



Research Article

Symptom Severity and Its Impact on Daily Life in Women with Urinary Incontinence: A Cross-sectional Study

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Abstract

Objective: This study aims to determine the severity of symptoms, their impact on daily life, and the associated factors in women with urinary incontinence (UI).

Methods: A cross-sectional, descriptive study was conducted among women with UI in the province of Istanbul, involving 161 women aged 40 years and older who had given birth at least once between June and September 2021. Data were collected by using a questionnaire form, the Urogenital Distress Inventory (UDI-6), and the Incontinence Impact Questionnaire (IIQ-7).

Results: The mean age of women was 57.08±9.86. Women's mean score of the UDI-6 and mean score of the IIQ-7 were found to be 46.30±20.61 and 34.45±22.98 respectively. A significant difference was found between the women's UDI-6 scores and IIQ-7 scores and education, having a vaginal operation, constant drug use, and the behavior at the first appearance of UI ($P<0.05$). A positive correlation was found between the UDI-6 and the IIQ-7 ($r=0.658$; $P=0.000$).

Conclusion: The daily life of women with high severity of UI symptoms was more adversely affected. As age, weight, body mass index, the number of births, the number of miscarriages, the number of pregnancies, and the duration of UI increased, the severity of symptoms also increased.

Keywords: urinary incontinence, Urogenital Distress Inventory (UDI-6), Incontinence Impact Questionnaire (IIQ-7)

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1 INTRODUCTION

Urinary incontinence (UI) is a common condition in the general population, especially with increasing age, and

it reduces the quality of life. It affects 10% to 20% of all women, and incontinence occurs in 77% of women over 60 years of age^[1]. Any involuntary leakage of urine is called UI^[2].

The main risk factors for UI are age, sex, race, smoking, birth, menopause, medications, family history, a history of hysterectomy, pelvic prolapse, obesity, and constipation. Age, sex, and birth are accepted as the most important variables among the risk factors. Furthermore, studies have emphasized the importance of increasing women's awareness of UI in terms of preventable and modifiable risk factors^[3,4]. According to studies, the incidence and severity of UI increase with more frequent and operative deliveries, as well as advancing age^[5].

UI profoundly affects women physically, socially, psychologically, and economically^[6]. Women with UI problems often behave timidly; these issues can lead to social isolation and negatively impact their quality of life. Although women see UI as a health problem, they are hesitant to seek help, share the problem with other people, and apply to a health institution. While the feeling of distress increases in women with incontinence problems, their self-confidence decreases significantly; they do not find themselves attractive and they avoid communicating with other people^[7-9].

There are various studies in the literature on UI in women. However, the prevalence cannot be clearly determined since women do not apply to health institutions, do not express their problems, and find the situation embarrassing^[6,9-11]. Therefore, this study was conducted to determine symptom severity, its impact on daily life and associated factors in women with UI.

2 MATERIALS AND METHODS

2.1 Study Design

A cross-sectional, descriptive study was conducted with women with UI in Istanbul between June and September 2021. The "Strengthening the Reporting of Observational Studies in Epidemiology Statement" was used in the design, planning, implementation and reporting of the study.

2.2 Study Population

Regions with different socioeconomic and cultural characteristics in Istanbul were selected as the study location. In the study sample, the G*Power program was used to determine the sufficient number for the obtained data to represent the population. In the study, the required minimum sample size was found as 100 with a study power of 80% by taking type I error level as 5% and type II error level as 20%. The study was completed by reaching 161 women with UI between the dates of data collection.

The inclusion criteria were being a woman living in Istanbul between June and September 2021, having UI, being aged 40 years and above, and having given at least one birth. The exclusion criteria were not being willing to participate in the study and having a language problem.

2.3 Data Collection

Three tools were used in the data collection. The first

of these tools was the questionnaire prepared by the researchers in line with the literature^[2,8-11] to determine the descriptive characteristics of women. The questionnaire consisted of a total of 24 questions, including 10 socio-demographic questions about age, education, employment, income status and habits; six obstetric questions about pregnancy, curettage, abortion and delivery; six questions about health status; two questions about the duration of UI and behaviors when UI first appeared. The second tool was the Urogenital Distress Inventory (UDI-6), used to determine the severity of UI symptoms. The third tool used was the Incontinence Impact Questionnaire (IIQ-7), used to determine the impact of UI on daily life.

2.3.1 UDI-6

The 30-question long forms of the UDI-6 were developed by Shumaker et al.^[12] in 1994. The short forms of these questionnaires, the UDI-6, were created by Uebersax et al.^[13] in 1995. The UDI-6, a multidimensional, self-administered questionnaire, consists of six questions. For each item on the UDI-6, the options are: 0 = none, 1 = mild, 2 = moderate, 3 = severe. The UDI-6, as one of the Likert-type questionnaires, comprises three sub-dimensions: irritative symptoms (questions 1 and 2), stress symptoms (questions 3 and 4), obstructive / disturbing symptoms or symptoms causing difficulty in voiding (questions 5 and 6). A minimum score of 0 and a maximum of 18 points can be obtained from the UDI-6. A lower score on the UDI-6, which assesses the severity of UI symptoms, indicates milder symptoms. Cronbach's alpha coefficient for the UDI-6 was calculated to be 0.74^[14]. In this study, the Cronbach's alpha coefficient of the UDI-6 was found to be 0.85.

2.3.2 IIQ-7

The 19-question long forms of the IIQ-7 were developed by Shumaker et al.^[12] in 1994. The short forms of these questionnaires, the IIQ-7, were created by Uebersax et al.^[13] in 1995. The IIQ-7, a multidimensional, self-answered questionnaire, consists of seven questions. For each item on the IIQ-7, the options are: 0 = none, 1 = mild, 2 = moderate, 3 = severe. The IIQ-7 comprises four sub-dimensions: physical activity (questions 1 and 3), travel (question 4), social activity (question 5), and emotional health (questions 6 and 7). Therefore, in addition to the total score of both forms, sub-dimension scores are also available. A minimum score of 0 and a maximum of 21 points can be obtained from the IIQ-7. A lower score on the IIQ-7, indicating the impact of UI on daily life, suggests a lesser effect on the quality of life. Cronbach's alpha coefficient for the whole questionnaire was calculated at 0.87^[14]. In this study, the Cronbach's alpha coefficient of the IIQ-7 was found to be 0.87.

The total score of both forms, UDI-6 and IIQ-7, is calculated over 0-100 points. The average score obtained is multiplied by 33.3 and converted into a percentage. The Turkish validity and reliability studies of the UDI-6 and IIQ-7 were conducted by Cam et al.^[14] in 2007.

2.4 Data Collection Method

Informed voluntary consent was obtained by explaining the purpose of the study to the women who met the sample selection criteria. The data collection tools were filled out using the face-to-face interview method with women, and each data collection process was completed in 10-15min on average.

2.5 Statistical Analysis

The statistical analysis of the data obtained from the study was conducted using statistical software. The data were compared using the descriptive statistical analyses, the Mann-Whitney U test and the Kruskal-Wallis test. Statistical significance was considered as $P < 0.05$. Correlation analysis was employed to examine the relationship between continuous variables, while regression analysis utilized the ENTER method.

2.6 Ethical Approval Statement

The Ethics Committee Approval (NO. 25.05.2018/51) and scale permission from the scale authors were obtained before starting data collection. The rules of the Declaration of Helsinki were complied with during the study. By paying attention to the principle of voluntariness in the study participation, information about the purpose of the study was given before the study, and verbal and written informed consent forms were obtained from the women.

3 RESULTS

The mean age of the women participating in this study was 57.08 ± 9.86 (range: 40 to 86), weight 74.79 ± 11.05 (range: 54 to 120), height 160 ± 0.06 (range: 150 to 172), body mass index (BMI) 29.14 ± 4.48 (range: 21 to 47), number of births 3.47 ± 1.59 (range: 1 to 9), number of miscarriages 0.53 ± 0.65 (range: 0 to 3), number of curettages 0.32 ± 0.71 (range: 0 to 3), total number of pregnancies 4.27 ± 1.97 (range: 1 to 12), and the duration of UI was 32.81 ± 28.26 months (range: 3 to 200 months). The mean score of the IIQ-7 was 34.45 ± 22.98 (range: 0 to 99.90), and the mean score of the UDI-6 was 46.30 ± 20.61 (range: 0 to 99.90).

Table 1 illustrates the comparison between women's UDI-6 and IIQ-7 scores along with their descriptive characteristics. The comparison revealed a significant relationship between UDI-6 scores and factors such as education, menopause, vaginal operation, continuous drug use, and behavior at the onset of UI ($P < 0.05$). Similarly, a significant correlation was found between IIQ-7 scores and variables including education, income level, smoking, vaginal operation, continuous drug use, and behavior at the initial occurrence of UI ($P < 0.05$).

In Table 2, a positive correlation was found between the UDI-6 score and the IIQ-7 score ($r = 0.658$; $P = 0.000$). It was revealed that as the women's UDI-6 score, in

other words, the severity of UI symptoms, increased, the IIQ-7 score, i.e., the impact on daily life, also increased. There was a positive correlation found between the UDI-6 scores and age, weight, BMI, number of births, number of miscarriages, number of pregnancies, and the duration of UI, and a negative correlation was found with height (Table 2). A positive correlation was found between the IIQ-7 score and age, weight, BMI, and the number of miscarriages (Table 2).

Linear regression analysis was conducted to determine the effect of some variables that might affect the UDI-6, i.e., symptom severity, in women with UI. In the regression analysis, the dependent variable was the UDI-6, and the independent variables were age, BMI, the number of births, and the number of pregnancies. Since age, BMI, the number of births and the number of pregnancies did not give significant results in the *t*-test, the model could not be created. Linear regression analysis was conducted to determine the effects of some variables that might affect the IIQ-7, i.e., daily life, in women with UI. In the regression analysis, the IIQ-7 was designated as the dependent variable, while the UDI-6, age, BMI, number of births, and number of pregnancies were included as independent variables. Subsequently, age, BMI, number of births, and number of pregnancies were excluded from the model due to their lack of significance in the *t*-test. In the regression analysis, the severity of the relationship between the IIQ-7 as the dependent variable and the UDI-6 as the independent variable was evaluated by employing the ENTER method. According to the regression analysis results, it was found that a one-unit increase in the UDI-6 score increased the IIQ-7 score by 0.634 points. It was revealed that the UDI-6 alone explained 40.2% of the total variance of the dependent variable IIQ-7 (Table 3).

4 DISCUSSION

Although UI is not a life-threatening health problem, it significantly affects daily life adversely. It may also cause the interruption of social relations, psychological distress such as embarrassment and frustration, and outcomes that require hospitalization, such as deterioration of skin integrity and urinary infections^[6,8]. This study was conducted to determine symptom. UI is a multifaceted phenomenon. Therefore, women's perspective, symptom severity, socio-economic evaluations, and quality of life measurements should be included in its evaluation^[3,15].

In the literature, studies revealing the relationship between education levels and UI differ. In the study conducted by Akkus and Pinar^[10], it was reported that UI was less common in women with higher education and income levels. Similarly, in a systematic review and meta-analysis study, it was reported that education is a highly effective factor in the severity of UI and the search for a treatment method^[3]. In the present study, as the level of

Table 1. Comparison of the Women’s UDI-6 and IIQ-7 Scores and Descriptive Characteristics (n=161)

Variables	n	%	UDI-6 Total Score Mean±SD (min-max)	IIQ-7 Total Score Mean±SD (min-max)
Marital status				
Married	135	83.9	20.27±1.75 (00.00-99.90)	35.59±23.64 (00.00-99.90)
Single	26	16.1	22.22±4.36 (22.20-94.35)	28.54±18.45 (04.76-66.60)
Z			-0.849	-1.399
P			0.396 [†]	0.162 [†]
Educational status				
Literate ^a	40	24.8	55.78±20.34 (11.10-94.35)	38.88±20.06 (09.51-90.39)
Elementary education ^b	71	44.1	46.35±20.94 (00.00-83.25)	42.88±24.66 (00.00-99.90)
Middle education and higher ^c	50	31.1	38.63±17.26 (16.65-99.90)	18.93±13.05 (00.00-66.60)
Chi-square			17.906	39.021
P			0.000 ^{**}	0.000 ^{**}
			c<a,b ^{***}	c<a,b ^{***}
Employment status				
Employed	35	21.7	43.13±21.16 (16.65-72.15)	34.39±20.74 (09.51-66.60)
Unemployed	126	78.3	47.18±20.45 (00.00-99.90)	34.47-23.64 (00.00-99.90)
Z			-1.225	-0.041
P			0.221 [†]	0.967 [†]
Income level				
Income less than expenses ^a	25	15.5	40.18±15.72 (22.20-83.25)	33.49±17.01 (04.76-66.60)
Income equal to expenses ^b	103	64.0	48.01±21.96 (00.00-94.35)	38.06±24.93 (00.00-99.90)
Income more than expenses ^c	33	20.5	45.58±19.01 (11.10-99.90)	23.93±16.88 (04.76-57.09)
Chi-square			3.519	9.066
P			0.172 ^{**}	0.011 ^{**}
				b>c ^{***}
Social security				
Social Security Institution	148	91.9	46.09±21.21 (00.00-99.90)	34.43±23.62 (00.00-99.90)
Green card	9	5.6	46.87±08.82 (27.75-61.05)	32.25±08.83 (23.79-52.33)
Not available	4	2.5	52.73±18.41 (33.30-77.70)	40.44±23.47 (09.51-66.60)
Chi-square			1.177	0.704
P			0.555 ^{**}	0.703 ^{**}
Mode of delivery				
Vaginal delivery	147	91.3	47.16±21.05 (00.00-99.90)	34.43±23.46 (00.00-99.90)
Cesarean section	14	8.7	37.26±12.40 (16.65-61.05)	34.60±17.84 (4.76-66.60)
Z			-1.660	-0.441
P			0.097 [†]	0.659 [†]
Giving birth to a large baby (4000g and above)				
Yes	72	44.7	45.56±20.87 (00.00-94.35)	30.92±16.79 (00.00-90.39)
No	89	55.3	46.89±20.50 (11.10-99.90)	37.31±26.73 (00.00-99.90)
Z			-0.167	-0.898
P			0.867 [†]	0.369 [†]
Menopause				
Yes	98	60.9	49.50±20.79 (00.00-99.90)	35.05±18.89 (00.00-90.39)
No	63	39.1	41.32±19.45 (11.10-77.70)	33.53±28.34 (00.00-99.90)
Z			-2.479	-1.680
P			0.013 [†]	0.093 [†]

Constipation				
Yes	72	44.7	49.41±20.52 (22.20-99.90)	32.18±20.11 (04.76-90.39)
No	89	55.3	43.78±20.45 (00.00-83.25)	36.29±25.02 (00.00-99.90)
Z			-1.141	-0.777
P			0.254 [*]	0.437 [*]
Smoking				
Yes	41	25.5	43.05±19.85 (11.10-99.90)	27.96±17.09 (04.76-99.90)
No	120	74.5	47.41±20.83 (00.00-94.35)	36.67±24.34 (00.00-99.90)
Z			-0.955	-2.029
P			0.340 [*]	0.042 [*]
Having vaginal surgery				
Yes	62	38.5	53.26±17.96 (22.20-83.25)	48.26±25.27 (09.51-99.90)
No	99	61.5	41.93±21.04 (00.00-99.90)	25.80±16.38 (00.00-76.11)
Z			-3.619	-5.554
P			0.000 [*]	0.000 [*]
Hormone replacement therapy				
Yes	21	13.0	42.02±08.34 (33.30-66.60)	25.83±17.52 (04.76-57.09)
No	140	87.0	46.94±21.81 (00.00-99.90)	35.75±23.47 (00.00-99.90)
Z			-1.084	-1.561
P			0.278 [*]	0.119 [*]
Chronic disease				
Yes	33	20.5	53.31±23.50 (22.20-99.90)	35.03±14.65 (09.51-66.60)
No	128	79.5	44.49±19.49 (00.00-83.25)	34.30±24.72 (00.00-99.90)
Z			-1.584	-0.997
P			0.113 [*]	0.319 [*]
Continuous drug use				
Yes	36	22.4	60.13±23.23 (22.20-99.90)	44.66±28.30 (09.51-99.90)
No	125	77.6	42.31±18.01 (00.00-83.25)	31.51±20.41 (00.00-90.39)
Z			-3.872	-2.366
P			0.000 [*]	0.018 [*]
Behavior at the first occurrence of urinary incontinence				
I paid no attention ^a	65		44.06±21.58 (11.10-99.90)	24.66±17.91 (00.00-76.11)
I shared it with my neighbor / friend ^b	32		56.37±17.44 (11.10-77.70)	53.52±27.98 (04.76-99.90)
I shared it with my husband / family ^c	29		37.13±11.21 (00.00-49.95)	31.33±14.58 (00.00-57.09)
I didn't share it with anybody ^d	35		48.84±23.62 (16.65-94.35)	37.79±21.15 (9.51-66.60)
Chi-square			16.828	29.448
P			0.001 ^{**}	0.000 ^{**}
			b>a,c ^{***}	a<b,d; b>c ^{***}
Total	161	100		

Notes: Statistical significance was accepted as $P < 0.05$. ^{*}Mann-Whitney U. ^{**}Kruskal-Wallis. ^{***}Post hoc.

Table 2. The Relationship between the Women’s UDI-6 and IIQ-7 Total Scores and Continuous Variables (n=161)

Variables	UDI-6		IIQ-7	
	r	P	r	P
UDI-6	1.000	-	0.658**	0.000
IIQ-7	0.658**	0.000	1.000	-
Age	0.220**	0.005	0.164*	0.038
Weight	0.211**	0.007	0.246**	0.002
Height	-0.212**	0.007	-0.072	0.361
BMI	0.310**	0.000	0.290**	0.000
Number of births	0.188*	0.017	0.091	0.250
Number of miscarriages	0.213**	0.004	0.176*	0.026
Number of pregnancies	0.211**	0.007	0.108	0.175
Duration of urinary incontinence	0.167*	0.035	0.024	0.758

Notes: Spearman’s correlation test; *P<0.05, **P<0.01.

Table 3. Results of Linear Regression for the UDI-6 Score

Model	Unstandardized Coefficients		Standardized Coefficients	t	P	95.0% Confidence Interval for B	
	B	SE	Beta			Lower Bound	Upper Bound
Constant	1.705	3.462		0.492	0.623	-5.133	8.543
UDI-6	0.707	0.068	0.634	10.348	0.000	0.572	0.842

Notes: Dependent variable: IIQ-7. R=0.634. R-squared = 0.402. F=107.080. P=0.000.

education increased, the severity of symptoms decreased, and daily life was less affected. With education, it may be possible that women’s awareness increases, and they are less affected. In this study, the daily life of people whose income is equal to their expenses is more affected. As the income level increases, the impact is less. This can be explained by access to health services and high general standards.

UI, which is common among geriatric problems, can cause problems such as social isolation, depression, skin wounds, urinary tract infections, and falls, especially in older adults^[3,16,17]. As in the age factor, weight and increased BMI also increase the risk and severity of UI^[10,18]. A positive correlation was detected between the severity of symptoms (UDI-6 scores) and their impacts on daily life (IIQ-7 scores) of the women participating in the study and age, weight, and BMI. The results of the studies in the literature report that the symptoms and incidence of UI increase with age and affect the quality of life^[16,17,19]. Studies have demonstrated that an increase in weight and BMI is associated with the occurrence of UI and symptom severity^[3,16,17]. It is observed that the results in the literature are in parallel with the study findings, and women should be recommended to develop healthy lifestyle behaviors (nutrition, weight control, and Kegel exercise, etc.) at an early age. It should not be forgotten that weight control becomes more difficult with advancing age.

A study reported that all women with UI had a chronic disease, but there was no correlation between UI and quality of life^[20]. In this study, the severity of symptoms increased, and daily life was more affected in those who used drugs continuously. It is observed that the study results are different from the literature. This suggests that it originates from differences in UI perceptions and the severity of symptoms in the studied groups.

It is known that the pelvic floor slides down due to pregnancy, and the contractions of the pelvic floor muscles are significantly reduced. It is reported that as the number of pregnancies increases, the risk and severity of UI increase^[5,21]. A positive correlation was found between the severity of UI symptoms (UDI-6 scores) and their impacts on daily life (IIQ-7 scores) of the women participating in the study and the number of births, miscarriages, and pregnancies. Aksoy and Topal^[16] also determined in their study that UI was associated with multiparity, multigravida, episiotomy, a family history of UI, vaginal deliveries, and macrosomia (>4kg). In the study carried out by Çiftçi and Günay^[22], the prevalence of UI was stated as 25.3% in those without a history of pregnancy, 37.1% in those with a history of pregnancy, and 79% in those with more than one pregnancy. The study findings are similar to the literature in terms of UI risk, and it is recommended to perform pelvic floor muscle exercises, especially during pregnancy, to reduce its risk^[5,23].

A study reported that the UI problem was encountered in all patients who had undergone gynecological operations^[24]. In this study, the severity of symptoms increased and daily life was more affected in those who underwent vaginal operation for the diagnosis and treatment of gynecological diseases. The results are parallel with the literature.

Menopause and postmenopause are an important phase of a woman's life. In postmenopause, urogenital atrophy is experienced due to the decrease in estrogen and progesterone hormones, and depending on this situation, weakening and incontinence are observed in the urogenital support tissues^[5,21]. In their study, Demir and Beji^[25] determined that women who had entered menopause had UI complaints more often than those who were not in menopause, and their quality of life was affected more adversely. Similar to the literature, in the current study, symptom severity is higher in menopausal women.

Although UI adversely affects women's quality of life, it is observed that most women with UI have not received medical treatment^[9,10]. In this study, when UI first occurred, the severity of symptoms was higher in those who shared it with their neighbors and friends, while the daily life of those who did not care about UI was less affected. The results of the study are similar to the literature. The results suggest that it may originate from women's perceptions of UI.

UI adversely affects the quality of life and mood of female patients. Although it is not regarded as a disease that has an effect on mortality, it can lead to significant morbidities. Moreover, it can cause psychiatric morbidities such as social withdrawal, decreased self-esteem, depression, and sexual dysfunction and severely affects the quality of life of patients^[5,9,21]. With the regression analysis conducted, it was revealed that the negative impacts on women's daily life explained 40.2% of the total variance. In the meta-analysis conducted by Pizzol et al.^[17], which included studies examining the impact of UI on quality of life, strong evidence was found indicating that UI significantly affected the quality of life in women. In countries such as Spain, Sweden, Germany, and France, women experiencing UI typically reported high total scores in quality of life assessments, similar to those in Turkey. As the reason for this, it was reported that women regarded UI as a condition that could be considered normal with aging^[20]. In the literature, studies examining the impact of UI on quality of life have obtained similar results reporting that UI affects the quality of life adversely and the quality of life deteriorates as the duration and severity of symptoms increase^[11,26,27]. The literature results on the impact of UI on daily life and quality of life differ. The severity of UI and discomfort from it are different conditions. Determining the severity of UI should not mean determining the woman's perception of incontinence and its impacts on her daily life.

4.1 Limitations

Since the research is a cross-sectional study and sample size small, it cannot be generalized to the population.

5 CONCLUSION

According to the study results, the daily life of women with high severity of UI symptoms is more affected. As age, weight, BMI, number of births, number of miscarriages, number of pregnancies, and the duration of UI increase, the severity of symptoms also increases. Considering the causes of the UI problem, women should be encouraged to apply to health institutions and to implement interventions to reduce UI, and they should be informed about the factors associated with UI. Especially women in the older age group should be given training to increase their knowledge and awareness about pelvic floor health. In order to increase people's ability to cope with UI, Kegel exercises should be taught and social awareness should be increased. Randomized controlled trials should be conducted to prevent the development of UI as a factor affecting women's daily life or reduce the severity of symptoms.

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Conflicts of Interest

The authors declared no conflict of interest.

Author Contribution

Dinç Kaya H, Yılmaz T, and Bilgiç FŞ collaborated in designing the research study, conducting the research, and drafting the manuscript. Yılmaz T took charge of data analysis. All authors thoroughly reviewed and endorsed the final version of the manuscript.

Abbreviation List

BMI, Body mass index
IIQ-7, Incontinence Impact Questionnaire
UDI-6, Urogenital Distress Inventory
UI, Urinary incontinence

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