

## Efficacy of Progressive Muscle Relaxation Training on Anxiety, Depression and Quality of Life in Cancer Patients Undergoing Chemotherapy at Tabriz Hematology and Oncology Research Center, Iran in 2010

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### Abstract

**Background:** Chemotherapy is an important treatment for cancer, yet some of its side effects are serious and painful. Many patients with cancer suffer from psychiatric disorders that most likely result from therapeutic drugs or mental strategies to cope with their illness. Progressive muscle relaxation is one of the cost effective, self-help methods that promotes mental health in healthy participants. This study aims to determine the effect of progressive muscle relaxation training on anxiety and depression in cancer patients undergoing chemotherapy.

**Methods:** This was a randomized, clinical study that enrolled 60 patients who received inpatient chemotherapy in the Tabriz Hematology and Oncology Research Center in 2010. We divided patients into two groups, intervention and control. All participants signed written formal consents and completed the Hospital Anxiety & Depression Scale questionnaires. Intervention group participants were trained in progressive muscle relaxation in groups of 3-6 to enable participants to perform this technique when they were alone in the hospital and after discharge, two to three times each day. After one and three months, questionnaires were completed again by both groups and the results compared. 17<sup>th</sup> version of SPSS software was used for data analysis.

**Results:** After data analysis, most participants were satisfied with learning and experiencing this technique. There was no significant difference between scales in the case and control groups after one month ( $P>0.05$ ). However after three months, anxiety and depression considerably improved in patients who underwent progressive muscle relaxation training ( $P<0.05$ ).

**Conclusion:** Progressive muscle relaxation training can improve anxiety and depression in cancer patients.

**Keywords:** Chemotherapy, Quality of life, Cancer, Patients

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## Introduction

Chemotherapy is a common treatment method for cancer yet it has numerous side effects both during and after treatment, which can be very serious and painful. Alopecia, anorexia, vomiting, limb pain, headache and backache are some adverse effects.<sup>1,2</sup> Many patients suffer from psychiatric disorders, particularly anxiety and depression as a result of chemotherapy treatment or cancer coping strategies. Anxiety and depression can cause some problems in the treatment process and impact quality of life (QOL).<sup>3,4</sup> Patients suffering from anxiety and depression can be treated by medications or psychotherapy.

Progressive muscle relaxation (PMR) training is one of the cost effective, self-help methods promoting mental health. The aim of this study was to determine the effect of PMR training to improve mental health in cancer patients receiving chemotherapy.

## Materials and Methods

This was a randomized, clinical trial registered in IRCT, Iranian Registry of Clinical Trials, a Primary Registry in the WHO Registry Network set up with the help from the Ministry of Health and Medical Education (MOHME) and hosted by Tehran University of Medical Sciences (TUMS).

Progressive muscle relaxation (PMR) training is one of the cost effective, self-help methods promoting mental health in healthy participants and others with chronic diseases such as multiple sclerosis.<sup>19</sup>

This study randomly enrolled 60 cancer patients who received inpatient chemotherapy in the Tabriz Hematology and Oncology Research Center in 2010. All participants completed written formal consents. We determined the anxiety and depression dimensions with the Hospital Anxiety & Depression Scale (HADS) and QOL was graded with the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ-C30). The reliability and validity of the Persian translated versions of these

questionnaires have been confirmed by Montazeri and Beiraghi.<sup>21,22</sup>

The HADS questionnaire contains 14 questions, and is divided into 2 subscales with 7 questions each, depression (HADS-D) and anxiety (HADS-A). Each question is graded from 0-3 and the maximum subscale level for depression or anxiety is 21. The cut-off point for HADS-D is 8, for HADS-A it is 5, and for the total HADS score (HADS-T), it is 11.<sup>8</sup>

The EORTC QLQ-C30 questionnaire consists of 30 questions and is designed to measure QOL in five functional issues: somatic, role playing, emotional, cognition, and social. The other nine issues are designed to describe common problems in cancer patients' lives such as fatigue, pain, nausea and vomiting, dyspnea, diarrhea, constipation, decrease in sleep, anorexia, and economic problems due to sickness. In the functional context, higher grades determine better function whereas in the problems context, higher grades determine the severity of the problems. Each question is graded from 0-4 according to the variable answers that range from "not at all" to "always".

Progressive muscle relaxation (PMR) training is one of the cost effective, self-help methods promoting mental health in healthy participants and others with chronic diseases such as multiple sclerosis.<sup>19</sup> In this technique all body muscles are relaxing group by group and finally the person feels relaxed.

Patients were included in the study, if they expressed an interest in participating, were between the ages of 15-65 years, were literate, and previously received at least two rounds of chemotherapy. The type of cancer was not important. Excluded were those who had a history of any treatment for anxiety and depression, either biological or non-biological; unstable psychological state and co morbidity for any episode of mania, psychosis or substance abuse; concurrent treatment with radiotherapy; history of any serious medical conditions such as diabetes or chronic renal failure; and HADS-A ranges of 0-7, HADS-D ranges of 0-4, and HADS-T ranges of 0-10.

**Table 1.** Demographic characteristics.

		Intervention group	Control group	Test	P value
Age		13.6750± 0.29	0.9150±13.29	t-test	123.0
Sex	Male	17	16	X <sup>2</sup>	795.0
	Female	13	14		
Educational Status	Elementary	4	4	Fisher	109.0
	Middle school	10	4		
	High school	14	14		
	Academic	8	2		
Socio-Economic Status	Low level	15	14	Fisher	620.0
	Middle level	15	15		
	High level	0	1		
Marriage	Single	15	12	X <sup>2</sup>	436.0
	Married	15	18		

After completing written formal consent and HADS questionnaires, we enrolled 60 in patients diagnosed with cancer who were undergoing chemotherapy. Patients were randomly divided into two groups, intervention (case) and control.

The case group were divided into small groups of 3-6 individuals and trained in PMR. Next, participants were requested to perform PMR alone two to three times a day during the time, they were inpatients and following discharge. Participants were contacted after discharge with reminders to perform PMR. All study participants in both groups completed the questionnaires again after one and three months.

We used SPSS version 17 for data analysis.

## Results

Most participants in the case group were satisfied with learning and experiencing PMR. There was no significant difference in demographic characteristics between cases and controls (Table1).

According to the paired t-test, some healing was noted by the HADS scales after one month, however the difference was not significant. After three months, healing in the HADS scales was

significant ( $P=0.004$ ). The difference between scales from the first and third months was significant.

In the control group there was no significant improvement in the HADS scale after one month ( $P=0.528$ ) and three months ( $P=0.261$ ; Table 2). The same results were seen in the QOL scale, with some healing noted after one month, however the difference was not significant. After three months according to the QOL scales, the level of healing was significant ( $P=0.045$ ). The difference between QOL scales of the first and third months was significant.

In the control group, the QOL scale did not show significant improvement after months one and three (Table 3).

## Discussion

Approximately 47% of cancer patients suffer from psychiatric disorders. Of these, two-thirds (68%) have anxiety and depression. Thus anxiety and depression are common psychiatric disorders seen in cancer patients.<sup>4,6</sup>

In a study by Jorm and associates at Melbourne University, patients found PMR to be useful in describing the elements of subjective depression.<sup>24</sup>

**Table 2.** HADS changes In Case & Control Group.

		Before intervention		After 1 month		After 3 months	
		Min±SD	P	Min±SD	P	Min±SD	P
HADS	Intervention group	43.03±6.80	0.698	40.20±5.22	0.391	35.63±5.56	** 0.004
	Control group	42.40±5.75		41.57±6.91		40.50±7.05	

**Table 3.** QOL changes In Case & Control Group.

		Before intervention		After 1 month		After 3 months	
		Min±SD	P	Min±SD	P	Min±SD	P
QOL	Intervention group	6.23±11.33	0.855	63.33±10.77	0.801	67.53±10.28	**0.045
	Control group	60.73±9.67		62.60±11.68		62.36±9.19	

In another study in the US, non-biological psychosocial interventions were useful in two-thirds of cancer patients.<sup>25</sup> A review article in Germany performed by Larbig concluded that psychological interventions positively affected psychosomatic problems seen in cancer patients.<sup>26</sup>

According to Cheung et al., PMR training had a positive effect on subjective feelings of anxiety and depression in patients,<sup>23</sup> which has been confirmed by our study. A study by Yoo et al. in South Korea showed that non-drug treatments such as PMR improved adverse effects of chemotherapy in patients diagnosed with breast cancer. In their study, after three and six months the intervention group had less anxiety, depression and physical signs, and better QOL than the control group.<sup>15</sup>

In the current study, there were some limitations for following patients for six months. The results of the third month after intervention were also similar to this study.

In our study using PMR for three months as a self-help technique positively impacted anxiety, depression and QOL in cancer patients undergoing chemotherapy. However no significant effects were noted at one month. These results were similar to other studies. This effect was possibly related to the shorter time for practice and less experience in patients. However after acquiring adequate experience, patients could benefit from PMR. On the other hand, the adverse effects of chemotherapy such as serious pain, vomiting, anorexia and weakness did not allow patients to fully concentrate and practice this technique.

The results at the sixth month have not been documented. Participants in this study were diagnosed with various cancers therefore some were unable to continue with the research study. As a result, we were unable to gather data after six months.

According to numerous researches, depression and anxiety have an important effect on QOL.<sup>10</sup> In this study, there was no significant correlation between depression and QOL. However Anxiety impacted quality of life more than depression in this study

## Conclusion

In this study, depression and anxiety did not change in the control group after one and three months. However, in the case group depression and anxiety improved after three months. These results confirmed the positive effect of PMR on depression and anxiety in cancer patients undergoing chemotherapy.

The positive results of this study and the important characteristics of PMR as a self-help method that requires no drug intervention enable this technique to be used in patients with severe illnesses such as cancer in order to assist with healing depression and anxiety and improving QOL.

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