

Risk factors and prevalence of urinary incontinence in postmenopausal women living in Turkey

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Summary

Purpose of investigation: To detect the prevalence, types and risk factors of urinary incontinence (UI) in postmenopausal women. **Methods:** Three-hundred and thirty-three patients who were referred to our Menopause Clinic between August 2008 and May 2009 were included in the study according to the acceptance criteria. A detailed questionnaire was completed by the patients who were between 31-65 years of age. **Results:** The mean age was 52.5 and the mean age at which menopause symptoms started was 45.8. The prevalence of urinary incontinence was found to be 45.6%. The most frequently seen UI type was mixed urinary incontinence (68.4%). Advanced age, vaginal delivery, high BMI and no hormone replacement therapy were regarded as significant risk factors. **Conclusion:** UI is a common problem influencing the social experience of postmenopausal women. The prevalence of UI was detected as 45.6% in our study. The quality of life in postmenopausal women can be augmented by diagnosing the risk factors of UI and making an effort to improve the condition.

Key words: Menopause; Urinary incontinence; Vaginal delivery; Body mass index (BMI).

Introduction

Urinary incontinence (UI) is a medical and social problem which manifests with involuntary incontinence and has a high prevalence [1]. Continence occurs due to complex mechanisms and neurophysiologic functions of the bladder, urethra and pelvic floor [2]. Incontinence was detected in 70% of the women in the postmenopausal period. Previous studies regarding UI have shown wide variability about prevalence rates in women, with estimates ranging between 32% and 73% [3-5].

The most important results of UI concern the social and psychologic complications. It causes psychological problems varying from simple embarrassment to depression. Because of the decreasing self confidence, social activities diminish and eventually the patient's quality of life becomes impaired [6]. UI is also an expensive health problem.

The risk factors for UI are age, parity, menopause, vaginal delivery, heavy lifting and hysterectomy [1, 2]. Age and obesity are well established risk factors for UI. Parity is another risk factor for moderate and severe stress and any UI [7, 8]. However, in relation to other risk factors, findings have been inconsistent with some studies showing significant associations between UI and mode of delivery [9-11], menopausal status [1], postmenopausal hormone use [12] and hysterectomy [13, 14] with other studies failing to show a significant association of UI with mode of delivery [15], menopausal status [16], postmenopausal hormone use [17] and hysterectomy [18]. We aimed to evaluate the prevalence, types and risk factors of urinary incontinence in postmenopausal women.

Material and Methods

Three hundred and thirty-three postmenopausal patients whose ages ranged between 31 and 65 years participated in the study. The protocol for the research project was approved by our Institution's Ethics Committee and conformed to the provisions of the Declaration of Helsinki. A signed consent form was submitted before obtaining demographic data. The patients were asked detailed questions about their UI. The questionnaire form consisted of two parts. The first part comprised questions on age, weight, height, birth pattern, onset of menopause age, menopause pattern (surgical or natural) and use or nonuse of hormone replacement therapy (HRT). Natural menopause was described as not having a menstrual cycle throughout one year. Undergoing bilateral oophorectomy accompanied or not accompanied by hysterectomy was described as surgical menopause. The second part consisted of three types of UI. UI types were described as follows: 1) Stress urinary incontinence (SUI): being incontinent while coughing, sneezing or laughing; 2) Urge urinary incontinence (UUI): being incontinent with urge symptoms; 3) Mixed urinary incontinence (MUI): having a combination of SUI and UUI.

Statistical Analysis and Graphics (NCSS 2007) and Power Analysis and Sample Size (PASS 2008) statistical software programs (Utah, USA) were used in this study. Student's t-test, Mann-Whitney U test, chi-square test and logistic regression analysis were performed. Results were assessed with a 95% confidence interval and $p < 0.05$ significance level.

Results

Three-hundred and thirty-three postmenopausal women completed the study questionnaire. The mean age of the patients was 52.50 ± 7.44 years. Onset of menopausal age of the patients varied between 30 and 56 years and mean menopausal age was 45.80 ± 5.52 . Body mass index (BMI) was between 18.73- 48.44, mean BMI level was 30.02 ± 5.11 . BMI was < 25 in 15% of the patients, while the remaining patients were within the $>$

25 BMI level. Birth numbers of the patients ranged from 0 to 13 and the mean birth number was 3.72 ± 2.05 . Parity was < 3 in 25.5% of the women; the others were at level 3 or more parity. Vaginal birth rate was 99.1%. Menopause pattern was natural in 79% and surgical in 21% of the cases. Twenty-three percent of the patients were using HRT.

The patients were divided into two groups. The incontinent group consisted of 152 patients, while the control group (continent group) consisted of 181 patients. UI was seen in 45.6% of the patients. One hundred and four patients (68.4%) were MUI, 32 cases (21.1%) were SUI and 16 (10.5%) were UUI.

The mean age of the incontinent women was higher than continent women and this value was found to be statistically significant ($p < 0.01$). There was no statistically significant difference between the two groups in relation to menopausal age. The BMI levels of the incontinent women were significantly higher than the continent group ($p < 0.01$). The parity of the incontinent women was also significantly higher than the continent group ($p < 0.01$) (Table 1).

Table 1. — Assessment of age, BMI and parity according to the groups.

	Incontinent (n = 152)	Continent (n = 181)	p
	Mean \pm SD	Mean \pm SD	
*Age	54.20 \pm 7.67	51.07 \pm 6.95	0.01**
*Menopausal age	46.24 \pm 5.54	45.43 \pm 5.48	0.18
*BMI	31.17 \pm 5.32	29.06 \pm 4.74	0.01**
Parity	4.47 \pm 2.16 (4)	3.07 \pm 1.71 (3)	0.01

* Student's t-test; ** Mann-Whitney U test; * $p < 0.05$ (significant); ** $p < 0.01$ (very significant).

Distribution of the risk factors according to the groups is demonstrated in Table 2. Menopausal age, BMI, parity, birth pattern, menopausal pattern, and use of HRT were compared according to the continence status.

When the risk factors influencing UI (BMI, parity, birth pattern, use of HRT) were assessed by logistic regression analysis, the model was found to be significant ($p < 0.05$), Nagelkerke R square value was detected to be 0.17 and expressiveness of the model quotient was good (68.3%) (Table 3). The effects of the parameters were found to be statistically significant ($p < 0.05$).

Discussion

Our study was performed in postmenopausal patients only and UI prevalence was detected as 45.6% during this period. Sakondhvat *et al.* [1] reported the prevalence of UI in women aged 45-50 years to be 38.86%, whereas Hsieh *et al.* [19] reported a prevalence estimate of 29.8% for women aged 60 years or older.

When the incontinence types were evaluated the proportions of MUI, SUI and UUI were found to be 68.4%, 21.1% and 10.5%, respectively. Many studies have shown similar results [1, 2]. Different results in previous studies may be due to the distinct methodology and different

Table 2. — Distribution of the risk factors according to the groups (chi square test).

		Incontinent (n = 152) n (%)	Continent (n = 181) n (%)	Odds ratio (95% CI)	p
Menopausal	< 50	98 (64.5%)	137 (75.7%)	0.583	
Age	≥ 50	54 (35.5%)	44 (24.3%)	(0.36-0.94)	0.02*
BMI (kg/m ²)	≥ 25	136 (89.5%)	147 (81.2%)	1.966	
	< 25	16 (10.5%)	34 (18.8%)	(1.03-3.72)	0.03*
Parity (n)	≥ 3	129 (84.9%)	119 (65.7%)	2.922	
	< 3	23 (15.1%)	62 (34.3%)	(1.70-5.01)	0.01**
Birth pattern	Vaginal	147 (96.7%)	153 (84.5%)	5.380	
	Nonvaginal	5 (3.3%)	28 (15.5%)	(2.02-14.30)	0.01**
Menopausal	Surgical	31 (20.4%)	39 (21.5%)	0.933	
pattern	Natural	121 (79.6%)	142 (78.5%)	(0.54-1.58)	0.79
Using HRT	Positive	133 (87.5%)	122 (67.4%)	3.385	
	Negative	19 (12.5%)	59 (32.6%)	(1.91-6.00)	0.01**

* $p < 0.05$ (significant); ** $p < 0.01$ (very significant).

Table 3. — Logistic regression analysis results of UI cases.

	B	S.E.	Sig.	Exp(B)	95.0% CI for EXP (B)	
					Lower	Upper
BMI > 25	0.798	0.343	0.02*	2.220	1.13	4.35
Parity > 3	0.759	0.309	0.02*	2.135	1.16	3.91
Vaginal Delivery	1.354	0.544	0.02*	3.873	1.33	11.24
Not to use HRT	1.279	0.301	0.01**	3.593	1.99	6.48

B: Beta coefficient; S.E.: standard error; Sig.: significans; Exp.: exponential coefficient.

* $p < 0.05$ (significant); ** $p < 0.01$ (very significant).

classifications. The precise pathogenesis of urge incontinence among elderly women is not understood. It may involve anomalies of neurological control, an element of obstruction or premature activation of the micturition reflex [1, 2, 5].

BMI, parity, vaginal delivery, advanced age and non use of HRT were detected as significant risk factors in our study.

Our study confirms that a high BMI is a risk factor for UI. The likelihood of UI was almost two times greater for obese women than for women with a BMI under 25 kg/m². We found a statistically significant relationship between parity level and UI. Having a parity ≥ 3 increased the UI risk 2.92 times.

Cesarean section was more protective than vaginal delivery in relation to the pelvic floor in previous studies with large patient numbers [9, 15]. We also found vaginal delivery to be a significant risk factor for UI. Herrmann and colleagues stated that parity of more than three was an especially significant risk factor for UI [10].

Some [20], but not all [13, 14] studies indicate that hysterectomy is a risk factor for UI. It is biologically plausible that nerve and urethral support structure damage associated with hysterectomy could result in a mixed pattern of symptoms. Alternatively, hysterectomy may be associated with either stress or urge or both, but in our study the association may have achieved statistical significance in the mixed UI group only because of statistical power, as the mixed UI group had the largest number of women. We found that hysterectomy was not a significant risk factor for UI.

Estrogen receptors were commonly seen in the lower genital tract and hypoestrogenic situation cases of UI

[21]. Although the role of estrogen replacement therapy is controversial, using estrogen for urogenital atrophy was reported to be beneficial [22]. Using HRT improved the incidence of UI in postmenopausal patients. The findings in our study supported these data. The proportion of UI was significantly high in cases that did not use HRT in comparison with the cases using HRT. Not using HRT increased the risk of UI 3.38 times.

There are many studies which have been carried out in Turkey. Kocak and colleagues investigated female urinary incontinence in Western Turkey [4]. Onur *et al.* researched prevalence and risk factors of female urinary incontinence in Eastern Turkey [5]. Both studies indicated the same results as our study.

The data were obtained from detailed conversation with postmenopausal patients, although this study was descriptive. The women in this study could ask about the questions put to them. Thus, a detailed answer rate was obtained for each question. However, the limitation of this study was making the classification of UI, not using any physical examination or valid urodynamic investigation, assessment being made only according to the clinical symptoms of the patients and assessing the answers to the questions asked.

Consequently, UI is a common problem which influences the social life of the menopausal patients. Our results highlight the fact that being obese and parous were positively associated with the likelihood of having UI. The quality of life can be improved by diagnosing and preventing the relevant risk factors in postmenopausal UI patients.

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