



Effects of Progressive Muscle Relaxation Exercises on Sexual Quality of Life in Women During Pregnancy

Progresif Kas Gevşeme Egzersizlerinin Gebelikte Kadınların Cinsel Yaşam Kalitesi Üzerine Etkisi

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ABSTRACT

Aim: To evaluate the effects of progressive muscle relaxation (PMR) exercises on sexual quality of life in women during pregnancy. **Methods:** This is a randomized controlled intervention study. The study was completed with 71 pregnant women (experimental group (EG) = 36, control group (CG) = 35). Data were collected using a data collection form and the Sexual Quality of Life Questionnaire-Female (SQOL-F). The pregnant women in the experimental group received an education program of progressive muscle relaxation exercises except for antenatal class education. The education programs were conducted in groups of 4-5-women with a total of 8 groups. In group educations, 10 minutes of deep breathing, and 20 minutes of progressive muscles relaxation exercises were taught. After training in the antenatal class, the women were asked to continue the exercises at home for 30 minutes, once a day, for 4 weeks. Data were collected 3 times: at the introduction session, and at the end of the second and fourth weeks. **Results:** The SQOL-F scores, which were obtained at two weeks after the first PMR exercises (in the second measurement) were determined to be 93.3 for the EG and 83.3 for the CG. The SQOL-F scores, which were obtained at the third measurement two weeks after the first intervention, were EG=95.0 and CG=84.4. The SQOL-F scores, which were obtained at the third measurement four weeks after the first intervention, were EG=95.0 and CG=84.4. At the second (p=0.006) and third measurements (p=0.001), SQOL-F score medians were significantly different between groups. **Conclusion:** Almost half of the women experienced sexual problems (such as problems arousal, orgasm, sexualpain), but they did not perceive them as problems. Progressive muscle exercises conducted in the second and third trimesters increase the sexual quality of life in pregnant women.

Key words: Nursing, sexual life, sexual quality of life, progressive muscle relaxation

ÖZET

Amaç: Gebelikte progresif kas gevşetme (PMR) egzersizlerinin kadınlarda cinsel yaşam kalitesi üzerine etkilerini değerlendirmektir. **Yöntem:** Randomize kontrollü bir müdahale çalışmasıdır. Çalışma 71 gebe kadınla (deney grubu (DG) = 36, kontrol grubu (KG) = 35) tamamlandı. Veriler, veri toplama formu ve Cinsel Yaşam Kalitesi Ölçeği-Kadın (SQOL-F) kullanılarak toplanmıştır. Deney grubundaki gebelere doğum öncesi sınıf eğitimi dışında ilerleyici kas gevşetme egzersizleri eğitimi verildi. Eğitim programları 4-5 kişilik, toplam 8 gruplu gruplar halinde yürütülmüştür. Grup eğitimlerinde 10 dakikalık derin nefes alma ve 20 dakikalık progresif kas gevşeme egzersizleri öğretildi. Doğum öncesi sınıfta eğitim yaptıktan sonra, kadınlara egzersizlerini 4 hafta boyunca günde bir kez 30 dakika boyunca evde sürdürmeleri istendi. **Bulgular:** İlk PMR egzersizlerinden (ikinci ölçümde) iki hafta sonra elde edilen SQOL-F skorlarının DG için 93.3 ve KG için 83.3 olarak belirlendi. İlk müdahaleden dört hafta sonra üçüncü ölçümde elde edilen SQOL-F skorları DG = 95.0 ve KG = 84.4 idi. İkinci (p = 0.006) ve üçüncü ölçümlerde (p = 0.001) SQOL-F skor meydanları gruplar arasında anlamlı olarak farklıydı. **Sonuç:** Kadınların neredeyse yarısının gebeliklerinde cinsel problem (uyarıma problemleri, orgazm, cinsel ağrı gibi) yaşadığı, ancak var olan sorunları cinsel problem olarak algılamadıkları belirlendi. İkinci ve üçüncü trimesterde yapılan progresif kas egzersizleri, gebe kadınlarda cinsel yaşam kalitesini artırır.

Anahtar kelimeler: Hemşirelik, cinsel yaşam, cinsel yaşam kalitesi, progresif kas gevşemesi

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INTRODUCTION

Pregnancy is a natural process playing an important role in women's sexual life. Sexual life during pregnancy can be affected by physical, mental, and hormonal changes, as well as couples' attitudes and beliefs about sexuality.¹⁻⁴ Cantarino et al. (2016) reported that social norms and religious beliefs transmitted to pregnant women by their mothers restrict sexuality during pregnancy.

Previous studies have shown that sexual quality of life may be deteriorated during pregnancy due to several reasons^{2,3,6-8}, such as the concern for harming the fetus,⁹ the concern for miscarriage or preterm delivery,^{10,11} negative relationship with the husband,^{2,12,13} and reduced libido.¹⁴

In recent years, numerous studies have been conducted to investigate the changes in women's sexual life during pregnancy, and they showed that pregnancy has distinct and negative effects on sexuality.^{4,7,15-20} Studies have shown that sexual function during pregnancy changes in a range between 17.4% and 87%,¹⁵⁻¹⁹ and deteriorations in sexuality can occur at all trimesters.^{7,21} Especially the women's sexual perceptions, cultural norms, parental thought, economic factors, lack of knowledge, and negative attitudes towards sexuality may cause deterioration in sexuality and thereby sexual quality of life decreases.¹⁴

Sexuality, which is accepted as an integral part of life from birth to death, is also an important indicator of physical and mental health.⁸ High sexual quality of life is important for a healthy family structure and marital harmony. One of the most important components of happiness and continuity in marriage is a healthy sexual life. Sexual satisfaction in a marriage translates into a marital satisfaction.²² Therefore, sexual health should also be maintained during pregnancy.^{19,23}

Maternity nurses and midwives are among important health professionals in detecting couples' sexual problems during pregnancy and taking necessary actions in this regard. Maternity nurses and midwives play an active role in the care and treatment of the pregnant woman both in hospital as well as during follow-up. Relaxation exercises, which nurses have included in their care practices in the last 20 years, are non-pharmacological applications that are easy-to-apply, economical, safe, and effective.²⁵⁻²⁷ Progressive muscle relaxation exercises, which is one of the relaxation exercises, is a technique that can be easily taught to pregnant women, and they can easily practice them by themselves to reduce muscle tension by a deep

relaxation state without side effects.²⁷⁻²⁹ Progressive muscle relaxation exercises are the process of deliberately contracting and loosening large muscles in a certain sequence until relaxation occurs in all muscles in the body.^{28,30,31}

Studies have shown that, in pregnant women, progressive muscle relaxation increases calmness and reduces depression, stress, and anxiety levels.^{27,32} As the relaxation exercises are thought to increase the physical and mental well-being of the pregnant woman, the sexual function of pregnant women can also be changed positively and sexual quality of life can be improved with progressive muscle relaxation exercises.

A literature review showed that no study has examined the effects of progressive muscle relaxation exercises on sexual quality of life during pregnancy. The aim of this study was to evaluate the effects of progressive muscle relaxation exercises on women's sexual quality of life during pregnancy.

Research Hypothesis

H₁: Progressive muscle relaxation exercises during pregnancy increase women's sexual quality of sexual during pregnancy.

METHODS

Study Design

The present study was carried out to investigate the effects of progressive muscle relaxation techniques on sexual quality of life in nulliparous women. The study was conducted as a randomized controlled intervention study.

Participants and Sampling

The population of the study consisted of the pregnant women participating in an antenatal education class of a state hospital in Karaman province of Turkey in a certain period of time.

Inclusion and Exclusion Criteria

Participants included those who graduated from primary education or above, age between 18 and 49 years, being in the second or third trimester of pregnancy, no preterm intervention diagnosis, no communication problems (no mental incapacity, no visual/hearing impairment) and being nulliparous and pregnant with one fetus.

Exclusion criteria also included those with having a chronic disease (cardiovascular hypertension, asthma, etc.) and having any

pregnancy-related complications (gestational diabetes, preeclampsia, etc.).

G-power package version 3.1.9.2 was used to determine the sample size. Prior and post-hoc power analyses were both performed based. Expected Cohens' f value for effect size was 0.4, which is considered a large effect size for prior power analyses. For a 0.4 effect size with a 0.05 type I error and 97% power minimum required, the estimated total sample size was 64. The study was conducted between 10 July and 01 November 2018. In this time period, 92 women participated in the pregnancy education program. Ten of these women did not fit the inclusion criteria and eleven of them rejected to participate. Therefore, 71 women were included in the study. Using a simple random numbers table, the researcher randomly assigned the pregnant woman to one of the experimental and control groups. This table was used for random assignment of pregnant women to groups. Therefore, the study was completed with a total of 36 pregnant women in the experimental group and 35 pregnant women in the control group (Figure 1). According to the post-hoc power analysis based on the SQOL-F results of the second measurement (Effect size $F=0.96$, $\alpha=0.05$), the power of the study was found as 0.99.

Measures

Data were collected with a data collection form and a scale (Sexual Quality of Life Questionnaire-Female).

Data Collection Form

A 35-item structured questionnaire prepared by the researchers in line with the related literature was used as one of the data collection tools.^{7,8,17} The data collection form comprised three sections, namely, women's socio-demographic characteristics (10 questions); obstetric characteristics (6 questions), and information about their sexual life (19 questions).

Sexual Quality of Life Questionnaire-Female (SQOL-F)

SQOL-F was developed by Symonds et al (2005).³⁴ It consists of 18 items with a 6-point Likert-type scale: (1=Strongly agree, 2=Moderately agree, 3=Slightly agree, 4=Slightly disagree, 5=Moderately disagree, 6=Strongly disagree). Each item needs to be answered based on sexual life in the previous 4 weeks. The possible range of score is between 18 and 108 points.³⁴ For calculating the total score, the scores of items 1, 5, 9, 13, and 18 need to be reversed. The total score obtained from the scale is converted to 100 using the following

formula: $(\text{raw score} - 18) \times 100/90$. For example, for an individual with a total score of 63, the converted score would be $(63-18) \times 100/90 = 50$. Higher scores indicate a better sexual life. The validity and reliability study of the Turkish version of the scale was conducted by Tugutand Golbasi (2010).³⁵ Cronbach's alpha coefficient of the scale was found as 0.83.³⁵ Cronbach's alpha coefficients of the first, second, and third measurement in the present study were found to be 0.87, 0.88, and 0.89, respectively.

Interventions

Experimental Group

The pregnant women in the experimental group received an education program of progressive muscle relaxation exercises except for antenatal class education. The education programs were conducted in groups of 4-5 women with a total of 8 groups. In the group educations, 10 minutes of deep breathing, and 20 minutes of progressive muscles relaxation exercises were taught. In progressive muscle relaxation exercises, 16 large muscles (right hand and right arm front part, right upper arm, left hand and left arm front part, left upper arm, forehead, upper cheek and nose, chin, neck, abdomen, right upper leg, right calf, right foot, left upper leg, left calf, and left foot) are contracted and relaxed along with deep breathing, which can be carried out by individuals alone to reduce the symptoms of pain, anxiety, and depression.³¹ It was reported that relaxation occurs much faster when deep breathing awareness is added when sending tension and release orders to different muscle groups for relaxation during these exercises.³¹ Pregnant women were asked to take the most comfortable position in the chair. Exercises were performed starting from the legs, and by moving up to buttocks, abdomen, back, shoulders, arms, hands, face, and finally the whole body by simultaneously contracting for 10 seconds and then relaxing for 20 seconds. Contraction and relaxation movements were performed three times in each muscle. The desired muscle to relax was contracted while breathing in and released while breathing out. After each muscle exercise, pregnant women were asked to breathe deeply three times.

After training in the antenatal class, the women were asked to continue the exercises at home for 30 minutes, once a day, for 4 weeks. In this process, they were called by phone by the researcher once a week. The aim of this follow-up was to encourage the continuation of the practice, to provide advice on daily timing, and to answer their questions. Measurements were carried out by phone after the initial training at the end of weeks 2 and 4 by the researchers.

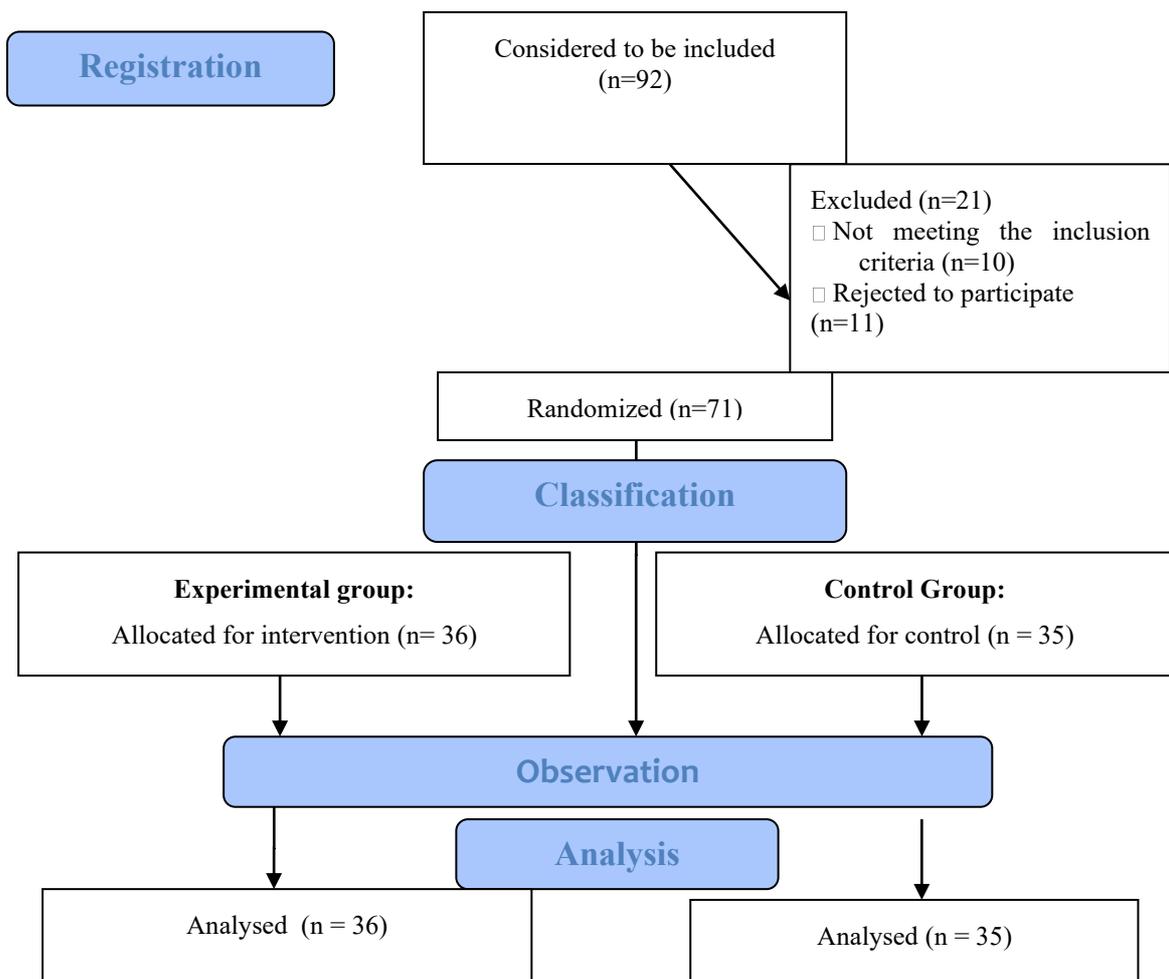


Figure1. Study flow diagram. Ten nulliparous women from the experimental group and eleven nulliparous from the control group excluded for some reason. Seventy-one nulliparous women randomly assigned to groups and analyzed.

Control Group

The women in the control group were informed about the study and their informed consents were obtained. No intervention was performed in this group. Information form/data collection form and SQOL-F were administered in both intervention and control groups at the introduction session. They were re-administered in both groups at the end of weeks 2 and 4. Follow-up measurements were performed by telephone.

Ethical Considerations

Approvals were obtained before the study from Selcuk University Faculty of Health Sciences Non-Interventional Clinical Research Ethics Committee (Date: 2018/144) and also from the hospital administration in which the study was carried out

(Date: 20.06.2018/19286923-774.99). All the women who participated in the study were informed about the study and their written informed consent was obtained.

Data Analysis

Descriptive statistics were calculated for the sociodemographic characteristics of the study population. The Shapiro-Wilk normality test was applied to scale and subscale scores for further analyses. Before and after progressive muscle exercises, the differences between the total scores of both the intervention and control group did not show normal distributions ($p < 0.05$). Mann Whitney U test was used to compare two independent groups. In addition, changes over time were tested by the Friedman test and the measurement which caused the difference was tested by the Wilcoxon

test. Cronbach's alpha coefficients were calculated to test the validity and reliability. For descriptive statistics, mean and standard deviation were used for numerical variables, and number and % values for categorical variables. Chi-square and Fisher Exact Tests were used to compare the descriptive statistics between the groups. All tests $p < 0.05$ was the standard for statistical significance. All tests were run in SPSS 21 (IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp.)

RESULTS

The socio-demographic and obstetric characteristics of the participants are given in Table 1 and Table 2. No significant differences were found between groups ($p > 0.05$). Table 3 gives the pre-intervention SQOL-F scores. In the first measurement, the

difference between groups was found statistically insignificant ($p = 0.553$). In the second ($p = 0.006$) and third measurements ($p = 0.001$), the median SQOL-F score was statistically different between the two groups. The SQOL-F scores obtained in the second measurement two weeks after the first intervention were: Experimental group (EG) = 93.3 and Control Group (CG) = 83.3. The SQOL-F scores obtained in the third measurement four weeks after the first intervention were: EG = 95.0 and CG = 84.4 (Table 3).

The intra-group comparisons revealed that the SQOL-F scores of the experimental group increased significantly in the 2nd and 3rd measurements in comparison to the 1st measurement ($p = 0.000$), whereas the scores of the control group decreased significantly in the 2nd and 3rd measurements compared to the 1st measurement ($p = 0.000$) (Table 3).

Table 1. The distribution of socio-demographic data ($n = 71$)

Socio-demographic characteristics	EG ^a ($n = 36$)	CG ^b ($n = 35$)	Total	Analysis
	Mean \pm SD	Mean \pm SD	Mean \pm SD	Spearman Correlation (p)
Age	24.28 \pm 4.30	24.82 \pm 3.65	24.55 \pm 3.97	0.563
Partner's age	26.63 \pm 3.70	28.17 \pm 4.62	27.39 \pm 4.17	0.123
Duration of marriage (Year)	1.83 \pm 1.08	2.08 \pm 1.57	1.95 \pm 1.34	0.434
	n (%)	n (%)	n (%)	Chi-square (p)
Education status				
Primary school	15 (41.6)	11 (31.4)	26 (36.6)	0.665
High school	10 (27.8)	11 (31.4)	21 (29.6)	
University	11 (30.6)	13 (37.2)	24 (33.8)	
Partner's education status				
Primary school	9 (25.0)	13 (37.1)	22 (31.0)	0.522
High school	17 (47.2)	13 (37.1)	30 (42.3)	
University	10 (27.8)	9 (25.8)	19 (26.8)	
Family type				
Nuclear family	34 (94.4)	34 (97.1)	68 (95.8)	0.511
Extended family	2 (5.6)	1 (2.9)	3 (4.2)	
Place of Residence				
District/town	5 (13.9)	5 (14.3)	10 (14.1)	0.614
City	31 (86.1)	30 (85.7)	61 (85.9)	
Working status				
Employed	8 (22.2)	10 (28.6)	18 (25.4)	0.539
Unemployed	28 (77.8)	25 (71.4)	53 (74.6)	
Income level				
Low	9 (25.0)	6 (17.2)	15 (21.1)	0.716
Moderate	23 (63.9)	25 (71.4)	48 (67.6)	
High	4 (11.1)	4 (11.4)	8 (11.3)	
Health insurance status				
Yes	33 (91.7)	33 (94.3)	66 (93.0)	0.514 ^c
No	3 (8.3)	2 (5.7)	5 (7.0)	

^aEG (Experimental group; Progressive Muscle Relaxation Exercises Group), ^bCG (Control Group), ^cFisher's Exact Test

Table 2. The distribution of obstetric characteristics (n = 71)

Obstetric characteristics	EG ^a (n = 36)	CG ^b (n = 35)	Total	Analysis
	Mean \pm SD	Mean \pm SD	Mean \pm SD	Spearman Correlation (p)
Gestational week (GW)	21.83 \pm 5.09	21.71 \pm 4.50	21.77 \pm 4.77	0.917
	n (%)	n (%)	n (%)	Chi-square (p)
The state of planning of pregnancy				
Planned	36 (100.0)	32 (91.4)	68 (95.8)	0.115 ^c
Unplanned	0 (0.0)	3 (8.6)	3 (4.2)	
Regular medical monitoring during pregnancy				
Yes	32 (88.9)	29 (82.9)	61 (85.9)	0.349 ^c
No	4 (11.1)	6 (17.1)	10 (14.1)	
Education to cope with childbirth				
Yes	23 (63.9)	19 (54.3)	42 (59.2)	0.411
No	13 (36.1)	16 (45.7)	29 (40.8)	
Regular exercising before pregnancy				
Yes	8 (22.2)	6 (17.1)	14 (19.7)	0.591
No	28 (77.8)	29 (82.9)	57 (80.3)	
Fear of childbirth				
Yes	27 (75.0)	21 (60.0)	48 (67.6)	0.177
No	9 (25.0)	14 (40.0)	23 (32.4)	

^aEG (Experimental group; Progressive Muscle Relaxation Exercises Group), ^bCG (Control Group), ^cFisher's Exact Test

Table 3. A Comparison of sexual quality between experimental and control groups based on Sexual Quality of Life Questionnaire-Female (SQOL-F)

Variables ^a	Experimental Group (n = 36) Median (Min-Max)	Control Group (n = 35) Median (Min-Max)	Value	Mann-Whitney U (p)
SQOL-F 1 (A)	88.89 (67.8-100.0)	87.78 (40.0-100.0)	-0.593	0.553
SQOL-F 2 (B)	93.3 (63.3-100.0)	83.3 (37.8-100.0)	-0.272	0.006
SQOL-F 3 (C)	95.0 (77.8-100.0)	84.4 (36.7-100.0)	-3.473	0.001
Chi-Square	26.104	27.439		
Friedman Test (p)	0.000	0.000		
Differences	(A<B; A<C; B<C)	(A>B; A>C)		

^aSQOL-F was assessed before the intervention (SQOL-F1), Two week after first intervention (SQOL-F 2), and four weeks after the first intervention (SQOL-F1)

DISCUSSION

In the present study, 14% of the pregnant women stated that they had sexual problems (such as problems as arousal, orgasm, sexual pain), while about half of the participants stated that they experienced some of the other parameters affecting sexual life, such as sexual reluctance, physical discomfort, fatigue, and emotional change. Almost

all of the pregnant women (98.6%) believe that having sexual intercourse during pregnancy is improper in terms of religion. Although half of the pregnant women in our study had sexual problems (such as problems as arousal, orgasm, sexual pain), they did not perceive them as sexual problems. This outcome may be because almost all of them did not find sexuality appropriate during pregnancy.

In this study, the sexual quality of life of pregnant women was evaluated before and after the intervention with SQOL-F scale. Considering that the minimum and maximum scores obtained from the scale are between 18 and 108,³⁴ it can be said that the sexual quality of life of the experimental group (Median = 88.89) and the control group (Median = 87.78) was moderate. In a previous study, the median of the SQOL-F was found to be 35.5.⁷ This result is quite low compared to the median of the first measurement (approximately 88) in the present study. In their study, the gestational age of the women was 30 weeks or over⁷, the mean gestational age of the women in the present study was 21.77±4.77. This result shows that the sexual quality of life of pregnant women may decrease as the gestational week progresses. In addition, it is seen that it is important for maternity nurses and midwives to evaluate the sexual quality of life of pregnant women from the first day to the last day of pregnancy and to make the necessary interventions as soon as sexual problems emerge.

In the literature, it's reported that women in Turkey experience sexual problems during pregnancy, which is compatible with the findings of the present study.^{1,17,36} Sexual problems during pregnancy may have a negative effect on the marital relationship and may increase the couples' stress during pregnancy.¹ In order to cope with sexual problems during pregnancy, it is also important for maternity nurses and midwives to provide pregnant women and their spouses with the pieces of training in addition to sexual counseling to reduce stress. In progressive muscle relaxation exercises, the muscles relax and endorphin hormone level, which is accepted as the body's natural analgesic and happiness hormone, increases, and anxiety, stress, and pain decrease.³¹

To the best of our knowledge, there exists no study in the literature examining the effects of progressive muscle relaxation exercises on sexual quality of life during pregnancy. Progressive muscle relaxation exercises can be used as a distraction technique in women experiencing sexual dysfunction and may allow women to relieve before sexual activity by reducing body tension. In addition, exercises just before sexual intercourse can help relax the muscles around the pelvic region and increase arousal.³⁷ Therefore; it is considered that progressive muscle relaxation exercises in pregnancy may affect sexual life positively.

In previous studies, it has been reported that, in pregnant women, progressive muscle relaxation exercises increased the quality of life³⁰ and psychobiological wellbeing²⁹, and reduced physical symptoms, sleeping problems, anxiety, and depression.³⁸⁻⁴⁰ Based on these results, progressive

muscle relaxation exercises may increase the general health status of pregnant women and be recommended throughout pregnancy. Unlike these studies, in the present study, median SQOL-F scores of the experimental group increased at the third measurement compared to the first and second measurements, while the same value decreased in the control group (Table 3). Considering that there are 4 weeks between the first measurement and the last measurement, it can be said that progressive muscle relaxation exercises continue to improve the quality of sexual life in pregnant women despite the progression of the gestational week. At the second and third measurements, median SQOL-F score of the experimental group was significantly higher than that of the control group (Table 3). This outcome verifies H1. Therefore, it would be safe to conclude that progressive muscle relaxation exercises increase the sexual quality of life of pregnant women. This is an important study because it is the first and only study examining the progressive muscle exercises on sexual quality of life in pregnant women and it is considered to be contributing to nursing applications.

Strengths and Limitations

This is a well-designed, randomized controlled study. The first and only study investigating the effects of progressive muscle relaxation exercises on the sexual quality of women during pregnancy. Therefore, our study is important for sexual health literature.

The results of the present study are only applicable to the individuals in which the study was conducted and they cannot be generalized. Not recruiting illiterate or multiparous women in the study was another limitation. Therefore, not including the spouses of the women in this study, and depending on only their self-reports regarding whether they performed the exercises at home regularly and appropriately for 4 weeks are other limitations of the study.

Implications for Nursing Practice

Progressive muscle relaxation exercises are non-pharmacological applications that maternity nurses and midwives can safely perform. Therefore, it is recommended that maternity nurses and midwives teach relaxation exercises to pregnant women to improve their sexual quality of life.

CONCLUSIONS

In the present study, almost half of the women experienced sexual problems, but they did not perceive them as problems. Progressive muscle

exercises conducted in the second and third trimesters increase the sexual quality of life in pregnant women. Based on these results, it is important that nurses and other health professionals evaluate the sexual health of the pregnant women starting from the first day of pregnancy and determine the risks that will decrease the sexual quality of life in the early period and provide the necessary counseling. Progressive muscle relaxation exercises are non-pharmacological applications that maternity nurses and midwives can safely perform. Therefore, it is recommended that maternity nurses and midwives teach relaxation exercises to the pregnant women to improve their sexual quality of life. It is recommended that similar studies be repeated for a longer period of time with the larger sample group and including spouses. It is thought that our study results will contribute to the nursing literature and further develop the independent roles of nurses.

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Declaration of Interest Statement

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