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PROGRESSIVE MUSCLE RELAXATION AND SLEEP QUALITY: A LITERATURE REVIEW

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ABSTRACT

Background and Objective: Sleep disturbance is a common complaint in patients with chronic disease. Progressive muscle relaxation (PMR), used as a non-pharmaceutical approach in ameliorating the sleep quality. The aim of this study was to present a comprehensive literature review describing the effect of PMR on sleep quality.
Materials and Methods: Literature review was undertaken using the international databases including Pub Med/Medline, Scopus, Science Direct, and Google Scholar. Also, Persian electronic databases such as Magiran, SID and IranMedex were searched up to April 2017. The search was limited to articles in the English and Persian languages that evaluate the effect of Progressive muscle relaxation on sleep quality.
Results: It seems PMR has been able to reduce the global score of patients' sleep quality, but hasn't been able to reach sleep quality at a normal range (PSQI<5).In addition, in some studies, only a few components of the sleep quality were improved.
Conclusion: Educational intervention using PMR by nurses may improve sleep quality.

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Introduction

A good hygienic sleep is an essential part of everyday life and humans spend one third of their lifetime sleeping[1]. Sleep disturbance interferes with physical function and results in fatigue; depression; irritability; impaired cognitive function; decreased participation in key treatment recommendations; impaired self-care; worsening of symptoms of the underlying disease[2-5] and decreased quality of life[6-8]. Additionally, chronic sleep disturbance can lead to activate pro-inflammatory pathways, increased sympathetic activity, higher cortisol levels[9]and a risk factor for cardiovascular disease, stroke and all cause morbidity & mortality[10].

Currently, the management of sleep disturbance is both pharmacological and non-pharmacological. However, medications may create adverse consequences with physical and psychological effects[11-13]. 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[14, 15]. It is a systematic and continuous stretching and relaxing of the muscles until the whole body becomes relaxed. It was named and developed by Edmund Jacobsen in 1929[16, 17].

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The aim of this narrative review is to present a comprehensive review of the literatures describing the effect of PMR on sleep quality in chronic conditions.

Materials And Methods

A systematic search of the relevant literature were performed within international databases including PubMed/Medline, Scopus, Science Direct as well as Google Scholar using the following search terms or their combinations: "progressive muscle relaxation", "sleep disorder", "sleep", "insomnia".

Keywords related to progressive muscle relaxation and sleep were identified prior to initiating the search. These keywords equivalents in Farsi were searched in Persian electronic databases such as Iranian Journal Database (Magiran), Scientific Information Databases (SID) and IranMedex (Iranian Biomedical Journal Database) or barakatkns. In addition, a hand search of article references was done to ensure completeness of the search. Relevant English and Persian articles from 2009 to April 2017 were used. Exclusion criteria included children and infants population research, no access to full text and articles in other languages. The search strategy generated 44017 titles and abstracts. After initial screening and evaluation, 43994 articles were rejected. Then 23 articles were extracted and finally 11 articles relevant to objectives of this study were examined. (Figure 1).

The studies that evaluated another outcome with sleep or another intervention with progressive muscle relaxation were included.

Results

Type of study

7 studies were quasi-experimental[18-24], 3 studies were randomized controlled trial[25-27], and one study was case report[28](Table1). All articles published between 2009 and 2016.

Sleep quality measurement tool

The majority of articles used the Pittsburgh Sleep Quality scale [18-27] and one article used the Insomnia Severity Index[28].

Duration and frequency

The number or frequency of relaxation procedures was different: once a day in 5 studies [18, 20, 21, 23, 25], twice a day in 4 studies [22, 24, 26, 28], three times a day in one study [27]and two times a week in another one [19].The duration of PMR was only mentioned in one study[24].

Follow up

The length of the follow up was different from 8 days to 12 months : one month in 4 studies [19, 24, 26, 28], more than one month in 6 studies [18, 20-22, 25, 27], and about 8 days in one study [23].

Population research

Population research of articles was difference. Population research of 2 articles was patients with multiple sclerosis[20, 22], 2 articles was patients undergoing hemodialysis[24, 25],2 articles was patients with breast cancer[19, 21], 2 articles was older adults[23, 27], one article was patients with chronic obstructive lung disease[18],one article was primigravida women [26] and another article was case report about a woman[28].

Discussion

In all articles, PMR has been able to reduce the global score of patients' sleep quality, but hasn't been able to reach sleep quality at a normal range (PSQI<5).In addition, in some studies, only a few components of the sleep quality were improved: 7 components in one study [22], 6 components in 4 studies [18, 20, 24, 26], one component in 2 studies [19, 21]. In 4 studies, the effect of RMR on sleep quality component wasn't mentioned[23, 25, 27, 28]. It may be due to unsimilarities of the nature of diseases, design of intervention, duration and frequency of relaxation, number of training session, number of samples, gender of samples and inclusion and exclusion criteria.

PMR is a method of systematically tensing and relaxing various muscles of the body that helps to decrease the physiological and cognitive states of arousal that interfere with sleep. It facilitate a functional pre-sleep process characterized by cognitive and physiological deactivation. PMR helps in improving the sleep pattern as well as a reduction in the dose of medication required[29].

Conclusion

In conclusion, the results of our review indicate that sleep disorder is a common problem in chronic conditions. Sleep disturbance in patient with chronic disease is a multifactorial problem that requires the cooperation of all medical personnel, including doctors, nurses and psychologists, as well as the patient's family, in order to resolve this problem. Interventional education such as complementary medicine, including PMR for nurses and the design of such management programs, may improve the quality of sleep, although further research is needed.

Table 1. Summary of the basic features of the research articles that were included in the review.

Author & year	**Objective**	**Method and Data collection**	**Sample & Setting**	**Key Findings**
Demiralp M; et al[21], 2009	Effects of relaxation training on sleep quality and fatigue in patients with breast cancer undergoing adjuvant chemotherapy.	A quasi-experimental design with control group. Using the Pittsburgh Sleep Quality Index and Piper Fatigue Scale.	27 patient (intervention=14, control=13) with newly diagnosed breast cancer undergoing adjuvant chemotherapy. Patients were selected according to convenience sampling.	The findings indicated that PMR would improve sleep quality, fatigue and one component of sleep quality (sleep quality) in patients with breast cancer undergoing adjuvant chemotherapy.
Saeedi M; et al[24], 2012	The effect of progressive muscle relaxation on sleep quality of patients undergoing hemodialysis.	A quasi-experimental study with one-group. Using the Pittsburgh Sleep Quality Index.	39 patients (n=39) undergoing hemodialysis. Patients were selected according to convenience sampling.	The sleep quality score and each sleep quality dimension (except for use of sleep medications) were significantly lower than before relaxation.
Dayapoglu N; et al[20],2012	Evaluation of the Effect of Progressive Relaxation Exercises on Fatigue and Sleep Quality in Patients with Multiple Sclerosis.	A single-group pretest/posttest pretrial model. Using the Pittsburgh Sleep Quality Index.	32 patients (n=32) with multiple sclerosis. Patients were selected according to convenience sampling.	PMR decreased patients' fatigue level and improved their sleep quality and each sleep quality component (except for use of sleep medications).
Sun J; et al[27], 2013	Self-relaxation training can improve sleep quality and cognitive functions in the older: a one-year randomised controlled trial	A randomised controlled study. Using Pittsburgh Sleep Quality Index, Epworth Sleepiness Scale, Mini-Mental State Examination, Wechsler Memory Scale-Chinese Revised.	80 (intervention=40, control=40) older adults were selectedaccording to convenience sampling.	The result of this study showed that Self-relaxation training can improve sleep quality and cognitive functions in the older.
Author & year	Objective	Method and Data collection	Sample & Setting	Key Findings
Gitanjali N; et al[28], 2014	Progressive muscular relaxation as a Multi-pronged psychotherapeutic technique for Insomnia.	A case report study. Using the Insomnia Severity Index (ISI) and Beck Depression Inventory.	A 55 years old housewife with insomnia resistant to tranquillizers.	The findings indicated that PMR reduced significantly depressive symptoms and insomnia.
khakha D; et al[23], 2015	Impact of Jacobson progressive muscle relaxation (JPMR) and deep breathing exercises on anxiety, psychological distress and quality of sleep of hospitalized older adults.	A quasi-experimental study design. Using Geriatric Anxiety Inventory, K-10, and Pittsburgh Sleep Quality Index.	60(intervention=30, control=30) hospitalized older adults.Patients were selected according to convenience sampling.	Significant improvements were found in the intervention group in reducing anxiety, and psychological distress, and improving quality of sleep.

Jalal manesh Sh; et al[22], 2015	Effects of progressive muscle relaxation technique on fatigue and sleep quality in patients with multiple sclerosis.	A quasi-experimental study adopted a pretest-posttest single group design. Using Fatigue Severity Scale, and the Pittsburgh Sleep Quality Index.	67 individuals (n=67) with MS.Patients were selected according to convenience sampling.	The findings indicated that PMR decreased patients' fatigue and improving sleep qualityand each sleep quality component (except for use of sleep medications).
Akgun Sahin Z; et al[18],2015	Effect of progressive relaxation exercise on fatigue and sleep quality in patients with chronic obstructive lung disease.	A single group pretest/post-test pretrial model. Using Fatigue Severity Scale and Pittsburgh Sleep Quality Index.	45 patients (n=45) with chronic obstructive lung disease.Patients were selected according to convenience sampling.	The result of this study showed PMR decreased patients' fatigue and improving sleep qualityand each sleep quality component (except for use of sleep medications).

Table 1. Summary of the basic features of the research articles that were included in the review.

Author & year	Objective	Method and Data collection	Sample & Setting	Key Findings
Golmakani N; et al[26], 2015	Comparing the Effects of Progressive Muscle Relaxation and Guided Imagery on Sleep Quality in Primigravida Women Referring to Mashhad Health Care Centers.	A three-group clinical trial. Using Pittsburgh Sleep Quality Index.	100 primigravida women (PMR=33, guided imagery=33, control=34).Patients were selected according to convenience sampling.	The findings indicated thattotal score of sleep quality and its components (except use of sleep medication) was significantly lower after the intervention.
Atadokht K; et al[19], 2015	The comparison of the effectiveness of progressive muscle relaxation and music therapy on the sleep quality of patient with breast cancer.	A experimental study and it design was pre-test and post- test. Using Pittsburgh Sleep Quality Index.	45 (PMR=15, music therapy=15, control=15) females with breast cancer were selected using accessible sampling.	Result showed that both treatment methods were effective in promotion of sleep quality. However, there was no significant difference betweenall quality sleep components, the exception of sleep disturbance component.
Amini E; et al[25], 2016	Effect of Progressive Muscle Relaxation and Aerobic Exercise on Anxiety, Sleep Quality, and Fatigue in Patients with Chronic Renal Failure Undergoing Hemodialysis.	A doubleblind clinical trial. Using Pittsburgh Sleep Quality Index, Spielberger and beck anxiety inventory, piper and Rhoten fatigue scale.	100 (PMR=33, aerobic exercise=32, control=35) patientswith Chronic Renal Failure Undergoing Hemodialysis.Patients were selected according to convenience sampling.	Results showed better function of PMR compared to aerobic exercise in improving the symptoms of anxiety, sleep disorders, and fatigue.

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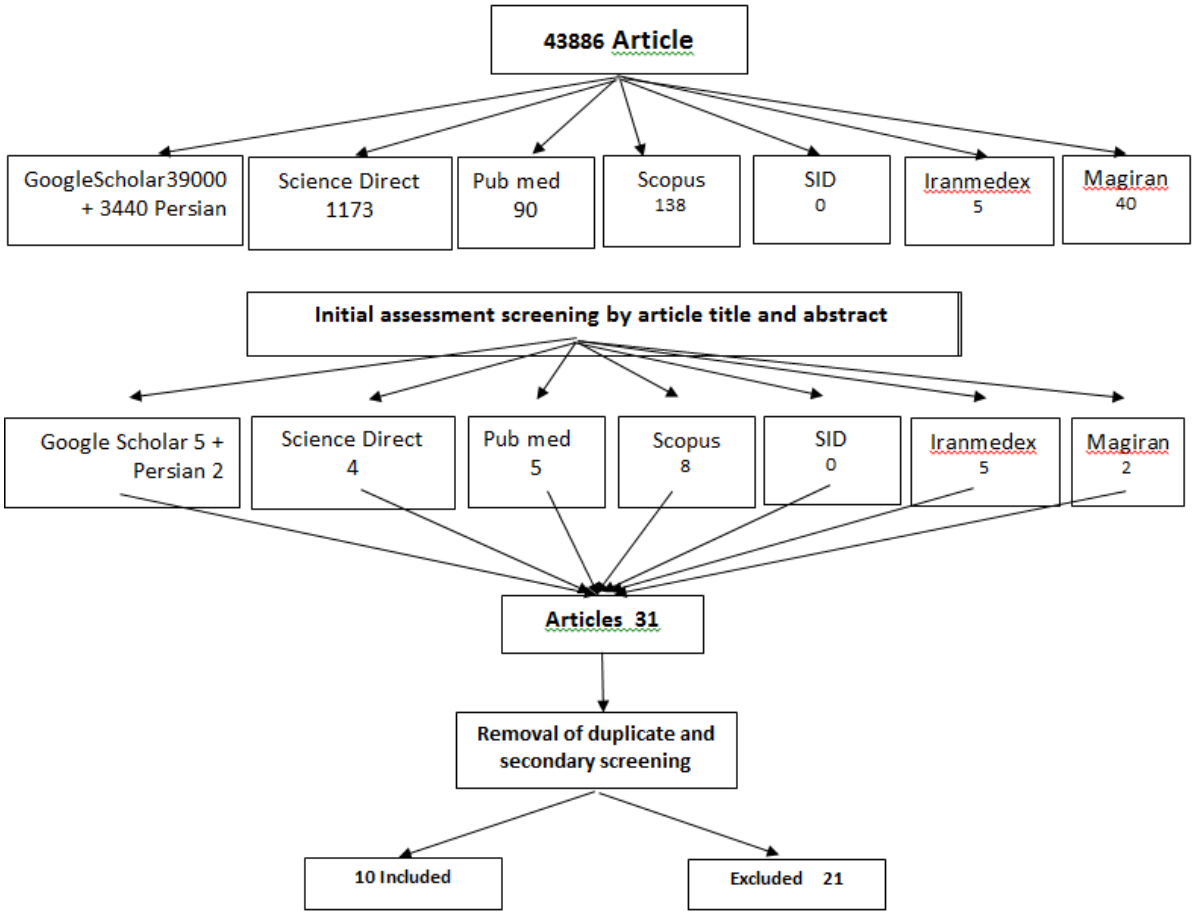

Figure1. Literature search and retrieval flow diagram