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RESEARCH ARTICLE

Knowledge Level of Pelvic Floor and Pelvic Floor Disorders According to and Related Disorders According to Gender and Education Levels

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Abstract
Pelvic floor disorders, their management and protective educational programs have become popular in recent years. The aim of this study is to determine the level of knowledge about pelvic floor health according to gender and education levels. This cross sectional study is conducted on women and men between January and September of 2021 in Turkey. The knowledge level of pelvic floor was assessed with Pelvic Floor Health Knowledge Quiz (PFHKQ). Oneway ANOVA test was used for comparing pelvic floor knowledge according to the education levels and the age groups. Chi square test and Pearson chi square test were used for calculating binary variables, effect size, and confidence interval values between participants' pelvic floor knowledge level and gender. A total of 1215 (1115 women, 100 men) participants completed the study. Men had less knowledge about the topics related to the pelvic floor ($p < 0.05$) and the awareness of those that have graduated from higher education on these issues was found to be higher compared to the other education levels ($p<0.05$). In conclusion, we determined that the Turkish population has insufficient knowledge about the relationship between the pelvic floor and other body systems, the causes and types of pelvic problems. In the future, educational programs emphasizing deficient points regarding the pelvic floor within the scope of preventive treatment may be planned to cover the general population.

Keywords
Cardiovascular, Down Syndrome, Exercise, Physical Activity

INTRODUCTION

Pelvic floor consists of muscles, ligaments, and fascia; it is an important structure that supports the pelvic organs, provides control of micturition and defecation, and plays a role in the respiratory system, sexual function, and reproduction (Eickmeyer, 2017; Han & Ha, 2015; Messelink et al., 2005). The abnormal function of the pelvic floor is termed pelvic floor dysfunction and includes conditions such as Urinary incontinence (UI), Pelvic organ prolapse (POP), pelvic pain, sexual dysfunction, and anal incontinence (Good & Solomon, 2019; MacLennan, Taylor, Wilson, & Wilson, 2000). Conservative treatment and surgical intervention options are used in the treatment of pelvic floor dysfunctions. Delay of the treatment is associated with an increase in the burden of care and health expenditures and a deterioration in the quality of life (Duffield et al., 2017).

The level of patients' knowledge about pelvic floor health and the level of awareness about pelvic floor problems are important for preventive approaches. It has been shown that information and education programs about the pelvic floor lead to an increase in women's level of awareness (de Andrade et al., 2018; Geoffrion et

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al., 2009). On the other hand, in men, pelvic floor training is one of the treatment methods for pelvic floor disorders such as urinary incontinence after prostate treatment and erectile dysfunction (Ali et al., 2022; Cohen et al., 2016). For this reason, knowing the importance of the pelvic floor in both gender health can increase the chances of patients receiving effective treatment.

In researches conducted with different populations to determine the level of knowledge about the pelvic floor, it has been determined that the community has insufficient knowledge (de Freitas et al., 2019; Fante, Silva, Mateus-Vasconcelos, Ferreira, & Brito, 2019; Hill, McPhail, Wilson, & Berlach, 2017; Neels et al., 2016; Skaug, Engh, Frawley, & Bø, 2020). Although the number of studies conducted in this area is very limited in Turkey, the results show similarities with the results in the literature (Mamuk, Dişsiz, & Dinç, 2018; Süt & Küçükkaya, 2018). Patient education sessions are one of the most important ways of preventive health applications and the proportion of application increase day by day in Turkey.

To create a framework for guiding protective approaches in this area, we aimed to determine the level of knowledge of Turkish women and men about the pelvic floor and topics related to pelvic floor. We think that the results will obtain at the end of our study will provide up-to-date data on this subject. We hope that our results can be used in the design of preventive health policies.

MATERIALS AND METHODS

Study Design

This study was designed as a cross-sectional study. Ethical approval was obtained from the Scientific Research Ethical Committee of the Faculty of Health Science of Marmara University (Approval date and number: 28.01.2021/10). This study was conducted in accordance with the Declaration of Helsinki. This cross-sectional study was registered at the US National Institutes of Health (ClinicalTrials.gov) #NCT04893005.

Study Population

The volunteers who were invited via social media platforms (Facebook, Instagram) and accepted to participate the study were included. Exclusion criteria included participants who did not complete the entire quiz and were under 18.

Study Interventions

After receiving the informed consent electronically, firstly demographic data was examined. These data included age groups (18-25; 26-35; 36-45; 46-55; 56-65; >65), gender, education levels (elementary school, high school, graduate education, postgraduate education, doctorate education), birth experience, number of births, type of birth (vaginal delivery, cesarean section, epidural, water birth), and education/working status.

The general questions were determined to elicit the basic information level of the participants about the pelvic floor. The general question set is presented as the following;

- Have you ever heard the expression of ‘pelvic floor’ before?
- In which source have you encountered the expression of ‘pelvic floor’ before? (The answer options which were given to the participants for this question were television; lecture, online education, course; internet, social media; friends, family. And ‘others’ choice is also among the options).
- In the "Pelvic Floor Health Knowledge Quiz", which is a part of the same study, it was asked that pelvic floor location correctly on the body was given (Fig. 1).

And subsequently, the location of the pelvic floor was shown at PFHKQ correctly.

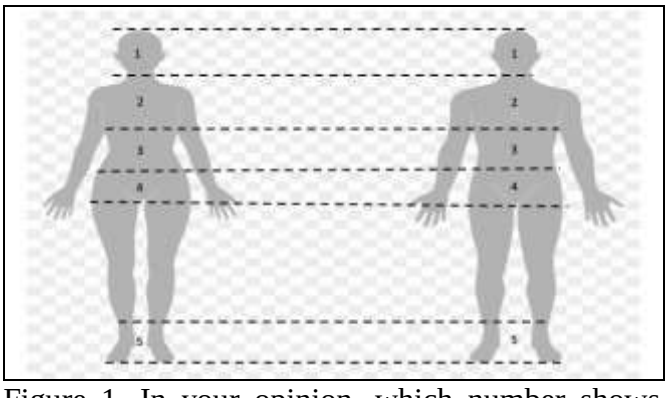

Figure 1. In your opinion, which number shows the pelvic floor location correctly on the body figure?

Pelvic Floor Health Knowledge Quiz

A special quiz consisting of 29 items that were previously developed and validated was used to determine the level of knowledge about pelvic floor function/dysfunction (items from 1 to 8), risk/etiology (items from 9 to 21) and diagnosis, and treatment (items from 22 to 29) (Wala'a & Çelenay, 2021). The participants were asked to

answer the items by choosing the appropriate option. The choices were ‘yes, no, do not know’. The answers were by allocating one point for each

question answered correctly, and zero points for answered incorrectly or to which the respondent does not know the answer. Higher scores show better knowledge.

At the end of the quiz, considering that the participants were asked which pelvic floor disorder they had. The options were ‘UI’, ‘POP’, ‘fecal incontinence’, ‘gas incontinence’, ‘pelvic pain’, and ‘none of them’.

Statistical Analysis

In the classification of the data, qualitative and quantitative statistical methods were evaluated with the SPSS 22.0 statistical program at the 95% confidence interval, and the significance was evaluated at the $p<0.05$ level.

The characteristics of the participants were summarized as frequencies for categorical data, means±standard deviation for continuous variables, and medians (quartiles), minimum, maximum values, and percentages were calculated for assessment. The total scores obtained from the quiz were determined as a percentage according to gender and education level. The answers given by the participants to the statements were categorized as correct or incorrect, and analyzes were made between groups according to age, gender, and education level. The Oneway ANOVA test was used to compare participants’ knowledge levels according to the age groups and education levels. Chi-square test and Pearson chi-square test were used for calculating binary variables, effect size, and confidence interval values between participants’ pelvic floor knowledge level and gender. Cramer’s V test was used to detect the measure of association between two nominal variables.

RESULTS

A total of 1215 people, (1115 women, and 100 men), were included in the study (Fig. 2).

The age groups that participated the most in the research were 46-55 and 56-65 (27.1%, and 27.7%, respectively). It was determined that 73.8% of the participants had a graduate or higher education level, and 21.2% had continued health education and worked in medical fields. 72.2% of the participants had birth experience. All participants' sociodemographic statuses are shown in Table 1.

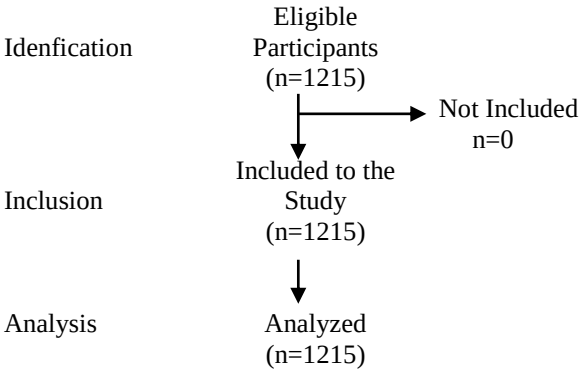

Figure 2. Study enrolment flow chart. STROBE, Strengthening the reporting of observational studies in epidemiology

Table 1. Sample Characteristics

		n(%)
Age groups (years)	18-25	143(11,8)
	26-35	146(12)
	36-45	198(16,3)
	46-55	329(27,1)
	56-65	336(27,7)
	>65	63(5,2)
Gender	Female	1115(91,8)
	Male	100(8,2)
Education Level	Elementary School	19(1,6)
	High School	299(24,6)
	Graduate	718(59,1)
	Postgraduate	134(11)
	Doctorate	45(3,7)
Birth Experience	Yes	811(72,7)
	No	304(27,3)
Number of Births	1	329(40,6)
	2	416(51,3)
	3 and more	66(8,1)
Education/Work in a medical field	Yes	256(21,1)
	No	959(78,9)

52.7% of the participants had heard the expression ‘pelvic floor’ before. The participants stated that they encountered the term 'pelvic floor' mostly through lecture-online education-course, and internet-social media (42.2%, 28.4%, respectively). 72.8% of the participants showed the location of the pelvic floor correctly.

When the situation of the participants regarding pelvic floor disorders was examined, it

was determined that 25.7% of the participants had UI, 4.7% had POP, and 13.7% had pelvic pain.

Participants generally correctly agreed that:

- In pelvic floor problems, besides the clinical examination, the patient's complaint is also important (79,4%)
- The patient examination is important in determining pelvic floor problems (79,2%)
- Regular physical activity and exercise are beneficial for pelvic floor problems (71,4 %).

When the total correct scores obtained from the quiz were examined, it was seen that 9.2% of the men and 90.8% of the women scored 20 or more points out of a 29-point total; 23% of men, and 9.96% of women got 0 points. When the total scores obtained are analyzed according to their education levels, of the participants received 0 points, 15.79% had elementary school education, 16.72% had high school education, 10.72% had graduate education, and 2.96% had postgraduate education. Of the participants who received 20 or more points out of a 29-point total, 23.16% had high school education, 56.3% had graduate education, 15.07% had postgraduate education, and 5.51% had doctorate education. None of the participants who had a doctorate education received 0 points, and none of the participants who had an elementary school education received 29 points.

There was no difference between the correct answers according to the age groups (p>0.05).

Participants' knowledge of the pelvic floor function/dysfunction; risk/etiology; diagnosis and treatment were compared according to gender (Table 2).

Table 2. The Effect of gender on the level of knowledge of the pelvic flor

		Female n(%)	Male n(%)	p	CI (lower-upper)	Crammer's V
Item 1. Urinary incontinence is a pelvic floor problem	Correct	783(70.2)	51(51)	**<0.0001***	2.27 (1.50-3.42)	**0.114**
	Incorrect	332(29.8)	49(49)			
Item 2. Pelvic organ (bladder, uterus, bowel) prolapse is one of the pelvic floor problems	Correct	823(73,8)	54(54)	**<0.0001***	2.40 (1.59-3.64)	**0.122**
	Incorrect	292(26,2)	46(46)			
Item 3. Fecal or gas incontinence is not a pelvic floor problem	Correct	303(27,2)	14(14)	0.074	0,68 (0,45-1,04)	0,051
	Incorrect	812(72,8)	86(86)			
Item 4. Pelvic floor tension may be the cause of pelvic pain (pain in the pelvis)	Correct	641(57,5)	56(56)	0,773	1,60 (0,70-1,61)	0,008
	Incorrect	474(42,5)	44(44)			
Item 5. Pelvic floor problems are not associated with low back pain	Correct	182(16,3)	18(18)	0,631	1,11 (0,72-1,73)	0,014
	Incorrect	933(83,7)	82(82)			
Item 6. The pelvic floor is important for sexual health	Correct	724(64,9)	59(59)	0,235	1,29 (0,85-1,95)	0,034
	Incorrect	391(35,1)	41(41)			
Item 7. The pelvic floor is associated with the respiratory system	Correct	112(10)	19(19)	**0,006***	0,48 (0,28-081)	**0,079**
	Incorrect	1003(90)	81(81)			
Item 8. Pelvic floor weakness can cause pelvic pain	Correct	643(57,7)	58(58)	0,949	0,97 (0,65-1,49)	0,002
	Incorrect	472(42,3)	42(42)			
Item 9. Pelvic floor problems can have many causes	Correct	778(69,8)	66(66)	0,432	1,19 (0,77-1,83)	0,023
	Incorrect	337(30,2)	34(34)			
Item 10. Pregnancy can adversely affect the pelvic floor	Correct	675(60,5)	46(46)	**0,005***	1,80 (1,19-2,71)	**0,081**
	Incorrect	440(39,5)	54(54)			
Item 11. Having vaginal birth too many times can weaken the pelvic floor	Correct	631(56,6)	33(33)	**<0.0001***	2,65 (1,72-4,08)	**0,13**
	Incorrect	484(43,4)	67(67)			
Item 12. The probability of pelvic floor problems is low in obese individuals	Correct	38(3,4)	4(4)	0,447	1,17 (0,78-1,77)	0,022
	Incorrect	1077(96,6)	96(96)			

Item 13. Smoking addiction can weaken the pelvic floor	Correct	336(30,1)	31(31)	0,857	0,96 (0,62-1,50)	0,005
	Incorrect	779(69,9)	69(69)			
Item 14. Weight-bearing continuously can damage the pelvic floor	Correct	697(62,5)	58(58)	0,373	1,21 (0,80-1,83)	0,026
	Incorrect	418(37,5)	42(42)			
Item 15. Constipation can cause weakening of the pelvic floor	Correct	503(45,1)	45(45)	0,983	1,01 (0,67-1,52)	0,001
	Incorrect	612(54,9)	55(55)			
Item 16. Pelvic floor problems are more common in younger people than older people	Correct	66(5,9)	8(8)	0,072	1,47 (0,96-2,24)	0,052
	Incorrect	1049(94,1)	92(92)			
Item 17. Unconsciously compelling sports/exercises (such as jumping, or lifting weights) can weaken the pelvic floor	Correct	448(40,2)	34(34)	0,226	1,30 (0,85-2,01)	0,035
	Incorrect	667(59,8)	66(66)			
Item 18. The postural disorder does not affect the pelvic floor	Correct	139(12,5)	11(11)	0,372	0,83 (0,55-1,26)	0,026
	Incorrect	976(87,5)	89(89)			
Item 19. Menopause can affect pelvic floor problems	Correct	570(51,1)	40(40)	**0,033***	1,57 (1,03-2,39)	**0,061**
	Incorrect	545(48,9)	60(60)			
Item 20. Some medications can cause pelvic floor problems	Correct	410(36,8)	40(40)	0,522	0,87 (0,57-1,33)	0,018
	Incorrect	705(63,2)	60(60)			
Item 21. Surgical approaches to the pelvic organs (bladder, prostate gland, uterus...) can weaken the pelvic floor	Correct	469(42,1)	43(43)	0,856	0,96(0,64-1,46)	0,005
	Incorrect	646(57,9)	57(57)			
Item 22. The patient examination is important in determining pelvic floor problems	Correct	894(80,2)	68(68)	**0,004***	1,90 (1,22-2,97)	**0,082**
	Incorrect	221(19,8)	32(32)			
Item 23. Some special tests are used to identify pelvic floor problems	Correct	513(46)	54(54)	0,443	0,85 (0,57-1,28)	0,022
	Incorrect	602(54)	46(46)			
Item 24. In pelvic floor problems, besides the clinical examination, the patient's complaint is also important	Correct	899(80,6)	66(66)	**0,001***	2,14 (1,38-3,33)	**0,099**
	Incorrect	216(19,4)	34(34)			
Item 25. Pelvic floor exercises can prevent pelvic floor problems	Correct	786(70,5)	59(59)	**0,017***	1,66 (1,09-2,52)	**0,069**
	Incorrect	329(29,5)	41(41)			
Item 26. Physiotherapy can be used to treat pelvic floor problems	Correct	517(46,4)	53(53)	0,203	0,77 (0,51-1,16)	0,037
	Incorrect	598(53,6)	47(47)			
Item 27. Medication is the only treatment for pelvic floor problems	Correct	24(2,2)	1(1)	0,972	1,01 (0,67-1,52)	0,001
	Incorrect	1091(97,8)	99(99)			
Item 28. Surgery may not be the definitive solution for pelvic floor problems	Correct	465(41,7)	43(43)	0,801	0,95 (0,63-1,43)	0,007
	Incorrect	650(58,3)	57(57)			
Item 29. Regular physical activity and exercise are beneficial for pelvic floor problems	Correct	802(71,9)	66(66)	0,209	1,32 (0,86-2,04)	0,036
	Incorrect	313(28,1)	34(34)			

CI: Confidence Interval; *p<0,05

Function/Dysfunction:

In both the 1st item (Urinary incontinence is a pelvic floor problem) (95% CI 1.50-3.42, Crammer's V= 0.114, p<0.0001) and the 2nd item (Pelvic organ (bladder, uterus, bowel) prolapse is one of the pelvic floor problems) (95% CI 1.59-3.64, Crammer's V= 0.122, p<0.0001), it was found that females' knowledge levels were significantly higher than males'. But the males' knowledge level was higher than the females' for the 7th item (the pelvic floor is associated with the respiratory system) (95% CI 0.28-0.81, Crammer's V= 0.079, p=0.006). Other items' answers associated with this section were similar.

Risk/Etiology:

A statistically significant difference was found according to the genders. In the 10th (Pregnancy can adversely affect the pelvic floor) (95% CI 1.19-2.71, Crammer's V= 0.081, p=0.005), 11th (Having vaginal birth too many times can weaken the pelvic floor) (95% CI 1.72-4.08, Crammer's V= 0.13, p<0.0001), and 19th items (Menopause can affect pelvic floor problems) (95% CI 1.03-2.39, Crammer's V= 0.061, p=0.033), it was determined that females' correct answers were higher than males'.

Diagnosis and Treatment:

Females' knowledge rates about the diagnosis and treatment of the pelvic floor problems which are involved in the 22nd (Patient examination is important in determining pelvic floor problems) (95% CI 1.22-2.97, Crammer's V= 0.082, p=0.004), 24th (In pelvic floor problems, besides the clinical examination, the patient's complaint is also important) (95% CI 1.38-3.33, Crammer's V= 0.099, p=0.001), and 25th items (Pelvic floor exercises can prevent pelvic floor problems) (95% CI 1.09-2.52, Crammer's V= 0.069, p=0.017) were higher than males'. The other results were similar.

Participants' knowledge of pelvic floor function/dysfunction; risk/etiology; diagnosis and treatment were compared according to their education levels (Supplement 1).

The correct answers rate of the participants who had graduate, postgraduate, and doctorate education were higher than the participants who had an elementary school and high school education for the 2nd (Pelvic organ (bladder, uterus, bowel) prolapse is one of the pelvic floor problems), 6th (The pelvic floor is important in sexual health), 10th (Pregnancy can adversely affect the pelvic floor), 11th (Having vaginal birth too many times can weaken the pelvic floor), 12th (The probability of pelvic floor problems is low in obese individuals), 27th (Medication is the only treatment for pelvic floor problems), 28th (Surgery may not be the definitive solution for pelvic floor problems), 29th items (Regular physical activity and exercise are helpful for pelvic floor problems); (p<0.05). The correct response rate of the participants who had elementary school education was found to be lower than that of the other groups for the 9th item (Pelvic floor problems can have many causes); (p<0.05).

The rate of correct answers of the participants who had graduate and higher education were similar for the 1st (Urinary incontinence is a pelvic floor problem), 3rd (Fecal or gas incontinence is not a pelvic floor problem), 5th (Pelvic floor problems are not associated with low back pain), 6th (The pelvic floor is important in sexual health), 7th (The pelvic floor is associated with the respiratory system), 8th (Pelvic floor weakness can cause pelvic pain), 9th (Pelvic floor problems can have many causes), 10th (Pregnancy can adversely affect the pelvic floor), 12th (The probability of pelvic floor problems is low in obese individuals), 14th (Weight bearing continuously can damage the pelvic floor), 15th (Constipation can cause weakening of the pelvic floor), 18th (Postural disorder does not affect the pelvic floor), and 21st items (Surgical approaches to the pelvic organs (bladder, prostate gland, uterus...) can weaken the pelvic floor); (p>0.05). For the 23rd (Some special tests are used to identify pelvic floor problems) and 26th items (Physiotherapy can be used to treat pelvic floor problems), the correct response rates of the participants who had postgraduate and doctorate education were higher than the participants who had high school and graduate education (p<0.05). Lastly, the correct response rates for all of the items were similar among participants who had postgraduate and doctorate education.

No statistically significant difference was found according to the education levels for the correct answers of the 4th (Pelvic floor tension may be the cause of pelvic pain (a pain in the pelvis)), 7th (The pelvic floor is associated with the respiratory system), 8th (Pelvic floor weakness can cause pelvic pain), 13th (Smoking addiction can weaken the pelvic floor), 17th (Unconsciously compelling sports/exercise (such as jumping, lifting weights) can weaken the pelvic floor), and 24th items (In pelvic floor problems, besides the clinical examination, the patient's complaint is also important); (p>0.05).

DISCUSSION

As a result of our research, it was determined that men had less knowledge about the topics related to pelvic floor function/dysfunction, risk/etiology, diagnosis and treatment, and the awareness of those that have graduated from higher education was found to be higher. In the

statements evaluating the level of knowledge, it was remarkable that about a quarter of men and about 1 in 10 women knew nothing.

Having basic knowledge about the functioning of organs and systems enables people to apply to the right specialist without loss of time in the presence of any health problem and paves the way for early intervention of the disease. In recent years, research on the pelvic floor has drawn attention to the role of training programs on pelvic floor health and exercises in reducing the symptoms of patients, increasing their knowledge level and quality of life (Berzuk & Shay, 2015; Blanchard, Nyangoh-Timoh, Fritel, Fauconnier, & Pizzoferrato, 2021). In the literature, there are different results in studies investigating the level of knowledge about the anatomical location and function of the pelvic floor in different population groups. Blanchard et al. (Blanchard et al., 2021), reported that only 15.2% of women knew the location of the pelvic floor correctly before pelvic floor muscle training. de Freitas et al. (de Freitas et al., 2019), reported that only 24.1% of 133 women participants over the age of 18 had accurate information about the location of the pelvic floor. In a study by Neels et al. (Neels et al., 2016), the rate of knowing the location of the pelvic floor accurately was reported as 92%. In this study, it was seen that 74.1% of women and 59% of men had correct information about the anatomical location of the pelvic floor. The fact that the studies were conducted in different sample sizes and groups may be the reason for the differences in the results.

Pelvic floor dysfunctions can be hidden due to the feeling of shame in society. Wala'a and Çelenay (Wala'a & Çelenay, 2021), found that 23.5% of 370 participants felt shame due to pelvic floor problems. The fact that the individuals think of pelvic floor problems as a natural consequence of pregnancy, old age, and menopause, and in addition to this, not sharing their problems with health professionals due to the feeling of shame reduces the success of preventive health practices. This situation can also prevent patients from accessing information about the existence of different treatment methods. Only 13% of our participants stated that they heard the pelvic floor expression from friends and family; 77.2% of them reported that they heard it through television, lectures/online education, the internet, and social media. The results support that this issue is not talked about much even among individuals of the same sex in society. This situation can also be attributed to the cultural characteristics of Turkish society. Individuals can be informed about the pelvic floor by implementing training programs containing accurate information, especially through television, the internet, and social media. This situation can positively affect the individual and the health system in terms of early treatment, preventive health services, and health care costs.

The prevalence of UI varies between 23% and 70% in the literature (Arbuckle, Parden, Hoover, Griffin, & Richter, 2019; Kim, Lee, & Park, 2004; Perera, Kirthinanda, Wijeratne, & Wickramarachchi, 2014). The studies conducted in Turkey have shown that the rate of UI in women varies between 5.65% and 56.7% (Akkus & Pinar, 2016; Demir, Sen, Irer, Bozkurt, & Esen, 2017; Öztürk, Toprak, & Basa, 2012; Şimşek & Yağcı, 2022). Wala'a and Çelenay (Wala'a & Çelenay, 2021), reported that POP is seen in 3.5% of men and women over the age of 18. Yıldız et al. (Yıldız, Çakmak, Gencer, & Boyama, 2018) detected POP as 66.2% in perimenopausal women. In our study, it was determined that 25.7% of our participants had UI and 4.7% had POP. 77% of men and 53.9% of women stated that they did not have any pelvic floor problems. Our findings are in agreement with the literature. Pelvic floor disorders are common, especially in women (MacLennan et al., 2000). We think that women have a higher level of knowledge as a result of the fact that these problems are more common in women. In our study, it was determined that women had a higher level of knowledge on items related to UI and POP, which questioned the knowledge of the participants about pelvic organ dysfunction.

Fante et al. (Fante et al., 2019), reported in a systematic review that women could not identify risk factors for pelvic floor dysfunction. On the other hand, Hill et al. (Hill et al., 2017), found that pregnant women who attended antenatal education classes had a higher level of pelvic floor awareness. In our study, we found that women gave more correct answers than men, especially for items stating that pregnancy, vaginal delivery, and menopause are risk factors. We think that the reason why women have more information about these risk factors than men may be because these processes are a part of female physiology. 72.7% of our female participants gave birth; 48.89%

reported that they had experienced of vaginal delivery. One of the reasons why women had a higher level of knowledge than men in our study may be that they received information about risk factors in pelvic floor dysfunctions in pregnancy and birth preparation training and books during pregnancy and childbirth. Moreover, this research showed that the most of women and a low range of men, and also persons who had high education levels, had got a score of 20 and above from the PFHKQ. A 20-point is not a cut of value for this scale. On the other hand, it can be said that is a high knowledge level according to the total score because higher scores show better knowledge for the PFHKQ. Moreover in a study, Mamuk et al. (2022), reported that students who perceived a high level of knowledge about pelvic floor health also had significantly higher sub-scales scores (18 points for PFHKQ scale total score) in the pelvic floor functions and dysfunctions as well as pelvic floor dysfunction's etiology and risk factors. Our results showed that the pelvic floor health knowledge levels of participants, who are women with and high education level, were higher than the others. It can be said that this is an expected result according to the literature.

Exercise practices are important in pelvic floor problems. Among these applications, pelvic floor muscle training provides an improvement in symptoms in the presence of UI and POP in women (Li, Gong, & Wang, 2016; Woodley et al., 2020). In men, the effectiveness of pelvic floor muscle training in the treatment of erectile dysfunction and premature ejaculation has been demonstrated (Myers & Smith, 2019). Skaug et al. (Skaug et al., 2020) reported that in athletes 43% of women and 72.5% of men did not know how to train their pelvic floor muscles. In studies conducted in Turkey, while Mamuk et al. (Mamuk et al., 2018), reported that 91.1% of women working in the field of health had knowledge about pelvic floor muscle exercise; Kahyaoglu et al. (Süt & Küçükkaya, 2018) reported that 16.5% of 559 patients had knowledge about pelvic floor muscle exercise. 71.4% of the participants in our study reported that regular physical activity and exercise were beneficial for pelvic floor problems. In addition, 70.9% of women and 59% of men stated that exercise can prevent pelvic floor problems. Since our research was planned online, the knowledge level of the participants about pelvic floor exercise practices and exercises could not be questioned in detail. It can be considered as one of the limitations of this research.

The pelvic floor is important for sexual health in both sexes. In the literature, there are studies investigating the level of knowledge about sexual health in Turkey. Aydın Sayılan and Özbaş (Aydın Sayılan & Özbaş, 2018) determined that 4.2% of graduate students started to learn information about sexual health during their university years. Koluacik et al. (Koluaçık, 2010) reported that the knowledge level of sexual and reproductive health increased as age and grades progressed. These studies support our conclusion that those with graduate or higher education have more knowledge about the relationship between the pelvic floor and sexual health. The low level of knowledge of our participants those with elementary and high school education may be due to deficiencies in the education curricula. In Turkey, education on the reproductive system is given in the 7th grade at the elementary education level and in the 11th grade at the high school level. We think that adding basic information about the pelvic floor, sexual health, and reproductive health to these training programs in accordance with the age levels will be beneficial in terms of raising awareness in this area in general.

The strength of our study is that the level of knowledge of the pelvic floor in Turkey is questioned in both genders and all education levels.

As a result it was determined that the participants had insufficient knowledge about the relationship of the pelvic floor with other body systems, the causes, and types of pelvic problems. We think that these points may be included in the content of the education programs to be planned within the scope of preventive interventions. In addition, it can be beneficial to design the education programs according to the participants' education level, to reach the goals. In further studies, the evaluation of the knowledge level of participants including more men can be investigated and which interventions can effectively increase their pelvic floor knowledge level can also be investigated.

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Author Contribution

BBK conceived and designed the study, and conducted the research. Material preparation and data collection were performed by, HA and ET. AYÖ performed the data analysis and statistical interpretation and wrote part of the results section. The first draft of the manuscript was written by BBK and all authors commented on previous versions of the manuscript. All the authors have critically reviewed and approved the final draft and are responsible for the content.

REFERENCES

Akkus, Y., Pinar, G. (2016). Evaluation of the prevalence, type, severity, and risk factors of urinary incontinence and its impact on quality of life among women in Turkey. *International urogynecology journal*, 27(6), 887-893.

Ali, M., Hutchison, D. D., Ortiz, N. M., Smith, R. P., Rapp, D. E. (2022). A narrative review of pelvic floor muscle training in the management of incontinence following prostate treatment. *Translational andrology and urology*, 11(8), 1200–1209. https://doi.org/10.21037/tau-22-143.

Arbuckle, J. L., Parden, A. M., Hoover, K., Griffin, R. L., & Richter, H. E. (2019). Prevalence and Awareness of Pelvic Floor Disorders in Female Adolescents Seeking Gynecologic Care. *J Pediatr Adolesc Gynecol*, 32(3), 288-292. doi:10.1016/j.jpag.2018.11.010

Aydın Sayılan, A., & Özbaş, A. (2018). The Effect of Pelvic Floor Muscle Training On Incontinence Problems After Radical Prostatectomy. *Am J Mens Health*, 12(4), 1007-1015. doi:10.1177/1557988318757242.

Berzuk, K., & Shay, B. (2015). Effect of increasing awareness of pelvic floor muscle function on pelvic floor dysfunction: a randomized controlled trial. *International urogynecology journal*, 26(6), 837-844.

Blanchard, V., Nyangoh-Timoh, K., Fritel, X., Fauconnier, A., & Pizzoferrato, A. (2021). Importance of a pelvic floor lifestyle program in women with pelvic floor dysfunctions: A pilot study. *Journal of Gynecology Obstetrics and Human Reproduction*, 50(4), 102032.

Cohen, D., Gonzalez, J., & Goldstein, I. (2016). The role of pelvic floor muscles in male sexual dysfunction and pelvic pain. *Sexual medicine reviews*, *4*(1), 53-62.

de Andrade, R. L., Bø, K., Antonio, F. I., Driusso, P., Mateus-Vasconcelos, E. C. L., Ramos, S., Ferreira, C. H. J. (2018). An education program about pelvic floor muscles improved women's knowledge but not pelvic floor muscle function, urinary incontinence or sexual function: a randomised trial. *J Physiother*, 64(2), 91-96. doi:10.1016/j.jphys.2018.02.010

de Freitas, L. M., Bø, K., Fernandes, A. U. N., Duarte, T. B, & Ferreira, C. H. J. (2019). Pelvic floor muscle knowledge and relationship with muscle strength in Brazilian women: a cross-sectional study. *Int Urogynecol J*, 30(11), 1903-1909. doi:10.1007/s00192-018-3824-y

Demir, O., Sen, V., Irer, B., Bozkurt, O., & Esen, A. (2017). Prevalence and possible risk factors for urinary incontinence: a cohort study in the city of Izmir. *Urologia Internationalis*, 99(1), 84-90.

Duffield, S. J., Ellis, B. M., Goodson, N., Walker-Bone, K., Conaghan, P. G., Margham, T., & Loftis, T. (2017). The contribution of musculoskeletal disorders in multimorbidity: Implications for practice and policy. *Best practice & research. Clinical rheumatology*, 31(2), 129–144. https://doi.org/10.1016/j.berh.2017.09.004

Eickmeyer, S. M. (2017). Anatomy and physiology of the pelvic floor. *Physical Medicine and Rehabilitation Clinics*, 28(3), 455-460.

Fante, J. F., Silva, T. D., Mateus-Vasconcelos, E. C. L., Ferreira, C. H. J., & Brito, L. G. O. (2019). Do Women have Adequate Knowledge about Pelvic Floor Dysfunctions? A Systematic Review. *Rev*

Bras Ginecol Obstet, 41(8), 508-519. doi:10.1055/s-0039-1695002

Geoffrion, R., Robert, M., Ross, S., van Heerden, D., Neustaedter, G., Tang, S., & Milne, J. (2009). Evaluating patient learning after an educational program for women with incontinence and pelvic organ prolapse. *Int Urogynecol J Pelvic Floor Dysfunct*, 20(10), 1243-1252. doi:10.1007/s00192-009-0919-5

Good, M. M., & Solomon, E. R. (2019). Pelvic floor disorders. *Obstetrics and Gynecology Clinics*, 46(3), 527-540.

Han, D., & Ha, M. (2015). Effect of pelvic floor muscle exercises on pulmonary function. *Journal of physical therapy science*, 27(10), 3233-3235.

Hill, A. M., McPhail, S. M., Wilson, J. M., & Berlach, R. G. (2017). Pregnant women's awareness, knowledge and beliefs about pelvic floor muscles: a cross-sectional survey. *Int Urogynecol J*, 28(10), 1557-1565. doi:10.1007/s00192-017-3309-4

Kim, J. S., Lee, E. H., & Park, H. C. (2004). Urinary incontinence: prevalence and knowledge among community-dwelling Korean women aged 55 and over. *Journal of Korean Academy of Nursing*, 34(4), 609-616.

Koluacik, S., Gunes, G., Pehlivan, E. (2010). The Knowledge of the Students of Inonu University about the Reproductive Health and their Expectations From the Services. *Journal of İnönü University Medical Faculty*, 17(1), 7-14.

Li, C., Gong, Y., & Wang, B. (2016). The efficacy of pelvic floor muscle training for pelvic organ prolapse: a systematic review and meta-analysis. *Int Urogynecol J*, 27(7), 981-992. doi:10.1007/s00192-015-2846-y

MacLennan, A. H., Taylor, A. W., Wilson, D. H., & Wilson, D. (2000). The prevalence of pelvic floor disorders and their relationship to gender, age, parity and mode of delivery. *BJOG,*107(12),1460-1470. doi:10.1111/j.1471-0528.2000.tb11669.x

Mamuk, R., Miral, M., Dişsiz, M., Demirgöz Bal, M. (2022). Determination of nursing students' pelvic floor health knowledge levels. *Jaren*, 8(3), 149-155.

Mamuk, R., Dişsiz, M., & Dinç, H. (2018). Assessment of The Knowledge, Attitudes and Behaviors of Healthcare Professionals in Relation to Applying and Teaching Pelvic Floor Muscle Exercises. *Journal of Academic Research in Nursing*, 4(1),15-20.

Messelink, B., Benson, T., Berghmans, B., Bø, K., et al. (2005). Standardization of terminology of pelvic floor muscle function and dysfunction: report from the pelvic floor clinical assessment group of the International Continence Society. *Neurourology and Urodynamics: Official Journal of the International Continence Society*, *24*(4), 374-380.

Myers, C., & Smith, M. (2019). Pelvic floor muscle training improves erectile dysfunction and premature ejaculation: a systematic review. *Physiotherapy, 105*(2), 235-243. doi:10.1016/j.physio.2019.01.002

Neels, H., Wyndaele, J. J, Tjalma, W. A, De Wachter, S., Wyndaele, M., & Vermandel, A. (2016). Knowledge of the pelvic floor in nulliparous women. *J Phys Ther Sci*, 28(5), 1524-1533. doi:10.1589/jpts.28.1524

Öztürk, G. Z., Toprak, D., & Basa, E. (2012). The frequency and the affecting factors of urinary incontinence in women over 35 years old. *The Medical Bulletin of Şişli Etfal Hospital*, 46(4), 170-176.

Perera, J., Kirthinanda, D. S., Wijeratne, S., & Wickramarachchi, T. K. (2014). Descriptive cross sectional study on prevalence, perceptions, predisposing factors and health seeking behaviour of women with stress urinary incontinence. *BMC women's health*, 14(1), 1-7.

Skaug, K. L., Engh, M. E., Frawley, H., & Bø, K. (2020). Prevalence of Pelvic Floor Dysfunction, Bother and Risk Factors and Knowledge of the Pelvic Floor Muscles in Norwegian Male and Female Powerlifters and Olympic Weightlifters. *Journal of strength and conditioning research*, 36(10), 2800-2807. doi:10.1519/jsc.0000000000003919

Süt, H. K., & Küçükkaya, B. (2018). Knowledge and Practices of Women Pelvic Floor Muscle Exercises. *Suleyman Demirel University The Journal of Health Science*, 9(3), 15-20.

Şimşek, Ş., & Yağcı, N. (2022). Investigation of Urinary Incontinence Prevalance and Pelvic Floor Dysfunction Awareness in

Healthcare Professionals. *Journal of Adnan Menderes University Health Sciences Faculty*, 6(1), 77-84.

Wala'a, A., & Çelenay, Ş. T. (2021). Development of Pelvic Floor Health Knowledge Quiz in Turkish People: validity and reliability. *Turkish Journal of Physiotherapy and Rehabilitation*, 32(2), 122-131. https://doi.org/10.21653/tjpr.754949

Woodley, S. J., Lawrenson, P., Boyle, R., Cody, J. D., Mørkved, S., Kernohan, A., & Hay-Smith, E. J. C. (2020). Pelvic floor muscle training for preventing and treating urinary and faecal incontinence in antenatal and postnatal women. *Cochrane Database Syst Rev*,5(5),Cd007471. doi:10.1002/14651858.CD007471.pub4

Yıldız, E., Çakmak B. D., Gencer, F. K., & Boyama, B. A. (2018). Incidence and Severity of Pelvic Organ Prolapse and its Risk Factors in Perimenopausal Women. *Okmeydanı Medical Journal,* 34(2), 148-153.