

ORIGINAL RESEARCH



Awareness of urinary incontinence in pregnant women as a neglected issue: a cross-sectional study

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Abstract

Background

Pregnancy and labor are independent risk factors for the development of urinary incontinence (UI). Although UI is common during pregnancy, it is a health problem mostly neglected by pregnant women. The high prevalence of UI in pregnancy and its effects on the postpartum period justifies the need to determine the knowledge and attitudes of pregnant women regarding the prevention and management of UI. It is necessary to increase the awareness of pregnant women about UI, educate, consultant, and integrate pelvic floor muscle training into prenatal care services. This study aims to determine the UI awareness of pregnant women and their knowledge and attitudes in this context.

Methods

This cross-sectional study was conducted with 255 pregnant women in a university hospital in Turkey between March and September 2020. Data were collected using the Incontinence Knowledge Questionnaire (PIKQ) and Urinary Incontinence Attitude Scale (UIAS).

Results

The UI prevalence was 51% during pregnancy. The mean score of PIKQ was 8.07 ± 2.64 , and only 6.3% of participants correctly answered all the questions regarding UI. The mean score of UIAS was 42.33 ± 3.48 . A positive correlation was found between UI knowledge and attitude score ($r=0.35$, $p=0.00$).

Conclusions

The results showed that although UI is prevalent during pregnancy, pregnant women's knowledge of UI is poor. Nearly half of pregnant women need information. They tend to display positive attitudes towards UI, but not sufficient to improve their health-seeking behavior. Strategies should be developed to increase pregnant women's awareness of UI and to encourage them health-seeking behaviors for the prevention/management of UI during prenatal visits.

Keywords: attitude, awareness, knowledge, pregnant women, urinary incontinence.

Introduction

Urinary incontinence (UI) is one of the most common pelvic floor disorders. Although its etiology is multifactorial, it has often been associated with pregnancy and labor in the literature^{1,2}. De Lancey et al. explained how pelvic floor structure and function can be influenced by biological and lifestyle factors in an integrated lifespan model. Accordingly, the functional reserve of the pelvic floor in childhood reaches its maximum capacity. A decline in functional reserve is normally observed with aging. Pregnancy-related changes and vaginal birth trauma (eg. muscle injury/avulsion, connective tissue tears, nerve injury, and vascular damage) can significantly reduce functional reserve. A forced pelvic floor due to pregnancy and birth trauma lowers the continence threshold of women, leading to UI³. In a study comparing the levator hiatus dimensions of primigravida women during pregnancy and postpartum period using 3D/4D transperineal USG, the resting levator hiatal area measurements of pregnant women were 14.73 ± 3.05 cm² at the 12th gestational week and 16.06 ± 3.42 cm² at the 36th gestational week. In the measurements at the 6th month postpartum, it was determined as 15.23 ± 3.34 cm² and 13.16 ± 2.40 cm², respectively, in women who had vaginal

and cesarean deliveries, according to the type of delivery.⁴ In the presence of UI, the deterioration of these structures may be exacerbated.

The prevalence of UI during pregnancy varies from 14% to 64%⁵⁻⁸. In Turkey, UI prevalence during pregnancy is between 21% and 42%⁹⁻¹². According to studies, UI prevalence increases as the trimester increases. Rogers et al. found that the UI prevalence was 33% first, 44% second, and 69% in the third trimester¹³. It has been reported that almost 17-54% of women experience their first symptoms of UI during pregnancy¹⁴. In a meta-analysis evaluating pregnancy and obstetrics-related risk factors for UI and other pelvic floor disorders later in a woman's life, the strongest risk factor was reported to be UI during pregnancy¹⁵.

UI negatively affects women's quality of life physically, psychologically, sexually and socially. In the study of Gokalp et al., it was found that the quality of life of pregnant women with UI was affected the most in the area of limitation of behavior, and the least in the psycho-social area¹⁶. Inal and Timur found that with the increase in urinary symptoms of pregnant women, the quality of life decreased in the sub-dimensions of limiting behaviors, psychosocial influence and social isolation¹⁷. In the study of Palmieri et al, it was found

that 29.2% of pregnant women complained of some sexual disorders in the third trimester of pregnancy and almost half of them experienced dyspareunia¹⁸. UI also spiritually affects women's quality of life in Muslim countries. Since sitting, standing and bending movements during prayer may cause leakage in women with UI, women should ensure body cleanliness again before completing their religious practices. In a study conducted with Egyptian women, it was stated that not being able to pray in the presence of UI was the most distressing quality of life area¹⁹. In another study conducted in Turkey, it was determined that the spiritual dimension of women's lives was adversely affected by the increase in the amount of urine leaked, and they used various coping methods such as restricting fluid intake before prayer and praying sitting down in order to perform their religious prayers²⁰. Although there is no study examining the quality of life of pregnant women with UI in a spiritual dimension, it is possible that pregnant women will be affected in this area as well.

UI is considered to be one of the most important problems affecting public health, as it not only reduces women's quality of life, but also imposes a significant burden on women and health resources²¹. 80% of women do not receive treatment or continue their lives with conservative treatments (pessary, daily pad, etc.)²². 20% of women diagnosed with UI undergo surgery and 17% of them need a second operation. It has been reported that one out of every five women will have UI or prolapse surgery at some point in their life, which may increase the cost of incontinence treatment and the surgical complication rates. Considering that pregnancy and childbirth are independent risk factors in the etiology of UI, it is predicted that the demand for care will continue to increase until 2050 with the increasing prevalence of UI in pregnancy²³.

In Turkey, a woman gives birth to an average of 2.3 children. According to the data of the European Union Statistical Office in 2020, Turkey is the third country with the highest fertility rate among 27 countries. Living in rural areas, low education and low economic status increase the fertility rate²⁴⁻²⁶. The possibility of an increase in the number of pregnancies and births during the childbearing age will also increase the risk of UI. Since UI is a preventable and well-managed health problem, it is important to educate pregnant women about UI risk factors, prevention and management from the preconceptional period, and to teach applied pelvic floor muscle exercises.

Although UI is common, it is neglected due to social and cultural attitudes, most importantly lack of knowledge, and it is not often perceived as an important health problem among Turkish women²⁷. There is no study examining the knowledge and attitudes of pregnant women on UI in Turkey. It is thought that this study will contribute to the international literature, the regulation of antenatal health policies and education by determining the UI awareness of pregnant women. Nurses, who are one of the most important health personnel to take part in antenatal training, are expected to take a more active role in training pregnant women on UI prevention and management.

Methods

Study design and setting

This cross-sectional and descriptive study was conducted in the obstetrics services of a university hospital in the west

of Turkey, between March 2020 and September 2020. Data were collected from the pregnant women using the face-to-face interview method.

Study population

Inclusion criteria were as follows: being ≥ 18 years old, having singleton pregnancy, speaking and understanding Turkish. Pregnant women with a communication problem, or having a mental, auditory disorder were excluded.

Sample size

The sample size was calculated using the sampling method for known population. The average number of pregnant women admitted to the obstetrics services of the university hospital monthly was 600. The minimum sample size calculated as 234 using the G power 3.1 program (confidence interval: 95% and power: 0.80). Therefore, the study data were collected from 255 pregnant women by conducting the power analysis.

Study instruments

Data were collected using Demographic Information Form, Prolapse and Incontinence Knowledge Questionnaire, and Urinary Incontinence Attitude Scale.

The Demographic Information Form

This form includes items related to pregnant women's descriptive characteristics, general health history, and knowledge of pregnancy and pelvic floor exercises.

The Prolapse and Incontinence Knowledge Questionnaire (PIKQ)

This was developed by Shah et al.²⁸ The reliability and validity study of the Turkish version of the PIKQ was conducted by Celenay et al.²⁹ and by Korkut et al.³⁰ The questionnaire includes two distinct parts measuring the level of knowledge regarding UI and prolapse. In this study, only the Incontinence Knowledge Questionnaire part of the PIKQ was used. Responses given to the items are rated on a three-point Likert-type scale. The responder chooses one of the following three options: "Agree", "Disagree", and "Don't know". Each item has a correct answer and the participants received "1" point if they chose the correct answer. Those who chose the wrong option or the "Don't know" option, or did not choose any option were given "0" points. The total score ranged 0-12. A higher score indicates a higher level of knowledge of UI. The Cronbach's Alpha value was 0.67.²⁹

The Urinary Incontinence Attitude Scale (UIAS)

This was developed by Yuan et al.³¹ to measure attitudes towards UI. Ugurlucan et al.³² conducted its Turkish reliability validity study. The UIAS includes 15 items and 4 subscales. Responses given to the items are rated on a four-point Likert-type scale ranging from 1 to 4 (1: Strongly disagree, 2: Disagree, 3: Agree, 4: Strongly agree). The subscales are as follows: lower urinary tract symptoms (items 1 to 4), prevention (item 5), treatment (items 6 to 10), and management (items 11 to 15). The UIAS has 7 positive items (5,8,9,11,13,14,15) and 8 negative items (1,2,3,4,6,7,10,12). To calculate the total score, the negative items are scored reversely and then the scores of the 15 items are summed to find out the overall UIAS score. The total score ranged 15-60. Higher scores indicate positive attitudes toward UI. The Cronbach's Alpha value was 0.72.³²

Table 1. Characteristics of pregnant women (n= 255)

Characteristic	N (%)
Age	
<30	139 (54.5)
≥30	116 (45.5)
Education Status	
Primary school	74 (29)
High school	80 (31.4)
University and above	101(39.6)
Employment status	
Yes	83 (32.5)
No	172 (67.5)
Health Insurance	
Yes	238 (93.3)
No	17 (6.7)
Body Mass Index (BMI) before pregnancy	
Underweight (BMI<18.5)	8 (3.1)
Normal (18.5≤BMI≤24.9)	155 (60.8)
Overweight (25≤ BMI ≤29.9)	55 (21.6)
Obese (≥30)	37 (14.5)
Gravida	
Primigravida	98 (38.4)
Multigravida	157 (61.6)
Gestational Age	
1st Trimester (Between 0 th and 13 th weeks)	19 (7.5)
2nd Trimester (Between 14 th and 27 th weeks)	84 (32.9)
3rd Trimester (Between 28 th and 40 th weeks)	152 (59.6)
Parity	
Nulliparous	107 (42)
Primiparous	97 (38)
Multiparous	51 (20)
Type of birth in previous pregnancy (n=148)	
Vaginal Delivery	78 (52.7)
Cesarean Delivery	63 (42.5)
Vaginal and Cesarean Delivery	7 (4.8)
Having a chronic disorder	
Yes	61 (23.9)
No	194 (76.1)
Using medication during pregnancy	
Yes	84 (32.9)

Data analysis

Statistical analyses were performed using the SPSS 24.0 (Statistical Package for the Social Sciences) software package. Descriptive statistical methods (frequency, mean, standard deviation, minimum and maximum values and percentage values), the Independent samples t-test, One-way ANOVA and Pearson's correlation test were used to compare the quantitative data.

Ethical considerations

The participants gave their written informed consent after

they were informed about the study. Ethical approval was obtained from the Non-Invasive Clinical Studies Ethics Committee of a university (Decision number: 2019/32-30). The study was carried out in accordance with the ethical standards established in the Declaration of Helsinki.

Results

A total of 255 pregnant women were enrolled in this study, with a mean age of 29.2 ± 5.1 years, 39.6% were university graduates and 67.5% did not work.

Table 1 Cont...

No	171 (67.1)
Smoking during pregnancy	
Yes	35 (13.7)
No	220 (86.3)
Having constipation during pregnancy	
Yes	76 (29.8)
No	179 (70.2)
Doing exercise regularly during pregnancy	
Yes	43 (16.9)
No	212 (83.1)

Table 2. Pregnant women's characteristics regarding UI

Characteristic	N (%)
UI before pregnancy	
Yes	23 (9)
No	232 (91)
UI during pregnancy	
Yes	130 (51)
No	125 (49)
UI according to trimester (n=130)	
1st Trimester (Between 0 th and 13 th weeks)	31 (24)
2nd Trimester (Between 14 th and 27 th weeks)	46 (35.3)
3rd Trimester (Between 28 th and 40 th weeks)	53 (40.7)
Frequency of UI (n=130)	
Occasionally (once a week or less)	73 (56.1)
Sometimes (two or three times a week)	26 (20)
Usually (once a day)	17 (13.1)
Always (a few times in a day)	14 (10.8)
Situations during which UI occurs*	
Coughing, sneezing, vomiting, or doing a physical activity	108 (75.5)
Without reason or urinary feeling (without feeling a need to go to the bathroom)	22 (15.4)
Reaching the toilet	7 (4.9)
Sleeping	5 (3.5)
Sexual intercourse	1 (0.7)
Pregnant women apply to healthcare services with a complaint of UI (n=130)	
Yes	44 (33.9)
No	86 (66.1)
Pregnant women apply to healthcare services if UI occurs (n=125)	
Yes	111 (88.8)
No	14 (11.2)
What can be done to prevent and manage UI? ^a	
Don't know	125 (44)
It is a normal during pregnancy, so it cannot be prevented.	17 (6)
Doing exercise might help	23 (8.1)
Kegel exercise might help	19 (6.7)
Need to use the bathroom should not be postponed	18 (6.3)
You should see a doctor	8 (2.8)
Medication/surgery/laser treatment may help	74 (26.1)
Family history of UI	
No	126 (49.4)
Mother	90 (35.3)
Relatives	34 (13.3)
Sister	5 (2)

UI Knowledge and Attitudes	Pregnant Women	
	Scores (Min-Max)	Mean±SD
Incontinence Knowledge Questionnaire (PIKQ)	0-12	8.07±2.64
Urinary Incontinence Attitude Scale (UIAS)	30-55	42.33±3.48
Lower urinary tract symptoms	4-16	10.98±1.97
Prevention	1-4	3.08±0.48

Table 2 Cont...

Treatment	9-18	13.61±1.36
Management	10-19	14.65±1.43

^aMore than one option was chosen. Note. UI, urinary incontinence; PIKQ, incontinence knowledge questionnaire; UIAS, urinary incontinence attitude scale; SD, standard deviation

Table 3. The relationship between the total and sub-dimension scores of pregnant women of PIKQ and UIAS

	PIKQ total score	
	r	P
UIAS total score	0.35	0.00 ^a
Lower Urinary Tract Symptoms	0.46	0.00 ^a
Prevention	0.30	0.00 ^a
Treatment	0.08	0.18
Management	0.07	0.91

^ap<0.05, Pearson correlation test.

Table 4. Pregnant women's awareness regarding PFME (n=255)

Characteristic	N (%)
Hearing about PFME	
Yes	95 (37.2)
No	160 (62.8)
Resources from which information about PFME was obtained (n=95)	
Internet	44 (46.3)
Healthcare professional	38 (40)
Television	8 (8.4)
Friend	5 (5.3)
Practicing PFME	
Yes	42 (16.5)
No	213 (83.5)
Willing to learn PFME	
Yes	165 (64.7)
No	90 (35.3)
Reasons for not wanting to learn about PFME (n=90)	
Could not allocate time	41 (45.5)
No complaint regarding urinary incontinence	22 (24.4)
Not caring about urinary incontinence	20 (22.4)
Believing that urinary incontinence is normal during pregnancy and it will recover after pregnancy	7 (7.7)
Where to learn PFME	
Hospital	157 (61.6)
Family health center	44 (17.3)
Information class for pregnant women	32 (12.5)
Private course/medical examination	22 (8.6)
Health professional preferred to obtain information about PFME ^a	
Doctor	126 (43.3)
Nurse	83 (28.5)
Midwife	63 (21.6)
Physiotherapist	19 (6.5)

^aMore than one option was chosen. PFME, pelvic floor muscle exercises

Table 5. Comparison of the mean scores the pregnant women obtained from the PIKQ and UIAS in terms of some variables (n= 255)

Variables	PIKQ		UIAS	
	Mean±SD	p-value	Mean±SD	p-value
Age				
<30	8.12±2.79	0.73	42.34±3.33	0.96
≥30	8.01±2.45		42.32±3.66	
Education Status				
Primary school	6.86±2.84	0.00 ^b	41.37±3.15	0.00 ^b
High school	8.16±2.67		42.31±3.48	
University and above	8.90±2.10		43.05±3.57	
Gravida				
Primigravida	8.14±2.78	0.47	43.18±3.26	0.94
Multigravida	8.03±2.55		41.80±3.33	
Parity				
Nulliparous	8.01±2.74	0.24	43.19±3.21	0.00 ^b
Primiparous	8.38±2.51		41.97±3.39	
Multiparous	7.62±2.66		41.21±3.80	
UI during pregnancy (n=130)				
Yes	8.24±2.27	0.305	42.16±3.13	0.414
No	7.90±2.98		42.52±3.81	
Pregnant women presenting to healthcare services with a complaint of UI (n=130)				
Yes	8.20±2.38	0.882	42.88±3.94	0.059
No	8.26±2.22		41.79±2.57	
Pregnant women presenting to healthcare services without a complaint of UI (n=125)				
Yes	8.31±2.32	0.020 ^a	42.89±3.68	0.002 ^a
No	4.64±5.13		39.57±3.79	
Hearing about PFME				
Yes	9.64±1.64	0.000 ^a	43.08±3.25	0.008 ^a
No	7.15±2.68		41.89±3.54	
Practicing PFME				
Yes	9.92±1.53	0.000 ^a	44.35±3.56	0.000 ^a
No	7.71±2.66		41.93±3.33	
Willing to learn PFME				
Yes	8.03±2.64	0.695	42.33±3.50	0.989
No	8.16±2.65		42.33±3.46	

^ap< 0.05, Independent sample t-test, ^bp<0.05, One-way ANOVA

Their mean BMI scores were 24.6±4.5 before pregnancy and 27.6±4.9 during pregnancy. Additionally, 61.6% were multigravida, 59.6% were in the third trimester and 52.7% had a vaginal delivery. Of the pregnant women, 23.9% had a chronic disorder and the most common chronic disorders were thyroid (37.1%) and gestational diabetes mellitus (22.9%). Most of the medications that pregnant women used regularly are vitamins, iron supplements, thyroid and diabetes drugs. Only 16.9% of the pregnant women exercised regularly (Table 1). The analysis in terms of the some variables such as education level, employment status, income status found that there were statistically significant

differences between the participants' mean PIKQ scores (p<0.05). There were also statistically significant differences between the participants' mean UIAS scores in terms of the variables such as health insurance, number of pregnancies and births, smoking, constipation status, and regular exercise during pregnancy (p<0.05).

In Table 2, the pregnant women's characteristics regarding UI were presented. Of the pregnant women, 51% had UI during the current pregnancy (n=130), and 40.7% were in their third trimester. The mean number of weeks that the pregnant women experienced UI for the first time was 21.9±9.6. Of the pregnant women with UI, 56.1% occasionally had UI,

Table 6. Pregnant women's knowledge regarding UI according to PIKQ (n=255)

Items	Mean	Agree		Disagree		Don't know	
	PIKQ	n	%	n	%	n	%
	Score						
1. Urinary incontinence is more common in young women than it is in old women.	0.61±0.03	39	15.3	157	61.6	59	23.1
2. Women are more likely than men to leak urine.	0.75±0.02	192	75.3	21	8.2	42	16.5
3. Other than pads and diapers, not much can be done to treat leakage of urine.	0.58±0.03	65	25.5	148	58.0	42	16.5
4. It is not important to diagnose the type of urine leakage before trying to treat it	0.63±0.03	20	7.8	161	63.1	74	29.0
5. Many things can cause urine leakage.	0.79±0.02	202	79.2	22	8.6	31	12.2
6. Certain exercises can be done to help to control urine leakage.	0.53±0.03	136	53.3	7	2.7	112	43.9
7. Some medications may cause urinary leakage.	0.52±0.03	134	52.5	24	9.4	97	38.0
8. Once people start to leak urine, they are never able to control their voiding again.	0.74±0.02	27	10.6	189	74.1	39	15.3
9. Doctors can do special bladder tests to diagnose urine leakage.	0.76±0.02	194	76.1	3	1.2	58	22.7
10. Surgery is the only option to treat urinary leakage.	0.73±0.02	10	3.9	187	73.3	58	22.7
11. Giving birth many times may lead to urine leakage.	0.56±0.03	143	56.1	42	16.5	70	27.5
12. Most people who leak urine can be cured or their UI can be improved with some kind of treatment.	0.85±0.02	219	85.9	5	2.0	31	12.2
Total	8.07±2.64						

75.5% had UI during coughing, sneezing, vomiting, or doing a physical activity and 66.1% did not apply to healthcare services. Also, 44% did not know what to do to prevent and manage UI. The total scores of PIKQ and UIAS were 8.07 ± 2.64 (min 0-max 12) and 42.33 ± 3.48 (min 30-max 55) respectively (Table 2). There was a significant and positive correlation between the UI knowledge and the attitude scores ($r=0.35$, $p=0.00$) (Table 3).

In Table 4, the pregnant women's awareness regarding pelvic floor muscle exercises (PFME) was presented. More than half of the pregnant women (62.8%) had not heard about PFME, and most of them (83.5%) did not do PFME. Of the pregnant women, 64.7% wanted to learn this exercise, 61.6% wanted to learn it in the hospital, and 43.3% wanted to learn it from a doctor (Table 4).

In Table 5, the comparison of the pregnant women's UI knowledge and attitude scale scores in terms of some variables were presented. There was no statistically significant difference between the PIKQ and UIAS scores in terms of UI during pregnancy. The pregnant women with UI applied to a health service and they were willing to learn PFME. PIKQ and UIAS scores of the groups who apply to healthcare services when they developed UI, and who heard about PFME and applied it were statistically higher ($p<0.05$) (Table 5). In Table 6, pregnant women's knowledge regarding UI according to PIKQ were presented. The items that pregnant women answered correctly were "most people who leak urine can be cured or improved with some kind of treatment" (85.9%), "many things can cause urine leakage" (79.2%), and "doctors can do special types of bladder testing

Table 7. Pregnant women's attitudes regarding UI according to UIAS (n=255)

Items	Mean UIAS score	Strongly Disagree		Disagree		Agree		Strongly Agree	
		n	%	n	%	n	%	n	%
		1. The initial onset of involuntary urine loss can be ignored.	2.33±0.66	10	3.9	83	32.5	144	56.5
2. UI is hard to talk about because it is an embarrassing problem.	2.69±0.72	21	8.2	152	59.6	64	25.1	18	7.1
3. UI is shameful.	2.92±0.61	29	11.4	188	73.7	28	11.0	10	3.9
4. It is the person's fault if they have UI.	3.03±0.48	44	17.3	184	72.2	18	7.1	9	3.5
5. UI may be prevented.	3.08±0.48	3	1.2	11	4.3	202	79.2	39	15.3
6. Surgical treatment of UI is unnecessary and unsafe for the elderly.	2.70±0.57	8	3.1	171	67.1	68	26.7	8	3.1
7. UI is not serious enough to warrant treatment.	2.91±0.60	26	10.2	192	75.3	26	10.2	11	4.3
8. UI can be effectively treated.	3.02±0.40	0	0	18	7.1	213	83.5	24	9.4
9. UI can be treated with medications.	2.83±0.54	1	0.4	60	23.5	175	68.6	19	7.5
10. UI is frustrating to take care of.	2.14±0.68	4	1.6	69	27.1	141	55.3	41	16.1
11. Any urinary problem should be reported when health problems are assessed.	3.15±0.45	1	0.4	6	2.4	200	78.4	48	18.8
12. Managing UI is time-consuming.	2.32±0.66	22	8.6	134	52.5	93	36.5	6	2.4
13. Family support is important in dealing with UI.	2.90±0.66	4	1.6	57	22.4	152	59.6	42	16.5
14. UI is manageable.	3.14±0.42	0	0	7	2.7	203	79.6	45	17.6

to diagnose urine leakage" (76.1%). The items that pregnant women answered correctly the least were "some medications may cause urinary leakage" (52.5%), "certain exercises can be done to help to control urine leakage" (53.3%), and "giving birth many times may lead to urine leakage" (56.1%) Only 6.3% (n=16) of the participants correctly answered all of the items in the UI knowledge scale (Table 6).

In Table 7, the pregnant women's attitudes regarding UI according to UIAS were presented. The items and mean scores indicating that the pregnant women tended to display positive attitudes towards UI in the study were "any urinary problem should be reported when health problems are assessed" (3.15±0.45), "UI is manageable" (3.14±0.42) and "UI hinders social interactions" (3.11±0.72). The items and mean scores indicating that the pregnant women had insufficient knowledge to improve their health-seeking behavior attitudes regarding UI in the study were "UI is frustrating to take care of" (2.14±0.68), "managing UI is time-consuming" (2.32±0.66), and "the initial onset of involuntary urine loss can be ignored" (2.33±0.66) (Table 7).

Discussion

This study provides important information about pregnant women's knowledge and attitudes toward UI. The results show that there is poor knowledge but positive attitudes in UI among pregnant women. As the pregnant women's level of knowledge increased, they displayed more positive attitudes towards the prevention and management of UI.

In this study, one of every two pregnant women had UI

(51%). The prevalence of UI during pregnancy ranged from 14% to 64%⁵⁻⁸. Similarly, Inal and Timur¹⁷ found that the UI prevalence during pregnancy was 52.6%, consistent with the finding of our study. UI prevalence may differ depending on the measurement tool used, persons' statements, gestational week, and current risk factors. The high prevalence of UI is an important finding and may be due to the fact that women do not have enough knowledge about how to prevent UI or how to manage their symptoms during pregnancy. Thus, only three of every ten women with UI (33.9%) applied to health care services due to UI. Aksoy et al³³. found that of the pregnant women with UI, 24.4% visited a health institution, and only two received UI treatment. Moossdorff-Steinhauser et al³⁴. found that 13.1% of the pregnant women with UI visited a health institution, and these women had higher UI knowledge scores compared to those who did not visit a health institution. Therefore, nurses have significant roles in taking a detailed medical history from pregnant women, detecting risk factors, recommending lifestyle modifications and behavioural interventions such as fluid intake, smoking cessation, PFME etc.

International guidelines recommend that all pregnant women should be taught PFME to prevent and manage UI in the prenatal and postnatal period regardless of the continence, which has been recommended on the level of Proof A^{35,36}. In this study, the rates of the pregnant women who were knowledgeable of, heard of and performed PFME for the prevention and management of UI were 6.7%, 37.2%, and 16.5%, respectively. In their study conducted to investigate

awareness, compliance, and barriers regarding PFME, Bayat et al.³⁷ found that 27% of the pregnant women were aware of PFME, and 73% did not have any knowledge regarding PFME. Temtanakitpaisan et al.³⁸ found that only 10.7% of the women were aware of PFME during pregnancy but performed PFME irregularly. Hill et al.³⁹ found that only 11% of the pregnant women performed PFME. Our results are consistent with those in the literature. Reasons for not performing PFME indicated in previous studies were forgetting, feeling tired, being busy/having excessive care burdens, not knowing or understanding PFME, and giving priority to the fetus's health during pregnancy⁴⁰. Also, another reason pregnant women do not perform PFME could be that it is not a routine procedure conducted during antenatal follow-ups within the scope of health policies. In addition to the physical and hormonal changes that occur in the lower urinary system with pregnancy, the lack of knowledge and practice of PFME to support the pelvic floor may have increased the prevalence of UI in this study. However, when pregnant women are educated about UI risk factors and the positive effects of PFME in the prevention and treatment of UI, they may become more willing to do the exercises.

In this study, the pregnant women's knowledge regarding UI was poor. Only six out of ten women answered all the items correctly. They mostly answered the following items correctly: various factors may cause UI (79.2%), there are special tests to detect UI (76.1%), and UI is curable (85.9%). Liu et al.⁴¹ found that the UI knowledge scores of the pregnant women in the third trimester were low and O'Neil et al.⁴², and Neels et al.⁴³ found that the pregnant women's knowledge regarding PFD was inadequate. Antenatal education classes might be an opportunity for them to discuss problems regarding UI and to replace their misinformation with the correct one. If pregnant women know the UI risk factors and, aware of its diagnosis and treatment, their health-seeking behaviors and attitudes toward UI might be positively affected.

Attitudes are formed as a result of experience and learning and guide behavior. Knowledge alone is not enough to develop positive behaviors; a positive attitude is also necessary to put knowledge into practice. In this study, the pregnant women tended to have a positive attitudes towards UI, and their UIAS mean score was above the average. Also, their attitude scores increased as UI knowledge scores increased. In studies showed that education significantly affects acquisition of positive attitudes toward UI. Hill et al.³⁹ found that the pregnant women who participated in the antenatal education had a higher likelihood to perform PFME. Muhammad et al.⁴⁴ found that pregnant women's knowledge and attitude scores and rate of performing exercises increased after receiving PFME education. Therefore, nurses' educator role is very important since they often spend time with pregnant women. They should inform pregnant women about UI during pregnancy or the postpartum period, and they should teach them how to perform PFME to strengthen their pelvic floor muscles.

Most of the participants thought that problems regarding urine should also be questioned while evaluating health issues and they believed that UI could be overcome. These positive attitudes toward UI may increase women's cooperation with health professionals as well as their readiness for treatment and compliance with treatment. Also, Gumussoy et al.⁴⁵ found that the pelvic floor muscle strength of multiparous women who delivered vaginally was low and stated that

health professionals should pay attention to the urogenital symptoms of women during pregnancy and postpartum period. Another positive attitude is that most pregnant women consider UI as a barrier affecting social life. Similarly, in previous studies, it was indicated that UI during pregnancy physically, socially, and psychologically affected negatively of quality of life^{10,13,16}. Therefore, knowing that their quality of life will be affected when UI cannot be prevented or managed may increase their health-seeking behaviors.

In this study, pregnant women had some negative attitudes for instance, they thought that UI could be ignored, and that UI during pregnancy was normal. Hill et al.³⁹ found that more than 40% of the participants considered UI during pregnancy normal. Aksoy et al.³³ found that women thought that UI was a temporary condition, and it could go away on its own after pregnancy. Women's normalizing and/or ignoring UI may increase symptoms, and therefore, decrease quality of life and cause treatment to be delayed. The low rate of women with UI who applied to healthcare services in the study might be due to their lack of knowledge about UI and perceptions that UI during pregnancy was normal.

This study has some limitations. First, it is a single-centered study, which could affect the generalizability of the results. Second, we used the verbal statements of the pregnant women in the determination of UI, instead of using a valid and reliable measurement tool. The time in which the data was collected coincided with the Covid-19 process. So, another limitation of the study was that fewer antenatal visits were paid the pregnant women and the duration of the visits was short within the scope of pandemic measures.

Conclusion

This study results highlighted two important points. First, one of every two pregnant women had UI. Second, pregnant women's knowledge of UI was poor, although UI prevalence was high, and they tended to display positive attitudes, but not sufficient to improve their health-seeking behavior. Additionally, the rate of pregnant women who knew, heard and applied PFME for the prevention of UI was low.

A lack of knowledge may result in delayed or no treatment for the prevention and management of UI in this population. Education can change the attitudes of these women, improve their awareness of UI symptoms and encourage them to apply healthcare services. Therefore, nurses and midwives providing health education and counseling services within a multidisciplinary team beginning from the pre-conceptional period should give information about protection and reducing risk factors for UI, which might help women raise their awareness of UI during pregnancy. Encouraging pregnant women to participate in the antenatal classes / pregnant women schools, education programs regarding UI in health centers such as family health centers, teaching PFME in practice, and preparing educational materials and visuals for pregnant women can improve their knowledge and attitude regarding UI. Finally, considering the uncertainty about how long the current COVID-19 infection will last, it may be beneficial to support educations remotely with applications such as mobile applications, tele-health and tele-nursing.

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