IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal

Chemotherapy with Side Effects: Progressive Muscle Relaxation Technique and Music therapy

[1]Ms. Divya Upreti, [2]Prof. Dr. Pity Koul
[1]Phd Scholar, School of Nursing Science and Research, Sharda University [2] Professor, School of Nursing Science and Research, Sharda University

ABSTRACT

Introduction: Cancer is the leading cause of death from illness. It is a significant medical issue since it has an impact on the health of a large global population. In the United States, almost 1.5 million people receive a cancer diagnosis annually. On average, one patient dies from cancer every ninety seconds, despite large variations in cancer frequency and death rate. Over 75% of cases estimate that one family member may have cancer. In the US, it is ranked as the second-most deadly illness after heart disease. Annually, an estimated 562,875 patients pass away from cancer (Centers for Disease Control and Prevention, 2011). Cancer is the leading cause of fear, even though it ranks second in terms of fatality. According to an assessment of 1500 Americans, 49% of respondents said they were afraid of the word "cancer" (American Cancer Society, 1980). We anticipate that by 2020, India will have lost over 8 lakh cancer patients annually, with over 17 lakh new cases of the disease likely to occur annually. Data from a single year in 2016 documented more than 1.5 lakh cases of breast cancer. Lung cancer follows closely behind, with an estimated 1.14 lakh cases, 83,000 of which are in men and 31,000 of which are in women. According to estimates, there are 70–80 cases of cancer for every 100,000 people in India. Researchers have determined that between 2 and 2.5 million people in India have cancer at any given time, with over 800,000 new cases and 5,000 fatalities annually. **Objective**: The primary aim of the study is to assess the efficacy of technique of progressive muscle relaxation and music therapy 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 groups and the control group. **Methodology:** Quantitative approach was collected with nine 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 three groups, each consisting of three patients in each group. The experimental groups received progressive muscle relaxation techniques and music therapy, whereas the control group receives standard treatment care, similar to the other groups. **Result:**. The results indicated that the group practicing progressive muscle relaxation techniques experienced a noticeable reduction in chemotherapy side effects, such as nausea, vomiting, and sleep disturbances, when compared to the 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

The term "cancer" commonly refers to approximately 250 related disorders that are incurable. The similarities are in the characteristics that are hazardous as well as the odd developments that occur inside any linked tissue as a result of host anomalies or deviations. These develop differently in different people, at varying rates, and throughout different time periods. In actuality, the Greek word "Karkinos," which means crab, is where the word "cancer" originates. A general non-communicable disease known as cancer is defined as the growth of abnormal and irregular cells (tumors or lumps) in one or more body parts that are malignant (cancerous or neoplasmas). These abnormal cells proliferate rapidly and without hindrance, spreading quickly to distant or localized locations inside the body to produce tumors. If left unchecked, these tumors have the potential to destroy vital organs, result in organ failure, or trigger a stroke or other event that could ultimately lead to death if medication is not administered. This is the way that illness has become such a sensitive issue.

Progressive relaxation combines controlled breathing techniques with muscle contractions and relaxation to help manage stress. Fitness professionals often use music therapy to promote relaxation and enhance their clients' well-being. In addition, music therapy can facilitate emotional expression, encourage social interactions, and help reduce various symptoms. Music therapists utilize both active and passive approaches tailored to each patient's preferences and abilities.

A study aimed to explore progressive muscle relaxation affects the sleep quality of cancer patients receiving chemotherapy. Ninety patients were chosen through convenience sampling and were

randomly divided into two groups: one practicing progressive muscle relaxation and a control group. Prior to the intervention, all patients completed the Pittsburgh Sleep Quality Questionnaire. The relaxation group practiced muscle relaxation twice daily for four weeks, spending about twenty minutes each session. The control group, however, only received their usual care. After four weeks, both groups

filled out the questionnaire again. The data was analysed in which results showed that relaxation group experienced a clear improvement in sleep quality. The findings suggest that relaxation techniques are a simple and effective way to help improve sleep for cancer patients. (Kahreh, Abdi et al., 2024)

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. Daily PMRT was practiced for seven days, two hours before chemotherapy, using the Rhodes nausea-vomiting index and the Zung self-rating anxiety scale before and 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)

An explorative study on seven articles were analyzed in this study to examine how music therapy helps reduce gastrointestinal side effects in chemotherapy for digestive tract cancer patients. Researchers searched multiple databases, including EMBASE, PubMed, OVID, WoS, CNKI, CBM, and VIP, to find relevant studies. They combined the treatment results for evaluation. The meta-analysis showed that music therapy lowered patients' nausea scores after chemo. It also helped decrease the occurrence of mild symptoms categorized as grade I. (Zhong 2023)

In a study, research assessed and contrasted the impacts of music therapy and music medicine interventions on the psychological and physical outcomes for cancer patients. The review was evaluated by the Cochrane Central Register of Controlled Trials (CENTRE; 2020, 3rd edition) within the Cochrane Library, MEDLINE, Embase, CINAHL, PsycINFO, LILACS, Science Citation Index, CancerLit, CAIRSS, Proquest Digital Dissertations, ClinicalTrials.gov, Current Controlled Trials, RILM Abstracts of Music Literature, and all randomized and controlled quasi-randomized trials of music interventions aimed at enhancing psychological and physical outcomes in cancer patients. GRADE is utilized to evaluate the strength of the evidence. A total of seventy-four studies involved adult participants (N = 5,306), while seven studies included pediatric patients (N = 270) with oncology conditions. There were 38 studies focused on music therapy and 43 on music medicine. The findings indicate that music interventions may yield beneficial effects on anxiety, depression, hope, pain, and fatigue in adults suffering from cancer when compared to standard care. (Bradt , Dileo , Myers Coffman et al., 2021)

METHODOLOGY

The present study took place in the Oncology department at Fortis Memorial Research Institute in Gurugram, a 330-bed hospital known for its specialized cancer care and chemotherapy services located in Karkardooma, Delhi. Nine patients were selected based on specific inclusion criteria, utilizing a process that involved sealed, opaque envelopes. After thoroughly explaining the study, we secured consent from each participant. The data collection tools were then distributed, and participants took approximately 40 minutes to complete them. Among the participants, three received Post-chemotherapy Relaxation Therapy (PMRT), while the remaining three continued with their standard care as controls. Data analysis was performed using basic descriptive and statistical methods. The tools employed included demographic data and clinical variables, the Multinational Association of Supportive Care in Cancer (MASCC-MAT) for evaluating nausea and vomiting, and the Pittsburgh Sleep Quality Index for assessing sleep disturbances. The intervention for the experimental group was the Progressive Muscle Relaxation technique (Jacobson's Technique), which was demonstrated followed by a video demonstration.

DATA ANALYSIS AND INTERPRETATION

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

Table No.1: Frequency and percentage distribution of socio demographic profile of Progressive muscle relaxation technique

N=9

Socio Demographic data	**Experimental group-I**					
	Frequency	%	Mean±S.D	**MASCC (Section –A)** Chi square ($\chi 2$) & p Value	**MASCC (Section –B)**	**Pittsburgh**
1. Age			3.67±0.577	0.584	6.251	0.584
a. 21-30 years	0	0				
b. 31-40 years	0	33.3				
c. 41-50 years	1	66.7				
d. 51-60 years	2	66.7				
2. Gender			1.33±0.577	**0.02 S***	**0.016 S***	**0.016 S***
a. Male	2	66.7				
b. Female	1	33.7				
3. Education Qualification			2.33±0.577	0.584	0.584	0.584
a. Primary Education	0	0				

b. Graduate	2	66.7				
c. Post graduate	1	33.3				
d. Doctorate	0	0				
4. Occupation						
a. Unemployed	1	33.3				
b. Government employee	1	33.3	3±1	0.1	6.251	0.584
c. Private employee	1	33.3				
d. Own Business	1	33.3				
5. Martial status						
a. Married	2	66.7				
b. Unmarried	0	0	2±1.732	0.352	0.584	0.584
c. Widow	0	0				
d. Separated	1	33.3				
6. Monthly family income (in Rs.)						
a. Above 70,000	2	66.7				
b. 50,001-70,000	1	33.3	1.33±0.577	6.251	0.584	0.352
c.30,001-50,000	0	0				
d. Less than 30,000	0	0				
7. Family history of cancer						
a. Present	1	33.3	1.67±0.577	**0.016 S***	**0.016 S***	**0.016 S***
b. Absent	2	66.7				
8. History of substance used						
a. Tobacco	0	0				
b. Alcohol	1	33.3	3.33±1.155	0.584	0.584	0.584
c. Tobacco and alcohol	0	0				
d. None	2	66.7				
9. Dietary habits						
a. Vegetarian	1	33.3	1.67±0.577	**0.016 S***	**0.016 S***	**0.016 S***
b. Non-vegetarian	2	66.7				
10. Total cycles of chemotherapy						
a. 3-4	2	66.7	1.33±0.577	0.103	0.211	0.211
b.5-6	1	33.3				
c.7-8	0	0				
11. Presence of any co-morbidity						
a. Hypertension	1	33.3				
b. Diabetes mellitus	1	33.3	2.33±1.528	0.584	0.352	0.352
c. Other	0	0				
d. No co-morbidity	1	33.3				
12. Time since diagnosis (year)						
a. Less than 1 year	2	66.7				
b. 1 to 2 years	0	0	1.67±1.155	0.103	0.211	0.211
c. More than 2 years	1	33.3				
13. Site of cancer						
a.. Prostate	1	33.3	2.67±1.528	0.352	0.352	0.352

/Ovary/Uterus/Breast						
b. Lung/Head/Neck	0	0				
c. Colon/Rectum/Stomach/Intestine	1	33.3				
d. Others	1	33.3				

*p<0.05

Table No.2: Frequency and percentage distribution of Socio demographic profile of Music Therapy

N=9

Socio Demographic data	**Experimental group-II**					
	Frequency	%	Mean±S.D	**MASCC (Section –A)** Chi square ($\chi 2$) & p Value	**MASCC (Section –B)**	**Pittsburgh**
1. Age			3.67±0.577	0.584	6.251	6.251
a. 21-30 years	0	0				
b. 31-40 years	0	0				
c. 41-50 years	1	33.3				
d. 51-60 years	2	66.7				
2. Gender			1.33±0.577	**0.016 S***	**0.016 S***	**0.001 S***
a. Male	2	66.7				
b. Female	1	33.3				
3. Education Qualification			2.67±1.155	6.251	6.251	6.251
a. Primary Education	0	0				
b. Graduate	2	66.7				
c. Post graduate	0	0				
d. Doctorate	1	33.3				
4. Occupation			3±1.732	6.251	6.251	6.251
a. Unemployed	1	33.3				
b. Government employee	0	0				
c. Private employee	0	0				
d. Own Business	2	66.7				
5. Martial status			1.67±1.155	0.584	6.251	0.584
a. Married	2	66.7				
b. Unmarried	0	0				
c. Widow	2	33.3				
d. Separated	0	0				

6. Monthly family income (in Rs.)			1.33±0.577	6.251	0.584	0.584
a. Above 70,000	2	66.7				
b. 50,001-70,000	1	33.3				
c.30,001-50,000	0	0				
d. Less than 30,000	0	0				
7. Family history of cancer			1.33±0.577	**0.016 S***	**0.016 S***	**0.001 S***
a. Present	2	66.7				
b. Absent	1	33.3				
8. History of substance used			3±1.732	0.584	6.251	0.072
a. Tobacco	1	33.3				
b. Alcohol	0	0				
c. Tobacco and alcohol	0	0				
d. None	2	66.7				
9. Dietary habits			1.67±0.577	**0.004 S***	**0.016 S***	**0.016 S***
a. Vegetarian	1	33.3				
b. Non-vegetarian	2	66.7				
10. Total cycles of chemotherapy			2±1	**0.02 S***	**0.010 S***	**0.051 S***
a. 3-4	1	33.3				
b.5-6	1	33.3				
c.7-8	1	33.3				
11. Presence of any co-morbidity			2±1	0.352	0.216	0.216
a. Hypertension	1	33.3				
b. Diabetes mellitus	1	33.3				
c. Other	1	33.3				
d. No co-morbidity	0	0				
12. Time since diagnosis (year)			2±1	**0.02 S***	**0.010 S***	**0.051 S***
a. Less than 1 year	1	33.3				
b. 1 to 2 years	1	66.3				
c. More than 2 years	1	33.3				
13. Site of cancer			2.33±1.528	0.352	0.216	0.216
a.. Prostate /Ovary/Uterus/Breast	1	33.3				
b. Lung/Head/Neck	1	33.3				
c.Colon/Rectum/Stomach/Intestine	1	33.3				
d. Others	0	0				

***p<0.05**

Table No.3: Frequency and percentage distribution of socio demographic profile of Control Group

N=9

Socio Demographic data	Control Group					
	Frequency	%	Mean±S.D	**MASCC (Section –A)** Chi square ($\chi 2$) & p Value	**MASCC (Section –B)**	**Pittsburgh**
1. Age			3±1	0.352	0.352	0.216
a. 21-30 years	0	0				
b. 31-40 years	1	33.3				
c. 41-50 years	1	33.3				
d. 51-60 years	1	33.3				
2. Gender			1.67±0.577	**0.016 S***	**0.016 S***	**0.016 S***
a. Male	1	33.3				
b. Female	2	66.7				
3. Education Qualification			2.67±0.577	6.251	6.251	6.251
a. Primary Education	0	0				
b. Graduate	1	33.3				
c. Post graduate	2	66.7				
d. Doctorate	0	0				
4. Occupation			1.67±0.577	6.251	0.584	6.251
a. Unemployed	1	33.3				
b. Government employee	2	66.7				
c. Private employee	0	0				
d. Own Business	0	0				
5. Martial status			2±1.732	6.251	6.251	6.251
a. Married	2	66.7				
b. Unmarried	0	0				
c. Widow	0	0				
d. Separated	1	33.3				
6. Monthly family income (in			1.67±1.155	6.251	6.251	0.352

Rs.)						
a. Above 70,000	2	66.7				
b. 50,001-70,000	0	0				
c.30,001-50,000	1	33.3				
d. Less than 30,000	0	0				
7. Family history of cancer						
a. Present	2	66.7	1.33±0.577	**0.016 S***	**0.016 S***	**0.016 S***
b. Absent	1	33.3				
8. History of substance used						
a. Tobacco	1	33.3				
b. Alcohol	0	0	3±1.732	6.251	6.251	0.352
c. Tobacco and alcohol	0	0				
d. None	2	66.7				
9. Dietary habits						
a. Vegetarian	2	66.7	1.33±0.577	**0.016 S***	**0.016 S***	**0.016 S***
b. Non-vegetarian	1	33.3				
10. Total cycles of chemotherapy						
a. 3-4	1	33.3	2.33±1.155	4.605	4.605	4.605
b.5-6	0	0				
c.7-8	2	66.7				
11. Presence of any co-morbidity						
a. Hypertension	0	0				
b. Diabetes mellitus	1	33.3	3±1	0.216	0.352	0.216
c. Other	1	33.3				
d. No co-morbidity	1	33.3				
12. Time since diagnosis (year)						
a. Less than 1 year	1	33.3	1.67±0.577	6.251	6.251	6.251
b. 1 to 2 years	2	66.7				
c. More than 2 years	0	0				

13. Site of cancer			2.33±1.528	0.352	0.216	0.352
a.. Prostate /Ovary/Uterus/Breast	1	33.3				
b. Lung/Head/Neck	1	33.3				
c.Colon/Rectum/Stomach/Intestine	0	0				
d. Others	1	33.3				

*p<0.05

SECTION: 2 , Mean Score Distribution Of Multinational Association Of Supportive Care In Cancer (Mascc-Mat) Scores Among Pre-Test, Post Test –I, Post Test-Ii And Post Test –Iii

Figure 1 a): Graphic Representation of Multinational Association of Supportive Care in Cancer (MASCC-MAT) Mean scores among Chemotherapy Patients Performing Progressive muscle relaxation technique during first 24 hours after chemotherapy

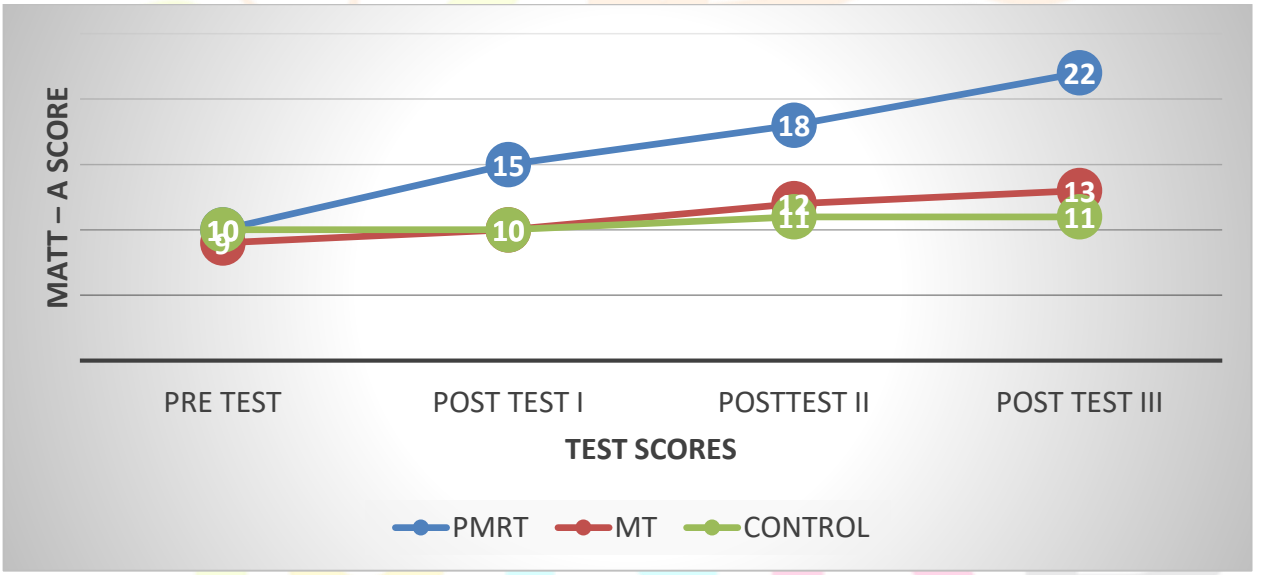
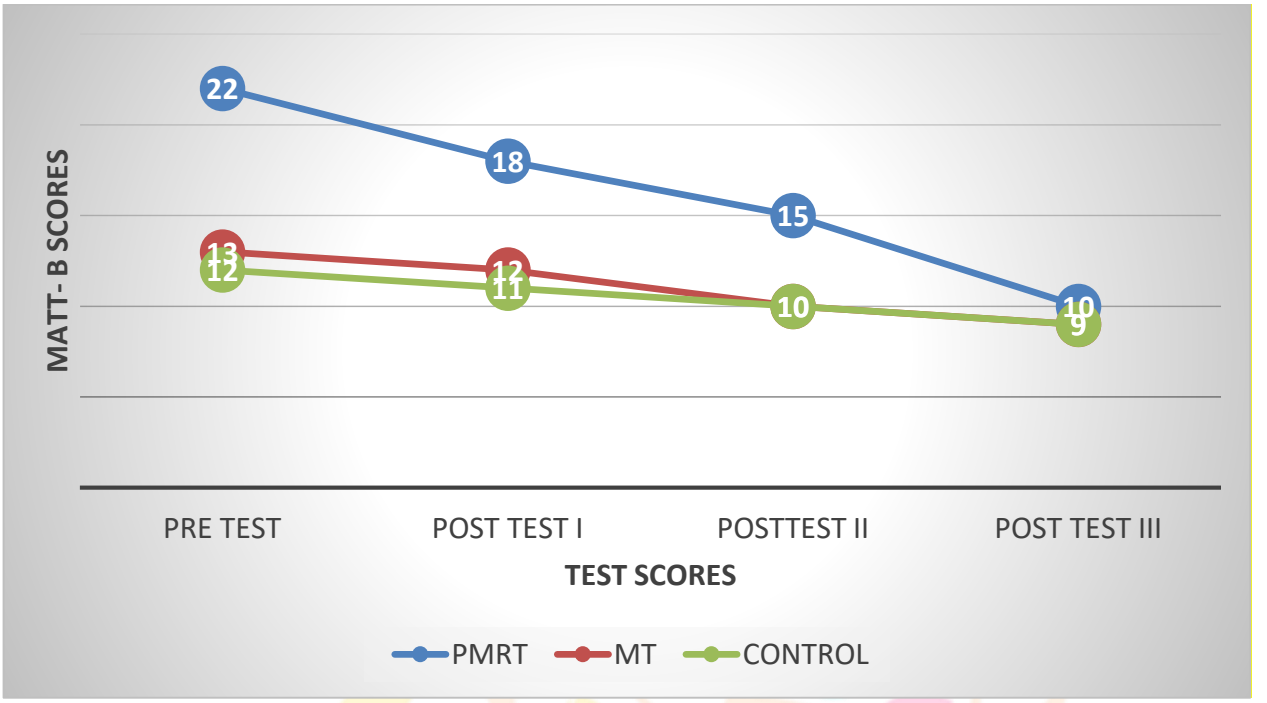
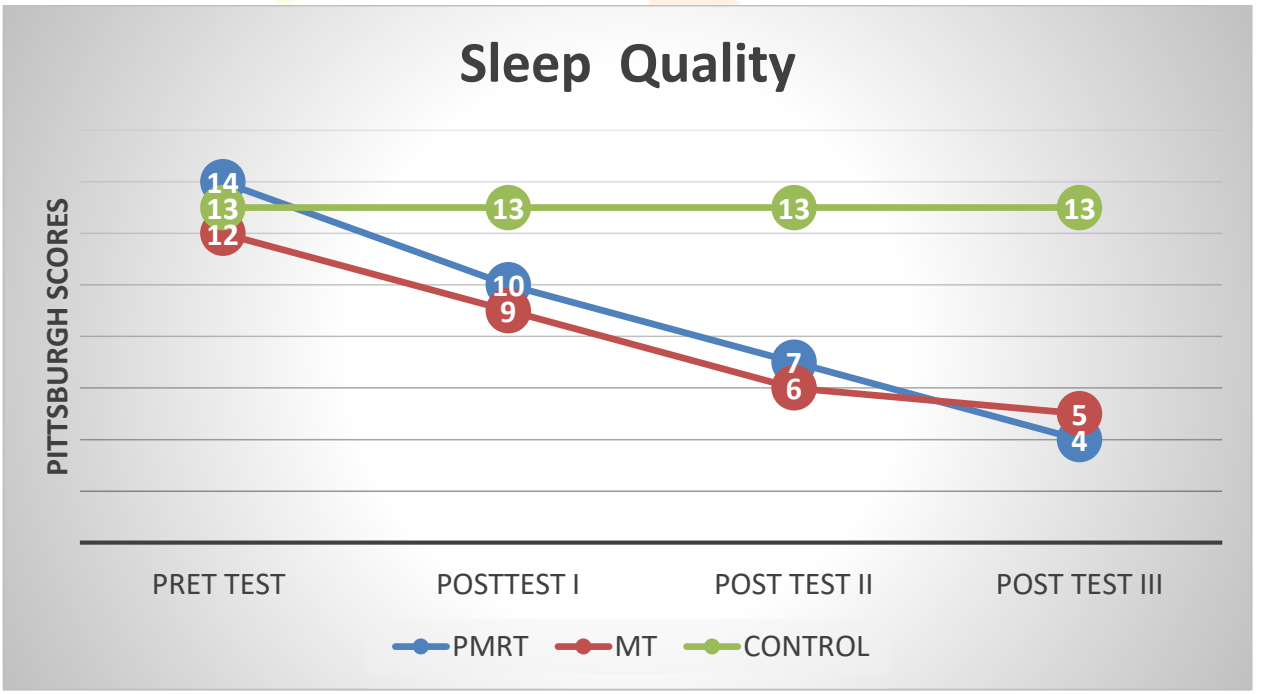


Figure1 b): Graphic Representation of Multinational Association of Supportive Care in Cancer (MASCC-MAT) among Chemotherapy Patients Performing Progressive muscle relaxation technique after first 24 hours after chemotherapy



Section: 3, Mean Scores Distribution Of Pittsburgh Sleep Quality Index Scores Among Pre-Test, Post Test –I, Post Test-II And Post Test –III

Figure 2: Graphic Representation of Pittsburgh sleep quality index among Chemotherapy Patients



RESULT: There is a significant difference in the selected side effects of chemotherapy among cancer patients before and after the administration of progressive muscle relaxation technique in the experimental group –I and music therapy in the experimental group- II. There was clear positive mean difference between pre test and post test I, II, III level in the selected side effects of chemotherapy among cancer patients before and after the administration of progressive muscle relaxation technique in the experimental group –I and music therapy in the experimental group- II

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.

FINANCIAL SUPPORT

Nil

CONFLICTS OF INTEREST

There are no conflicts of interest

REFERENCES

- Standley, J.M., 1992. Clinical Applications of Music and Chemotherapy: The Effects on Nausea and Emesis. Music Therapy Perspectives 10, 27–35. https://doi.org/10.1093/mtp/10.1.27
- Gebre, D., Murugan, R., Bizuwork, K., Wurjine, T.H., 2022. Knowledge, practice and perceived barriers towards chemotherapy induced nausea and vomiting in prophylaxis guideline adherence among nurses in oncology units at selected hospitals, in Addis Ababa, Ethiopia, a cross-sectional study. BMC Nurs , 21, 223. https://doi.org/10.1186/s12912-022-01009-7
- Sunil Thombare B., C. Temkar A., 2021.Effect of progressive muscle relaxation on the prevention of chemotherapy induced nausea and vomiting among patient receiving chemotherapy admitted in oncology ward of selected hospital, 7, https://nursing.journalspub.info/index.php/journal
- Tian, X., Tang, R.-Y., Xu, L.-L., Xie, W., Chen, H., Pi, Y.-P., Chen, W.-Q., 2020. Progressive muscle relaxation is effective in preventing and alleviating of chemotherapy-induced nausea and vomiting among cancer patients: a systematic review of six randomized controlled trials. Support Care Cancer 28, 4051–4058. https://doi.org/10.1007/s00520-020-05481-2

- Bajpai, J., Chandrasekharan, A., Talreja, V., Simha, V., Chandrakanth, M.V., Rekhi, B., Khurana, S., Khan, A., Vora, T., Ghosh, J., Banavali, S.D., Gupta, S., 2017. Outcomes in non-metastatic treatment naive extremity osteosarcoma patients treated with a novel non-high dosemethotrexate-based, dose-dense combination chemotherapy regimen 'OGS-12.' European Journal of Cancer 85, 49–58. https://doi.org/10.1016/j.ejca.2017.08.013
- Xiao Bin Lai, Shirley Siu Yin Ching, Frances Kam Yuet Wong,A qualitative exploration of the experiences of patients with breast cancer receiving outpatient-based chemotherapy.doi: https://doi.org/10.1111/jan.13309, 2017
- Bhawna Gupta, Mamta Kumara, Tarandeep Kaur, Effectiveness of progressive muscle relaxation teachique on physical symptoms among patients receiving chemotherapy . https://doi.org/10.33698/NRF0195 47. Lavdaniti, M., 2015. Assessment of symptoms in cancer patients undergoing chemotherapy in northern greece. Mater sociomed 27, 255. Https://doi.Org/10.5455/msm.2015.27.255-258
- Lavdaniti, M., 2015. Assessment of Symptoms in Cancer Patients Undergoing Chemotherapy in Northern Greece. Mater Sociomed 27, 255. https://doi.org/10.5455/msm.2015.27.255-258