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The effects of pelvic floor exercises on sexual function and spousal support in postmenopausal women with urinary incontinence

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ABSTRACT

Objective: The current research was conducted to investigate the impacts of pelvic floor exercises on sexual function and spousal support in postmenopausal women with urinary incontinence. **Method:** The study used a one-group pretest-posttest experimental design. During the study, 50 women completed the pelvic floor exercises programme consisting of eight modules, one day a week, face-to-face, in five groups of 8-12 people. Measurements were made before and after the intervention. Data were collected using the Information Form, Female Sexual Function Index, and Menopausal Spousal Support Questionnaire. **Results:** The women's mean age was 50.14±5.68 years, and 48% were primary school graduates. The participants had a mean duration of marriage of 29.72 ± 9.06 years; 14% had a regular job, and 38% were classified as having first-degree obesity. The mean age at menopause was 44.58±4.05 years, and 84% of women experienced natural menopause. The mean score on the Female Sexual Function Index was 27.95±2.82 in the first measurement and 29.16±3.79 in the last measurement, and the women's sexual function levels increased significantly after the exercise programme. The mean score on the Menopausal Spousal Support Questionnaire was 109.80±32.55 before the exercise and 116.26±31.60 after the exercise, indicating a significant increase in perceived spousal support following the exercise programme. **Conclusion:** This study concluded that the pelvic floor exercises programme positively affected sexual function and spousal support in postmenopausal women with urinary incontinence. Community-based studies should be conducted to increase physical exercise in menopausal women.

Keywords: Menopause, urinary incontinence, pelvic floor, exercise, sexual dysfunctions

Menopoz sonrası üriner inkontinanslı kadınlarda pelvik taban egzersizlerinin cinsel işlev ve eş desteğine etkisi

ÖZET

Amaç: Bu araştırma, üriner inkontinansı olan postmenopozal kadınlarda pelvik taban egzersizlerinin cinsel fonksiyon ve eş desteği üzerindeki etkilerini araştırmak amacıyla yapılmıştır. **Yöntem:** Çalışmada tek gruplu ön test-son test deneysel tasarım kullanılmıştır. Çalışma süresince 50 kadın sekiz modülden oluşan pelvik taban egzersiz programını 8-12 kişilik beş grup halinde, haftada bir gün, yüz yüze tamamlamıştır. Ölçümler müdahaleden önce ve sonra yapılmıştır. Veriler Bilgi Formu, Kadın Cinsel İşlev Ölçeği ve Menopozda Eş Desteği Ölçeği kullanılarak toplanmıştır. **Bulgular:** Kadınların yaş ortalaması 50.14±5.68 yıl olup, %48'i ilkokul mezunudur. Katılımcıların ortalama evlilik süresi 29.72 ± 9.06 yıldı; %14'ünün düzenli bir işi vardı ve %38'i birinci derece obez olarak sınıflandırılmıştı. Ortalama menopoz yaşı 44.58±4.05 ve %84'ü doğal menopoz geçirmişti. "Kadın Cinsel İşlev Ölçeği" puan ortalaması ilk ölçümde 27.95±2.82 ve son ölçümde 29.16±3.79 olup, egzersiz programı sonrasında kadınların cinsel işlev düzeyleri istatistiksel anlamlı olarak artmıştır. Menopozal Eş Desteği Anketi puan ortalaması egzersiz öncesinde 109.80±32.55, egzersiz sonrasında 116.26±31.60 olup, algılanan eş desteği egzersiz programı sonrasında istatistiksel anlamlı olarak artmıştır. **Sonuç:** Bu çalışma, pelvik taban egzersiz programının üriner inkontinansı olan postmenopozal kadınlarda cinsel fonksiyon ve eş desteğini olumlu yönde etkilediği sonucuna varmıştır. Menopozal kadınlarda fiziksel egzersizin artırılmasına yönelik toplum temelli çalışmalar yapılmalıdır.

Anahtar Kelimeler: Menopoz, üriner inkontinans, pelvik taban, egzersiz, cinsel fonksiyon bozukluğu

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INTRODUCTION

The World Health Organization (WHO) defines menopause as the permanent cessation of menstruation due to loss of ovarian activity. Menopause is a point on the continuum of life stages for women, which marks the end of reproductive years. Most women experience menopause between the ages of 45 and 55 as a natural part of biological ageing.[1] The mean age at menopause in Türkiye is 46-49 years.[2]

The onset of menopause triggers a series of endocrine, physical, and emotional changes that may affect women's genitourinary functions.[3,4] During this period, in addition to reduced hormone production, atrophic changes occur in the vulva, whereas functional losses are observed in the vagina and lower urinary system.[5] At the pre- and peri-menopausal stages, decreased steroid hormone production and secretion cause thinning of the vaginal epithelium due to the reduction in epithelial cells and degeneration of elastin fibers and collagen. The aforesaid changes lead to loss of tissue elasticity and increased mucosal fragility, causing symptoms such as a burning sensation, dyspareunia, postcoital bleeding, and crack formation.[6] Genitourinary symptoms are the most common and problematic symptoms in postmenopausal women, which have been demonstrated to impact 36% to 90% of women.[5] During this period, the prevalence of lower urinary tract symptoms is high in peri- and postmenopausal women. A study found increased urinary frequency (45.9%), nocturia (10.8%), urge incontinence (11.4%), and stress incontinence (32.8%) in these women.[7]

Postmenopausal urinary incontinence (UI) is mainly associated with chronic conditions such as ageing, history of pelvic and/or perineal surgery, history of pregnancy, obesity, diabetes, and worsened cognitive function.[8] Urinary incontinence (UI) is defined as involuntary urinary leakage that causes social and economic problems.[9] UI is a common public health problem that frequently occurs in the menopausal period and affects women physically, psychologically, and socially. The World Health Organization (WHO) estimates that there will be 1.2 billion women aged 50 years and over by 2030 and most will experience urinary incontinence for a long time after menopause.[10] This condition is also associated with sexual dysfunction and reduced quality of life and sexual satisfaction in postmenopausal women.[11] Apart from hormone replacement therapy, physical exercises and physiotherapy are often recommended in postmenopausal women for the purpose of preventing osteoporosis, enhancing physical and mental health, reducing the occurrence and severity of hot flushes, and improving sleep quality and urinary and sexual functions.[12] Aerobics, resistance exercises, and pelvic floor muscle exercises (PFE) are recommended most frequently for postmenopausal women.[13] It has been reported that physical activity may alleviate some symptoms of menopause and help prevent diseases with an increased risk during menopause.[14] Exercise is a widely used intervention aimed at improving quality of life and sexual function in postmenopausal women and alleviating the impact of menopausal symptoms.[15-19]

Most postmenopausal women experience genitourinary symptoms at the pre-, peri-, and post-menopausal stages, such as nocturia, increased urinary frequency, urinary urgency, UI, cystitis, and incontinence dermatitis.[20] In addition to the changes mentioned above, the loss of reproductive hormones during menopause results in reduced smooth muscle activity and urethral support from the endopelvic fascia and muscles, which reflects the contribution of the pelvic floor muscles to developing genitourinary symptoms. Furthermore, hormone fluctuations accompanying menopause may increase the risk of sexual dysfunction. These hormonal changes can lead to pelvic organ atrophy, vaginal dryness, and worsening of genitourinary symptoms.[20,21] Although menopause does not inherently pose a high risk for psychiatric conditions, it often leads to psychological problems, such as memory and concentration difficulties, depression, anxiety, irritability, and increased distress.[22] Moreover, a sedentary lifestyle correlates with adverse physical health outcomes, including sexual problems and deteriorated psychological well-being.[23] These symptoms experienced during menopause can disrupt women's relationships with their partners, family, and friends, who constitute their social support system, and adversely impact their quality of life.[24] The literature highlights the importance of spouses in creating the social environment necessary to promote health-promoting behaviors. Spouses' efforts to encourage greater engagement in and continuation of health-enhancing behaviors, social support, actions that affirm and encourage health behavior, and interactions that attempt to regulate or correct health behavior are important.[25] While spouses may use social support and/or social control to facilitate their partner's own health care, the effectiveness and value of these efforts vary according to a specific health condition, a specific health behavior, the frequency of support, and the quality of the marital relationship.[26,27] Symptoms experienced during menopause may disrupt women's relationships with their spouses, family, and friends, which constitute the social support system, and may adversely affect their quality of life.[28]

Although some studies have examined the effects of pelvic floor exercises, no study has evaluated the impacts of pelvic floor exercises on sexual function and spousal support in postmenopausal women. In this context, this study was conducted to examine the impacts of pelvic floor exercises training and practices

on sexual function and spousal support in postmenopausal women with UI.

METHOD

Study Design

The present study used a one-group pretest-posttest experimental design. The study population consisted of 450 women attending a religious education course in Istanbul. This course has been in service since 1977 and has the highest number of students in the district with 450 students. No sample selection was performed in the study, and women meeting the research criteria and volunteered to take part in the research were included. The study was completed between March 2024 and June 2024. Women enrolled in the course were screened for eligibility. Women who were interested in the research were informed about the study, and those who voluntarily agreed to participate were included. Therefore, fifty women who volunteered to take part in the research, who were postmenopausal, who could speak and understand Turkish, who had no hearing, comprehension, or visual problems, who had not undergone any previous gynecological or pelvic surgery, who had no physical or mental disabilities, who were at least literate, who were married, who lived with their husbands, who did not have chronic diseases such as hypertension and diabetes, and who had UI complaints were included in the study. Women who wanted to leave the study, gave incomplete information in the data collection forms, did not complete the pelvic floor exercises training, and were absent for more than two weeks during the eight-week training were excluded. Hence, 50 women completed the study.

Measures

The research data were collected using the "Personal Information Form" prepared by the researchers in line with the literature, "Bladder Diary Form", "Female Sexual Function Index", and "Menopausal Spousal Support Questionnaire".

Personal Information Form: The form in question was prepared by the researchers in line with the literature and includes questions about socio-demographic and obstetric characteristics, general health, menopause, and UI.

Female Sexual Function Index (FSFI): This Likert scale consists of 19 items evaluating women's sexual dysfunction in the last four weeks. Rosen et al. (2000) performed the validity and reliability study of the scale, while Aygin and Aslan (2005) conducted its Turkish validity and reliability analysis.[29] It consists of the sexual desire (1-2), arousal (3-6), lubrication (7-10), orgasm (11-13), sexual satisfaction (14-16), and pain or discomfort (17-19) subscales, and each subscale is multiplied by a certain coefficient (sexual desire 0.6, arousal 0.3, lubrication 0.3, orgasm 0.4, sexual satisfaction 0.4, and pain or discomfort 0.4), resulting in a total score. The scale's validity and reliability study found total Cronbach's alpha value to be .95, whereas it was .77 in the current study.

Menopausal Spousal Support Questionnaire (MSSQ): Idiana et al. (2022) developed the MSSQ to measure the support perceived by menopausal women from their spouses. The Turkish validity and reliability study of the scale has been conducted.[30] The scale comprises 17 items and has a four-factor structure. The scale's factors are "emotional support (items 1-5)," "instrumental support (items 6-8)," "valuing support (items 9-14)," and "sexual intimacy support (items 15-17)." Each item is evaluated using a 10-point visual numerical scale ranging from 1=never to 10=almost always. The total score on the scale varies between 17 and 170, the emotional support factor score between 5 and 50, the instrumental support factor score between 3 and 30, the valuing support factor score between 6 and 60, and the sexual intimacy support factor score between 3 and 30. A higher score on the scale and factors indicates a higher level of spousal support. The scale's validity and reliability study found total Cronbach's alpha value to be 0.95, which was .96 in the present study.

Study Procedures

The brochure prepared about the study was presented to the women invited to the study. After providing information about the study, the researchers collected baseline data from each participant through face-to-face interviews. In the first week, a presentation was made for acquaintance and information purposes, and pre-test forms were filled out. The content of the presentation included the following subjects: What is Menopause?, What is Urinary Incontinence?, How Do I Know If I Have Pelvic Floor Muscles Problems?, Female Pelvic Anatomy, Do I Have a Risk of Pelvic Floor Dysfunction?, How to Do Pelvic Floor Exercises?, How Often Should Pelvic Floor Exercises Be Performed?, How Do Pelvic Floor Exercises Work?, What Do They Do? Answers to the questions were explained. In the following weeks, 30-minute exercises were performed under the researchers' leadership. The researchers performed the exercises in five groups of 8-12 people, with one group every day. Participants were allowed to exercise for 30 minutes one day a week for eight weeks. The first five minutes of the exercises were started with deep breathing and warm-up exercises. Then, 15 minutes of pelvic floor muscle exercises and the last 10 minutes of cooling and stretching movements were performed under the researchers' leadership. In this regard, exercises such as indirect training of pelvic floor muscles with the activation of abdominal muscles, pelvic tilt (waist press), jellyfish imaging in pelvic floor training, pelvic

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clock exercise, lumbopelvic rhythm training and pelvic floor exercises in the squat position, bridge exercise, and hip rotation exercise were performed for 8 weeks. During the training period, participants were asked to do these exercises at home on at least three other days of the week when they did not attend the course, and reminders were sent from the WhatsApp group for this purpose. Post-tests were applied after the last-week exercises were performed.

Table 1. Women's individual characteristics (n=50)

Variable	Income level	n (%)
Income status	Low income	8 (16)
	Medium income	40 (80)
	High income	2 (4)
Family type	Small family	40 (80)
	Extended family	10 (20)
Smoking	No	40 (80)
	Yes	10 (20)
Chronic illness	None	24 (48)
	There is	26 (52)
BMI	Healthy weight	10 (20)
	Overweight	14 (28)
	1st-degree obese	19 (38)
	2nd-degree obese	5 (10)
	3rd-degree obese	2 (4)
Frequency of sexual intercourse in the last week	1	20 (40)
	2	23 (46)
	3	6 (12)
	4	1 (2)
Menopause pattern	Natural	42 (84)
	Surgical	8 (16)
Severity of menopausal symptoms	Mild	31 (62)
	Moderate	15 (30)
	Severe	4 (8)

Data Analysis

The data were analyzed statistically using the SPSS (Statistical Programme for Social Sciences) package programme. Frequency and percentage distributions mean±standard deviation, and median (min-max) values were utilized in data evaluation. When comparing numerical data, the paired samples t-test was conducted to evaluate the suitability for normal distribution. A value of $p<0.05$ was considered statistically significant.

RESULTS

The participating women's mean age was 50.14±5.68 years (40-60), and 48% (n=24) were primary school graduates. The mean duration of marriage was 29.72±9.06 (11-50), 14% (n=7) had a regular job, and the mean duration of living in Istanbul was 32.32±14.58 (6-58) years. The prevalence of smoking among women was 20% (n=10), but no women consumed alcohol. Considering the body mass index, 38% (n=19) of the women were 1st-degree obese. The age at menopause was 44.58±4.05 (37-54), and 84% (n=42) experienced natural menopause. Table 1 lists the women's other individual characteristics.

Of the participating women, 70% (n=35) avoided laughing too much due to urinary incontinence, 88% (n=44) experienced urinary incontinence during laughter, and 50% (n=25) experienced fear of smelling urine (Tables 2). While the mean total score on the "Menopausal Spousal Support Questionnaire" was 109.80±32.55 before the exercise, it was 116.26±31.60 after the exercise, and the perceived spousal support increased significantly after the exercise programme ($p=0.013$, $t=2.570$). The mean score on the "Female Sexual Function Index" was 27.95±2.82 in the first measurement and 29.16±3.79 in the last measurement, and women's sexual function levels increased significantly after the exercise programme ($p=0.003$, $t=3.187$) (Table 3).

DISCUSSION

The literature review found studies reporting different results regarding the effects of physical exercises applied in the postmenopausal period on sexual function and menopausal symptoms.[14,31,32] Stojanovska et al.(2014) emphasised that the findings regarding exercise and sexual function were still unclear and more research was needed in this field.[33] A systematic review by Carcelén-Fraile et al. (2020) investigated the impacts of various exercise programmes on sexual function and quality of sexual life related to menopausal symptoms and showed that exercises targeting pelvic floor muscles positively affected sexual function.[34] Similar to the study findings of Carcelén-Fraile et al. (2020)[34] it was determined that the pelvic floor exercises programme positively affected sexual function and spousal support in postmenopausal women with urinary incontinence. similar to this study, Hakbilen and Ince (2025) found that Kegel exercises performed in the houses of older women diagnosed with UI with training and frequent follow-up reduced the levels of incontinence and perceived complaints and improved the quality of life.[35]

A randomised controlled trial by Khosravi et al. (2022) evaluating the effectiveness of Kegel exercises and lubricating gel in enhancing sexual function among menopausal women revealed that both Kegel exercises and lubricating gel improved sexual function.[36] On the contrary, Lara et al. (2012) emphasised that a physical exercise regime, including pelvic floor muscle exercises, administered to postmenopausal women twice a week for 12 weeks reduced anxiety and strengthened pelvic floor muscles but did not significantly improve sexual function.[31] Mercier et al. (2019) reported that pelvic floor muscle training conducted for 12 weeks for women experiencing menopausal genitourinary symptoms improved genitourinary symptoms, quality of life, and sexual function.[37] A review of the existing literature shows that most studies have obtained similar results to those in the current research.

In a qualitative study from Türkiye, women in menopause reported that their family problems increased, they argued with their husbands and children, they had problems with their husbands due to sexual reluctance, their lives were adversely affected, and they experienced psychological problems.[38] The support received from the spouse during menopause is considered very important, and the support provided by the mother, relatives, or friends is inadequate to meet the support provided by the spouse.[39] Another study found that women in menopause received the most support from family and friends and the least support from their spouses.[40] In another study from Türkiye, 40% of menopausal women stated that they received support from their spouses. In another study, 58% of women who stated that they received support from their environment during menopause reported that they received this support from their spouses.[41]

Table 2. Women's urinary incontinence status during activities and conditions experienced by women due to urinary incontinence

Conditions experienced by women due to urinary incontinence		**n (%)**
Avoidance of laughing too much		35 (70)
Fear of smelling urine		25 (50)
Restricting fluid intake		21 (42)
Avoidance of lifting things (bags, chairs, etc.)		18 (36)
Fear of urine leakage from the pad/diaper		11 (22)
Avoidance of daily activities (housework, shopping, etc.)		9 (18)
Avoidance of sexual intercourse		8 (16)
Conditions experienced by women due to Incontinences Severity urinary incontinence		**n (%)**
Laughing	Drip	42 (84)
	Leakage	2 (4)
	Totally inkontinance	0
Getting out of bed	Drip	8 (16)
	Leakage	3 (6)
	Totally inkontinance	2 (4)
Climbing stairs	Drip	12 (24)
	Leakage	7 (14)
	Totally inkontinance	2 (4)
Lifting things (bags, chairs, etc.)	Drip	14 (28)
	Leakage	11 (22)
	Totally inkontinance	1 (2)
Physical activity	Drip	10 (20)
	Leakage	4 (8)
	Totally inkontinance	0
Rushing when doing something	Drip	8 (16)
	Leakage	2 (4)
	Totally inkontinance	2 (4)
Sexual activity	Drip	9 (18)
	Leakage	0
	Totally inkontinance	0
During sleep	Drip	9 (18)
	Leakage	6 (12)
	Total inkontinance	0
When you hear the sound of water	Drip	28 (56)
	Leakage	0
	Totally inkontinance	0

Table 3. Comparison of women's scale scores before and after pelvic floor exercises

		Before exercise	**After exercise**	**p/t**
Menopausal Spousal Support Questionnaire	Total score	109.80±32.55	116.26±31.60	**p=0.013,** t=2.570
	Emotional support	35.38±9.70	36.56±9.47	p=0.121, t=-1.580
	Instrumental support	15.92±6.71	17.62±6.78	**p=0.003,** t=-3.135
	Valuing support	39.64±13.17	41.26±12.46	p=0.109, t=-1.634
	Sexual intimacy support	18.86±6.57	20.82±5.84	**p<0.001**, t=-3.872
Female Sexual Function Index	Total score	27.95±2.82	29.16±3.79	**p=0.003,** t=3.187
	Sexual desire	4.00±093	4.24±0.99	**p=0.032,** t=2.214
	Sexual arousal	4.63±1.00	5.09±1.17	**p=0.002**, t=3.213
	Lubrication	4.91±0.61	5.09±0.63	**p=0.018,** t=2.441
	Orgasm	4.60±0.59	4.94±0.69	**p<0.001**, t=4.365
	Satisfaction	3.84±1.05	4.60±1.35	**p<0.001**, t=5.966
	Pain/discomfort	5.93±1.14	5.17±1.36	**p<0.001**, t=5.783

In a study from Türkiye, 27.4% of women in menopause stated that the symptoms they experienced due to menopause adversely affected their relationship with their husbands, and 40.3% stated that they wanted to share these symptoms with their husbands.[42] In the study by Kurt and Arslan, women reported that they could cope with their sexual problems during menopause by talking to their husbands and asking them to be understanding and supportive.[3] To ensure a smooth transition to postmenopausal years, interventions are needed to increase men's awareness of menopause so that they can better support their wives. Spousal support can help women more and increase their quality of life in reducing urinary incontinence complaints and increasing sexual satisfaction after menopause.

CONCLUSION

In this study, perceived spousal support of menopausal women with urinary incontinence increased significantly after pelvic floor exercise program. In addition, women's sexual function levels increased significantly. More community-based studies should be conducted to increase physical exercise in menopausal women.

Ethical Consideration

Before the study, approval was received from Marmara University Faculty of Health Sciences Non-Interventional Clinical Research Ethics Committee (28.12.2023/141) and the institution where the research would be conducted (E-39319688-600-4731778). Necessary permissions were obtained for the measurement tools used in the research. Signed consent was received from the participants, who had the right to withdraw from the research at any time during the study. Ethical requirements specified in the Declaration of Helsinki were fulfilled during the study.

Author contributions

Study idea/design: FBB, BA, BK, ZY
Data collection: BA, BK, ZY
Data analysis and interpretation: FBB
Literature review: FBB
Writing of the article: FBB, BA, BK, ZY
Critical review: FBB
Final approval and responsibility: FBB, BA, BK, ZY

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