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EFFECT OF PROGRESSIVE MUSCLE RELAXATION TECHNIQUE ON THE TRAIT ANXIETY OF PATIENTS WHO ARE CANDIDATE FOR ORTHOPEDIC SURGERY

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ABSTRACT

Background and Objective: Organ fracture is a prevalent effect of traumas experienced by human. Patients with fracture need orthopedic cares including orthopedic surgeries. The process of surgery increases the incidence of mental and psychological reactions, such as anxiety. Therefore, adopting progressive muscle relaxation technique in such patients is of high importance.

Materials and Methods: This clinical trial conducted on 80 patients with lower limb fracture who were candidate for orthopedic surgery. They were selected using conventional sampling method and were randomly grouped in two case and control groups, each with 40 members. Relaxation technique was applied on case group prior to surgery and on daily basis, three times per day and 10 to 20 rounds in each time. STAI questionnaire was used to measure patients' anxiety before and during discharging from hospital. Data was analyzed using independent t, square t, chi-square and using SPSS 16.

Results: Prior to the intervention, the mean score of trait anxiety in case and control group was 47.56 ± 6.16 and 48.1 ± 2.81 , respectively ($p=0.009$) while after intervention it was 48.54 ± 6.40 and 48.66 ± 3.26 , respectively ($p=0.001$).

Conclusion: According to results, adopting progressive muscle relaxation technique can mitigate the stress of candidate patients for orthopedic surgery. This study had limitations and conducting further studies on this field is recommended.

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Introduction

Hepatitis Organ fracture is a prevalent side effect of traumas experienced by human. It consumes the major part of the capabilities of clinical centers, reinforcements and physicians [1]. Studies show that about half of injured people with severe traumas suffer organ fracture. Males are more susceptible to such injuries [2,3]. Today, organ fracture is considered as an important health problem across the world. It is defined as the radiological diagnosis of a crack in a joint [4]. Fractures are resulted from severe impacts on bone disturbing the continuity of bone. On the other hand, it is a prevalent injury in all sex, age and social groups that can lead to disability and permanent dependency in a wide range of injured people [6].

Studies in the U.S. show that fractures account for 20% of mortalities on annual basis [7]. Unfortunately, there is no reliable statistics about the prevalence of fracture in Iran [8]. Patients with fracture need orthopedic cares, including orthopedic surgeries. Amongst others, orthopedic surgeries are the most painful ones. Generally, post-surgery pain [9, 10], which is almost accompanied with all surgeries [11], is the most prevalent complaint of patients. Moreover, surgery process is a diagnostic and therapeutic process increasing the incidence of mental and psychological reactions of patients with anxiety as one of the most important side effect of surgery [12-13].

Surgery-induced anxiety go with side effects including increased hormone secretion, dysrhythmia, malnutrition, water-electrolyte unbalance, increased infection risk, hypertension, and prolonged wound healing and delayed surgery, all can

directly affect surgery side effects, including recovery and healing period, bleeding, anaesthesia and post-surgery pain. It can be argued, therefore, that anxiety has a direct effect on post-surgery pain in such patients [14, 15].

Mitigating and controlling pain is an objective of medical treatments. For centuries, physicians have used narcotics to mitigate severe pains [16]. Narcotics are accompanied with different side effects including respiratory depression, nausea, vomiting, constipation, convulsion and probably addiction. This has reduced narcotics consumption [17, 18]. Seemingly, narcotics consumption should be reduced and other effective methods should be used to mitigate and control pain [16, 19].

According to above discussions, there is a direct interaction between anxiety and pain [14-15] so that controlling one of them can largely affect the other one. Therefore, non-medical approaches could be adopted to control anxiety [43]. Progressive muscle relaxation is a technique proposed to reduce patients' anxiety [20-21]. It is a non-medical intervention used to mitigate stress, tension, anxiety, nausea, vomiting and pain [22, 23]. The aim of this intervention is to make the patient aware of stress and relaxation of muscles and to teach a technique by which all muscles can be relaxed [24]. It can be used both as a part of therapeutic programs or as an independent technique. No body motor, applying control on the concentrated region, decreased muscle strength and educating a special framework of mind which is called pondering, non-judgmental and mindfulness are the properties of progressive muscle relaxation technique [25]. As it was mentioned before, it is a non-aggressive and low-cost technique with no side effect, which can be independently executed by the patient himself/herself [26, 27] following a brief training [28]. The training includes exercises by which the selected muscle groups are tensed until achieving deep relaxation and then are released. This process increases blood flow, improves blood distribution between organs, and mitigates muscular stress and tension. This is associated with decreased anxiety [29, 30].

Considering above discussions and the importance of non-aggressive methods such as progressive muscle relaxation in the control of post-surgery anxiety, this study aims to evaluate the effect of progressive muscle relaxation on the trait anxiety of patients who are candidate for orthopedic surgery in the trauma center of Sistan Baluchestan in 2017.

Materials and Methods

This is a randomized controlled clinical trial. Its population consisted of all patients with lower limb fracture in 2016. Considering previous studies, samples size was estimated to be 40 for each group ($S_1=0.827$, $S_2=1.14$, $Z_{1-\alpha}=1.9602$, $Z_{1-\beta}=1.28$, $\bar{X}_1 = 2.64$ and $\bar{X}_2 = 1.9$). Totally, 80 cases included in the study using convenience-sampling method and were grouped in control and case group using random number table. Of case group, 3 cases did not participate in education sessions. In addition, 3 cases of control group did not referred to fill follow-up questionnaire. Therefore, analyzes were conducted on 74 patients (37 cases in each group).

Exclusion criteria were background in relaxation technique or special sport activity in the past six months, no filling of questionnaires and lack of anxiety. State and trait anxiety scores can range from 20 to 80. Cases with an anxiety score of 65-75 suffered severe anxiety and cases with a score of >76 suffered acute anxiety and were excluded from study.

Inclusion criteria were as follows: no use of drugs affecting anxiety, interest to participating in study, diagnosis of fracture by orthopedist, confirmation of the need for orthopedic surgery by an orthopedist, no use of muscle relaxant drugs, sleeping pills, psychedelic drug and lower limb fracture with the minimum anxiety score of 20.

Data was collected using STAI questionnaire, (Spiegel Trait Anxiety Inventory). The questionnaire has 40 items measuring anxiety. It has two parts. The second part includes 20 items (items 21 to 40). Each item is scored using 4-point likert scale: almost never, sometimes, often and almost always. The items are used to measure the anxiety (state and trait anxiety) of cases. Each item is scored by a point from zero to 3. The total score of items is calculated and the responded case is grouped in one of the following triple groups: mild anxiety (score 0 to 21), medium anxiety (score 21 to 40) and severe anxiety (score 41 to 60).

The researcher obtained necessary permits and referred to the orthopedic department of Khatam-al-Anbia hospital, Zahedan serving as the accident center of Sistan and Baluchestan Province. She, then, introduced herself to the center, explained the objectives of study and selected surgery candidate patients with inclusion criteria. The cases, then, were explained about the importance of the study. When their consents were obtained, they were asked to fill demographic and SATI questionnaires. The cases were stabilized in the first day of study and the relevant orthopedist approved that the study can be initiated. When the cases were in acceptable condition, progressive muscle relaxation technique was educated for them. The training program is designed and executed within 7 stages namely:

- identification of muscles and considered muscle groups,
- education of the stages of executing progressive muscle relaxation technique via explanation and practical demonstration by the researcher,
- answering the questions of cases about relaxation technique,
- execution of the technique by the researcher using voice tape,
- execution of the technique by both cases and the researcher,
- declaring the difference of physical and mental feelings in cases following relaxation,
- execution of the technique by cases under the supervision of the researcher

After surgery, the case group conducted the technique on daily basis, three times per day and 10 to 20 rounds in each time until discharging from hospital where they refilled the aforementioned questionnaires. It should be noted that no intervention

was applied on control group. They received the mentioned questionnaires and only consumed the routine narcotic drugs prescribed by relevant department.

Results

Prior to intervention, the mean trait anxiety score was 47.56 ± 6.16 and 48.10 ± 2.81 in case and control groups, respectively ($p=0.009$). After intervention, it was raised to 48.54 ± 6.40 and 48.66 ± 3.26 in case and control groups, respectively ($p=0.001$).

Table 1. Age and Sex of the study

age	34.51±10.19	
sex	Female	31 (41.3)
	Male	43 (57.3)
	Sum	74 (98.7)

Table 2. the mean trait anxiety score before and after intervention

group	Before intervention	After intervention
Case group	47.56 ± 6.16	48.54 ± 6.40
Control group	48.10 ± 2.81	48.66 ± 3.26
p	0.009	0.001

Table 3. the mean trait anxiety total score before and after intervention

Anxiety	Before intervention	After intervention	p-value
Total train anxiety score	47.83 ± 3.56	48.60 ± 5.06	0.26

Discussion

Patients with fracture experience a range of symptoms including the symptoms of both state and trait anxiety. Relaxation mitigates stress in muscles, reduces anxiety and establishes a balance between posterior and anterior hypothalamus. This, in turn, prevents the incidence of stress-induced effects. According to our findings, relaxation reduced the trait anxiety of patients with fracture who were candidate for orthopedic surgery. Aghebati et al, showed that relaxation reduces anxiety and stress in cancer patients [31]. Our study differs with Aghebati et al in that they studied patients with a chronic disease like cancer while we studied patients who experienced acute conditions and severe pain. Similar results were obtained in Hamidizade et al study where they showed the effect of relaxation technique on the anxiety and stress of elders with hypertension [32]. Ghobadi et al obtained similar results and showed that progressive muscle relaxation technique has positive effect on the stress and depression of hemodialysis patients [33].

Furthermore, Asvadi Kermani et al evaluated the effect of progressive muscle relaxation on the anxiety, depression and quality of life of cancer patients undergoing chemotherapy in Tabriz Hematology and Oncology center. They observed no significant difference between case and control groups. This disagrees with our results [34].

Conducted studies have concentrated on the general dimensions of anxiety while anxiety is composed of two dimensions: state anxiety and trait anxiety each has its own side effect such as increased hormone secretion, dysrhythmia, malnutrition, water-electrolyte unbalance, increased infection risk, prolonged wound healing and delayed surgery. Considering the results of this study, paying attention to trait anxiety is of high importance. Considering the high prevalence of anxiety among patients with fracture, adopting non-medical methods, such as relaxation technique, can provide the patients with increased control of trait anxiety and an environment with low stress.

Conclusion

Considering the results of this study, it appears that applying progressive muscle relaxation technique can positively influence patients' anxiety. It is a non-aggressive and low-cost intervention and, therefore, can be considered in line with the educational role of nurses.

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