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Research Article

The Effectiveness of Progressive Muscle Relaxation on the Postpartum Quality of Life: A Randomized Controlled Trial

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ABSTRACT

Purpose: This study aimed to determine the effectiveness of progressive muscle relaxation (PMR) on the quality of life of women during postpartum period.
Methods: A randomized controlled trial design was used. The participants consisted of primiparous women who had experienced a vaginal birth in the obstetrics department of a hospital. Thirty women in the intervention group and 30 women in the control group were included. Data were collected using the Maternal Postpartum Quality of Life Questionnaire (MAPP-QoL) between June 2016 and April 2017. PMR was applied to the intervention group. PMR was performed as contracting a muscle group and then relaxing it, moving (or progressing) from one muscle group to another.
Results: The mean pretest and posttest scores of the MAPP-QoL in the intervention group were 24.43 ± 4.58 and 26.07 ± 4.58, respectively ($t = -2.73$, $p < .05$). The mean pretest and posttest scores of the MAPP-QoL in the control group were 23.29 ± 4.37 and 21.99 ± 5.58, respectively ($t = 2.23$, $p < .05$). The difference between the mean scores of the women in the intervention and control groups before PMR was not statistically significant ($t = 0.99$, $p > .05$), whereas the difference between the groups after PMR was found to be statistically significant ($t = 3.09$, $p < .05$).
Conclusion: Postpartum quality of life of women was increased after PMR. It is recommended that PMR be taught to women who are admitted to obstetrics and outpatient clinics and home visits be completed to expand the use of PMR.
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Introduction

The postpartum period, a period that begins after the end of labor and lasts about 6 weeks, is characterized by physiological and anatomical changes for the mother and physical, social, and emotional changes within the family that require its members to learn new roles and responsibilities. Most of the problems emerge in the first days of this period and last from 6 weeks to 1 year [1–3]. Symptoms that include insomnia, fatigue, nausea, anxiety, sexual problems, and problems with the spouse or partner are experienced during the postpartum period. These problems have a significant effect on the physical, emotional, and social health; breastfeeding; relationships with family and community; infant care; and housework. All of these can negatively affect the mothers' quality of lives [1,4,5].

Quality of life (QOL) is a multidimensional concept that affects performance of the individual in physical, psychological, social, and spiritual aspects of life and can be affected by political, cultural, economic, and spiritual beliefs. Assessing QOL in postpartum period will allow a woman to make a self-evaluation of her own postpartum situation and will assist health-care providers with further promotion of women's and infants' health [6]. According to the literature, the maternal QOL was decreased because of many troubles in women's own care and infant care [5,7,8].

To increase the mother's QOL in the postpartum period, nonpharmacological methods such as health education, exercise, and relaxation therapy during pregnancy and the postpartum period could be used [6,9–11]. One of these nonpharmacological methods, progressive muscle relaxation (PMR), is a therapeutic method that is widely used to induce nerve-muscle relaxation. PMR includes the deliberate stretching and relaxing of the body's major muscle

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groups (starting with the hands and ending with the feet) [12,13]. PMR has both physiological and psychological benefits. PMR is effective in treating headaches, backaches, side effects of cancer, insomnia, pain, and high blood pressure. Progressive relaxation has been demonstrated to have a wide range of effects on psychological well-being and behavioral change [14]. This method is also used to control many postpartum symptoms [11,13]. The literature describes studies on the ways in which PMR increases the QOL of patients with endometriosis and ectopic pregnancy and also of pregnant women [11,15]. These studies showed that the PMR group had significantly better improvement in the scores of anxiety, depression, and QOL than the control group after PMR training [11,15]. However, no study on the effects of PMR on women's QOL during the postpartum period could be found in the literature. It is believed that the application of PMR during the postpartum period may increase a woman's ability to cope with physical and psychological problems that she may experience in this period; furthermore, it may improve the QOL by accelerating the healing process.

This study aimed to determine the effectiveness of PMR on the QOL of women during the postpartum period. The hypothesis of the study is as follows:

H_1: Progressive muscle relaxation has an effect on increasing a woman's postpartum quality of life.

Methods

The study design and samples

A randomized controlled trial design was used in this research. The study population consisted of primiparous women who had experienced a vaginal birth in the obstetrics department of a hospital. The sample size was calculated *a priori* using G*Power 3.1. The effect size was estimated from a study that examined effects of health education on postpartum complaints and QOL [6]. Based on a large effect size (0.75) and an alpha level set to .05, the initial power analysis indicated that 30 participants per group were required to reach 80% statistical power. After considering the possibility that some participants might experience health problems, be unable to continue to participate in the research, or need to leave the intervention or control groups for unforeseen reasons during the extended period of the research, a total of 72 women were initially included in the study (36 in the intervention group and 36 in the control group). The women included in the study were matched according to their age and education level to provide homogeneity in groups.

6 women from the intervention group were excluded from the study (3 women failed to apply the PMR regularly, 1 woman left the research of her own will, and 1 woman and 1 of the infants experienced health problems); 6 women from the control group were excluded (4 women left the study of their own will, and 2 of the women's infants had health problems). The study was completed with 30 women in the intervention group and 30 in the control group (Figure 1).

The inclusion criteria of the study comprised the following: the women should (a) have completed a minimum education level of elementary school, (b) be aged 18 or above, (c) be primiparous women, (d) have underwent episiotomy, (e) have experienced no communication problems, and (f) have delivered a full-term, healthy baby. Exclusion criteria were as follows: (a) multiparous women, (b) women who had caesarian section, (c) women who delivered premature birth, (d) women who had unhealthy baby, and (e) women who had neuropsychiatric or chronic diseases.

Measurements and instruments

A questionnaire based on the literature [16–18] and the Maternal Postpartum Quality of Life Scale (MAPP-QoL) was used for data collection.

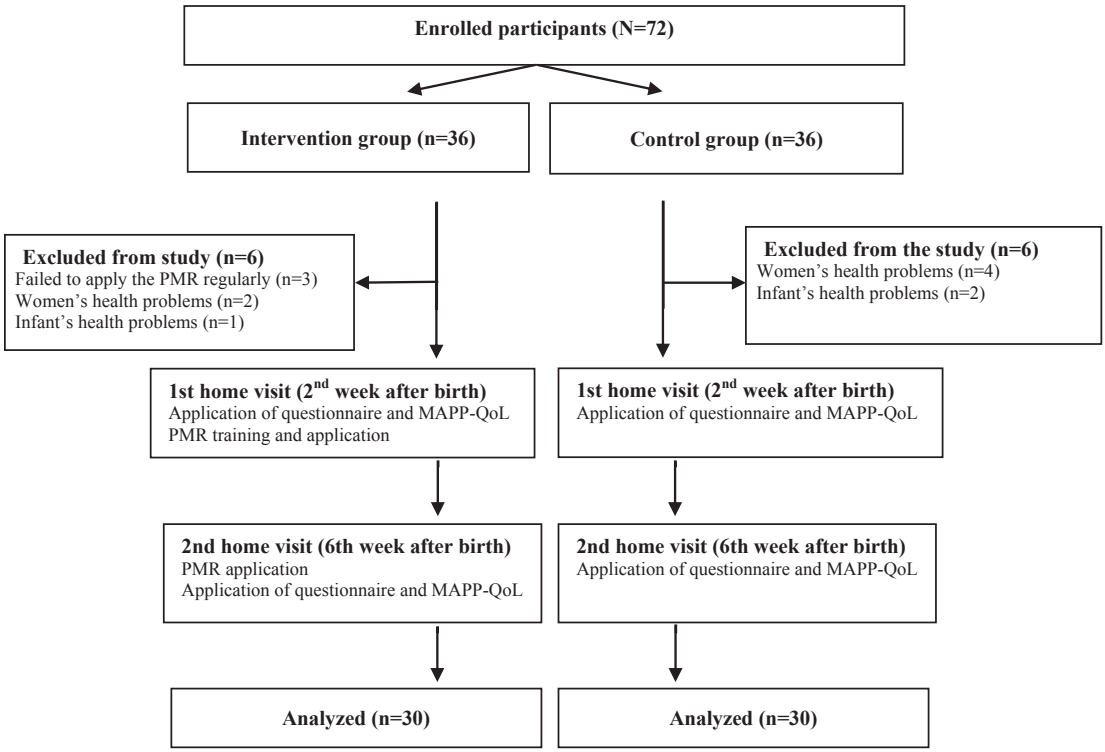


Figure 1. Research chart.
MAPP-QoL = Maternal Postpartum Quality of Life Scale; PMR = progressive muscle relaxation.

The questionnaire contained 8 questions for determining the sociodemographic characteristics of women such as age, education level, employment status, family type, monthly income, planned pregnancy, perception of relationship with spouse, and self-confidence status about the care of their baby. A follow-up form (application and duration of the PMR, the reason for any failure to perform PMR, difficulties in applying the PMR, and suggestions regarding application of the PMR) was used in the follow-up of the PMR.

The MAPP-QoL, which was developed in 2007 by Hill and Aldag [19], consists of 40 items, each of which is addressed in terms of its importance to and satisfaction for the respondent. Each item is scored from 1 to 6 on a Likert-type scale that has the following five subscales: kinship–family friend (10 items), socioeconomic (9 items), spouse (5 items), health (8 items), and psychological/infant (8 items). To calculate the scale's quality-of-life score, 3.5 is subtracted from each of the satisfaction items (again, ranging from 1 to 6), and the resulting score is then multiplied by the number of significance point of the respective item. The points are then added, and the sum is divided into the number of items (40 items); a constant value (15) is added to avoid a negative result. The MAPP-QoL scores ranged from 0 to 30. A high score on the scale indicates higher QOL of the individual, whereas a lower score indicates lower QOL after birth. The Turkish validity and reliability study of the scale was conducted by Altuntuğ and Ege [20], and its Cronbach α reliability coefficient was calculated to be .95. In this study, the Cronbach α value was .85.

Data collection and procedure

The study was conducted between June 2016 and April 2017. During the application process, women were randomly assigned to the intervention and control groups. Researchers wrote names on slips of paper, placed them in a container, mixed them, and then drew the names out one at a time. Before the women's hospital discharge, their contact information was obtained, and appointments were made for the first home visit 2 weeks after the births of their babies.

Two home visits to participants in the intervention group were made by the researcher at the end of the 2nd and 6th weeks after the births of their babies. On the first visit, the participants completed a questionnaire and the MAPP-QoL (pretest). Then, education was given to women on a one-to-one basis to help them learn and perform the PMR properly. Education lasted for approximately 1 hour for each woman. Women were first given education about PMR in a quiet room in their homes and then allowed to listen to a CD on relaxation exercises. For PMR, the Turkish Psychologists Association's "Voice Recordings of Relaxation Exercises CD" was used. Later, the PMR was performed by the researcher and then the women were asked to perform PMR. Before beginning the PMR, each woman was asked to lie down on a comfortable seat or bed and take about five slow, deep breaths. The first step is applying muscle tension to a specific part of the body. PMR was performed in conjunction with the voice recordings, with stretching every muscle group from head to feet and to relax after counting up to 5; the participants also performed deep breathing when stretching each muscle group and exhaled slowly during relaxation. Relaxation lasted for 10–20 seconds before tension of next muscle group. These techniques allow the muscles in the hands, arms, neck, shoulders, chest, abdomen, hips, feet, and fingers, as well as facial and whole body muscles (muscle groups starting with the hand and ending with the feet), to stretch and relax and thus provide relief to the participant. After the education, each woman was given an MP3 player and asked to listen to and perform the PMR at home by following the instructions in the MP3 player three times a week for 4 weeks.

During the PMR regimen, the researcher called the participants twice a week to follow up on the continuity. The postpartum QOL was reassessed during the home visit at the end of the 6th week after birth (posttest). No intervention was administered in the control group, and the postpartum QOL was evaluated during home visits at the end of the 2nd and 6th weeks after birth.

Ethical consideration

Approval of Aksaray University Human Research Ethics Committee and the written permission of Aksaray Public Hospitals Association General Secretariat were obtained before conducting the study (Approval no. 2016/33). Before beginning the research, an explanation of informed consent was read to the women, and the written consent of each woman was obtained. PMR training was also planned after completing the posttest in the control group. However, none of the participants in the control group requested the training.

Data analysis

Data were evaluated via the use of the SPSS 23.0 (IBM Corp., Armonk, NY, USA) statistical program. The mean score of the MAPP-QoL scale was the dependent variable, and the PMR was the study's independent variable. Descriptive statistics, such as number, percentage, mean, and standard deviation, were used to present the descriptive characteristics of the women in the intervention and control groups. The Chi-square test was used to compare the categorical data. The Shapiro–Wilk test was used to evaluate the normal distribution of quantitative variables, and the Box–Cox transformation was performed for variables with non-normal distribution. The significance test was used to examine differences in quantitative variables between the groups. Continuous variables were compared using the independent sample t test or paired t test. Independent sample t test was used to compare the difference between pretest and posttest scores of women in the intervention and control groups. Paired sample t test was used to compare the difference between pretest and posttest scores of women at each group. For all analyses, $p < .05$ was accepted as the level of significance.

Results

There were no statistically significant differences between the intervention and control group participants in terms of age, montly income, employment status, education level, family type, planned pregnancy, perception of relationship with spouse, and self-confidence status about the care of their baby ($p > .05$) (Table 1).

It was determined that the difference between the mean pretest and posttest MAPP-QoL scores (24.43 ± 4.58 and 26.07 ± 4.58, respectively) of the women in the intervention group was statistically significant ($t = -2.73$, $p < .05$). The mean pretest and posttest MAPP-QoL scores of the women in the control group were 23.29 ± 4.37 and 21.99 ± 5.58, respectively, with a difference that was also statistically significant ($t = 2.23$, $p < .05$). The difference between the mean scores of the women in the intervention and control groups before PMR was not statistically significant ($t = 0.99$, $p > .05$), whereas the difference between the groups after PMR was found to be statistically significant ($t = 3.09$, $p < .05$) (Table 2).

Table 1 *Sociodemographic Characteristics of Women (N = 60).*

Sociodemographic characteristic	Intervention group (n = 30)	Control group (n = 30)	χ^2 or t	*p*
Age (yrs) (Mean ± SD)	21.73 ± 3.96	22.73 ± 3.77	1.18[a]	.241
Monthly income (Turkish Liras)	4424.66 ± 384.69	4209.33 ± 527.52	1.80[a]	.076
Education level	n (%)	n (%)		
Elementary school or less	17 (56.7)	18 (60.0)	0.07	>.999
High school and university	13 (43.3)	1 2 (40.0)		
Employment status				
Employed	3 (10.0)	3 (10.0)	0.00	>.999
Unemployed	27 (90.0)	27 (90.0)		
Family type				
Nuclear family	22 (73.3)	16 (53.3)	2.58	.180
Extended family	8 (26.7)	14 (46.7)		
Planned situation of pregnancy				
Planned	25 (83.3)	28 (93.3)	1.46	.424
Not planned	5 (16.7)	2 (6.7)		
Perception of relationship with spouse				
Average	1 (3.39)	5 (16.7)	2.96	.195
Good	29 (96.7)	25 (83.3)		
Self-confidence about the care of her baby				
Found self-confident	24 (80.0)	20 (66.7)	1.36	.382
Not found self-confident	6 (20.0)	10 (33.3)		

Note. SD = standard deviation; yr = years.
[a] Independent samples *t* test.

Table 2 *Mean Scores of Postpartum Quality of Life before and after Progressive Muscle Relaxation (N=60).*

Groups	n	Pretest (Mean ± SD)	Posttest (Mean ± SD)	Paired t	*p*
Intervention	30	24.43 ± 4.58	26.07 ± 4.58	−2.73	.010
Control	30	23.29 ± 4.37	21.99 ± 5.58	2.23	.033
t		0.99	3.09		
p		.326	.003		

Note. SD = standard deviation.

Discussion

The postpartum period is characterized by physiological and psychosocial changes and the assumption of parental roles and responsibilities. These changes can affect the mother's QOL. Studies conducted to determine women's postpartum QOL have reported moderate-to-low QOL after labor [5,7,21]. For this reason, the implementation of initiatives to increase the QOL of women in the postpartum period is important. Relaxation therapy has recently become an integral part of the care by reducing anxiety and stress, distracting attention away from the pain, relieving muscle strain and contractions, facilitating sleep, and reducing sensitivity to fatigue and pain [22]. PMR is the tension-release cycle combined with a focus on breathing. This variation is aimed at getting in touch with the individual's tension and the body's response and then letting it go in a controlled manner [23]. In this study, the effect of PMR on the postpartum QOL of women in the intervention and control groups was investigated, revealing an increase in the mean MAPP-QoL scores after PMR which was found to be statistically significant. The increase in the MAPP-QoL mean score of women in the intervention group supports the hypothesis, “Progressive muscle relaxation has an effect on increasing the postpartum quality of life.” Specifically, the study results indicated that PMR training and application served as an effective method for increasing the postpartum QOL of women in the intervention group. The technique promotes systematic relaxation of the major muscle groups of the body with the goal of physical and mental relaxation, reducing the response to stress, reducing skeletal muscle contractions, and decreasing pain sensations [22]. The literature describes studies indicating that PMR increase the QOL in different patient groups [11,15]. However, the literature contains no study on the effects of PMR on the QOL of women during the postpartum period.

A comparison of the pretest and posttest scores of the control group showed a decrease in the MAPP-QoL mean score despite the lack of a PMR regimen in this group. This may have been the result of many factors affecting daily life, such as a lack of social support and difficulties associated with self-care and the care given to the baby during the postpartum period. Studies have found that problems such as changes in the family, care of the baby, added responsibilities, insomnia, and fatigue are experienced during the postpartum period, which in turn negatively affect the QOL [2,4].

After the PMR, the women in the intervention group were found to have a higher MAPP-QoL mean score than the women in the control group. PMR was observed to positively affect the postpartum QOL of the women in the intervention group. There are several reasons why PMR might produce the observed benefit. In the autonomic nervous system, tension and relaxation involve the firing of sympathetic and parasympathetic nerve fibers, respectively. Because muscle relaxation constitutes the major dominant component of PMR, the parasympathetic system dominates during and after PMR, resulting in subsequent reductions in heart rate, respiratory rate, and blood pressure. It has also been suggested that deep somatic restfulness, together with parasympathetic dominance, reduces anxiety. The relaxation response generally may also reduce pain by decreasing tissue oxygen demand, lowering levels of chemicals such as lactic acid and releasing endorphins. [24,25]. Therefore, a PMR-induced reduction in anxiety, along with the decreased perception of pain, may improve QOL in the postpartum period. This enhanced QOL has been shown to be associated with findings indicating that PMR is effective in coping with fatigue [16], pain relief [13], decreased levels of depression and anxiety [15,26,27], and increased sleep quality [28].

PMR is a systematic technique that can be used to achieve a deep state of relaxation [22]. PMR applied in the postpartum period will make an important contribution to enhancing women's QOL by increasing their overall ability to cope with the problems that may be encountered during this period.

This is the first study to investigate the effect of PMR on a woman's postpartum QOL. The exclusion of women who gave birth in private hospitals and conducting the research in a single hospital comprise the limitations of the study. Only women who were primiparous and who experienced a vaginal birth were included in the study.

Conclusions

As a result of the study, it was determined that the postpartum QOL of women was increased after PMR. Based on this finding, it is recommended that PMR be taught to women who are admitted to obstetrics and outpatient clinics, home visits be completed to expand the use of PMR, and future studies include multiparous women and those who have experienced C-section delivery.

Conflicts of interest

The authors declare no conflicts of interest.

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