

Examination of awareness, knowledge and beliefs on pelvic floor and pelvic floor muscle training in pregnant women

Gebelerde pelvik taban ve pelvik taban kas eğitimi farkındalığı, bilgi ve inanışlarının incelenmesi

Abstract

Aim: This study aimed to determine the awareness, knowledge, and beliefs of pregnant women on pelvic floor and pelvic floor muscle training.

Methods: A total of 250 volunteer women with gestational weeks ranging between 5 to 40 weeks were included in this study. After the physical and socio-demographic characteristics of the pregnant women were recorded, they were asked to complete the questionnaire assessing their awareness, knowledge and beliefs on pelvic floor and pelvic floor muscle training.

Results: It was determined that 70.4% of the pregnant women had not heard of the pelvic floor muscles before, 95.2% did not get information about pelvic floor muscles, 90.8% did not know why they needed pelvic floor muscles. It was found that 47.6% of the pregnant women believed that urinary incontinence during pregnancy was normal. In addition, 98% of the pregnant women did not think that they had sufficient information about pelvic floor muscles. It was found that knowledge, awareness and beliefs about pelvic floor and pelvic floor muscles were similar between gestational trimesters ($p > 0.05$).

Conclusion: As a result, pregnant women had insufficient awareness and knowledge levels, maladaptive beliefs about pelvic floor muscles and training. It is essential for pregnant women to know potential problems, preventive and therapeutic methods in this process which they are at risk for various pelvic floor dysfunctions. Therefore, it can be recommended that pregnant women should be routinely informed about the pelvic floor by health professionals and encouraged to participate in pelvic floor muscle training.

Keywords: Exercise; pelvic floor; pregnancy; urinary incontinence

Öz

Amaç: Bu çalışmanın amacı, gebelerin pelvik taban ve pelvik taban kas eğitimi hakkında farkındalık, bilgi ve inanışlarını belirlemektir.

Yöntemler: Çalışmaya gebelik haftası 5-40 arasında değişen 250 gönüllü gebe dahil edildi. Gebelerin fiziksel ve sosyo-demografik özellikleri kaydedildikten sonra pelvik taban ve pelvik taban kas eğitimi farkındalığı, bilgi ve inanışlarını değerlendiren anketi tamamlamaları istendi.

Bulgular: Gebelerin %70,4'ünün daha önce pelvik taban kaslarını duymadığı, %95,2'sinin pelvik taban kaslarıyla ilgili bilgi almadığı ve %90,8'inin de pelvik taban kaslarına neden ihtiyacımız olduğunu bilmediği belirlendi. Gebelerin %47,6'sının gebelik döneminde idrar kaçırmanın normal olduğuna inandığı tespit edildi. Ayrıca gebelerin %98'i pelvik taban kasları hakkında yeterli bilgi sahibi olduğunu düşünmemekteydi. Gebelik trimesterleri arasında pelvik taban ve pelvik taban kas eğitimi ilişkin bilgi, farkındalık ve inanışlarının benzer olduğu saptandı ($p > 0.05$).

Sonuç: Bu çalışmanın sonucunda gebelerin pelvik taban kasları ve eğitimine ilişkin yetersiz farkındalık ve bilgi seviyesine ve maladaptif inanışlara sahip olduğu ortaya çıktı. Gebelerin birçok pelvik taban problemi açısından risk altında oldukları bu süreçte potansiyel problemleri, önleyici ve tedavi edici yöntemleri bilmeleri önemlidir. Bu nedenle, her gebenin rutin olarak sağlık profesyonelleri tarafından pelvik taban hakkında bilgilendirilmesi ve pelvik taban kas eğitimine katılımı için teşvik edilmesi önerilebilir.

Anahtar Sözcükler: Egzersiz; gebelik; pelvik taban; üriner inkontinans

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INTRODUCTION

Pregnancy is a period during which numerous anatomical and physiological changes occur in the body's systems. The contribution of changes in the pelvic floor structures is important for the mother to adapt to pregnancy and prepare for childbirth (1). However, these changes can also result in negative consequences; weakening of the pelvic floor muscles and decreased support of pelvic organs are known effects of pregnancy on the pelvic floor (2-4). Many studies have reported that the muscles and nerves in the pelvic floor can be damaged during childbirth (5,6). The muscles located in the pelvic floor are important for fulfilling various functions such as ensuring continence, supporting pelvic organs, maintaining sexual function, and sustaining optimal intra-abdominal pressure (7-10). Common pelvic floor dysfunctions (PFDs) among women, including urinary incontinence (UI), fecal incontinence (FI), pelvic organ prolapse (POP), and sexual dysfunction, can stem from weakened or damaged pelvic floor structures due to various reasons (11,12).

Numerous studies published in the literature have demonstrated that PFDs pose a significant economic burden on both society and individual patients (13-15). Considering social aging and the increasing prevalence of PFDs, studies have indicated that the health burden or societal costs may escalate in the coming years (13,14,16). Therefore, prevention and early treatment of PFDs are of utmost importance.

Pelvic floor muscle training (PFMT) is frequently recommended as a preventive and therapeutic method for pelvic floor problems (17-20). It is known to increase muscle strength (21,22). The therapeutic and preventive effects of PFMT, especially for UI, have been proven during pregnancy (21,23).

Considering the risks posed by pregnancy and childbirth for PFDs and the known benefits of PFMT, we believe that it is important for women to have sufficient knowledge and awareness about the pelvic floor. Hill et al. have reported that if women cannot access adequate awareness and knowledge about the pelvic floor and PFMT, their participation in PFMT during pregnancy and postpartum may be low, and they may not be aware of the need to seek help for any pelvic floor problems (24). In their studies, Liu et al. have suggested that low participation in PFMT may be due

to a lack of knowledge. They have also noted that inadequate awareness levels affect attendance at prenatal classes (25).

Research has shown that pregnant women have low levels of knowledge and awareness about the pelvic floor (24,26). Upon reviewing the literature, no studies were found evaluating the awareness, knowledge, and beliefs of pregnant women in the Turkish population regarding the pelvic floor and PFMT. Examining the awareness, knowledge, and beliefs of pregnant women regarding pelvic floor health and PFMT can provide valuable information for the development of educational interventions. Therefore, the aim of this study is to evaluate pregnant women's beliefs, awareness, and knowledge levels regarding the pelvic floor, PFMT, and PFDs. Additionally, it aims to determine whether the pregnancy trimester influences pregnant women's knowledge levels or opinions regarding the pelvic floor, PFMT, and PFDs.

MATERIAL AND METHODS

This study was planned as a cross-sectional and descriptive study. A total of 250 pregnant volunteers who presented to the Department of Obstetrics and Gynecology at Abant İzzet Baysal University Faculty of Medicine participated in the research. Written and verbal consent was obtained from the pregnant women who were informed about the study. The study was approved by the Abant İzzet Baysal University Clinical Research Ethics Committee (date: 10.05.2018, decision no: 2018/85). The study was conducted between May 2018 and May 2019.

The study included pregnant women aged 18 years and older, who were able to read and write in Turkish, with gestational age between 5 and 40 weeks, and without any mental problems that would hinder cooperation and understanding. Participants with high-risk pregnancies, neurological disorders, or those employed as healthcare professionals were excluded from the study.

After recording the physical and socio-demographic characteristics of the pregnant women, they were asked to complete a questionnaire evaluating their awareness, knowledge, and beliefs regarding the pelvic floor and PFMT. This questionnaire was

constructed using questions from three different studies found in the literature (24,26,27). The translation of the questionnaire was conducted by three physiotherapists specializing in women's health. The questionnaire used contained questions related to pelvic floor anatomy and function, PFMT, pelvic floor problems, and their relationship with pregnancy. The questionnaire consisted of 48 closed-ended, open-ended, and multiple-choice questions selected according to the purpose of the study. Closed-ended questions had options such as yes/no/don't know; yes/no/partially/don't know; strongly agree/ agree/ undecided/ disagree/ strongly disagree. The questions were expressed in simple and understandable terms, avoiding complex terminology. To increase response rates and allow for a more accurate assessment, response options including "don't know" and "other" were added to account for indecision. The first 5 questions assessed the awareness of pregnant women about the pelvic floor, questions 6-39 evaluated their knowledge level about the pelvic floor, and questions 40-48 examined their beliefs regarding the pelvic floor. In the 48th question, pregnant women were asked to mark on a scale of zero to ten to evaluate their knowledge level about the pelvic floor. In this question, their beliefs about their own knowledge level were assessed.

Statistical analyses

For the statistical analysis, assuming a population of 4500 pregnant women who visited the Department of Obstetrics and Gynecology at Abant İzzet Baysal University Faculty of Medicine in the last year, with an expected knowledge and awareness level of 50%, a sample size of 250 was determined with a 5% margin of error and 90% power. This sample size was determined based on the number of individuals who met the inclusion and exclusion criteria and volunteered to participate. Chi-square test, One-Way ANOVA, or Kruskal-Wallis test were used to compare demographic characteristics, awareness, knowledge, and beliefs of pregnant women according to their trimesters, taking into account the type and distribution of the data. SPSS (ver. 18) software was used for calculations, and a significance level of $p < 0.05$ was considered statistically significant.

RESULTS

The research evaluation form and questionnaire were applied to 285 volunteer pregnant women who applied to Abant İzzet Baysal University Faculty of Medicine, Department of Obstetrics and Gynecology. 4 health-care professionals and 31 participants who did not complete the questionnaire were excluded from the study. The study was completed with 250 pregnant women.

The physical and socio-demographic characteristics of the pregnant women were given in the table (Table 1). The mean age of the pregnant women was 28.75 years, and the mean gestational age was 22.85 weeks. It was found that 24% of the pregnant women had a bachelor's degree or higher education, and 67.2% were housewives. When examining the characteristics related to incontinence, it was determined that 27.2% of the pregnant women had UI complaints. It was found that 8.4% of the pregnant women attended prenatal classes. In intergroup comparison, the participation status among pregnancy trimesters was similar.

Pelvic floor awareness and participation in pelvic floor muscle training

When examining the awareness of pregnant women regarding the pelvic floor and PFMT participation, it was found that only 16% had heard of pelvic floor muscles before, and 95.6% had not researched pelvic floor muscles. Additionally, 86.4% of the pregnant women had not heard of PFMT before, and 89.2% had not practiced PFMT before. When comparing the groups internally, it was determined that the pregnancy trimester was not a significant factor affecting the awareness level of pelvic floor and PFMT (Table 2).

Level of knowledge about pelvic floor and pelvic floor muscle training

Regarding the level of knowledge about the pelvic floor and PFMT, it was found that 44% of pregnant women knew that the pelvic floor contains muscles, and 45% knew the correct location of pelvic floor muscles in the body. Among the participants, 24.8% could describe at least one function of the muscles in the pelvic floor, while 6.8% could describe multiple functions. Additionally, 23.2% of individuals knew that pelvic floor

Table 1. Physical and socio-demographic characteristics of pregnant women

| n=250 | Mean±SD | Min | Max |
|---------------------------|---------------------------|-------|-------|
| Age (years) | 28.75±5.62 | 18 | 47 |
| BMI (kg/m ²) | 27.18±05.23 | 14.88 | 42.61 |
| Gestation weeks | 22.90±9.53 | 5.00 | 40.00 |
| | | n=250 | % |
| Gestation period | 1.trimester | 43 | 17.2 |
| | 2.trimester | 131 | 52.4 |
| | 3.trimester | 76 | 30.4 |
| Self-reported (UI) | Never | 175 | 70.0 |
| | <1/week | 30 | 12.0 |
| | Once a week | 14 | 5.6 |
| | >1/week | 19 | 7.6 |
| | Daily | 5 | 2.0 |
| | Don't know | 7 | 2.8 |
| Education level completed | Middle school/High school | 173 | 69.2 |
| | University | 77 | 30.8 |
| Working status | Not working | 168 | 67.2 |
| | Working | 82 | 32.8 |
| Economic status | 0-2500 | 89 | 35.6 |
| | 2500-5000 | 129 | 51.6 |
| | > 5000 | 32 | 12.8 |

BMI: Body mass index, UI: Urinary incontinence, n: Number, SD: Standard deviation, min: Minimum, max: Maximum, %: Percent

Table 2. Pregnant women levels of awareness about pelvic floor and PFMTs

| | | Total | Gestation Period | | | P |
|---|-------------|------------|------------------|-------------|-------------|-------|
| | | | 1.Trimester | 2.Trimester | 3.Trimester | |
| | | n (%) | n (%) | n (%) | n (%) | |
| Have you heard of your pelvic floor muscles? | Yes | 40 (16.0) | 7 (16.3) | 22 (16.8) | 11 (14.5) | 0.601 |
| | No | 176 (70.4) | 27 (62.8) | 94 (71.8) | 55 (72.4) | |
| | Do not know | 34 (13.6) | 9 (20.9) | 15 (11.5) | 10 (13.2) | |
| Have you ever received information about pelvic floor muscles? | Yes | 12 (4.8) | 3 (7.0) | 5 (3.8) | 4 (5.3) | 0.684 |
| | No | 238 (95.2) | 40 (93.0) | 126 (96.2) | 72 (94.7) | |
| Have you previously conducted research on pelvic floor muscles? | Yes | 11 (4.4) | 2 (4.7) | 5 (3.8) | 4 (5.3) | 0.884 |
| | No | 239 (95.6) | 41 (95.3) | 126 (96.2) | 72 (94.7) | |
| Have you heard the term "pelvic floor training" before? | Yes | 34 (13.6) | 7 (16.3) | 19 (14.5) | 8 (10.5) | 0.617 |
| | No | 216 (86.4) | 36 (83.7) | 112 (85.5) | 68 (89.5) | |
| | Yes | 15 (6.0) | 2 (4.7) | 7 (5.3) | 6 (7.9) | 0.883 |
| Have you ever exercise your pelvic floor muscles? | No | 223 (89.2) | 40 (93.0) | 117 (89.3) | 66 (86.8) | |
| | Do not know | 12 (4.8) | 1 (2.3) | 7 (5.3) | 4 (5.3) | |

PFMT: Pelvic floor muscle training, n: Number, %: Percent

Table 3. Pelvic floor and pelvic floor training knowledge level of pregnant women

| | | Total | Gestation period | | | P |
|--|-------------------|------------|----------------------|----------------------|----------------------|-------|
| | | n (%) | 1.Trimester n (%) | 2.Trimester n (%) | 3.Trimester n (%) | |
| Where are the pelvic floor muscles located in our body? | Correct | 113 (45.2) | 16 (37.2) | 58 (44.3) | 39 (51.3) | 0.103 |
| | Wrong | 45 (18.0) | 7 (16.3) | 20 (15.3) | 18 (23.7) | |
| | Don't know | 92 (36.8) | 20 (46.5) | 53 (40.5) | 19 (25.0) | |
| What do your pelvic floor muscles do? | Correct | 15 (6.0) | 4 (9.3) | 7 (5.3) | 4 (5.3) | 0.874 |
| | Wrong | 8 (3.2) | 1 (2.3) | 4 (3.1) | 3 (3.9) | |
| | Don't know | 227 (90.8) | 38 (88.4) | 120 (91.6) | 69 (90.8) | |
| Can the pelvic floor muscles be voluntarily controlled? | Yes | 43 (17.2) | 9 (20.9) | 21 (16.0) | 13 (17.1) | 0.748 |
| | No | 7 (2.8) | 1 (2.3) | 3 (2.3) | 3 (3.9) | |
| | Sometimes | 6 (2.4) | 0 (0.0) | 5 (3.8) | 1 (1.3) | |
| | Don't know | 194 (77.6) | 33 (76.7) | 102(77.9) | 59 (77.6) | |
| Does pregnancy cause urinary incontinence? | Yes | 91 (36.4) | 9 (20.9) | 48 (36.6) | 34 (44.7) | 0.207 |
| | No | 16 (6.4) | 3 (7.0) | 8 (6.1) | 5 (6.6) | |
| | Partially | 81 (32.4) | 15 (34.9) | 43 (32.8) | 23 (30.3) | |
| | Don't know | 62(24.8) | 16 (37.2) | 32 (24.4) | 14 (18.4) | |
| If I follow advice to do pelvic floor exercises my pelvic floor will become stronger | Strongly agree | 56 (22.4) | 11 (25.6) | 30 (22.9) | 15 (19.7) | 0.346 |
| | Agree | 99 (39.6) | 11 (25.6) | 58 (44.3) | 30 (39.5) | |
| | Undecided | 88 (35.2) | 19 (44.2) | 41 (31.3) | 28 (36.8) | |
| | disagree | 6 (2.4) | 2 (4.7) | 1 (0.8) | 3 (3.9) | |
| | Strongly disagree | 1 (0.4) | 0 (0.0) | 1 (0.8) | 0 (0.0) | |

n: Number, %: Percent

muscle function prevents UI, 6.4% knew it prevents FI, and 6% knew that internal organs are supported by pelvic floor muscles. It was found that 37.2% of pregnant women were not aware of known risk factors that negatively affect the pelvic floor, and only 1.4% could identify 5 or more factors that negatively affect the pelvic floor. Additionally, 96% of pregnant women did not know about treatments applied for pelvic floor problems. However, 62% of pregnant women believed that if they followed the recommendations for PFMT, the pelvic floor would strengthen (Table 3).

Beliefs about pelvic floor and pelvic floor muscle training

It was found that 98% of pregnant women believed their knowledge about the pelvic floor was insufficient. The pregnant women marked their own knowledge levels with an average score of 1.04 points. It was determined that one in five pregnant women believed they would experience UI during pregnancy or that their existing condition would worsen. Additionally, 47.6% of preg-

nant women believed that UI during pregnancy was a normal condition. It was found that 43.2% of pregnant women believed that PFMT treats or prevents UI. However, 60.8% of pregnant women reported that they did not believe there was any treatment for UI during pregnancy or were undecided on this matter. On the other hand, the majority of pregnant women participating in our study (72.8%) reported that they would exercise if PFMT were recommended. In intergroup comparison, it was found that pregnancy trimester was not a significant factor affecting beliefs about the pelvic floor and PFMT (Table 4).

DISCUSSION AND CONCLUSION

Studies conducted in different societies clearly indicate that women have a significant lack of knowledge and awareness about the pelvic floor (24,26,27). Additionally, it has been shown that women hold various maladaptive beliefs about the pelvic floor and PFDs (24,26). This study, conducted in Bolu, has revealed

Table 3 (Continued). Pelvic floor and pelvic floor training knowledge level of pregnant women

| | | Total | Gestation period | | | p |
|--|--------------------------|------------|------------------------|-------------------------|-------------------------|-------|
| | | n (%) | 1.Trimester | 2.Trimester | 3.Trimester | |
| | | | n (%) | n (%) | n (%) | |
| How often should you exercise your pelvic floor muscles? | Daily | 25 (10.0) | 2(4.7) | 18 (13.7) | 5 (6.6) | 0.066 |
| | Two or more times a week | 16 (6.4) | 3(7.0) | 7 (5.3) | 6 (7.9) | |
| | Once a week | 7 (2.8) | 1(2.3) | 3 (2.3) | 3 (3.9) | |
| | Never | 2 (0.8) | 2 (4.7) | 0 (0.0) | 0 (0.0) | |
| | Do not know | 200 (80.0) | 35(81.4) | 103 (78.6) | 62 (81.6) | |
| Women are more likely than men to leak urine | Agree | 74 (29.6) | 6 (14.0) ^a | 49 (37.4) ^b | 19 (25.0) ^{ab} | 0.001 |
| | Disagree | 24 (9.6) | 2 (4.7) ^a | 6 (4.6) ^a | 16 (21.1) ^b | |
| | Do not know | 152 (60.8) | 35 (81.4) ^a | 76 (58.0) ^b | 41 (53.9) ^b | |
| Leakage of urine only occurs as you get older | Agree | 7 (2.8) | 0 (0.0) ^a | 1 (0.8) ^a | 6 (7.9) ^b | 0.003 |
| | Disagree | 190 (76.0) | 28 (65.1) ^a | 107 (81.7) ^c | 55 (72.4) ^b | |
| | Do not know | 53 (21.2) | 15 (34.9) ^a | 23 (17.6) ^b | 15 (19.7) ^b | |
| Do healthy women leak urine? | Yes | 47 (18.8) | 6 (14.0) | 24 (18.3) | 17 (22.4) | 0.489 |
| | No | 102 (40.8) | 16 (37.2) | 52 (39.7) | 34 (44.7) | |
| | Do not know | 101 (40.4) | 21 (48.8) | 55 (42.0) | 25 (32.9) | |
| Do healthy women often experience pain during sexual intercourse? | Yes | 20 (8.0) | 4 (9.3) | 12 (9.2) | 4 (5.3) | 0.843 |
| | No | 113 (45.2) | 18 (41.9) | 58 (44.3) | 37 (48.7) | |
| | Do not know | 117 (46.8) | 21 (48.8) | 61 (46.6) | 35 (46.1) | |
| Do healthy women leak urine during sexual intercourse? | Yes | 9 (3.6) | 1 (2.3) | 2 (1.5) | 6 (7.9) | 0.199 |
| | No | 92 (36.8) | 15 (34.9) | 50 (38.2) | 27 (35.5) | |
| | Do not know | 149 (59.6) | 27 (62.8) | 79 (60.3) | 43 (56.6) | |

n: Number, %: Percent

Superscript letters (a, b, c) within the same row denote statistically significant differences between the corresponding groups ($p \leq 0.05$). Values that share the same letter are not statistically different from each other.

findings regarding the awareness, knowledge, and beliefs of pregnant women who presented to the hospital regarding the pelvic floor and PFMT. The study concluded that pregnant women had lower levels of knowledge and awareness about the pelvic floor and PFMT compared to the literature. Furthermore, it was determined that pregnant women held maladaptive beliefs about the pelvic floor and pelvic floor problems (Healthy women leak urine, UI during pregnancy is normal, healthy women frequently experience pain during sexual intercourse, healthy women leak urine very rarely during sexual intercourse, UI occurring during pregnancy or postpartum is temporary). It was observed that pregnancy trimester was not a significant factor influencing these results.

In our study, we first evaluated pregnant women's awareness of the pelvic floor and PFMT, as well as their

access to these topics. It was determined that only 16% of the participating women had previously heard of pelvic floor muscles. This rate was reported as 82.6% in a study conducted in Australia (24). In many studies, regular PFMT during pregnancy and postpartum has been shown to be effective in preventing and treating pelvic floor problems (28). However, it was found that the majority of the participating women in our study had not heard of PFMT before (86.4%) and had not practiced it (89.2%). These results are consistent with the findings of a study by Süt et al., which indicated that a large proportion of women in Turkey (83.5%) were not knowledgeable about PFMT (29). Research conducted in different countries has reported higher rates of awareness about PFMT and participation in PFMT compared to our study findings. For instance, Whitford et al. found that 90% of pregnant women in

Table 4. Pelvic floor and pelvic floor training beliefs of pregnant women

| | | Total | Gestation Period | | | P |
|---|-------------------|------------|------------------|-------------|-------------|-------|
| | | | 1.Trimester | 2.Trimester | 3.Trimester | |
| | | n (%) | n (%) | n (%) | n (%) | |
| Do you think you have enough information about pelvic floor muscles? | Yes | 5 (2.0) | 1 (2.3) | 3 (2.3) | 1 (1.3) | 0.717 |
| | No | 245 (98.0) | 42 (97.7) | 126 (96.2) | 75 (98.7) | |
| | Strongly agree | 21 (8.4) | 3 (7.0) | 14 (10.7) | 4 (5.3) | |
| | Agree | 87 (34.8) | 12 (27.9) | 45 (34.4) | 30 (39.5) | |
| I believe that pelvic floor exercises will prevent or improve leakage of urine | Undecided | 131 (52.4) | 26 (60.5) | 67 (51.1) | 38 (50.0) | 0.570 |
| | disagree | 9 (3.6) | 2 (4.7) | 3 (2.3) | 4 (5.3) | |
| | Strongly disagree | 2 (0.8) | 0 (0.0) | 2 (1.5) | 0 (0.0) | |
| | Strongly agree | 23 (9.2) | 5 (11.6) | 12 (9.2) | 6 (7.9) | |
| I think there is treatment or help for women who leak urine (wee) when pregnant | Agree | 75 (30.0) | 11 (25.6) | 38 (29.0) | 26 (34.2) | 0.847 |
| | Undecided | 108 (43.2) | 19 (44.2) | 55 (42.0) | 34 (44.7) | |
| | disagree | 39 (15.6) | 8 (18.6) | 22 (16.8) | 9 (11.8) | |
| | Strongly disagree | 5 (2.0) | 0 (0.0) | 4 (3.1) | 1 (1.3) | |
| If I am advised to do pelvic floor exercises I will try to do them | Strongly agree | 73 (29.2) | 12 (27.9) | 44 (33.6) | 17 (22.4) | 0.170 |
| | Agree | 109 (43.6) | 16 (37.2) | 55 (42.0) | 38 (50.0) | |
| | Undecided | 59 (23.6) | 12 (27.9) | 28 (21.4) | 19 (25.0) | |
| | disagree | 5 (2.0) | 3 (7.0) | 1 (0.8) | 1 (1.3) | |
| | Strongly disagree | 4 (1.6) | 0 (0.0) | 3 (2.3) | 1 (1.3) | |

n: Number, %: Percent

Scotland were knowledgeable about PFMT, and more than half of them (54%) had practiced PFMT in the past month (30). In a study conducted by Hill et al. in Australia, 57% of pregnant women had experienced PFMT at some point, and 11% had practiced PFMT during their current pregnancy (24). Whitford et al. (30) reported that 60.6% of women participated in antenatal education, while Hill et al. (24) reported a rate of 28.2%. In our study, only 8.4% of women attended antenatal classes. It has been confirmed in previous studies that attending any form of antenatal education positively contributes to motivation and knowledge, which in turn encourages PFMT adherence (30,31). Therefore, the differences in results among studies may be related to variations in the rates of attendance at antenatal education.

It was found that pregnant women had limited knowledge about the anatomy and function of the pelvic floor. For example, only 45% of the women knew the correct placement of pelvic floor muscles in our body, and only 24.8% could identify at least one function of the muscles in the pelvic floor. These results indicate

that a large proportion of pregnant women are unaware of the importance of pelvic floor muscles, which serve many essential functions in our body. Previous studies have also shown that women lack sufficient knowledge about the function of the pelvic floor and pelvic muscles, although these studies reported higher levels of knowledge compared to our findings. For instance, Neels et al. found that 92% of nulliparous women knew the correct location of the pelvic floor in the body, 73% could identify at least one function, and 43% could identify multiple functions (26). Sawant et al. similarly found that 97% of pregnant women knew the location of the pelvic floor in the body, and 60% could identify any function (27). Both studies had a higher proportion of participants with a high level of education compared to our study which could be one of the reasons for the reported higher knowledge rates (27,27).

Many factors throughout our lives can affect pelvic floor structures. 37.2% of pregnant women reported not being aware of known risk factors that can negatively impact the pelvic floor. In a study where women with UI were asked about the source of their

problem, pregnancy and childbirth were among the top five responses ($\geq 10\%$) (32). Among the individuals included in our study, 68.8% believe that pregnancy and 43.6% believe that childbirth can cause UI. Additionally, 47.2% of pregnant women believe that UI occurring during pregnancy or after childbirth will be temporary. However, a study reported that the effect of pregnancy and childbirth on UI is not only short-term but also persists in the long term, with the first childbirth affecting UI development even five years later (33). When comparing groups, it was observed that pregnant women, regardless of their trimester, have a significant lack of knowledge about the pelvic floor and PFMT. There are studies in the literature indicating a positive relationship between low pelvic floor knowledge in women and the prevalence of pelvic floor dysfunction (34,35). Cardoso et al. found that women athletes with sufficient knowledge about the pelvic floor had a 57% lower risk of developing UI (36). Berzuk et al. reported that advanced knowledge of the pelvic floor and PFMT would encourage women to practice exercises and help them develop appropriate strategies when experiencing any pelvic floor problems (34). Having a good understanding of the pelvic floor is crucial in the prevention and treatment of PFDs (26).

Our study found that one in every four pregnant women reported UI complaints. The majority of our population (69.6%) consisted of women in the first two trimesters. Considering the positive relationship between increased gestational age and UI development, an increase in UI complaints in later weeks of pregnancy can be expected. Therefore, it was concerning that half of the participants believed UI to be a normal condition during pregnancy, and 60.8% did not believe in or were undecided about UI treatment during pregnancy. When comparing between groups, it was found that the trimester of pregnancy was not a significant factor affecting beliefs about the pelvic floor and PFMT. Previous study results are consistent with our findings. Hill et al. (24) found that 41.4% of pregnant women, and Neels et al. (26) found that approximately one-third of nulliparous women, believed that UI was normal during pregnancy. Many studies have reported that PFMT is an effective method for preventing UI during and after pregnancy (21). McLaren

et al. found that 53% of postpartum women were unaware of the potential of PFMT to reduce UI risk (37). Similarly, in our study, 56.8% of participating pregnant women were not aware of the therapeutic or preventive effects of PFMT on UI. However, the majority of women (72.8%) stated that they would engage in exercises if PFMT were recommended and expressed interest in learning more about the pelvic floor. This underscores the need for healthcare professionals to educate all pregnant women about PFMT and ensure follow-up on its implementation, as suggested in other studies (24,26,30).

When compared to similar studies, our findings suggest that pregnant women have lower awareness and knowledge about the pelvic floor and PFMT (24,38). This could be explained by the fact that 95.2% of the women in our study had not received any information about pelvic floor muscles before, and 95.6% had never conducted any research on pelvic floor muscles. The closest results to our study were observed in the study by Neels et al., where they found that 81% of nulliparous women reported not receiving any information about the pelvic floor (26). Daly et al. found that 50% of participants received information about PFMT during routine hospital check-ups for pregnant or recently postpartum women (31). Another study conducted with postpartum women found that the rate of receiving information about the importance of PFMT during pregnancy was 81.7% (38). In a study conducted in Scotland, it was reported that expectant mothers were routinely given a pregnancy information booklet (30). These findings from our cross-sectional study provide evidence that pregnant women visiting hospitals in Bolu province are not adequately informed by healthcare professionals about the pelvic floor and PFMT, and most women are not encouraged to engage in PFMT during pregnancy.

Our study has some limitations. The majority of participants had low to moderate income levels and low levels of education. We believe that a homogeneous distribution in terms of demographic information is necessary for generalizing to the pregnant population. Another limitation is that we did not use a valid and reliable scale to assess awareness, knowledge, and beliefs about the pelvic floor and PFMT. This was

due to the lack of a Turkish validated and reliable scale at the time of this study.

As a result of this study, the majority of pregnant women living in our country have low knowledge and awareness about pelvic floor, PFMT, potential pelvic floor problems, and treatment methods, regardless of the trimester of pregnancy. Additionally, some pregnant women hold maladaptive beliefs regarding PFDs. Our study revealed that nearly all women were not adequately informed about the pelvic floor. As a result of this study, it was observed that women, especially before pregnancy, need to be further educated by physiotherapists and relevant experts regarding pelvic floor and PFMT awareness, knowledge, and beliefs. More research is needed to develop methods that effectively increase women's knowledge and awareness about the pelvic floor and motivate them to participate in PFMT.

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Conflict of interest and financial disclosure

The authors declare that they have no conflict of interest to disclose. The authors also declare that they did not receive any financial support for the study.

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