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Original Article *Özgün Araştırma*

INVESTIGATION OF PELVIC FLOOR MUSCLE KNOWLEDGE AND AWARENESS AMONG WOMEN LIVING IN TURKEY

Türkiye'de Yaşayan Kadınların Pelvik Taban Kasları Bilgi ve Farkındalığının İncelenmesi

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ABSTRACT

Objective: Pelvic floor muscles (PFM) are important for the protection of many mechanisms, support of pelvic organs, and maintenance of sexual function. Therefore, PFM exercises should be studied in more detail in women. This study aimed to evaluate the effect of knowledge and awareness of PFM on the sexual life of healthy women.

Material and Methods: This study included 182 women living in Turkey who had an active sexual life. The demographic information and PFM awareness of the participants were evaluated. Accordingly, they were divided into two groups: those who had knowledge of PFM (group 1) and those who did not (group 2). All groups were assessed using the female sexual function index (FSFI), sexual quality of life female (SQOL-F), and Beck's depression ınventory (BDI).

Results: There was a significant difference between groups 1 and 2 in the FSFI (p=0.046) scores (p<0.05), whereas there was no significant difference between the SQOL-F (p=0.709) and BDI (p=0.309) scores (p>0.05). Low correlations were found between the FSFI scores and knowledge of the pelvic region (p=0.062; r=0.114), exercise knowledge (p=0.026; r=0.136), and exercise habits (0.013; r=0.153).

Conclusion: Knowledge and awareness of PFM had an effect on sexual life but not on quality of life and depression levels in healthy women. However, we believe that increasing women's awareness about pelvic floor health and PFM may prevent delays in applying to health services due to problems related to sexual disorders.

Keywords: *Awareness, pelvic floor, quality of life, sexual health, women*

ÖZ

Amaç: Pelvik taban kasları (PTK) birçok mekanizmanın korunması, pelvik organların desteklenmesi, cinsel fonksiyon ve fonksiyonun sürdürülmesi açısından önemlidir. Bu nedenle PTK egzersizlerinin kadınlar tarafından ayrıntılı olarak bilinmesi gerekmektedir. Bu çalışmanın amacı, PTK hakkındaki bilgi ve farkındalığın sağlıklı kadınların cinsel yaşamına etkisini değerlendirmektir.

Gereç ve Yöntemler: Araştırmaya Türkiye'de yaşayan ve aktif cinsel yaşamı olan 182 kadın dâhil edilmiştir. Katılımcıların demografik bilgileri ve PTK farkındalıkları değerlendirilmiştir. Buna göre PTK hakkında bilgisi olanlar (Grup 1) ve olmayanlar (Grup 2) olmak üzere iki gruba ayrılmıştır. Tüm gruplar kadın cinsel fonksiyon indeksi (FSFI), kadın cinsel yaşam kalitesi (SQOL-F) ve Beck'in depresyon envanteri (BDİ) anketleri ile değerlendirilmiştir.

Bulgular: Araştırma sonuçlarına göre grup 1 ile grup 2 arasında FSFI (p=0,046) puanları (p<0,05) açısından anlamlı fark bulunurken, SQOL-F (p=0,709) ile BDİ arasında anlamlı fark saptanmamıştır. (p=0,309) (p>0,05). FSFI skorları ile pelvik bölge bilgisi (p=0,062; r=0,114), egzersiz bilgisi (p=0,026; r=0,136) ve egzersiz alışkanlıkları (0,013; r=0,153) arasında düşük korelasyonlar bulunmuştur.

Sonuç: Sağlıklı kadınlarda PTK bilgisi ve farkındalığının cinsel yaşam üzerinde etkisi olduğu ancak yaşam kalitesi ve depresyon düzeyleri üzerinde etkili olmadığı görülmüştür. Ancak kadınların pelvik taban sağlığı ve PTK konusunda farkındalığının arttırılmasının, cinsel bozukluklara bağlı sorunlar nedeniyle sağlık hizmetlerine başvuruda gecikmeleri önleyebileceğini düşünüyoruz.

Anahtar Kelimeler: *Farkındalık, pelvik taban, yaşam kalitesi, cinsel sağlık, kadınlar*

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INTRODUCTION

Sexual health is an important component of overall well-being and can be influenced by various physical and psychological factors (1). The status and function of the pelvic floor muscles significantly affects sexual health, particularly in women. These muscles, which form a hammock-like structure at the base of the pelvis, provide crucial support to pelvic organs and play a vital role in sexual function (2). Notably, pelvic floor disorders are prevalent among women in our country, adversely affecting their quality of life (3). The prevalence of these disorders increases owing to various factors, including age, obesity, menopause, smoking, number of births, and mode of delivery (4).

In recent years, Kegel exercises used in pelvic floor muscles (PFM) training have been frequently used in the treatment of pelvic floor disorders (5). Kegel exercises: This is a method of strengthening the muscles that stabilize the location of the bladder, intestines, and genital organs in the pelvis and control their movements. These exercises, including PFM training, aim to improve quality of life by supporting pelvic floor health (6).

Studies have determined that PFM training is an easily applicable conservative method for women with pelvic muscle disorders (5,6). However, a recent review reported that most women do not have sufficient information about these treatments for PFM. Despite its importance, PFM is often overlooked and undervalued (7). Studies have reported that insufficient awareness of this muscle group leads to pelvic floor disorders and sexual health problems (8,9).

To the best of our knowledge, no study has compared the effects of pelvic floor knowledge and awareness on sexual health. Based on the available data, this study aimed to investigate the effect of awareness of PFM on the sexual life of healthy adult women and to question their knowledge about the pelvic region. In this way, by emphasizing that sexual health is an important component of general health and quality of life, we will investigate the effect of PFM knowledge and awareness on these aspects.

MATERIALS AND METHODS

Study design and participants

The participants of this cross-sectional study were recruited between October 2023 and December 2023. The study included 182 female participants who volunteered to participate in the study, with patients receiving treatment at Medipol Mega University Hospital Physiotherapy and Rehabilitation clinic. The participants were under the supervision of licensed physiotherapists and informed about the study, and their consent was obtained. Women who had an active sexual life, did not have a disease affecting their pelvic muscles, were 18 years of age or older, and volunteered to participate in the study were included in the study. Individuals who had undergone pelvic surgery and sexual therapy in the last six months were excluded from the study. The value of 0.55, calculated by Alavi-Arjas et al. according to pelvic awareness, was used (10). A total of 87 people were calculated for each group with a power of 0.95 and a margin of error of 0.05. Of the participants who dropped out of the study, 92 were included in each group.

Data collecting

Participants who met the inclusion criteria were asked to complete online surveys via Google, including PFM knowledge status. According to these surveys, participants were divided into two groups according to their knowledge and awareness of PFM and Kegel exercises. According to the results of a 4-question evaluation of PFM awareness, if 'yes' to all questions was determined as group 1, if 'no' to all questions was determined as group 2. Participants who responded differently were excluded from the study.

Data collection instruments

In this study, the demographic information form, female sexual function scale, female sexual life quality scale, and Beck's Depression Inventory were used to collect data for both groups. After the necessary explanations were made, the participants were given 15- 20 minutes. Demographic information such as age, gender, height, weight, body mass index (BMI), medical history, and medications will be recorded. Awareness of PFM was assessed in terms of the level of knowledge about PFM, exercise knowledge, and exercise habits. In addition, the source of this information, the reason for practicing, from whom the exercises were trained, how they were practiced, and whether they were effective were evaluated.

The female sexual function index (FSFI) is a questionnaire used to assess sexual function in women to diagnose sexual disorders, monitor the progress of treatment, and adapt interventions to improve overall sexual health. Scores below 26 were indicative of sexual dysfunction, and the maximum total score was 36. By examining these facets, the FSFI allows health professionals and researchers to gain a holistic understanding of a woman's sexual functioning and identify specific areas where a woman may experience difficulties. This information is crucial for diagnosing sexual disorders, monitoring treatment progress, and tailoring interventions to improve overall sexual health (10).

The purpose of the sexual quality of life-female (SQOL-F) questionnaire is to comprehensively evaluate the overall impact of sexual functioning on a woman's quality of life. Scores range from one to five for questions covering a variety of

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topics, such as arousal, orgasm, satisfaction, and emotional health in relation to sexual concerns. It is expected that each response will consider one's sexual experiences during the previous four weeks. The scale has a range of values from 18 to 108 (11,12).

The BDI is a commonly used self-assessment tool that is designed to evaluate the intensity of depressive symptoms. Comprising 21 items, each item offers four statements scored from 0 to 3, depending on the individual's response. The cumulative score ranges from 0 to 63, with higher scores reflecting more severe levels of depression (13).

Ethical Considerations

Our study was registered with the Istanbul Medipol University Non-Invasive Clinical Trial Ethics Committee under the number E-10840098-772.02-5855 and registered at clinical. Trial gov with number NCT05806424. Permission to use the scale in the study was secured through email correspondence with the respective authors. The study was conducted in accordance with the principles outlined in the Declaration of Helsinki.

Data Analysis

IBM SPSS software was used for the statistical evaluation in our study. Before starting the statistical analysis, normality was assessed using the Shapiro-Wilk test. The data, summarized in terms of numbers, percentages, and mean ± standard deviation, were examined for normal distribution using the Kolmogorov-Smirnov test. Due to the normal distribution, they were evaluated using an Independent Simple t-test. Spearman's correlation analysis was used to evaluate the relationships between variables according to normality. Results were interpreted at the 95% confidence interval with significance levels of $p<0.05$ and $p<0.01$.

RESULTS

Our study included 182 participants, with 92 in group 1 and 90 in group 2. Upon comparing the demographic evaluation results, the study findings revealed no statistically significant differences between the two groups (Table 1). When the PFM exercise status of the participants was analyzed, 28% stated that they exercised. Of those who exercised, 27.4% did so to strengthen the PFM, 11.7% because of urinary incontinence problems, 21.5% during and after pregnancy, 5.8% to increase sexual arousal, and 33.3% for other reasons.

Comparative analysis of questionnaires between the study groups revealed a significant difference favoring group 1 in FSFI scores (p=0.046), with p-values less than 0.05. However, no significant differences were observed between SQOL-F (p=0.709) and BDI (p=0.309) scores, where p-values were greater than 0.05 (Table 2). When the relationship between PFM awareness level and FSFI scores was analyzed, low correlations were found between pelvic region knowledge level (p=0.062; r=0.114), exercise knowledge (p=0.026; r=0.136), and exercise habits (0.013; r=0.153) (Table 3).

Table 1: Demographic information

	Group 1 (n=92)	Group 2 (n=90)	p
Age	32.89	32.23	0.338
Height	164.67	164.60	0.990
Weight	62.50	63.23	0.890
BMI	23.10	23.42	0.914

BMI: Body mass index, Independent t test, *p<0.05

Table 2: Comparison of questionnaires between groups

	Group 1 (n=92)	Group 2 (n=90)	p
FSFI	21.17±4.82	19.36±4.74	0.046*
SQOL-F	64.28±14.19	65.08±14.47	0.709
BDI	12.83±10.44	11.42 ±10.19	0.309

FSFI: Female sexual function index, SQOL-F: Sexual quality of life female, BDI: Becks depression inventory, Independent t test,*p<0.05

Table 3: The Relationship between PFM awareness level and FSFI scores

PFM Awareness	FSFI scores
Pelvis Muscle Awareness	r: 0.114 p: 0.062
Exercise Awareness	r: 0.136 p: 0.026*
Exercise Habits	r: 0.153 p: 0.013*

PFM: Pelvic floor muscle, FSFI: Female sexual function index, r: Spearman korelasyon, *p<0.05

DISCUSSION

The study findings revealed a notable discrepancy in the FSFI scores between individuals with and without PFM awareness. However, no significant differences were observed in SQOL-F and BDI scores between the groups. There was a low correlation between the PFM awareness level and FSFI scores. Moreover, the results of this study provide a nuanced understanding of the multifaceted nature of female sexual wellbeing. The complexity of this relationship suggests the existence of other influential variables that may interact with PFM awareness to shape the overall sexual health landscape. Recent research on women's health has highlighted delays in accessing health services due to sexual dysfunction, suggesting that sexual health and quality of life issues are underdiagnosed (14). Approaches developed with increased awareness of women are thought to find solutions to the symptoms of sexual disorders (15). Therefore, PFM exercises should be performed in detail in women. In this study, we aimed

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to evaluate the effect of knowledge and awareness of PFM on the sexual life of healthy women.

Despite the significance of PFM exercises, as highlighted in studies conducted by Skaug and Navarro-Brazález et al., there is a substantial gap in the recognition and prioritization of the importance of PFM health (16,17). It should be noted that Kandadai et al. revealed alarming statistics regarding women's participation in pelvic floor exercises: 24% performed the exercises incorrectly, 39% unintentionally used other muscles, and 25% performed Valsalva maneuvers during exercise (18). This clearly indicates a disconnection between knowledge and proper execution.

Despite this evidence, healthcare practices often fail to acknowledge or value the importance of PFM health. As stated by Fante et al., recognizing the prevalence of techniques for PFM exercises and the undervaluing of PFM health, it is crucial to explore women's attitudes towards their floors and raise awareness about maintaining healthy function (7). Understanding these attitudes and promoting awareness interventions can be tailored to improve not only knowledge but also the practical application of PFM exercises, ultimately leading to better pelvic floor health and overall well-being.

In a previous study, sexual dysfunction was identified with an FSFI score below 26 points (19). Mamuk et al. on women in Turkey during Covid-19 found that 39.1% scored below 26.55 points on the FSFI (20). Similarly, our study observed FSFI scores below 26 in both groups. However, 49.4% of participants were not informed about PFM exercises. Only 28% were knowledgeable about PFM exercises and performed them regularly.

Omodei et al. reported women with PFM weakness had impaired sexual function. Weak muscles have been reported to prevent orgasm by providing inadequate stimulation (21). In our study, 5.8% of the women who exercised habitually did so to increase sexual arousal, 27.4% to strengthen the pelvic muscles, 11.7% because of urinary incontinence problems, 21.5% after pregnancy, and 33.3% for other reasons. The various reasons behind women's involvement in PFM exercises highlight the nature of their engagement. This emphasizes the importance of providing education and interventions to address overall pelvic health concerns.

Çetin et al. reported that the FSFI scores of a healthy control group were significantly better than those of women with PFM dysfunction (22). According to our study, there was a relationship between awareness of pelvic muscle exercises and the FSFI scores.

Accordingly, the FSFI scores of participants with awareness were better. In addition, a relationship was found between FSFI scores and level of knowledge of PFM and Kegel exercises. In other words, these patients had higher FSFI scores. Our findings are consistent with those in the existing literature, as PFM health has been shown to be associated with sexual function in women. The positive correlation between awareness, knowledge, and participation in pelvic muscle exercises and higher FSFI scores suggested that interventions to improve pelvic floor health may positively affect sexual function.

Recent studies highlight the diverse impact of pelvic floor problems on various aspects, including social, physical, psychological, occupational, and sexual functions, ultimately leading to diminished quality of life in affected women (22,23). Barut et al. emphasized the significant influence of sexual dysfunction on overall quality of life, but found no notable difference in BDI scores compared to a healthy group with sexual dysfunction (12). Conversely, a study by Frota et al. showed no association between pelvic floor dysfunction and quality of life in postmenopausal women (23). Interestingly, our study aligns with these findings, indicating no significant difference in SQOL-F scores between the groups. We believe that sexual dysfunction scores do not affect the quality of life and are not associated with PFM awareness in either group.

Similar to our study, Mojahed et al. used the BDI, FSFI, and SQOL-F in their study in which they examined healthy and polycystic ovary syndrome patients (24). They concluded that sexual dysfunction and anxiety were observed in both groups, particularly in those with polycystic syndrome. They concluded that sexual dysfunction and anxiety were observed in both groups, particularly in those with polycystic syndrome. Shahraki et al. reported that the BDI score was significantly higher and SQOL-F score was significantly lower in infertile women (25). According to our study results, the BDI scores were low in both groups. In addition, no difference was detected between those with and without PME awareness. We think that this is because the quality of life was not affected, and the participants were healthy women.

Our study yielded noteworthy results, with both groups exhibiting low BDI scores. Importantly, there was no significant difference in the BDI scores between participants with and without PME awareness. This may be attributed to the fact that quality of life was not affected and the participants were generally healthy women.

Although insightful, this study has limitations that should be considered. With a sample size of 182 women from Turkey, the findings may not be universally applicable given the potential cultural and regional variations. Self-reported data introduce the risk of recall and social desirability biases, which affect the accuracy of responses. Despite these limitations, this study provides a foundational understanding of the link between PFM knowledge, awareness, and sexual health

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in women, suggesting avenues for future research, including larger, diverse samples and intervention analyses.

Therefore, our study aimed to evaluate PFM function in women. In this way, we believe that such studies will increase the psycho-emotional states and awareness of patients about their sexual lives, who are given the opportunity to talk openly about women's health with a health professional. These results suggest that increasing women's awareness of pelvic floor health and PTC may contribute to earlier interventions for health problems arising from problems related to sexual disorders.

Conflicts of Interest: The authors declare that they have no competing interests.

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