

Effectiveness Of Progressive Muscle Relaxation Technique On Selected Side Effects Of Chemotherapy Patients

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ABSTRACT

Introduction: As stated by the WHO globally, cancer is recognized as one of the primary causes of mortality worldwide. It is a significant contributor to global death rates, responsible for almost 10 million fatalities in 2020, which equates to nearly one in six deaths. Despite advancements in cancer treatment methods, it remains a perilous disease associated with substantial pain, suffering, and the potential for death. Around 85,50,000 new most cancers instances are recognized in India each year.

Objective: The primary aim of the study is to assess the efficacy of technique of progressive muscle relaxation on selected side effects of chemotherapy in cancer patients and to find the association between demographic variables and selected side effects of chemotherapy among cancer patients in the experimental group and the control group.

Methodology: Quantitative approach was collected with eight patients by meticulous examination to identify the selected side effects experienced by cancer patients, which include nausea, vomiting and lack of sleep, across three chemotherapy sessions. A convenient sampling method was employed for data collection in this study. The Multinational Association of Supportive Care in Cancer (MASCC) was utilized to assess nausea and vomiting, while the Pittsburgh Sleep Quality Index scale was employed to evaluate sleep quality. The participants were divided into two groups, each consisting of four patients in each group. The experimental group received progressive muscle relaxation techniques, whereas the control group receives standard treatment care, similar to the other groups.

Result: Finding reveled a significant association seen between patients performing progressive muscle relaxation technique with Acute Nausea & Vomiting with site of cancer. Delayed nausea & vomiting with Pittsburgh scale with site of cancer. Results showed that the group receiving PMRT had a reduction in chemotherapy side effects such as nausea, vomiting and lack of sleep compared with control group.

Conclusion: The study concluded that progressive muscle relaxation technique was more effective in controlling the side effects of chemotherapy among cancer patients

Keywords: Cancer, Progressive muscle relaxation technique, Multinational Association of Supportive Care in Cancer (MASCC), Nausea, Vomiting, Lack of sleep, Pittsburgh sleeps quality index scale

INTRODUCTION

Cancers can be defined as an uncontrolled growth of cells that can reach different parts of the body. About 8.2 million human beings die from the ailment every year, accounting for his 13% of worldwide deaths. Furthermore, most cancers instances are expected to growth with the aid of using 70% over the subsequent 20 years. Cancer is the second one main reason of dying in lots of countries. The prevalence of most cancers is growing each day across the worldin many countries. The incidence of cancer is increasing every day around the world. Improvements in cancer screening and treatment have significantly increased survival rates for cancer patients globally. Consequently, it is essential to prepare for the future health of current cancer patients by adopting health-promoting strategies during and following their treatment. [1] Progressive relaxation includes a mixture of controlled respiratory training and contractions collection and residual muscle tissue for

pressure management. Music therapy is used by fitness professionals to market relaxation and improve the lives of their clients. Music therapy can also serve to encourage emotional expression, foster social interaction, and alleviate symptoms. Music therapists employ either active or passive techniques tailored to the preferences and capabilities of the patient. A study on behavioral health research was done on Benefits of Shortened Progressive Muscle Relaxation Training. Review was conducted using shortened progressive muscle relaxation training (APRT) as an intervention for psychophysiological disorders. The energy of the affiliation among APRT and final results measures became calculated for twenty nine experiments posted since 1980'. Results showed prospective design (changes analyzed) found stronger effects on APRT than those using cross-sectional designs (that is, group comparisons). APRT became maximum strongly related to development in experiments that provided his APRT was delivered individually and a training tapes to participants. (Carlson, 2021) [2]

A randomized clinical trial of the outcomes of relaxation on self-esteem was conducted ineighty cancer clients. Samples were taken by using convenience sampling & randomly assigned to experimental and control groups. In addition to his usual treatment, clients performed relaxation exercises for 30 minutes once/day for 60 consecutive days, whereas control group patients received only his usual treatment. A Persian version of the Coopersmith Self Esteem Inventory was used before and after the intervention. Results indicate that relaxation appears to be probably powerful in enhancing self-esteem in cancer clients.(Mehdi et al.; 2019) {3} A study evaluating the results of progressive relaxation on ache and fatigue in cancer clients.. A quantitative approach with a quasi-experimental two-group pre-test-post-test design was chosen. A targeted sampling with sample size was 60 people. A pain rating scale and a modified cancer fatigue scale showed reduction in pain and fatigue in the experimental group after surgery. There is a positive connection of pain and fatigue in cancer patients. (Matthew, 2019) {4}

To find out efficacy of technique of progressive muscle relaxation therapy for physiological sign & symptoms in cancer sufferers undergoing chemotherapy study were conducted. Quasi- design was with pre & post-study control groups was implemented. Forty gastrointestinal cancers sufferers was enrolled through a lottery process, with twenty client each divided into experimental & comparison groups. Universal Pain Assessment, Insomnia Severity Index Scale, Toxicity Criteria for Adverse Events Version-5, and Karnofsky Performance Status Scale. The results demonstrate that PMRT is powerful in decreasing bodily signs and symptoms of insomnia and fatigue in most cancers sufferers receiving chemotherapy accredited through the Cancer Institute of the Institute of Liver and Biliary Sciences. (Bhatia et al.; 2020) {5}

A study on effect of PMRT on chemotherapy-induced nausea, vomiting and anxiety in Egyptian breast cancer women.An RCT on seventy-four patients divided into thirty seven group at Oncology Center in Mansoura University. The intervention included daily PMRT practice for seven days two hours before chemotherapy by using Rhodes index of nausea-vomiting and Zung self-rating anxiety scale used before chemotherapy and at the seventh and 14th days after chemotherapy. Results shows decrease in frequency, severity, and duration hence PMRT combined with antiemetics was effective in vomiting, nausea, and retching. (Soliman et al., 2021){6}

METHODOLOGY

The current study was carried out at the Oncology department of Fortis Memorial Research Institute Memorial Research Institute, Gurugram. This is 330 beds hospital and it is specialized cancer care and chemotherapy center situated at Karkardooma, Delhi. Eight patients were chosen using a method involving sealed, opaque envelopes, considering specific inclusion criteria. After explaining the study, consent was obtained from each participant. The tools used for data collection were given to them, which took about 40 minutes to complete. Three subjects received Post-chemotherapy Relaxation Therapy (PMRT) and the last three continued with their usual care,

serving as controls. Data was evaluated through basic descriptive and statistical analyses. Tools were used Demographic data & Clinical variables, Multinational Association of Supportive Care in Cancer (MASCC-MAT) for assessing nausea and vomiting and Pittsburgh sleep quality Index for assessing lack of sleep. Intervention used for experiment group was Progressive muscle relaxation technique (Jacobson's Technique) by Demonstration followed by Video Demonstration.

DATA ANALYSIS AND INTERPRETATION

Section 1: Demographic distribution of cancer patients admitted in oncology ward of selected hospital

N=4

	Experiment group		Control Group	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Socio Demographic data				
1. Age				
a. 21- 30 years	1	25	1	25
b. 31- 40 years	0	0	0	0
c. 41- 50 years	3	75	3	75
d. 51 -60 years	0	0	0	0
2. Gender				
a. Male	2	50	1	25
b. Female	2	50	3	75
3. Education Qualification				
a. Primary Education	0	0	0	0
b. Graduate	2	50	1	25
c. Post graduate	2	50	3	75
d. Doctorate	0	0	0	0
4. Occupation				
a. Unemployed	0	0	1	25
b. Government employee	2	50	3	75
c. Private employee	1	25	0	0
d. Own Business	1	25	0	0
5. Marital status				
a. Married	3	75	3	75
b. Unmarried	1	25	1	25
c. Widow	0	0	0	0
d. Separated	0	0	0	0
6. Monthly family income (in Rs.)				
a. Above 70,000	3	75	4	100

b. 50,001-70,000	1	25	0	0
c.30,001-50,000	0	0	0	0
d. Less than 30,000	0	0	0	0
7. Family history of cancer				
a. Present	3	75	3	75
b. Absent	1	25	1	25
8. History of substance used				
a. Tobacco	0	0	0	0
b. Alcohol	1	25	0	0
c. Tobacco and alcohol	2	50	1	25
d. None	1	25	3	75
9. Dietary habits				
a. Vegetarian	3	75	3	75
b. Non-vegetarian	1	25	1	25
10. Total cycles of chemotherapy				
a. 3-4	2	50	2	50
b.5-6	2	50	2	50
c.7-8	0	0	0	0
11. Presence of any co-morbidity				
a. Hypertension	3	75	0	0
b. Diabetes mellitus	1	25	2	50
c. Other	0	0	1	25
d. No co-morbidity	0	0	1	25
12. Time since diagnosis (year)				
a. Less than 1 year	1	25	2	50
b. 1 to 2 years	2	50	2	50
c. More than 2 years	1	25	0	0
13. Site of cancer				
a.. Prostate /Ovary/Uterus/Breast	3	75	0	0
b. Lung/Head/Neck	0	0	0	0
c. Colon/Rectum/Stomach/Intestine	1	25	2	50
d. Others	0	0	2	50

Table No.1: shows the distribution of subject according to sociodemographic profile & clinical variable of experiment group & control group.

Section 2: Effectiveness of Progressive Muscle Relaxation Technique on Nausea and Vomiting & Lack of sleep among cancer patients.

N=4

EXPERIMENTAL GROUP		Mean±S.D	T -value	Df	P -Value
MASCC-MAT SECTION -A	PRE-TEST	10.50±1.29	9	3	0.003
	POSTTEST -I	12.75±1.25			
	PRE- TEST	10.50±1.29	15.58	3	0.001
	POST TEST -II	15±0.81			
	PRE- TEST	10.50±1.29	25.98	3	0
	POST TEST -III	18±0.81			
MASCC-MAT SECTION -B	PRE- TEST	19±2.16	7	3	0.006
	POST TEST -I	15.50±1.73			
	PRE- TEST	19±2.16	6.48	3	0.007
	POST TEST -II	12±2.16			
	PRE- TEST	19±2.16	9.25	3	0.003
	POST TEST -III	9±2.16			
PITTSBURGH	PRE- TEST	11.25±0.95	7	3	0.006
	POST TEST -I	9.50±1.29			
	PRE- TEST	11.25±0.95	6.75	3	0.007
	POST TEST -II	4.50±0.57			
	PRE- TEST	9.25±1.71	10.72	3	0.002
	POST TEST -III	4.25±0.96			

TABLE 2: Mean Score Distribution of Multinational Association of Supportive Care in Cancer (MASCC -MAT) and Pittsburgh sleep quality index among Experimental Group

Section 3: Effectiveness among Control Group on Nausea and Vomiting & Lack of Sleep

N=4

CONTROL GROUP		Mean±S.D	Tvalue	Df	PValue
MASCC-MAT SECTION -A	PRE-TEST	9.75±1.25	-	-	-
	POSTTEST -I	9.75±1.25			
	PRE-TEST	9.75±1.25	1	3	0.391
	POSTTEST -II	10±0.81			
	PRE- TEST	9.75±1.25	2.611	3	0.080
	POST TEST -III	11±1.41			
MASCC-MAT SECTION -B	PRE- TEST	17±2.16	-	-	-
	POST TEST -I	17±2.16			
	PRE- TEST	17±2.16	0	3	1
	POST TEST -II	17±1.41			
	PRE- TEST	17±2.16	0.52	3	0.638
	POST TEST -III	17.25±1.25			
PITTSBURGH	PRE- TEST	13.25±2.06	1	3	0.391
	POST TEST -I	13±1.82			
	PRE- TEST	13.25±2.06	1	3	0.0391
	POST TEST -II	13±1.86			
	PRE- TEST	13.25±2.06	0	3	1
	POST TEST -III	13.25±2.06			

	POST TEST -III	13.25±1.50			
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TABLE 3: Mean Score Distribution of Multinational Association of Supportive Care in Cancer (MASCC -MAT) and Pittsburgh sleep quality index among Control group

Section 4: Pre & post-test, mean difference between groups comparison by unpaired “t” test values on the selected side effects of chemotherapy among patients in experiment group & control group.

N=4

EXPERIMENTAL GROUP		F	t	P	MeanDifference
MASCC-MAT SECTION -A	PRE- TEST	0.07	0.83	0.437	0.75
	POST TEST -III	1	8.57	0	7
MASCC-MAT SECTION -B	PRE- TEST	0	1.30	0.238	2
	POST TEST -III	0.701	6.60	0.001	8.25
PITTSBURGH	PRE- TEST	12	1.76	0.129	2
	POST TEST -III	13.5	10.88	0	8.75

TABLE 4: Effectiveness of PMRT on Multinational Association of Supportive Care in Cancer (MASCC-MAT) and Pittsburgh sleep quality index between experimental and control groups

Section 5: Association between Progressive Muscle Relaxation Technique and Mat -Section A with selected Demographic Variables

N=4

Socio Demographic data	Acute Nausea and Vomiting	Delayed Nausea and Vomiting	X ² value	df	P- value
1. Age			0	1	1
a.21-30 years	1	1			
b.31-40 years	0	0			
c.41-50 years	3	3			
d.51-60 years	0	0			
2. Gender			0.533	1	0.465
a. Male	1	2			
b. Female	3	2			
3. Education Qualification			0.533	1	0.465
a. Primary Education	0	0			
b. Graduate	1	2			
c. Post graduate	3	2			
d. Doctorate	0	0			
4. Occupation			3.20	3	0.362
a. Unemployed	1	0			
b. Government employee	3	2			
c. Private employee	0	1			
d. Own Business	0	1			
5. Marital status			0	1	1
a. Married	3	3			
b. Unmarried	1	1			
c. Widow	0	0			

d. Separated	0	0			
6. Monthly family income (in Rs.)			1.143	1	0.285
a. Above 70,000	4	3			
b. 50,001-70,000	0	1			
c. 30,001-50,000	0	0			
d. Less than 30,000	0	0			
7. Family history of cancer			0	1	1
a. Present	3	3			
b. Absent	1	1			
8. History of substance used			2.33	2	0.311
a. Tobacco	0	0			
b. Alcohol	0	1			
c. Tobacco and alcohol	1	2			
d. None	3	1			
9. Dietary habits			0	1	1
a. Vegetarian	3	3			
b. Non-vegetarian	1	1			
10. Total cycles of chemotherapy			0	1	1
a. 3-4	2	2			
b. 5-6	2	2			
c. 7-8	0	0			
11. Presence of any co-morbidity			5.33	3	0.149
a. Hypertension	0	3			
b. Diabetes mellitus	2	1			
c. Other	1	0			
d. No co-morbidity	1	0			
12. Time since diagnosis (year)			1.333	2	0.513
a. Less than 1 year	2	1			
b. 1 to 2 years	2	2			
c. More than 2 years	0	1			
13. Site of cancer			5.333	2	0.069*
a. Prostate /Ovary/Uterus/Breast	0	3			
b. Lung/Head/Neck	0	0			
c. Colon/Rectum/Stomach/Intestine	2	1			
d. Others	2	0			

*p<0.05

Table No.5: Table Representation of association between Multinational Association of Supportive Care in Cancer (MASCC-MAT) among Chemotherapy Patients Performing Progressive muscle relaxation technique during first 24 hours after chemotherapy

Section 6: Association between Progressive Muscle Relaxation Technique and Mat -Section B with Selected Demographic Variables

N=4

Socio Demographic data	Acute Nausea and Vomiting	Delayed Nausea and Vomiting	X ² value	df	P value
1. Age			0	1	1

a.21-30 years	1	1			
b.31-40 years	0	0			
c.41-50 years	3	3			
d.51-60 years	0	0			
2. Gender			0.533	1	0.465
a. Male	2	1			
b. Female	2	3			
3. Education Qualification			0.533	1	0.465
a. Primary Education	2	1			
b. Graduate	0	0			
c. Post graduate	2	3			
d. Doctorate	0	0			
4. Occupation			3.20	3	0.362
a. Unemployed	0	1			
b. Government employee	2	3			
c. Private employee	1	0			
d. Own Business	1	0			
5. Marital status			0	1	1
a. Married	3	3			
b. Unmarried	1	1			
c. Widow	0	0			
d. Separated	0	0			
6. Monthly family income (in Rs.)			1.143	1	0.285
a. Above 70,000	3	4			
b. 50,001-70,000	1	0			
c. 30,001-50,000	0	0			
d. Less than 30,000	0	0			
7. Family history of cancer			0	1	1
a. Present	3	3			
b. Absent	1	1			
8. History of substance used			2.33	2	0.311
a. Tobacco	0	0			
b. Alcohol	1	0			
c. Tobacco and alcohol	2	1			
d. None	1	3			
9. Dietary habits			0	1	1
a. Vegetarian	3	3			
b. Non-vegetarian	1	1			
10. Total cycles of chemotherapy			0	1	1
a. 3-4	2	2			
b. 5-6	2	2			
c. 7-8	0	0			
11. Presence of any co-morbidity			5.33	3	0.149
a. Hypertension	3	0			
b. Diabetes mellitus	1	2			
c. Other	0	1			
d. No co-morbidity	0	1			

12. Time since diagnosis (year)			1.333	2	0.513
a. Less than 1 year	1	2			
b. 1 to 2 years	2	2			
c. More than 2 years	1	0			
13. Site of cancer			5.333	2	0.069*
a.. Prostate /Ovary/Uterus/Breast	3	0			
b. Lung/Head/Neck	0	0			
c. Colon/Rectum/Stomach/Intestine	1	2			
d. Others	0	2			

*p < 0.05

TableNo.6: Table Representation of association between Multinational Association of Supportive Care in Cancer (MASCC-MAT) among Chemotherapy Patients Performing Progressive muscle relaxation technique during after first 24 hours after chemotherapy

Section 7: Association between the Progressive Muscle Relaxation Technique and the Pittsburgh scale with selected demographic variables

N=4

Socio Demographic data	Good sleep	Bad sleep	X ² value	df	P value
1.Age			0	1	1
a.21-30 years	1	1			
b.31-40 years	0	0			
c.41-50 years	3	3			
d.51-60 years	0	0			
2. Gender			0.533	1	0.465
a. Male	2	1			
b. Female	2	3			
3. Education Qualification			0.533	1	0.465
a. Primary Education	2	1			
b. Graduate	0	0			
c. Post graduate	2	3			
d. Doctorate	0	0			
4. Occupation			3.20	3	0.362
a. Unemployed	0	1			
b. Government employee	2	3			
c. Private employee	1	0			
d. Own Business	1	0			
5. Marital status			0	1	1
a. Married	3	3			
b. Unmarried	1	1			
c. Widow	0	0			
d. Separated	0	0			
6. Monthly family income (in Rs.)			1.143	1	0.285
a. Above 70,000	3	4			
b. 50,001-70,000	1	0			
c. 30,001-50,000	0	0			
d. Less than 30,000	0	0			

7. Family history of cancer			0	1	1
a. Present	3	3			
b. Absent	1	1			
8. History of substance used			2.33	2	0.311
a. Tobacco	0	0			
b. Alcohol	1	0			
c. Tobacco and alcohol	2	1			
d. None	1	3			
9. Dietary habits			0	1	1
a. Vegetarian	3	3			
b. Non-vegetarian	1	1			
10. Total cycles of chemotherapy			0	1	1
a. 3-4	2	2			
b.5-6	2	2			
c.7-8	0	0			
11. Presence of any co-morbidity			5.33	3	0.149
a. Hypertension	3	0			
b. Diabetes mellitus	1	2			
c. Other	0	1			
d. No co-morbidity	0	1			
12. Time since diagnosis (year)			1.333	2	0.513
a. Less than 1 year	1	2			
b. 1 to 2 years	2	2			
c. More than 2 years	1	0			
13. Site of cancer			5.333	2	0.069 *
a.. Prostate /Ovary/Uterus/Breast	3	0			
b. Lung/Head/Neck	0	0			
c. Colon/Rectum/Stomach/Intestine	1	2			
d. Others	0	2			

*p<0.05

Table No.7: Table Representation of association between Pittsburgh sleep quality index scales among chemotherapy patients performing Progressive muscle relaxation technique

RESULT: It shows the distribution of subject according to socio demographic profile and clinical variable of experiment group and control group. The data revealed that majority 75 percent (3) of respondents were in the age 41-50 years, both gender was present in both groups. Educational qualification is same in PMRT group whereas post graduate is more in control group 75 percent (3), Government employee are there in both groups with 50 percent (2) and in control 75 percent (3) in control. Mostly respondents are married and having monthly family income more than 70,000 IN both groups. Family history of cancer was present 75 percent (3) in both groups. Tobacco and alcohol 50percent (2) in PMRT group were high.in both groups majority are vegetarian. 3- 6 session's majority of both groups undergone. Hypertension in PMRT group and diabetes in control group were found more. Majority was having time since diagnosis 1 to 2 years. In Experiment group 75 percent (3) respondents shows site of cancer prostate/ovary/uterus/breast whereas Gastro cancers was shown by control group. There is a significantly difference in selected side effects of chemotherapy in cancer patients before and after the administration of technique of progressive muscle relaxation in the experimental group -I. There was clear positive mean difference between

pretest and posttest I, II, III level in the selected side effects of chemotherapy in cancer patients before & after the administration of technique of progressive muscle relaxation in the experimental group -I .

CONCLUSION:

Experimental group who received chemotherapy along with progressive muscle relaxation technique showed reduction in side effects like nausea & vomiting and improvement in sleep were as control group, which shows no change in side effects. The study concluded technique of progressive muscle relaxation is more effective in controlling side effects of chemotherapy in cancer patients.

Recommendations for further research studies:

This study recommends that, a similar study can be done with other common side effects of chemotherapy among cancer patients. It is possible to replicate this study in other clinical and community settings. Other standardized research tools can be utilized to evaluate the effectiveness of technique of progressive muscle relaxation who is receiving chemotherapy. A similar study can be conducted with other alternative and complementary therapies to assess the reduction of side effects of chemotherapy among cancer patients

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