The effect of relaxation exercises on sleep quality in pregnant women in the third trimester: A randomized controlled trial

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ABSTRACT

Objective: To assess the effects of relaxation exercises on subjective sleep quality of in third-trimester pregnant women.
Materials and methods: The pretest posttest randomized controlled trial recruited 84 pregnant women in the third trimester. Following random assignment of subjects, the treatment group (n = 46) performed relaxation exercises for four weeks and the control group (n = 46) received standart cares. At baseline and after the intervention sleep quality was assessed. Data obtained were analyzed in SPSS.
Results: The mean score of the global Pittsburgh Sleep Quality Index was 7.12 ± 3.66. It was determined that relaxation exercises improved some sleep quality subscales including subjective sleep quality, sleep latency, sleep duration and habitual sleep efficiency, sleep disturbances, daytime dysfunction and global sleep quality. The difference between the two groups was found to be statistically significant (p < 0.05).
Conclusion: A four -week compact disc guide relaxation exercises program can be effective in improving sleep quality.

1. Introduction

Hormonal and physical changes during pregnancy cause significant changes in regular sleep routine and sleep quality [1]. Sleep problems in pregnancy are common, and they vary depending on the trimesters [2]. By the third trimester, women experience more problems in sleeping [3,4]. Studies investigating sleep quality in pregnancy indicate that pregnant women in the third trimester have poor sleep quality at percentages ranging from 50% to 89.3% [2,5–7]. Studies on sleep quality show that poor sleep quality in pregnancy has negative effects on labor as well as on fetal health. It is indicated that pregnant women with poor sleep quality usually have cesarean section, or they experience prolonged labor if they have vaginal birth. The effect of poor sleep quality on neonatal health is revealed in low APGAR scores and low birth weight [8–10]. Besides, it is reported that prenatal sleep disorders trigger the development of postpartum depression [11,12].

Some non-pharmacological relaxation therapy approaches, including progressive muscle relaxation, imagery training, meditation, biofeedback, and hypnosis can be especially effective for initiating sleep [13,14]. Relaxation exercises are important as they reduce the tension in muscles. They involve conscious contraction and relaxation of the big muscle groups in all body. The purpose is to help individuals to check their entire body and notice the tensions, to be able to control their muscles, and to relax the tension in their body in the shortest time possible. By reducing the tension in muscles, relaxation exercises help pregnant women to have more comfortable sleep and better sleep quality [15].

Studies on improving sleep quality show that progressive relaxation exercises are used in cancer patients, in the treatment of insomnia, in hemodialysis patients, and in patients with multiple sclerosis [16–19].

Studies on relaxation exercises in pregnancy indicate that the exercises reduce backache, improve lung parameters of pregnant women with bronchial asthma, have various effects on biological and psychological stress systems, prolong pregnancy week in pregnant women with preterm action risk, and increase birth weight [20–22]. The present study was guided by the positive effects of relaxation exercises on sleep quality and their use for pregnant women [13,14].

There is scarcity of studies in literature about the effect of relaxation exercises on sleep quality. This is important because sleep quality during pregnancy and its possible effects on the quality of life of pregnant women may affect pregnancy outcomes. This study aims to investigate the effects of relaxation exercises on subjective sleep quality

of the pregnant women in the third trimester.

2. Methods

2.1. Study design

This study is a randomized controlled trial with a prospective pre-test post-test experimental design.

2.2. Population, sample and randomization process

This study was conducted between September 2012 and July 2013 at Pregnant Women Monitoring clinic, pregnancy training class at Republic of Turkey Ministry of Health (RTMH) Zeynep Kamil Training and Research Hospital in Istanbul, Turkey. The Pregnant Women included in the study were randomized as control and intervention (relaxation exercises) groups. Relaxation exercises were applied in the experimental group, standard care was applied to the control group.

The following inclusion criteria were established for participants: volunteer pregnant women in the third trimester who were 20 and over, who had primipara, normal (one fetus and riskless) pregnancy, who were in gestational age between 28 and 34 weeks, who had pre-pregnancy Body Mass Index (BMI) of 25 kg/m2 or less, and whose neck circumference is less than 38 cm [23], and who did not experience Restless Legs Syndrome (RLS). A total of 165 pregnant women were visited the pregnancy training class, and 73 pregnant women were excluded for various reasons (Fig. 1). A total of 92 patients met the inclusion criteria and consented to take part in the present study.

The patients were randomly assigned to relaxation exercises group (n = 40) and control (n = 40) groups using block randomization with randomly selected block sizes of 4 and an allocation ratio of 1:1 [24]. Sample size was calculated using the Free Statistics Calculators website [25]. Confidence interval was taken as 95%, effect size as 0.64 (Cohen d ≥ 0.5) [7] and the power as 80%. The sample size was determined 40 patients for comparison of means between the two groups. With an anticipated 15% dropout rate and to ensure adequacy of final sample size, 46 patients were selected per group. However, a total of 84 patients took part in the study, including 42 in the relaxation exercises group and 42 in the control. The reasons for participants' dropping out were women's withdrew consent in the course of the study (n = 1 from control group and n = 1 from relaxation exercises group) and women who develop gestational diabetes (n = 2 from control group and n = 3 from relaxation exercises group) and preterm birth (n = 1 from control group). Fig. 1 demonstrates the Consort Flow Diagram (Fig. 1).

The study was conducted in the Republic of Turkey Ministry of Health (RTMH) Zeynep Kamil Training and Research Hospital, Pregnant Women Monitoring Clinic, Pregnancy training class. The pregnant women who consulted to the clinic for pregnancy monitoring were provided with training on pregnancy, labor, puerperality, and newborn care. The training lasted for four weeks and was composed of 5 courses, and each course lasted for 3 h. Courses in the pregnancy training class were actively conducted with a midwife. Voluntary pregnant women in the third trimester were included in the relaxation exercises group and control groups. . Relaxation exercises group and control groups were formed according to the number of the pregnant women who volunteered to participate in the study. The demographic variables that affected sleep quality demonstrated similar distribution in both groups after the randomization (p > 0.05). After the training, the pregnant women in the relaxation exercises group were asked to stay in the classroom. Data collection process was started, and the relaxation exercises were implemented then.

2.3. Data collection and procedure

At the beginning of the first course, the pregnant women in the relaxation exercises group were asked to fill in the structured
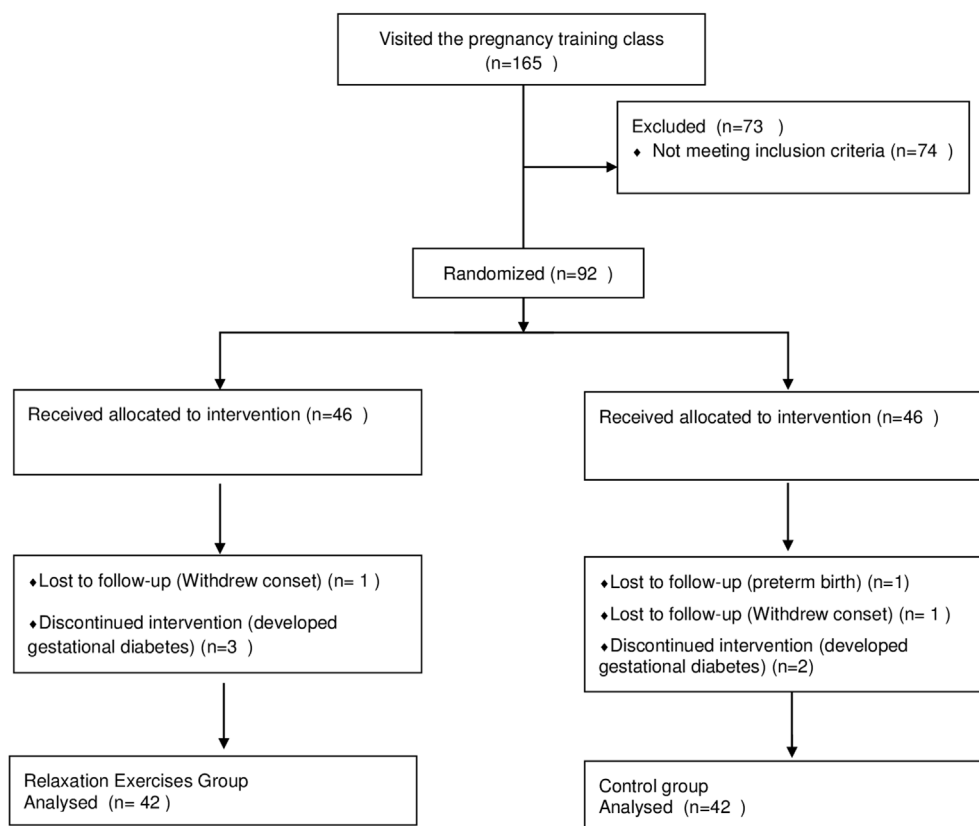

Fig. 1. Consort flow diagram.