Urinary Incontinence: Prevalence and Risk Factors, Association with Anal Incontinence and Scope of Incontinence in Turkish Women

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OBJECTIVE: To determine the prevalence and risk factors of urinary and anal incontinence and to assess women's response and point of view to urinary incontinence.
STUDY DESIGN: The prevalence of overall, stress, urge, mixed urinary incontinence and anal incontinence was assessed by a multichoice questionnaire form in 1021 patients who admitted to outpatient gynecology clinics of our hospital.
RESULTS: Of the 1021 patients, 162(15.9%) reported urinary incontinence, comprising 79(48.8%) with stress, 50(30.9%) with urge and 33(20.4%) with mixed urinary incontinence. There were significant differences regarding age, number of pregnancies and deliveries, route of delivery, duration of labor, infant birth weight, enuresis in childhood, enuresis nocturna, constipation, flatal and fecal incontinence between patients with and without urinary incontinence ($p<0.05$). In comparison of subgroups (stress, urge and mixed urinary incontinence) with patients without urinary incontinence, one by one, there were statistically significant differences concerning age, number of pregnancies and deliveries, route of delivery, and enuresis nocturna ($p<0.05$). Of the 1021 patients, 525(51.5%) reported flatal incontinence and 32(3.1%) reported fecal incontinence. The rates of flatal and fecal incontinence in patients with urinary incontinence were 65.4%(n=106) and 6.8%(n=11), respectively. Most of the women (66.1%) did not perceive urinary incontinence as a social or hygienic problem, however 84.6% of the patients with urinary incontinence did ($p<0.0001$).
CONCLUSION: Ageing and obstetric events were the most prominent risk factors. According to our results, patients with urinary and anal incontinence could not yet seek for medical help. Education of population is important in order to avoid complications of incontinence.
(Gynecol Obstet Reprod Med 2004; 10:114-122)

Key Words: Anal incontinence, Mixed incontinence, Stress, Urge, Urinary incontinence

Urinary incontinence (UI) is defined as "a condition in which involuntary loss of urine is objectively demonstrable and is a social and hygienic problem".[1] UI is not a diagnosis but a symptom and therefore it is a common problem in the population causing medical, social, psychological and economical affairs and may negatively affect a woman's quality of life by a great extend.[2,3] The prevalence of UI increases with age and is therefore often misinterpreted as a result of the normal ageing process.[4] In a recent analysis of 90 studies, Thom[5] reported that overall the median prevalence in adults of any type or amount of incontinence was 28% (range, 12%-42%) in women younger than 60 years and 35% (range, 17%-55%) in women 60 years and older.

Anal incontinence (AI) can be defined as the involuntary loss of flatus, liquid or solid stool. Many patients hide their symptoms and therefore the true incidence of AI remains unknown. It has been estimated to affect between 1-16% of women, its prevalence increases with age.[6] AI and UI may be produced by the same pathophysiological mechanism in some cases and an association would be expected. The most common mechanism is obstetric injury, particularly pelvic floor denervation occuring during childbirth.[7,8] Few studies have evaluated the prevalence of AI in women with UI and reported rates ranges from 30% to 50%.[9,10]

UI adversely affects daily activities, social relationships and emotional well being in women of all ages.[2,3,11,12] In addition, the characteristic odour in females with UI may cause the women to be repelled from the social enviroment which could result in additional health problem even leading to depression.[12] To determine the predisposing factors, the true rate of UI will enlighten us to develop strategies in prevention of UI.

This study is devised to detect the prevalence of overall, stress, urge, mixed UI and AI, to detect the possible risk factors for UI with particular focus on obstetric factors, to examine the association of UI with AI, to designate the point of view of Turkish women to UI, and to determine its effects on social and sexual lives.

Material and Method

Between March-April 2002, 1021 patients who were admitted to the outpatient gynecology clinics of our hospital

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Submitted for Publication: 09.02.2004

Accepted for Publication: 13.03.2004

because of complaints other than UI were included in our descriptive clinical study. A multichoice screening questionnaire form was used to collect the data of the study. The questionnaire form covered the following items: patients' demographic characteristics, the potential risk factors of UI, patients' characteristics related with enuresis (enuresis nocturna, enuresis history in childhood), their point of view to UI and the effect of UI to social and sexual lives.

No clinical examination and no urodynamically validated investigations were performed. A women was considered as having UI if she replied positively to the question " Do you currently have some involuntary leakage of urine?". The prevalence was determined in three subgroups of UI, i.e stress UI (defined as involuntarily "2-3 drops" or "that much as her underwearing gets wet" urethral loss of urine associated with laughing, coughing, sneezing, heavy lifting or physical exercise), urge UI, (defined as an involuntarily urethral loss of urine "more than it is necessary to wet her underwear" preceeded by a sensation of strong desire for urination or by rapid and uncontrollable voiding with little or no warning. Patients with history of urinary leak caused by impulses like sound of water or cold water were also assessed as having urge UI) and mixed UI (defined as the concomitant association of stress and urge UI). AI was defined as the involuntarily loss of gas (flatal incontinence) or feces (fecal incontinence) occuring once a month or more frequently.

The potential risk factors of UI were evaluated as; age, smoking, systemic diseases (diabetes mellitus, chronic lung diseases and urinary infection), constipation (defined as fewer than three bowel movements per week), and obstetric etiologies (number of pregnancy and delivery, previous Caeserean sectio (C/S) or vaginal delivery, duration of delivery lasting >10 hours, and delivering a large baby (>4000g)). The women with an existing neurological diseases were not included in the study to eliminate the neurological causes of UI. Enuresis in childhood was defined as betwetting still after 3 years of age. At least one episode of betwetting during previous 4 weeks was considered to have enuresis nocturna.

The women's point of view to UI, was evaluated by the questions " whether UI is normal in women after a certain age group", "whether UI is an important social or hygienic problem". The effect of UI to social and sexual lives, was evaluated by the questions "whether UI is restricting their pyhsical activity, business and social life", "do you need to use a pad due to UI" and "do you have UI during or after coitus" "whether there is an impairment in sexual life as result of urinary symptoms and avoidance of sex".

The potential relationships of each factor to overall, stress, urge, and mixed UI were analysed. To evaluate the risk factors for UI, two populations were defined, i.e.women with or without UI. For those with stress UI, the population was divided into those with stress UI only and those without UI. The same division was also made for urge and mixed UI, also. Distributions of the significant risk factors were also evaluated between subgroups. The women were assessed in different age groups (18-45 years, 46-65, >65) as reproductive age groups, menopause and late menopause.

The questionnaire was validated in 3 steps. Step 1: content validity was established by submitting the questionnaire to four certain gynecologists with special interest in incontinence. The colleagues were asked to critically assess the questionnaire in terms of specificity and sensitivity of the questions. Alterations of the questions suggested by the colleagues were incorporated. Step 2: before the general distribution of the questionnaire, its readability was tested by five randomly selected women who filled out the questionnaire. After having completed the questionnaire, the five women were interviewed about their perception of each question. Step 3: Three months after the completion of the questionnaire, 30 responders were asked to complete a second identical questionnaire and the answers were compared both intraindividually and between groups to evaluate the short term reproducibility.

The statistical evaluation was done with SPSS V.10 package program. Beside definitive statistical methods (mean, standard deviation), values in percentages, chi-square (χ^2) and Fisher's exact tests were used in evaluation of the data. Data considered as significant at $p<0.05$. The kappa reliability test was used to analyze the agreement between the answers in the validation of the questionnaire.

Results

Reproducibility was good (K=0.8) when measuring the extend to which the answers to a second questionnaire were the same as those to the original questionnaire. The mean age of patients was 42.48±10.62 (range; 18-69 years). The overall prevalence of UI in 1021 subjects was 15.9% (n=162); 48.8% (n=79), 30.9% (n=50), 20.4% (n=33) of women self-reporting UI were classified as having stress, urge, and mixed UI, respectively.

There was not any statistically significant difference regarding complaints leading to hospital admission among patients with or without UI (χ^2=2.51, p=0.64). Major complaints of the whole group were menstrual delay (22.2%), vaginal discharge (15.7%), abnormal uterine bleeding (13.8%), and pelvic pain (9.3%).

The potential risk factors for UI, stress, urge and mixed UI are shown in Table 1. The reported prevalence of UI increased from 12.4% in women aged 18-45 years to 26.6% in those aged 46-65 years, from 6.7% to 13.9% for stress UI, from 4.5% to 9.4% for urge UI and 2.2% to 8.9% for mixed UI; it was shown that the prevalence of UI, stress, urge and mixed UI was significantly different between the age groups and increased by ageing as those aged 46-65 years were more at risk of all UI (χ^2=28.34, p<0.0001), stress (χ^2=12.12, p=0.002), urge (χ^2=7.34, p=0.025) and mixed UI (χ^2=20.44, p<0.0001).

Table 1. Potential risk factors for UI, stress, urge and mixed UI

Factors	Urinary continent n (%)	UI n (%)	stress UI n (%)	urge UI n (%)	mixed UI n (%)
Age		*	*	*	*
18-45	677 (87.6)	96 (12.4)	49 (6.7)	32 (4.5)	15 (2.2)
46-65	174 (73.4)	63 (26.6)	28 (13.9)	18 (9.4)	17 (8.9)
>65	8 (72.7)	3 (27.3)	2 (20.0)	-	1 (11.1)
Constipation		*	*		*
No	463 (88.0)	63 (12.0)	28 (5.7)	23 (4.7)	12 (2.5)
Sometimes	259 (81.4)	59 (18.6)	34 (11.6)	17 (6.2)	33 (3.0)
Allways	137 (77.8)	40 (22.7)	17 (11.1)	10 (6.8)	13 (8.7)
Smoking					
Yes	214 (86.6)	33 (13.4)	17 (7.4)	11 (4.9)	5 (2.3)
No	645 (83.3)	129 (16.7)	62 (8.8)	39 (5.7)	28 (4.2)
Systemic disease					
No	719 (85.1)	128 (14.9)	65 (8.2)	36 (4.7)	27 (3.6)
Diabetes mellitus	26 (72.2)	10 (27.8)	5 (16.1)	4 (13.3)	1 (3.7)
Chronic lung diseaes	26 (74.3)	9 (25.7)	4 (13.3)	3 (10.3)	2 (7.1)
Cardiac diseases	15 (100)	-	-	-	-
Urinary infection	-	-	-	-	-
Other	63 (80.8)	15(19.2)	5 (7.4)	7 (10)	3 (4.5)
Gravidity		*	*	*	*
0	110 (94.8)	6 (5.2)	5 (4.3)	1 (0.9)	-
1-3	399 (91.9)	35 (8.1)	18 (4.3)	16 (3.9)	1 (0.3)
≥4	350 (74.3)	121 (25.7)	56 (13.8)	33 (8.6)	32 (8.4)
Parity		*	*	*	*
0	132 (94.3)	8 (5.7)	7 (5.0)	1 (0.8)	-
1-3	575 (88.1)	78 (11.9)	37 (6.0)	29 (4.8)	12 (2.0)
≥4	152 (66.7)	76 (33.3)	35 (18.7)	20 (11.6)	21 (12.1)
Route of delivery		*	*	*	*
No	136 (93.8)	9 (6.2)	8 (5.6)	1 (0.7)	-
Vaginal delivery	619 (80.7)	148 (19.3)	68 (9.9)	47 (7.1)	33 (5.1)
C/S	84 (96.6)	3 (3.4)	2 (2.3)	1 (1.2)	-
Both	20 (90.9)	2 (9.1)	1 (4.8)	1 (4.8)	-
Duration of labor		*	*		*
< 10 hours	369 (87.9)	51 (12.1)	22 (5.6)	19 (4.9)	10 (2.6)
>10 hours	328 (77.5)	95 (22.5)	46 (12.3)	29 (8.1)	20 (5.7)
Infant birth weight		*			
<4000 g	504 (85.6)	85 (14.4)	37 (6.8)	34 (6.3)	14 (2.7)
>4000g	180 (81.1)	42 (18.9)	19 (9.5)	13 (6.7)	10 (5.3)

*presence of statistical significance (when the group of UI, stress, urge and mixed UI was compared with the group without UI)

The prevalence of UI, stress, and mixed UI was significantly higher in women with constipation when compared to women without constipation (for UI; χ^2=13.87, p=0.001, for stress UI; χ^2=9.97, p=0.007, for mixed UI; χ^2=12.75, p=0.002) and thus constipation was interpreted as a risk factor for UI, stress and mixed UI but not for urge UI (χ^2=1.29, p=0.52).

The prevalence of UI, stress, urge and mixed UI decreased with smoking but the difference was not significant (p>0.05 for all). The incidence of diabetes mellitus was approximately two times higher in patients with UI rather than in patients without UI (6.2% versus 3%). Similarly, the incidence of chronic lung diseases was higher in patients with UI rather than in patients without UI (5.6% versus 3%). No patient had complaints associated with urinary infection. The distribution of systemic diseases was not significantly different between groups with UI, stress, urge, mixed UI and without UI (p>0.05).

The mean gravida of the patients was 3.18±1.84 (median=3, range: 0-7) and the mean parity of patients was 2.30±1.46 (median=2, range: 0-7). The prevalence of UI, stress, urge and mixed UI was significantly higher in patients with increased number of gravidity (χ^2=63.77, p<0.0001 for UI, χ^2=26.77, p<0.0001 for stress, χ^2=13.83, p=0.001 for urge, χ^2=41.04, p<0.0001 for mixed UI) and parity (χ^2=71.58, p<0.0001 for UI, χ^2=32.24, p<0.0001 for stress, χ^2=18.76, p<0.0001 for urge, χ^2=44.16, p<0.0001 for mixed UI) in their obstetrical history and thus pregnancy and delivery were significant risk factors for UI, stress, urge and mixed UI when compared with patients without UI.

Table 2. Patients' characteristics related with enuresis nocturna and enuresis history in childhood

	Urinary continency n (%)	UI n (%)	stress UI n (%)	urge UI n (%)	mixed UI n (%)
Enuresis nocturna		*	*	*	*
No	852 (86.8)	130 (13.2)	70 (7.6)	40 (4.5)	20 (2.3)
Sometimes	4 (18.2)	18 (81.8)	5 (55.6)	8 (66.7)	5 (55.6)
Allways	1 (6.7)	14 (93.3)	4 (80.0)	2 (66.7)	8 (88.9)
Enuresis in childhood		*	*		
No	676 (85.6)	114 (14.4)	51 (7.0)	39 (5.5)	24 (3.4)
Yes	181 (79)	48 (21.0)	28 (13.4)	11 (5.7)	9 (4.7)

* presence of statistical significance (when the group of UI, stress, urge and mixed UI was compared with the group without UI)

The nulliparity and the history of C/S were significantly lower in group with UI, stress, urge and mixed UI (χ^2=27.70, p<0.0001 for UI, χ^2=7.98, p=0.046 for stress, χ^2=12.18, p=0.007 for urge, χ^2=12.61, p=0.006 for mixed UI); previous C/S was not a risk factor. All types of UI increased in women with previous vaginal delivery so it was a significant risk factor for all types of UI.

According to history of duration of labor answered by 843 patients, duration of labor >10 hours was significantly higher in patients with UI (χ^2=15.88, p=0.0004), stress (Fisher's test, p=0.001) and mixed UI (Fisher's test, p=0.04), but was not higher in patients with urge UI (p=0.19); pointing out that duration of labor >10 hours was a risk factor for UI, stress and mixed UI. According to history of infant birth weight answered by 811 patients, infant birth weight >4000g was significantly higher in patients with UI (χ^2=24.0, p<0.0001) but not higher in patients with stress, urge and mixed UI (p>0.05 for all subgroups of UI); delivering a baby >4000 g was a risk factor for UI, but not for stress, urge and mixed UI.

Regarding to patients' characteristics related with enursis, the distribution of the patients are summarized in Table 2. The rate of enuresis nocturna was significanly higher in patients with UI (χ^2=143.96, p<0.0001), stress (χ^2=59.84, p<0.0001), urge (χ2=109.50, p<0.0001) and mixed (χ^2=255.54, p<0.0001) UI. The rate of enuresis history in childhood was significantly higher in patients with UI (χ^2=5.66, p=0.017) and stress (χ^2=8.55, p=0.003) UI but not in patients with urge and mixed UI (p>0.05 for urge and mixed UI).

When the distributions of potential risk factors were investigated between subgroups of UI (Table 3); regarding ageing, route of delivery, duration of labor, history of delivering a baby >4000g, and constipation, the distributions were not significantly different between subgroups of UI. However, in respect to gravidity, and parity the distributions were significantly different between subgroups of UI (χ^2=13.75, p=0.008 for gravidity, and χ^2=9.54, p=0.049 for parity).

The reported prevalences of fecal and flatal incontinence rates were 3.1% (n=32) and 51.5% (n=525) respectively. The reported prevalences of fecal and flatal incontinence in patients with UI were 6.8% and 65.4%, respectively. There were significantly higher rates of fecal incontinence in patients with UI (χ^2=8.43, p=0.004), stress (χ^2=6.83, p=0.009) and urge UI (χ^2=5.42, p=0.02). There were significantly higher rates of flatal incontinence in patients with UI (χ^2=14.92, p<0.0001), stress (χ^2=4.99, p=0.025) and mixed (χ^2=16.43, p<0.0001) UI (Table 4).

Table 3. Distribution of the significant risk factors between subgroups of UI

	StressUI n (%)	Urge UI n (%)	Mixed UI n (%)	P
Age				
18-45 yrs	49 (62.0)	32 (64.0)	15 (45.5)	N.S.
46-65yrs	28 (35.4)	18 (36.0)	17 (51.5)	
>65yrs	2 (2.5)	-	1 (3)	
Gravidity				
0	5 (6.3)	1 (2.0)	-	=0.008
1-3	18 (22.8)	16 (32.0)	1 (3.0)	
≥4	56 (70.9)	33 (66.0)	32 (97.0)	
Parity				
0	7 (8.9)	1 (2.0)	-	=0.049
1-3	37 (46.8)	29 (58.0)	12 (36.4)	
≥4	35 (44.3)	20 (40.0)	21 (63.6)	
Route of delivery				
No				
Vaginal delivery	8 (10.1)	1 (2.0)	-	N.S.
C/S	68 (86.1)	47 (94.0)	33 (100)	
Both	2 (2.5)	1 (2.0)	-	
	1 (1.3)	1 (2.0)	-	
Duration of labor				
< 10 hours	22 (31.0)	19 (38.8)	10 (31.3)	
>10 hours	46 (64.8)	29 (59.2)	20 (62.5)	N.S.
Infant birth weight				
<4000 g	37 (52.1)	34 (69.4)	14 (42.4)	N.S.
>4000g	19 (26.8)	13 (26.5)	10 (30.3)	
Constipation				
No	28 (35.4)	23 (46.0)	12 (36.4)	N.S.
Sometimes	34 (43.0)	17 (34.0)	8 (24.2)	
Allways	17 (21.5)	10 (20.0)	13 (39.4)	

N.S.=not significant

Table 4. The reported prevalence of fecal incontinence in patients with UI, stress, urge and mixed UI

	Urinary continency n (%)	UI n (%)	stress UI n (%)	urge UI n (%)	mixed UI n (%)
Flatal incontinence	419 (48.9)	* 106 (65.4)	* 49 (62.0)	* 29 (58.0)	* 28 (84.8)
Fecal incontinence	21 (2.5)	* 11(6.8)	* 6 (7.6)	* 4 (8)	1 (3.0)

*presence of statistical significance (when the group of UI, stress, urge and mixed UI was compared with the group without UI)

The gravida and parity numbers were significantly higher in patients with flatal incontinence (χ^2=7.22, p=0.027, χ^2=10.05, p=0.007, respectively), however there was not a significantly difference regarding infant birth weight (p>0.05) and route of delivery (p>0.05) in patients with flatal incontinence. When the same parameters were investigated in patients with fecal incontinence, there was statistically significant difference only in comparison of infant birth weights (Fisher's exact test p=0.005). Thus, increased number of gravidity and parity were risk factors for flatal incontinence and delivering baby >4000g was a risk factor for fecal incontinence (Table 5).

Table 5. Obstetric risk factors for fecal and flatal incontinence

	Fecal incontinence n (%)	Flatal incontinence n (%)
Gravidity		*
0	4(3.4)	55(47.4)
1-3	8(1.8)	207(47.7)
≥4	20(4.3)	263(56.1)
Parity		*
0	5(3.6)	68(48.6)
1-3	21(3.2)	319(48.9)
≥4	6(2.6)	138(60.8)
Birth weight	*	
<4000g	9(1.5)	293(49.8)
>4000g	12(5.4)	121(54.8)
Route of delivery		
No	5(3.4)	68(46.9)
Vaginal	24(3.1)	401(52.4)
C/S	3(3.4)	41(47.1)
Both	-	15(68.2)

*presence of statistical significance (when the groups of flatal and fecal incontinence were compared with the groups without flatal and fecal incontinence, respectively)

When women's point of view to UI was evaluated (Table 6); 56.6% of the 1021 women conveyed the UI as a normal consequence of aging. There was no statistical difference regarding the question whether UI is normal in women after a certain age group between the groups of patients with UI, stress, urge, mixed UI and the patients without UI (p>0.05 for four group). Of the 1021 patients, 33.9% reported UI as an important social and hygienic problem while 84.6% of the patients with UI shared the same opinion. There were significant differences regarding this question between patients with UI (χ^2=218.87, p<0.0001), stress (χ^2=113.36, p<0.0001), urge (χ^2=72.87, p<0.0001), mixed UI (χ^2=84.28, p<0.0001) and the patients without UI. In the age group between 18 and 45 years, the rate of considering UI as a problem was 30.6% (n=236), whereas this rate was 44.3% (n=105) in the age group between 46 and 65 years and 54.5% (n=6) in patients who were 66 years old or older. Accordingly, the rate of considering UI as a problem was found to increase with ageing (χ^2=17.21, p<0.0001). Thus, patients suffering from UI considered UI as an important social and hygienic problem.

Of the 162 patients with UI, 53.1% reported that UI was restricting their pyhsical activity, business and social life and this rate was 43%, 50%, and 81.8% for stress, urge and mixed UI respectively; thus the significantly effected group was mixed UI (χ^2=14.33, p=0.001). The reported prevalences of diaper usage due to UI in patients with UI, stress, urge and mixed UI were 61.7%, 58.3%, 52% and 84.8% respectively. Thus, the most significantly effected group was mixed UI (χ^2=18.50, p=0.001). Of the patients with UI, 29% (n=46) reported UI during or after coitus, and this rate was 0.5% in patients without UI; the difference was statistically significant (χ^2=228.71, p<0.0001); the mostly effected group was mixed UI (51.5%), which was followed by urge UI (30%) and stress UI (18.5%) where the distribution was significantly different (χ^2=23.04, p<0.0001). The rates of sexual impairment due to UI symptoms in group with UI, stress, urge and mixed UI were 41.3%, 37.9%, 34% and 60.6%, respectively, where the distribution was not statistically significant (p>0.05).

Discussion

The overall prevalence of UI in the present study was 15.9%, increasing to 26.6% in women aged 46-65 years, but decreasing to 12.4% in women aged 18-45 years. More than 90 studies have been published on the prevalence of UI. Despite this, the true prevalence of UI is difficult to ascertain because these studies have used differing survey methods. In most of the previous epidemiological studies, as in the present, a questionnaire was used with no clinical examination or laboratory investigation. In the two studies using a questionnaire and a clinical examination,[13,14] the prevalence of UI was 14-44% but the mean value remained at around 25% in studies with or without examination. Therefore, it is not possible to state that the prevalence varies according to the presence or absence of clinical examination.

Table 6. Women's response and point of view to UI.

	Urinary continency n (%)	UI n (%)	Stress UI n (%)	Urge UI n (%)	Mixed UI n (%)
UI is normal in women after a certain age group.	488 (84.6)	89 (15.4)	42 (7.9)	28 (5.4)	19 (3.7)
UI is an important social and hygienic problem	210 (60.5)	137 (39.5)*	65 (23.6)*	40 (16.0)*	32 (13.2)*
Prevalence of pad usage**	-	100 (61.7)	46 (58.3)	26 (52.0)	28 (84.8)
Reported prevalence of physical and social life restriction**	-	86 (53.1)	34 (43.0)	25 (50.0)	27 (81.8)
Reported prevalence of sexueal impairment	-	67 (41.3)	30 (37.9)	17 (34.0)	20 (60.6)
UI during or after coitus**	-	46 (29.0)	14 (18.5)	15 (30.0)	17 (51.5)

*presence of statistical significance (when the group of UI, stress, urge and mixed UI was compared with the group without UI)
**presence of statistical significance among subgroups

Most studies, as in the present, classified UI as stress, urge and mixed, using the same definitions.[15,16] The present distribution (48.8%, 30.9% and 20.4%, respectively) was similar to those reported elsewhere [5]. Thom [5] reported that among women younger than 60 years who suffered from UI, about half had stress UI.

Various risk factors for UI have been identified in epidemiological studies, the most common being age and obstetric events. In our study, the prevalence of all type of UI increased with age and those aged 46-65 years were more at risk of all UI; in most studies, the prevalence increases with age in elderly and middle-aged women[4,5,15-18] although two other studies did not confirm these findings.[19,20] In the present study, constipation was evaluated as a potential risk factor for all types of UI except urge UI. Chronic constipation with repeated prolonged defecatory straining efforts has been shown to contribute to progressive neuropathy and dysfunction.[21] Although we could not detect any association between the rate of UI and smoking in our study group, Bump et al[22] reported that smoking was a triggering factor in increment of the rate of UI. Diabetes mellitus and chronic lung diseases were detected approximately 2 times more often in the women with UI. Neuropathy associated with DM and increase in abdominal pressure because of coughing in women with pulmonary diseases might be responsible for these differences.

Several studies have shown association between pregnancy, delivery, and UI but the results are not consistent.[7,17,23,24] The prevalence of UI was greater in parous women when compared with nulliparous women and prevalence increasing with increasing parity.[7,23] Persson et al.[25] detected that the risk of possible incontinence surgery was increasing significantly with rising number of parity and that the first birth was the most harmful to the pelvic wall among the following consecutive births and finally that the following births increased the risk of UI additively. Many studies.[26,27] describe perineal trauma during delivery as a risk factor and some[15,17,26,27] consider that nulliparous women have a significantly lower risk of UI. In the present study, parity more than 3 was associated with increased rate of UI, stress, urge and mixed UI. Women delivered by C/S seem to have less risk of later development of UI than those delivered vaginally, according to some studies[28-30] but there is a report against this claim.[24] Farrell et al[30] reported that C/S when compared with spontaneous and instrumental vaginal labor, decreases the rate of postpartum UI risk, however any neurophysiological damage at pudental nerve might still occur despite of C/S. This damage has cumulative character; neurophysiological data suggest that, once labor has progressed to second stage, C/S is no longer protective.[8] Goldberg et al[31] stated that there was a protective effect against stress UI symptoms only in patients who delivered her baby with C/S. In conformity of the literature, there was a statistical significance in our study between the route of delivery and the rate of UI ($p<0.0001$). According to our results, the rate of C/S and the state of nulliparity was low in the group with UI. These results lead us to conclude that the vaginal delivery itself was a major risk factor in development of UI, as stated in other studies.[20,28-30]

In the literature, there are many studies investigating the relation between the duration of the labor and the development of stress UI. VanKessel et al.[32] reported that lenghth of second stage of labor was not associated with stress UI whereas Handa et al[33] think that avoiding operative deliveries and allowing passive descent in the second stage of labor may decrease the incidence of stress UI related to birth trauma. In the present study, duration of labor longer than 10 hours was a risk factor for UI, stress and mixed UI .

There are conflicting evidence in the literature about the association between infant birth weight and maternal risk of developing UI.[20,26,29] In our study; delivering a baby >4000g was a risk factor for UI, but not for stress, urge and mixed UI.

We found an association with enuresis history in childhood and UI as well as stress UI in adult life. Of the patients with UI, 29.6% (n=48) had enuresis in childhood ($p=0.017$), whereas 35.4% (n=28) of the patients with stress UI had enuresis in childhood ($p=0.003$).

Women with UI are more likely to report symptoms of AI than subjects continent of urine. Numerous studies point to a common cause for the development of AI and UI.[7-10,34,35] Childbirth remains the major contributory factor for the development of either AI or UI, being associated with functio-

nal and anatomical alterations in the muscles, nerves, and connective tissue of the pelvic floor.[7,8] In the overall population of the present study, flatal and fecal incontinence rates were found as 51.5% and 3.1% respectively. Concerning the rate of AI (flatal and fecal incontinence) in the group with UI, 65.4% of patients had both urinary and flatal incontinence concomitantly, whereas 6.8% of patients had both urinary and fecal incontinence concomitantly. It was speculated that if damage occuring to the branches of the pudental nerve innervating the external anal sphincter and thus leading to fecal incontinence then it is very likely that occult damage is occuring to the periurethral branches of the same nerve and thus contrubuting to stress UI.[34] On the other hand, Meschia et al.[35] proposed that a common central or peripheral disorder of smooth muscle function might also be a factor in both AI and urge UI.[35] In the present study, increased number of gravidity and parity were risk factors for flatal incontinence and delivering a baby >4000g was only a risk factor for fecal incontinence. Among the obstetric factors regarded as associated with AI, large birth weight infant was also significant in the study of Meschia et al.[35]

The prevalence of UI increases with age and is therefore often misconstructed as a result of the normal ageing process.[4] In our study, 56.6% (n=577) of 1021 women conveyed the UI as a normal consequence of aging. Many women suffer in silence, accepting these symptoms as a normal part of the aging process. Several studies have shown the widespread social consequences of the incontinence affecting the quality of the life.[2,3] The epidemiological study by Elving et al.[18] reported that 26% of women had ever experienced UI and 14% perceived it to be a social or hygiene problem. According to our results 66.1% of our general study population did not perceive UI as a social or hygienic problem, however 84.6% of the patients with UI accepted UI as a social or hygienic problem. The patients suffering from UI consider UI as an social and hygenic problem. The need to carry a pad was significantly high in patients with mixed UI where 84.8% of the patients with MI were noted as having neccessity in carrying a pat and almost 58.3% of the patients with stress UI and 52% of urge UI were noted to feel the neccessity to carry a pad. The real importance of incontinence may be underestimated by the health services because less than half of the patients requiring sanitary protection seek medical advice.[36] The embarrassment and the hygenic problems of urine loss lead to social isolation and depression.[37] In the present study, none of the patients primarily complain of UI symptoms. Social life was not restricted in more than half of the patients with stress UI, whereas the social life was significantly restricted in 81.8% of patients with mixed UI. Hagglund et al[38] detected that the scores of life of quality was lower in patients with urge incontinence and that most of the patients applying hospitals for medical help were suffering from urge incontinence and therefore they pointed similar results as our study.

A number of studies report an impairment in sexual lives as a result of urinary symptoms.[39-42] Norton et al.[40] reported 38% of the patients with symptoms of UI avoided sexual activity. In the study of Bogren et al[41] 8% of women with UI reported problems with sexual life. In the study of Walters et al,[42] it was reported that more women (49%) with stress UI felt that urinary symptoms interfered with sexual activity. In our study, 29% (n=46) of patients with UI reported UI during or after coitus, and the mostly effected group was mixed UI (51.5%, n=17) (χ^2=23.04, p<0.0001). In the present study, the rates of sexual impairment due to UI symptoms in the groups with UI, stress, urge and mixed UI were 41.3%, 37.9%, 34% and 60.6%, respectively (p>0.05).

In conclusion, in the present study, UI was not the primary cause among the reasons of the attendance to the hospital. This condition led us to think that this complaint was a social taboo in our population. Unlike the results of our study, the rate of seeking for medical help was 35% in a study of Yip et al[43] where none of the women felt ashamed during seeking for medical help. Simeonova et al[44] showed that only 6% of women with MI and urge UI were seeking for medical help. Hagglund et al found the rate of hospital application as 14% among patients with UI.[38] All of these results led us to think that the point of view of the population to UI changes from one population to another and this complaint is still a social taboo. In our epidemiologic study, the rate of UI was defined by an questionnaire. Morever, although being few, some subjects in the study group did not reply to some questions, which could be accepted as a social taboo. Consequently the significance of the data retrieved from our study seems to be restricted in that level of consideration. However, the results we obtained, designated not only how far UI and AI influenced the quality of life of women in the Turkish population, but also they could not yet seek for appropriate medical help because of considering it as a social taboo. When the importance of this topic is taken into consideration, all women undergoing gynecological assessment for any reason should be routinely questioned about UI and AI. The substantial effect of UI on the quality of life and its increasing prevalence with ageing suggest more medical attention to this problem and in the light of determined risk factors, precaution for prevention of the disease must be planned.

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