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Effect of progressive relaxation exercises on fatigue and sleep quality in patients with chronic obstructive lung disease (COPD)

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ABSTRACT

Objective: This research was conducted to investigate the effect of Progressive Muscle Relaxation Technique on fatigue and sleep quality in patients with COPD. This research was performed as a single-group pretest/post-test pretrial model.
Methods: The study was conducted with 45 patients who met the research criteria and agreed to participate in the study. A Personal Information Form was used as a data collection tool, Fatigue Severity Scale was used for measuring fatigue, and the Pittsburgh Sleep Quality Index was used for evaluating the sleep quality.
Results: It was determined that PMRT decreased patients' fatigue level and improved their sleep quality, patients' fatigue level increased as their sleep quality decreased.
Conclusion: Progressive relaxation exercises programs represent effective therapeutic intervention approaches for relieving COPD-associated fatigue and sleep quality. PMRT programs will extend the scope of the rehabilitation nurses' work, as it is an important course of COPD patients' continuity nursing.

1. Introduction

Patients diagnosed with COPD may experience fatigue due to both the sleeplessness and decrease of the O_2 saturation. Fatigue is experienced by approximately 43%–58% of individuals with COPD [1]. Fatigue affects the patient primarily as follows; negative effect on productivity in the working area, impairment of the concentration ability, decrease of performance, lethargic state or unwillingness, decrease of libido, indifference with the environment, failure of performing social activities, failure of collecting energy in spite of sleep [2,3]. In order to prevent the fatigue symptom to affect the individual negatively, it is important to evaluate the fatigue and plan convenient activities for the individual to efficiently cope with this symptom [2]. Since factors causing the fatigue are ambiguous and it is a subjective concept, it gets difficult to define and evaluate it and thus, it is generally neglected. Convenient interventions should be performed in order to enable the individual to cope with fatigue [4,5]. Application of the Progressive Muscle Relaxation Technique (PMRT) has recently become an integral part of the care of individuals with chronic disease due to its benefits such as reducing anxiety and effects of stress, distracting attention away from pain, relieving muscle strain and contractions, facilitating sleep, and reducing sensitivity to fatigue and pain [6,7]. PMRT was developed in 1920s by Jacobson. PMRT is a type of exercise that includes voluntary stretching and relaxation of large muscle groups in the human body from hands to feet [6,8]. Previously conducted studies have revealed the positive effects of PMRT on fatigue and sleep [6–10].

Relaxation exercises which are among nursing practices are considered among advanced level nursing practices. Progressive relaxation exercises can also be used for sleep disorders in addition to nursing diagnoses such as ineffective respiration, fatigue, and pain [11]. Relaxation training can also be used for nursing diagnoses of sleep disorder, ineffective respiration, ineffective coping, and pain. It has been reported in literatures that progressive relaxation exercises have advantages in many chronic diseases such as facilitation of falling asleep and reducing fatigue [6,8–10]. No studies on relationship between progressive relaxation exercises and the fatigue and sleep quality experienced by COPD patients in Turkey have been encountered.

This study was conducted to determine the effect of progressive relaxation exercises which are one of the non-pharmacological

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methods among independent nursing functions on the sleep quality and fatigue levels of COPD patients and form data for studies to be conducted in this field in order to give place to these exercises in nursing care.

H1. Progressive relaxation exercises reduce the fatigue levels of COPD patients.

H2. Progressive relaxation exercises increase the sleep quality of COPD patients.

2. Methods

2.1. Design

This study was designed as a single-group pretest/posttest pretrial model.

2.2. Ethical approval

The study protocol was approved by the Ethics Commission of the Institute of Kafkas University Faculty of Medicine.

2.3. Setting

The research was conducted in the outpatient polyclinic of the department for chest diseases of a university hospital in east Turkey.

2.4. Sample

The inclusion criteria were COPD of at least duration of 6 months or longer, residence in the city, patients with stage 3 or 4 COPD (according to the GOLD system, 2007), absence of a disease diagnosis additional to COPD, ability to read and write and willingness to collaborate. The sample group of the study consisted of a total of 40 patients, who were selected with the randomized sampling method, and the sample size was determined by power analysis. As a result of the power analysis, the significance level was 0.05, the confidence interval was 0.95, the effect size was 0.7 and the power of representing the population was 95%. According to this result, it was determined that the size of the sample group was sufficient in representing the population. To prevent selection bias, all eligible patients received a number according to their application to the departmental polyclinic for chest diseases. The study was conducted with 49 patients among those who applied to and registered however, since 4 patients did not complete the education program, the study was completed with a total of 45 patients. The sample group of the study was selected from the aforementioned population by using a non-probability random sampling method.

2.5. Intervention

In the pretest stage, data were collected by applying the Personal Information Form, CAFS, and PSQI to patients who were admitted to the chest polyclinic 4 days a week and who met the study criteria.

The CD on relaxation exercises developed by the Turkish Psychological Association was used. In the first section of the CD, which consists of three sections, the definition and purpose of deep relaxation and the practices to take into consideration during exercises are explained for 10 min. In the second 30-min section; relaxation exercises are explained to the accompaniment of running water sounds and verbal instructions. The third 30-min section only provides relaxation music. Relaxation techniques have positive effects on reducing stress factors and anxiety, reducing the tension or contractions in skeletal structure muscles, reducing fatigue, and facilitating sleep. Progressive relaxation technique includes stretching and relaxing the big muscle groups (hands, arms, neck, shoulders, face, chest, abdomen, hip, feet and fingers) in the human body on purpose. When steps of Progressive Relaxation Exercises are analyzed, it is observed that learning how to take correct and deep breaths is the most important step towards learning relaxation. In addition, taking correct breaths is used as a part of the exercise among all relaxation exercises.

Steps of Progressive Relaxation Exercise:

- breathing exercises
- lower extremity exercises
- upper extremity exercises
- exercise of respiratory muscles

PMRT was given by using a handbook including relaxation exercises (including information about how to perform relaxation, respiration control, and progressive relaxation exercises) and a PMRT CD (educational CD prepared by the Turkish Association of Psychologists). Patients with COPD were first given an education about PMRT in a quiet and special room in the chest polyclinic and then allowed to listen to a CD on relaxation exercises. Later, the exercises in the CD were performed by the researcher and then the patients were asked to do these exercises. Patient education was given once for each patient to help them to learn and perform the exercises properly. Education was given to patients on a one-to-one basis and lasted for approximately 1 h for each patient. After the education, each patient was given a handbook and CD containing PMRT and was asked to listen to and perform the exercises at home by following the instructions in the CD once a day for 6 weeks at hours when they felt themselves the least tired. Two (2) weeks after the first education, patients were again called to the chest polyclinic and were asked to do the PMRT under the supervision of the researcher. In addition, telephone numbers of patients were received and they were followed in terms of performing the exercises they were assigned.

In the post-test stage, patients were asked to come to the chest polyclinic 6 weeks after the completion of their education and they were again assessed with the CAFS and PSQI by the researcher.

2.6. Data collection

The data were collected between March 2013 and February 2014 using the questionnaires included (1) a Personal Information Form, (2) CAFS for measuring fatigue, and (3) Pittsburgh Sleep Quality Index (PSQI) for evaluating sleep quality.

2.6.1. Individual information questionnaire

The individual information questionnaire included age, sex, marital status, education, occupational status, income, and disease duration.

2.6.2. COPD and Asthma Fatigue Scale (CAFS)

COPD and Asthma Fatigue Scale (CAFS) was developed by Revicki et al. (2010) [12]. The internal consistency of the scale was found as 0.95 within both groups and 0.82 for patients with COPD and 0.84 for patients with asthma as a result of the test-retest. The original scale consists of 12 items and a likert scale is used for the answers (1 = never, 2 = rarely, 3 = sometimes, 4 = frequently, 5 = very often). The scale has two factor structures and the evaluations are performed on the basis of one point. The scale is scored in the five point likert scale and a value of 12–60 scores is obtained