group. In pre-test the study group mean anxiety scores was 56.8±4.30, which has positively decreased to 40.2±2.45 after the intervention of progressive muscle relaxation therapy and guided imagery.

Where as in control group the pre-test mean anxiety score was 58.4±5.06 but there is no noticeable change in post-test mean score 57.6±3.29. There was a substantial improvement in the anxiety scores of cancer patients after intervention of progressive muscle relaxation therapy and guided imagery.

Section 05: Assessment of effectiveness of Progressive muscle relaxation therapy and Guided imagery by comparing pre-test and post-test Functional assessment of cancer therapy difference scores and its clinical parameters differences scores and psychological parameters differences scores of experimental group & control groups.

Table 9: Description of subjects according to their effectiveness of progressive muscle relaxation therapy and guided imagery on Functional assessment of cancer therapy domain wise difference scores of experimental group and control group.

(N_1=15) (N_2=15)

QOL Domains	Mean difference	Standard Deviation difference	U value	*P value	Significance of difference
Physical well-being	4.33	6.31	0.50	0.01	Significance
Social well-being	8.06	4.87	37.50	0.002	Significance
Emotional well-being	4.83	5.25	3.00	0.01	Significance
Functional well=being	4.80	6.75	0.01	0.01	Significance

*P-Two tailed

Table 9: Depicts the effectiveness of progressive muscle relaxation therapy and guided imagery on Functional assessment of cancer therapy domain wise difference scores. The mean of difference of physical was 4.33, and standard deviation difference was 6.31 difference of social was 8.6, and standard deviation difference was 4.87, difference of emotional was 4.83, and standard deviation difference was 5.25, difference of functional was 4.8, and standard deviation difference was 6.75. The calculated U values of all Functional assessment of cancer therapy domains were much higher than table 'P' value (0.01) at 5 % level of significance and DF is 138. Hence the cancer patients of study group who attended progressive muscle relaxation therapy and guided imagery will have higher level of Functional assessment of cancer therapy scores compared to cancer patients of control group**,** was accepted, hence the intervention of progressive muscle relaxation therapy and guided imagery was effective.

Table 10: Description of subjects according to their effectiveness of progressive muscle relaxation therapy and guided imagery on pain difference score, nausea and vomiting difference score, stress difference score and anxiety difference score of experimental group and control group

(N_1=15) (N_2=15)

Parameters	Mean difference	Standard Deviation difference	U value	*P value	Significance of difference
Pain	2.96	3.22	0.01	0.01	Significance
Nausea and Vomiting	11.33	10.28	0.01	0.01	Significance
Stress	3.54	5.19	8.50	0.001	Significance
Anxiety	8.76	9.18	0.01	0.001	Significance

*P-Two tailed

Table 10: Depicts the effectiveness of progressive muscle relaxation therapy and guided imagery on pain difference score, nausea and vomiting difference score stress difference score and anxiety difference score. The mean of difference of pain was 2.96, and standard deviation difference was 3.22 difference of nausea and vomiting was 11.33, and standard deviation difference was 10.28, difference of stress was 3.54, and standard deviation difference was 5.19, difference of anxiety was 8.76, and standard deviation difference was 9.18. The calculated U values of all pain, nausea and vomiting, stress and anxiety were much higher than table 'P' value (0.01) at 5 % level of significance and DF is 138. Hence the cancer patients of study group who attended progressive muscle relaxation therapy and guided imagery will have higher level of recovery of pain, nausea and vomiting, stress and anxiety scores compared to cancer patients of control group**,** was accepted, hence the intervention of progressive muscle relaxation therapy and guided imagery was effective.

DISCUSSION: -

The following studies supports the present study and reflexes and impact the effect of progressive muscle relaxation therapy and guided imagery on physiological, psychological and functional wellbeing among cancer patients.

The purpose of this study was to examine the deferential effects of progressive muscle relaxation [PMR] and guided imagery [GI] on physical and emotional symptoms in nursing students taking their initial clinical training. Using a three-group, randomized, single blinded study conducted in a large Jordanian university, 156 nursing students were randomly allocated into one of three study groups (PMR group, GI group, and control group). The physical symptoms and emotional symptoms of depression, anxiety, and stress were assessed at baseline and end of the intervention. Results:

Using one-way MANOVA and post-hoc comparisons, the results showed that PMR and GI significantly reduced more physical symptoms than control condition although PMR was more effective than GI in this regard. GI significantly decreased more emotional symptoms such as anxiety, depression, and stress than PMR and control condition. PMR decreased anxiety, depression, and stress but the results were not statistically significant. Conclusion The findings of this study support the ABC relaxation theory claiming that PMR im-proves better physical symptoms while GI improves better emotional symptoms. However, further studies using students from multiple settings are needed.[5]

A study was conducted on a breast cancer affects the mental well-being of patients who may need psychological support. The combined practice of progressive muscle relaxation (PMR) and guided imagery (GI) is known to improve psychological health. Its effect has been studied in patients with breast cancer. We wanted to evaluate the effect of the combined practice of PMR and GI on stress, anxiety, depression and mood. We also wanted to study the impact on quality of life and chemotherapy-related adverse effects. A systematic search and evaluation of the literature was performed. Five randomised controlled trials were selected for data extraction and construction of forest plots. The intervention was effective for stress and anxiety. It positively improved the quality of life but saw no significant improvement in chemotherapy-related adverse effects. [6]

A study was conducted on the effectiveness of progressive muscle relaxation, spiritual guided imagery and music for coping and resilience of cancer patients undergoing chemotherapy. This study was a quasi-experimental design. A total of 62 respondents (intervention and control groups) were determined using a purposive sampling technique. The independent variable was Progressive Muscle Relaxation therapy with Spiritual Guided Imagery and Music. Meanwhile, the dependent variable was coping and resilience. The instrument used The-14 items Resilience Scale and The Cancer Coping Questionnaire. Data were analysed using the General Linear Model Repeated Measures. The results showed that coping mechanisms improved in the first week, while resilience was only developed in the second week after being given the intervention. [7]

A study was conducted on a the effectiveness of guided imagery (GI) and progressive muscle relaxation (PMR) as stress reducing interventions in patients with prostate and breast cancer who undergo chemotherapy. Methods. Patients were randomly assigned to either the control group or the intervention group (PMR and GI). Patients were observed for a total duration of 3 weeks and assessed with the SAS and BECK-II questionnaires for anxiety and depression, respectively, in addition to two biological markers (saliva cortisol and saliva amylase) (trial registration number: NCT01275872). Results. 256 patients were registered and 236 were randomly assigned. In total 104 were randomised to the control group and 104 to the intervention group. Intervention's mean anxiety score and depression score changes were significantly different compared to the control's ($b = -29.4$, $p < 0.001$; $b = -29.4$, $p < 0.001$, resp.). Intervention group's cortisol levels before the intervention (0.30 ± 0.25) gradually decreased up to week 3 (0.16 ± 0.18), whilst the control group's cortisol levels before the intervention (0.21 ± 0.22) gradually increased up to week 3 (0.44 ± 0.35). The same interaction appears for the Amylase levels ($p < 0.001$). Conclusions. The findings showed that patients with prostate and breast cancer undergoing chemotherapy treatment can benefit from PMR and GI sessions to reduce their anxiety and depression. [8]

The study reflects this gap in the literature and aimed to test the effectiveness of Guided Imagery (GI) and Progressive Muscle Relaxation (PMR) on a cluster of symptoms experienced by patients undergoing chemotherapy. Methods This was a randomized control trial with 208 patients equally assigned either in the intervention or the control group. Measurements in both groups were collected at baseline and at completion of intervention (4 weeks). The overall management of the cluster was also assessed based on the patients' self-reported health related quality of life-HRQoL. Chi-square tests (X2), independent T-tests and Linear Mixed Models were calculated. Results Patients in the intervention group experienced lower levels of Fatigue HRQoL 51.9(22.3)– 41.2(24.1)]. Nausea, vomiting and retching occurred significantly less often in the intervention group [pre-post: 25.4(5.9)– 20.6(5.6) compared to the control group (17.8(6.5)– 22.7(5.3) (F = 58.50 p].This study provided evidence that the combination of GI and PMR can be effective in the management of a cluster of symptoms in cancer patients receiving chemotherapy. These techniques can complement existing management measures to achieve a comprehensive management of this symptom cluster and increase patients HRQol. [9]

A study was conducted on a systematically review the current state of knowledge regarding the effects of the PMR-GI combination on cancer patients receiving chemotherapy. **Methods:** After removing the duplicates 342 publications were screened and 71 were considered as potentially relevant. Those using PMR or GI alone and those combining other techniques together with PMR and GI were excluded. **Results relives that** eight papers reporting the results of seven independent trials were finally included. All of them included only breast cancer patients, apart from a single trial using a mixed sample of breast and prostate cancer patients. Seven of the included trials reported beneficial effects on mental state (mood, anxiety, and depression) and on toxicity (nausea and vomiting). The study **concludes that** independent trials indicate that the PMR-GI combination is an effective way to tackle the impact of nausea and vomiting and to improve patients' mental state. [10]

The study was conducted on multicentre randomised controlled trial was designed to assess the adjuvant effect of PMR-IGI in alleviating pain in a sample of hospice patients with terminal cancer. A total of 104 patients were randomised to two groups. Group A patients (n = 53) were administered the Revised Edmonton Symptom Assessment Scale (ESAS-r) and the numerical rating scale (NRS) for pain immediately prior to (T1) and 2 h following an individual PMR-IGI session (T3). Group B patients (n = 51) received usual care and were assessed using the same tools. Acute pain episodes and rescue analgesics over the following 24 h were recorded. **The results shows that** the Pain Intensity Difference (NRS at T3-NRS at T1) was 1.83 in group A and 0.55 in group B and was significant in both groups ($p < 0.0001$). The mean Total Symptom Distress Score declined by 8.83 in group A and by 1.84 in group B. The average difference in the emotional

symptoms ESAS-r sub score (anxiety and depression) was 2.93 in group A ($p < 0.0001$) and 0.07 in group B ($p > 0.05$). The study **concludes that** this trial suggest that PMR-IGI may be considered as an effective adjuvant in alleviating pain-related distress in terminal cancer patients. Further studies should be performed to assess the effectiveness of repeated interventions. **[11]**

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