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FATMA GÖZÜKARA

İBRAHİM KORUK

BURCU KARA

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## Urinary incontinence among women registered with a family health center in the Southeastern Anatolia Region and the factors affecting its prevalence

Fatma GÖZÜKARA<sup>1\*</sup>, İbrahim KORUK<sup>2</sup>, Burcu KARA<sup>2</sup>

<sup>1</sup>Health School, Harran University, Şanlıurfa, Turkey

<sup>2</sup>Department of Public Health, Faculty of Medicine, Harran University, Şanlıurfa, Turkey

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**Background/aim:** In regions such as Şanlıurfa, Turkey, where the fertility rate is high, suitable health policies to easily and successfully treat urinary incontinence (UI) are needed. This study was conducted to determine the prevalence and risk factors for UI among women in the region.

**Materials and methods:** The participants in this cross-sectional study were selected by using 30 cluster sampling methods. A total of 300 women in the age group of 15–49 years were contacted to participate.

**Results:** The prevalence of UI was 39.3% among women in this sample but only 8.0% actually received treatment. The logistic regression analysis showed that UI risk is increased 1.8 times by chronic diseases, 2.7 times by menopause, 3.4 times by uterine prolapse, and 9.12 times by cystocele.

**Conclusion:** UI is a common health problem among the women in the study region; however, these women do not actively seek treatment for this problem.

**Key words:** Urinary incontinence, prevalence, risk factors, woman

### 1. Introduction

Urinary incontinence (UI) is such a common health problem among women that it is mistakenly considered natural and can even be ignored. UI is defined by the International Continence Society (ICS) as an involuntary loss of urine (1). The prevalence of UI is reported to vary by 15%–52% in the world and more than 200 million people suffer from the problem (2–4). Studies conducted in Turkey report the prevalence of UI among women aged between 15 and 70 and above as ranging between 20.5% and 68.8% (5–8).

The most common UI types are stress, urge, and mixed incontinence. Stress incontinence is defined by the ICS as the symptoms of involuntary loss of urine upon effort or physical exertion (e.g., sporting activities), or upon sneezing or coughing. Urge incontinence is defined as the involuntary loss of urine associated with urgency. In urge incontinence, neurogenic or idiopathic overactivity of the detrusor muscle plays a role. As for the mixed type, this is defined as the involuntary loss of urine associated with urgency and also with effort or physical exertion, or upon sneezing or coughing (1,9).

Numerous factors are reported to contribute to a diagnosis of UI. These include sexual activity, advanced age, being overweight, smoking, pregnancy and high birth number, difficult delivery, big baby delivery (macrosomia), menopause, chronic diseases, use of some medicines, chronic coughing, chronic constipation, hard working conditions, gynecological problems and surgical interventions related to these problems, and urinary system infections (5–8,10–13).

In regions such as Şanlıurfa, Turkey, where there is a high fertility rate, it is important that the prevalence and risk factors for UI that can be treated easily and successfully be determined so that health policies for this problem can be developed. Thus, in this study we aimed to determine the prevalence and risk factors for UI among women in the region of the Şanlıurfa Zeliha Öncel Family Health Center.

### 2. Materials and methods

#### 2.1. Study design

This research used a cross-sectional design and was conducted in Şanlıurfa, Turkey, in March and April 2013.

\* Correspondence: fgozukara18@gmail.com

## 2.2. Study area

Şanlıurfa is a city in the Southeastern Anatolia Region of Turkey. In a study conducted by the State Planning Organization it was ranked 73rd out of 81 cities in terms of its socioeconomic development (14). In the study area, residents have low education levels and generally do not work in a job yielding regular income. In the region where the study was conducted there is also a high proportion of seasonal agricultural workers and the local community mostly comprises unemployed people or people of lower social class (15).

## 2.3. Setting and sample

The research population consisted of 6125 women who were aged 15–49 years and who resided in the region affiliated with the Zeliha Öncel Family Health Center. Women in this age group who were married and not pregnant were included in the research.

Sample selection was done by using the World Health Organization (WHO)/EPI 30-by-7 cluster sample sampling technique. The 30-by-7 cluster sample was developed by the WHO in 1978. The 30-by-7 cluster survey is a modified two-stage cluster sampling method. The original goal of this sampling design was to estimate immunization coverage to within  $\pm 10$  percentage points of the true proportion with 95% confidence (16).

While this method was developed for determining vaccination levels, it has been used in many studies with some modifications. Despite certain limitations, it is actually a very useful method due to the convenience it provides in the field. This method was used for a total of 210 people, with 7 people in each cluster. In the first stage, 30 of these clusters were sampled with a probability proportionate to the size of the population in the cluster. In the second stage of sampling, 7 subjects were selected within each cluster. Although the sampling unit is the individual subject, the sampling is conducted on the household level. In this study, each district (out of a total of 73 districts) was considered a cluster.

In order to reduce error percentage in population estimates, the sample size for each cluster was increased from 7 to 10. A total of 300 individuals were reached, with 10 individuals in each cluster. As the starting point, 30 districts were determined from the list of streets in the region through a simple random sampling method. The third household from the start of the street was set as the household start point and it was continued on the right side of the street until 10 individuals were reached.

## 2.4. Ethical considerations

Approval was obtained from the Ethics Committee of the Faculty of Medicine of Harran University (decision no. 10,

dated 01.04.2013) for the research. Consent was obtained from the participants.

## 2.5. Data collection

Data were collected using a structured questionnaire focused on participants' demographic characteristics, their fertility characteristics, and some characteristics related to the genitourinary tract. The women were asked a total of 41 questions. Data were collected by the researchers using face-to-face interviews.

## 2.6. Definitions

In the research, the dependent variable was UI while the independent variables were sociodemographic features, fertility characteristics, and symptoms related to the genitourinary tract.

UI was determined by asking the participants if they had experienced a UI problem within the last month.

Participants complaining of UI due to phenomena such as increased intraabdominal pressure when coughing, laughing, sneezing, straining, yawning, or lifting a heavy object were considered to have "stress incontinence". Those participants who leaked urine when they could not reach the toilet and who afterwards felt the need to use the toilet again were considered to have "urge incontinence". Those having both stress and urge incontinence were considered to have "mixed incontinence" (7,17,18).

## 2.7. Data analysis

Data obtained from the research were analyzed by using SPSS 11.5 for Windows. Percentage and average descriptive statistics, standard deviation, chi-square test, and t-test from univariate analyses and logistic regression from multivariate analyses were also used in the data analysis. Statistical analyses were conducted within a significance range of  $P < 0.05$ .

Independent variables showing statistically significant differences in the univariate analyses were taken into the logistic regression model. A backward conditional method was used in the logistic regression model.

All the independent variables included in the logistic regression model were categorical variables. These independent variables were age (below 29 and above 30), body mass index (slim-normal/overweight-obese), chronic disease status (absent/present), the number of pregnancies (3 and below/4 and above), vaginal delivery (3 and below/4 and above), delivery done at home (3 and below/4 and above), difficult birth (yes/no), age of the first birth (17 and below/18 and above), menopause status (yes/no), constipation (yes/no), hemorrhoid (yes/no), uterine prolapse (yes/no), and cystocele (yes/no).

### 3. Results

The average age of the participants included in the study was  $31.8 \pm 7.9$  years; 54.0% were uneducated and 20.7% ( $n = 162$ ) perceived their economic situation to be bad/very bad. While 85% ( $n = 255$ ) of the women were working in a permanent job, 10.7% of them were working as seasonal farm workers. There were 34.7% ( $n = 104$ ) of participants with a chronic disease, 12.7% ( $n = 38$ ) of them did not smoke, and the average mass body index was  $29.0 \pm 6.3$  kg/m<sup>2</sup>.

When the fertility characteristics of the women were examined, it was seen that the average number of pregnancies was  $4.3 \pm 2.8$ , the average number of vaginal births was  $3.0 \pm 2.5$ , and the average number of deliveries made at home was  $1.3 \pm 2.1$ . The average age at the first delivery was  $20.7 \pm 3.5$  years and the average age at the last delivery was  $28.4 \pm 5.7$ . We determined that 36.3% of the women had a spontaneous abortion at least once, 14.7% of them had a voluntary abortion at least once, 23.7% of them had experienced a labor lasting for more than 24 h, 15.0% of them had a macrosomia history (above 4 kg), and 50.0% of them had had episiotomy repair at labor.

When the genitourinary system characteristics were examined, we found that 9.7% of the women were undergoing menopause, 50.3% of them had a urinary system infection at least once in the last year, 12.0% of them had uterine prolapse, and 10.7% of them had cystocele, constipation, or hemorrhoids and had undergone gynecological surgery.

The prevalence of UI was 39.3% among these women, but only 8.0% had received treatment. Distribution of the types of incontinence among the women is given in Table 1.

Distribution of the types of UI according to some socioeconomic features of the women is shown in Table 2. The univariate analyses show that UI cases are more frequent among women in the age group of 40–50 years (52.4%), overweight-obese women (43.3%), and those having a chronic disease (53.8%) ( $P < 0.05$ ) (Table 2). No

statistically significant difference was found between the frequency of UI and education level, economic situation, working status, status of being a farm worker, and smoking status.

In Table 3 the distribution of UI cases among women according to some fertility characteristics is shown. Univariate analyses showed that UI cases were more frequent among women who had 4 or more pregnancies (46.1%), had 4 or more vaginal deliveries (50.8%), had 4 or more deliveries at home (52.8%), experienced a difficult labor (51.4%), and delivered their first babies at the age of 17 or below (60.0%) ( $P < 0.05$ ). No statistically significant difference was found between the frequency of UI and spontaneous abortion, voluntary abortion, status of undergoing episiotomy, macrosomia, and age at the last birth.

Table 4 shows the distribution of UI cases among women according to some characteristics related to the genitourinary tract. Univariate analyses show that the UI cases were more frequent among women undergoing menopause (65.5%) and those who had constipation (50.0%), uterine prolapse (77.8%), cystocele (84.4%), or hemorrhoids (58.3%) ( $P < 0.05$ ). No statistically significant difference was found between the frequency of UI and urinary infection status and the status of undergoing gynecological surgery.

Table 5 gives the results of the regression model where the effects of independent variables on UI are assessed together. According to the results of the logistic regression analyses, UI risk is increased 1.8 times by chronic diseases, 2.7 times by menopause, 3.4 times by uterine prolapse, and 9.12 times by cystocele.

### 4. Discussion

In the study region, the number of farm workers was considerably higher than in city areas. Additionally, the education level of the residents was dramatically lower and they generally did not work in a job yielding regular

**Table 1.** Distribution of the types of UI among women.

Type of UI	N	%
No incontinence	182	60.7
Stress	46	15.3
Urge	13	4.3
Mixed	59	19.7
Total	300	100.0

**Table 2.** Distribution of UI cases according to women's characteristics.

Features	UI				Statistical analysis	
	Present		Absent			
	n	%	n	%	$\chi^2$	P
Age (years)						
17–29	36	29.3	87	70.7	10.3	<0.01
30–39	49	43.0	65	57.0		
40–50*	33	52.4	30	47.6		
Education level						
Uneducated	72	44.4	90	55.6	4.7	0.09
Primary and secondary education	43	34.7	81	65.3		
High school and higher	3	21.4	11	78.6		
Economic situation						
Very good–good	17	33.3	34	66.7	1.6	0.43
Moderate	73	39.0	114	61.0		
Bad–very bad	28	45.2	34	54.8		
Working status						
Working	19	42.2	26	57.8	0.07	0.79
Not working	99	38.8	156	61.2		
Being a farm worker						
Yes	14	43.8	18	56.3	0.2	0.58
No	104	38.8	164	61.2		
Body mass index						
Slim-normal	21	27.6	55	72.4	5.2	0.02
Overweight-obese	97	43.3	127	56.7		
Presence of chronic disease						
Yes	56	53.8	48	46.2	13.1	<0.001
No	62	31.6	134	68.4		
Smoking status						
Yes	13	34.2	25	65.8	0.2	0.60
No	105	40.1	157	59.9		

\*This group was different from the others.

**Table 3.** Distribution of UI cases according to women's fertility characteristics.

Fertility characteristics	UI				Statistical analysis	
	Present		Absent			
	n	%	n	%	$\chi^2$	P
Number of pregnancies						
0	4	21.1	15	78.9	8.1	0.01
1-3	37	32.5	77	67.5		
4 and over*	77	46.1	90	53.9		
Spontaneous abortion†						
Yes	46	42.2	63	57.8	0.1	0.75
No	68	39.5	104	60.5		
Voluntary abortion†						
Yes	16	36.4	28	63.6	0.02	0.65
No	98	41.4	139	58.6		
Vaginal delivery†						
0	9	18.4	40	81.6	15.4	<0.001
1-3	43	39.1	67	60.9		
4 and over*	62	50.8	60	49.2		
Home birth†						
0	51	30.9	114	69.1	15.5	<0.001
1-3	35	55.6	28	44.4		
4 and over*	28	52.8	25	47.2		
Difficult birth†						
Yes	36	51.4	34	48.6	4.1	0.04
No	77	36.7	133	63.3		
Episiotomy†						
Yes	64	42.7	86	57.3	0.4	0.50
No	49	38.0	80	62.0		
Macrosomia†						
Yes	19	42.2	26	57.8	0.01	0.91
No	94	40.0	142	60.0		
Age of the first birth† (years)						
17 and below	24	60.0	16	40.0	6.1	0.01
18 and over	89	37.7	147	62.3		
Age of the last birth†						
35 and below	110	40.6	161	59.4	0.1	0.67
36 and over	3	60.0	2	40.0		

\*This group was different from the others.

†Nulliparous women were not analyzed.

**Table 4.** Distribution of UI cases among women according to genitourinary tract characteristics.

Characteristics	UI				Statistical analysis	
	Present		Absent			
	n	%	n	%	$\chi^2$	P
<b>Menopause status</b>						
Yes	19	65.5	10	34.5	8.0	<0.001
No	99	36.5	172	63.5		
<b>Urinary infection</b>						
Yes	68	45.0	83	55.0	3.6	0.05
No	50	33.6	99	64.4		
<b>Constipation</b>						
Yes	42	50.0	42	50.0	4.9	0.02
No	76	35.2	140	64.8		
<b>Uterine prolapse</b>						
Yes	28	77.8	8	22.2	23.5	<0.001
No	90	34.1	174	65.9		
<b>Cystocele</b>						
Yes	27	84.4	5	15.6	28.3	<0.001
No	91	34.0	177	66.0		
<b>Hemorrhoids</b>						
Yes	42	58.3	30	41.7	13.3	<0.001
No	76	33.3	152	66.7		
<b>Gynecological operation</b>						
Yes	5	71.4	2	28.6	3.0	0.07
No	113	38.6	180	61.4		

**Table 5.** Logistic regression model of the variables influencing UI frequency.

	B	Sig.	Exp(B)	95% C.I. for Exp(B)	
				Lower	Upper
Chronic disease (present)	0.6	0.03	1.8	1.03	3.2
Vaginal delivery (4 and above)	0.5	0.06	1.6	0.9	2.9
Age of the first birth (17 and below)	0.7	0.05	2.0	0.9	4.5
Menopause status (in menopause)	1.0	0.02	2.7	1.1	6.6
Uterine prolapse (yes)	1.2	0.01	3.4	1.2	9.0
Cystocele (yes)	2.2	<0.01	9.1	2.4	33.3
Constant	-1.3	<0.01	0.2		

Hosmer and Lemeshow test: P &lt; 0.05.

income. These aspects are closely related to women's overall status and health behaviors.

Negative factors such as low education level, giving birth at an early age, and not working in a permanent job are likely to reduce the status of women and lead to a high numbers of births and pregnancies in the research region. However, it can be said that the fertility rate is still very high in the region, considering that the used data from a 2008 report on health and population represent a previous period. Fertility concerns a number of variables not shown in the logistic regression model. It is known, however, that excessive fertility is an important factor in the emergence of symptoms such as uterine prolapse and cystocele that can cause urinary incontinence (19).

According to 2008 data, the rate of women giving birth in healthcare institutions is 89.7% in Turkey; this is in comparison to the rate of 74.7% in the Southeastern Anatolia Region where Şanlıurfa is located (20). Home births without the aid of health professionals can be another important factor leading to complications that can predispose women to UI (19).

UI is a significant health problem affecting women physically, psychologically, socially, and economically, and approximately one-third of the participants were diagnosed with this condition in the present research. In developed countries, the prevalence of UI varies between 4.6% and 44.0% in different age groups (21,22). UI is a health problem generally more frequently seen in Turkey and the prevalence of urinary incontinence varies between 20.5% and 57.1% (6–8). This prevalence was found to be 39.3% in this research, which is consistent with the results of other studies.

The most common type of incontinence among participants in this research was the mixed type (19.7%), followed by stress incontinence (15.3%), and urge incontinence (4.3%). Similarly, a study conducted in the Marmara Region by Filiz et al. stated that the most common incontinence in women was the mixed type of incontinence, followed by the stress and urge types of incontinence (6). Two separate studies conducted in the Eastern and Central Anatolia Regions reported the most common incontinence type to be the stress type, followed by the urge and mixed types (23,24). These differences in prevalence of UI types are thought to have been caused by differences in the women's fertility characteristics. Studies suggest that the number and type of births also affect UI types (25,26). The Southeastern Anatolia Region and Şanlıurfa are in one of the areas of Turkey with the highest fertility rates.

Only 12.4%–27.7% of women in Turkey seek medical aid for UI, even though it negatively affects their life quality (5,18). In the metaanalysis study conducted by Minassian et al. the researchers found that 31%–42% of women

sought medical aid (27). The reasons given for not seeking medical aid included that women perceived UI as a normal situation and a natural consequence of aging; they believed that treatment would not be useful; they did not know where to seek aid; they felt distress, hesitation, and fear in sharing the problem with the healthcare professionals; and the costs of diagnosis and treatment interventions were high (27,28). The number of women who were not treated for the disease was significantly lower than those obtained in other studies. Although the reasons why women were not treated were not examined directly, characteristics such as education status and working status that determine the position of the women were found to be poor. These characteristics negatively affect the women's ability to seek medical services. Alternatively, factors such as poor economic situation and working as seasonal farm workers may lead to problems of access to healthcare services.

The human urethra and vaginal epithelium have a close embryologic origin. Estrogen receptors are found in high levels in these parts of the body, which are affected by the sex hormones (22,29). It is argued that atrophic changes occurring in the tissues as a result of estrogen deficiency during menopause disturb the lower urinary system function and lead to urinary system infections and urine storage problems (22). Multivariate analysis showed that chronic disease, being in menopause, having uterine prolapse, and the presence of cystocele were factors increasing the prevalence of UI. In parallel with the results of our research, Yeşiltepe Oskay et al. (29) and Kocaöz and Eroğlu (8) also reported in their studies that the prevalence of UI increased during menopause.

Studies show that patients with systemic and chronic diseases are more prone to urinary incontinence. Diabetes mellitus, diabetes insipidus, hypercalcemia, edema, congestive heart failure, and excessive fluid intake all increase renal clearance and cause frequent urination, urgency, and incontinence due to urgency (30,31). Diseases that affect the peripheral nervous system such as multiple sclerosis, Parkinson disease, and cerebrovascular attack all cause incontinence due to damage to nerves controlling the bladder, causing urgency and frequent urination (12). In this study, there was no correlation between UI and chronic diseases.

Successful storage of urine depends on proper contraction of the bladder and competency of the sphincter mechanism. In addition to these important factors, the pelvic muscles and fasciae are also influential on continence. Cystocele usually occurs due to damage to tissues that support the vesicovaginal septum and is usually accompanied by uterine prolapse. When the supportive tissues are damaged, actions such as sneezing and coughing that increase the intraabdominal pressure cause the urethra to open and the individual then leaks urine. Numerous

and frequent births, cephalopelvic disproportion, and difficult and long-lasting labor constitute the major factors leading to damaged supportive tissues (19). A high number and frequency of births, history of difficult labor, and presence of cystocele and uterine prolapse among women participating in the research were thought to have triggered many cases of UI.

In conclusion, UI is a common health problem among women but the rate of women seeking medical aid for this problem is relatively low. Family health centers

providing primary healthcare services should inform women registered to their centers about the symptoms, risk factors, and methods for the prevention of UI and should direct the women diagnosed with UI to healthcare institutions for treatment. A UI screening program should be developed for menopausal women who constitute a risk group. Nurses and physicians should provide women with the necessary counseling services during pregnancy, delivery, and postnatal periods.

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