



Urinary Incontinence Prevalence Study in Women Over Fifteen Years Old in Kahramanmaraş Province

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ABSTRACT

Objective: It was aimed to define the prevalence of urinary incontinence in the female population aged 15 and over in Kahramanmaraş province and to investigate the factors associated with urinary incontinence with a questionnaire. Thus, the importance and psychosocial consequences of urinary incontinence, which is a social health problem, were evaluated.

Material and Methods: Scans were made in four different regions determined according to socioeconomic status. These regions were from low to high socioeconomic level, respectively, 4th region: Tekke health center and its neighborhoods, 3rd region: Yavuz Selim health center and its neighborhoods, 2nd region: Dumlupınar health center and its neighborhoods, 1st region: Fatih healthcare and its neighborhoods. Five thousand women residing in these areas were surveyed by nurses and surveyors. 4506 women answered the questions.

Results: The prevalence of urinary incontinence in the population was 18.8% (850/4506). 13% (594/4506) had enuresis nocturna before the age of 15, and 73.6% (622/850) of incontinent women had stress incontinence; 72% (609/850) had urge incontinence; It was determined that 38.5% (321/850) were consulted by a doctor and 42.7% (363/850) of them received medical, surgical or rehabilitation treatment. 59.3% (515/850) of those with urinary incontinence described themselves as angry and nervous; 25.3% (233/850) used antidepressant drugs; 89.1% (771/850) stated that they were sexually active, and 41.5% (441/850) stated that they felt pain during sexual intercourse. BMI (Body Muscle Index) was correlated in all incontinence types and inversely correlated with education level.

Conclusion: Urinary incontinence is an important problem that is common in women and its prevalence increases with age. The effect of urinary incontinence on quality of life shows that we need to pay more attention to this problem.

Keywords: Urinary incontinency, prevalence, urge incontinency, stress incontinency, mixed type incontinency

ÖZ

Kahramanmaraş İl Merkezli On Beş Yaş Üzeri Kadınlarda Üriner İnkontinans Prevalans Çalışması

Giriş: Kahramanmaraş ilinde 15 yaş ve üstü kadın popülasyonda üriner inkontinans prevalansı özelliklerini tanımlamak ve üriner inkontinansla ilişkili faktörleri bir anketle araştırmak amaçlanmıştır. Böylece toplumsal bir sağlık problemi olan üriner inkontinansın önemi ve psikososyal sonuçları değerlendirilmiştir.

Gereç ve Yöntemler: Taramalar sosyoekonomik düzeye göre belirlenen dört ayrı bölgede yapıldı. Bu bölgelerin sosyoekonomik düzeyi düşükten yükseğe doğru sırasıyla 4. bölge: Tekke Sağlık Ocağı ve bağlı mahalleler, 3. bölge: Yavuz Selim Sağlık Ocağı ve bağlı mahalleler, 2. bölge: Dumlupınar Sağlık Ocağı ve bağlı mahalleler, 1. bölge: Fatih Sağlık Ocağı ve bağlı mahalleler olarak belirlendi. Bu bölgelerde yaşayan 5000 kadın, hemşireler ve anketörlerle ankete dahil edildi. 4506 kadın sorulara yanıt verdi.

Bulgular: Popülasyondaki üriner inkontinans prevalansı %18.8 (850/4506) idi. %13'ünün (594/4506) 15 yaşından önce enüresiz nokturnasının olduğu, inkontinan kadınların %73.6'sının (622/850) stres inkontinansı; %72'sinin (609/850) urge inkontinansı; %38.5'inin (321/850) bir doktora başvurduğu ve bunların %42.7'sinin (363/850) medikal, cerrahi veya rehabilitasyon tedavisi aldığı saptandı. Üriner inkontinansı olanların %59.3'ü (515/850) kendilerini sinirli ve gergin olarak tanımladıklarını; %25.3'ü (233/850) anti-depresan ilaç kullandıklarını; %89.1'i (771/850) cinsel olarak aktif olduklarını, %41.5'i (441/850) ise cinsel ilişki sırasında ağrı duyduğunu belirtti. BMI (Vücut Kas İndeksi) ile tüm inkontinans tiplerinde doğru, eğitim seviyesiyle ters orantı vardı.

Sonuç: Üriner inkontinans kadınlarda sık görülen ve yaşla prevalansı artan önemli bir problemdir. Üriner inkontinansın yaşam kalitesine olan etkisi; bu probleme daha fazla önem verilmesi gerekliliğini göstermektedir.

Anahtar Kelimeler: Üriner inkontinans, prevalans, urge inkontinans, stres inkontinans, miks tip inkontinans

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INTRODUCTION

Urinary incontinence (UI), seen frequently in women, is a health problem with economic and emotional effects. UI prevalence increases with age and is perceived as a normal outcome of aging. With the increase in average life expectancy, the importance of the disease in the community has gradually risen (1). In the USA, there are a total of 13 million incontinent patients, including 10-35% of adults and 50% of people living in senior centers. Even though this increase in prevalence is partly due to raised awareness and establishing a diagnosis, this condition will become more critical for urologists in the upcoming years. UI decreases quality of life and is a condition that affects all aspects of human life including professional, social, physical, psychological, and sexual (2). UI can affect all men and women in every age (3). In general, women are twice more affected than men. In younger populations in women, stress urinary incontinence (SUI) is seen more often. With age, sex-oriented difference changes, and urge urinary incontinence (UUI) starts to be seen more often. Current epidemiological studies are insufficient but indicate that all races are affected at a very serious rate (4).

Scores of studies have set forth the serious effects of incontinence (2,5-10). Patients with incontinence have low self-esteem and feel guilt and shame, which prevent them from working productively and taking part in social events. Some studies have shed light on the relation between urinary incontinence and depression (11,12). SUI limits patients' physical activity capacities. The negative effects of this limited physical activity on health are not yet clear but may be significant. UUI affects quality of life even more than SUI. Sex life and interpersonal relations are negatively affected by incontinence. Many studies have demonstrated that incontinence has wide social outcomes influencing quality of life (13-15). Hygienic problems and shame caused by urinary incontinence can lead to social isolation and depression (16,17) and thus incontinence plays a grand role in social life. This condition has been included into the definition of incontinence by the International Continence Society (ICS) (18). Economic effects of UI should also be taken into consideration. The cost does not only increase due to diagnostic test, surgical procedures, and pads used but also due to increased use of underwear, consumables, and nursing care needs. Incontinence may require a nurse to be present at home all the time (19).

The aim of this study was to determine UI prevalence in women aged 15 and over in Kahramanmaraş city center. It was also aimed at detecting the relation of UI with potential use of drugs, way of life, socioeconomic risk factors, and

physical activity, and at pointing out its negative effects on sex life and quality of life. This study was performed with women in specific regions of the city center with this aim in mind.

MATERIALS and METHODS

UI-associated factors were questioned with a questionnaire prepared by the Department of Urology of Kahramanmaraş University Medical Faculty (Figure 1). Information on population distribution and economic status of the central district was obtained from local administration. The study was conducted on women aged 15 years and over living in four different regions of the central district of Kahramanmaraş province determined as regards their socioeconomic status. Socioeconomic levels of these regions were determined from the lowest to the highest as such: 4th region: Tekke Community Health Center and affiliated neighborhoods, 3rd region: Yavuz Selim Community Health Center and affiliated neighborhoods, 2nd region: Dumlupınar Community Health Center and affiliated neighborhoods, and 1st region: Fatih Community Health Center and affiliated neighborhoods. Five thousand women living in these regions were included into the questionnaire by trained nurses and specially trained poll takers. Four thousand five hundred and six women replied to the questionnaire. This questionnaire form was filled out with individuals in charge by going door-to-door. The fundamental question on the form was whether the individual was aware of having UI or not. Answers from third persons were not accepted. The participants were asked if they had any complaints about UI in their lifetime, and if answered "yes", then the incidence of UI, its symptoms, how it was diagnosed, and whether it was treated or not were asked. Furthermore, the participants were also questioned about whether they took regular drugs, how UI affected their sex lives, whether they menstruated, whether they had given birth and if so, the way of delivery, history of previous urinary tract infection (UTI), whether they had constipation complaints, whether incontinence affected their daily and psychosocial lives, and whether they were physically active.

Each type of incontinence (three types: urge, stress and mixed) was addressed separately as dependent variables. All variables considered to have an impact on incontinence were evaluated using Chi-square test. As a result of these analyses, statistically significant variables were included into the logistic regression model. As a result of logistic regression analysis, adjusted odds ratios according to all other variables were obtained. All statistical analyses were performed on SPSS 9.0 computer program.

conomic level, BMI, age and mode of delivery, a relation was not established between SUI and education status, history of enuresis nocturna before the age of 15 years, smoking, number of births given, birth weight of the baby, constipation, and being moody and angry. A significant relation was found between MUI and socioeconomic level, BMI, age, education status, history of enuresis nocturna before the age of 15 years, smoking, number of births given, menstruation status, mode of delivery, being sexually active, history of UTI, birth weight of the baby, constipation, being moody and angry, and region of residence, but not with smoking and the duration spent sitting down during the day. Logistic regression showed that while UUI parameters were associated with BMI, illiterates, those that graduated from primary and secondary school, and those spending nine hours and more sitting during the day, they were not associated with those spending 5-8 hours and more sitting during the day, age, region, number of births given, birth weight of the baby, menstruation status, and mode of delivery (Table 1). While SUI parameters were found to be associated with those in the 35-54 years age group, those giving birth with cesarean (C/S), and those residing in the 4th region, they were not found to be associated with those aged under 35 years and over 45 years, BMI, menstruation status, vaginal delivery, and those residing in other regions (Table 2). While MUI parameters were associated with those aged 35 years and over, history of enuresis nocturna before the age of 15 years, those giving assisted birth, and those residing in the 3rd and 4th regions, they were not found to be associated with BMI, those aged 34 and under, menstruation status, C/S history, residing in the 2nd region, education status, and the duration spent sitting down during the day (Table 3).

DISCUSSION

UI is a common disease negatively affecting millions of people's lives worldwide. The prevalence reported for women and men are 4.5-53% and 1.6-24%, respectively (20). The wide interval of prevalence rates results from the different definitions of incontinence. Incontinence is seen three-four times more in women than in men and shows a parallel increase with age (21). This major difference in prevalence is based on the lack of incontinence definition clinically, on differences in methodology, and problems in validating results. In a study by Van Oyen et al. in Belgium, total UI prevalence in the population aged 15 years and over has been found as 4.6%, which has also been shown to increase to 21% in women aged 75 years and over (22). In another study from the UK, while SUI, UUI, and MUI prevalence has been determined respectively as 15.3%, 13.3%, and 11.5% (23), in a study comprising women aged between 48 and 86 years in Gothenburg,

Sweden, UI prevalence has been found as 24.6% in women aged 86 years and as 12.2% in women aged 46 years (24). UI prevalence in Italian, town-dweller young and middle-aged women has been found by Siracusano et al. as 20% (1). Again, 17% of the adult women population in Denmark have been reported as incontinent (25). A 26.3% prevalence has been reported in Australian women aged 20 years and over (26). Hannestad and colleagues have presented a 25% prevalence in Norwegian women at the same age group and 7% in severe UI. In another study, UI prevalence in Spain, France, Germany, and the UK has been found respectively as 23.9%, 44%, 41%, and 42% (27). According to Smith's urology, approximately 50% of the patients in nursing homes and 15-30% of women aged 65 years and over complain about UI (28). In 2005, the general prevalence of UI was found as 23.9% in a study titled "UI prevalence, risk factors, and its effects on quality of life in women in the west of Turkey" conducted by the Urology Department of Adnan Menderes University Medical Faculty on 1012 women aged 18 years and over. Among these women, 62 (25.6%) had UUI, 80 (33.1%) had SUI, and 100 (41.3%) had MUI, and prevalence rates were reported to increase with increasing age (29). There are other studies evaluating women's UI in Turkey. According to these studies, prevalence rates vary between 24.5% and 49.7% (30,31). In our study, UI prevalence was found as 19.2% (850/4434). Of the patients, 13% indicated that they had suffered enuresis nocturna before the age of 15 years. Of the participants, we detected that 73.6% had SUI (622/850) SUI and 72% had UUI (609/850).

Sex life and interpersonal relationships are influenced negatively due to incontinence (32). In the study by Siracusano et al., 85.5% of women with urinary incontinence have reported that they could have normal sexual intercourse and their sexual activities have not been harmed by UI (1). In this study, while total prevalence was 20%, 18% of those with UI indicated that they had suffered from enuresis nocturna before the age of 18 years, and 47% expressed that UI started after having given birth. Of the incontinent women, 83% had SUI, 44% had UUI, 18% used pads, 20% had seen a doctor and only half of them had received medical, surgical or rehabilitation treatment, 50% had suffered from or was suffering at that time from UTI, and 8% also had fecal incontinence. The fact that 41.5% (441/850) of the incontinent women in our study stated that they had painful sexual intercourse suggests how negatively they were affected.

UTI is a reversible condition that could cause or accompany urinary incontinence (29). It is said that presence of UTI negatively affects UI prevalence in women (22). In our study, UUI prevalence was 3.8% in women with previous UTIs (78/2071) and 3.6% in women with no previous UTIs (87/2436).

Table 1. The relation of urge incontinence with various parameters in the questionnaire form

Parameters	Urge Incontinence		p
	Present (%)	Absent (%)	
1- Age:			
15-24	20 (1.9)	1061 (98.1)	<0.05
25-34	44 (2.8)	1501 (97.2)	
35-44	28 (2.9)	950 (97.1)	
45-54	36 (7.8)	423 (92.2)	
55-64	17 (9.7)	159 (90.3)	
65 and above	15 (10.6)	127 (89.4)	
Total	160 (3.7)	4221 (96.3)	
2- BMI:			
Underweight-normal	39 (2.0)	1919 (98.0)	<0.05
Overweight	53 (3.9)	1317 (96.1)	
Obese-Morbid obese	61 (7.1)	804 (92.9)	
Total	153 (3.6)	4040 (96.4)	
3- Q14:			
Yes	122 (3.7)	3198 (96.3)	0.853
No	11 (3.5)	306 (96.5)	
Total	133 (3.7)	3504 (96.3)	
4- Q18:			
Yes	88 (3.5)	2402 (96.5)	0.689
No	73 (3.8)	1868 (96.2)	
Total	161 (3.6)	4270 (96.4)	
5- Q22:			
Never	133 (3.6)	3534 (96.4)	0.893
1-5	13 (4.1)	306 (95.9)	
6-10	9 (3.1)	277 (96.9)	
11 and above	10 (4.3)	225 (95.7)	
Total	165 (3.7)	4342 (96.3)	
6- Q25:			
Never	74 (4.4)	1616 (95.6)	<0.05
1-2	32 (2.2)	1400 (97.8)	
3-4	32 (3.3)	951 (96.7)	
5 and above	27 (6.7)	375 (93.3)	
Total	165 (3.7)	4342 (96.3)	
7- Q26:			
2499	16 (4.9)	313 (95.1)	0.006
2500-4000	69 (3.5)	1930 (96.5)	
4001 and above	25 (7.0)	333 (93.0)	
Total	110 (4.1)	2576 (95.9)	
8- Q27:			
Positive	78 (3.8)	1993 (96.2)	0.728
Negative	87 (3.6)	2349 (96.4)	
Total	165 (3.7)	4342 (96.3)	
9- Q29:			
1-3	144 (3.6)	3869 (96.4)	0.978
4 and above	4 (3.5)	109 (96.5)	
Total	148 (3.6)	3978 (96.4)	

Table 1. The relation of urge incontinence with various parameters in the questionnaire form (continue)

Parameters	Urge Incontinence		p
	Present (%)	Absent (%)	
10- Q32:			
Yes	54 (8.3)	594 (91.7)	<0.05
No	107 (2.8)	3680 (97.2)	
Total	161 (3.6)	4274 (96.4)	
11- Q33:			
Normal vaginal delivery	109 (4.6)	2262 (95.4)	0.066
Assisted delivery	7 (2.9)	232 (97.1)	
C/S	25 (2.9)	834 (97.1)	
Total	141 (4.1)	3328 (95.9)	
12- Zone:			
1.	49 (3.8)	1254 (96.2)	0.004
2.	29 (2.8)	994 (97.2)	
3.	56 (5.4)	990 (94.6)	
4.	31 (2.7)	1103 (97.3)	
Total	165 (3.7)	4341 (96.3)	
13- Education:			
High school-University	33 (2.3)	1423 (97.7)	<0.05
Primary-Secondary school	77 (3.5)	2151 (96.5)	
Illiterate	55 (7.1)	718 (92.9)	
Total	165 (3.7)	4292 (96.3)	
14 -Q34:			
4 hours and below	56 (3.1)	1774 (96.9)	<0.05
5-8 hours	56 (3.4)	1590 (96.6)	
9 hours and above	39 (7.0)	518 (93.0)	
Total	151(3.7)	3882 (96.3)	

This difference was not statistically significant. While MUI prevalence was 12.3% in women with previous UTIs (255/2071), it was 7.8% in women with no previous UTIs (190/2436). This difference was found statistically significant.

Patients with incontinence have low self-esteem and feel ashamed and guilty, which prevents them from working productively and taking part in social activities. Some studies have started to reveal the relation between UI and depression (11,12). It has been reported that 22% of women with incontinence feel ashamed of incontinence and perceive it as humiliating, but only 6% are disappointed and only 2% stay home for a long time (1). Again, the same study has put forth that 62% of incontinent individuals define themselves as anxious or nervous, 22% express an increase in urinary incontinence when they are at a state of anxiety and tension, 9% take antidepressants, 85% are sexually active and only 2% consider UI as an obstacle for a satisfying sexual activity. Moreover, 30% of the subjects in a study have indicated that they feel disabled due to their disease and that UI has

serious psychosocial effects (22). In our study, of the patients with UI, 34.9% (294/850) noted that they perceived UI as a shameful and mortifying condition, 59.3% (515/850) defined themselves as angry and tense, and 25.3% (233/850) stated that they were using antidepressants. All of these findings are parallel to the above-mentioned studies. Again, Siracusano et al. have found in their study that of the women with UI complaints, 22% consider incontinence as shameful and mortifying, 62% feel angry or tense, and 9% use antidepressants.

A study has reported that UI in women increases with age and its reason is unknown (22). In our study, it was seen that UI increased with age, SUI increased with age in the age range of 15-54 years but decreased in women aged 55 and over, and MUI increased with age, just as UUI. While UI prevalence was found as 16.4% (690/3894) in ages between 15 and 49 years, UUI, SUI, and MUI in the same age group was determined as 2.9% (112/3894), 3.7% (146/3894) and 8.2% (321/3894), respectively.

Table 2. The relation of stres incontinence with various parameters in the questionnaire form

Parameters	Stres Incontinence		p
	Positive(%)	Negative(%)	
1- Zone:			
1.	49 (3.8)	1254 (96.2)	<0.05
2.	31(3.0)	992 (97.0)	
3.	64 (6.1)	982 (93.9)	
4.	34 (3.0)	1100 (97.0)	
Total	178 (4.0)	4328 (96.0)	
2- BMI:			
Underweight-normal	42 (2.1)	1916 (97.9)	<0.05
Overweight	73 (5.3)	1297 (94.7)	
Obese-Morbid obese	52 (6.0)	813 (94.0)	
Total	167 (4.0)	4026 (96.0)	
3- Age:			
15-24	15 (1.4)	1066 (98.6)	<0.05
25-34	50 (3.2)	1495 (96.8)	
35-44	60 (6.1)	918 (93.9)	
45-54	36 (7.8)	423 (92.2)	
55-64	8 (4.5)	168 (95.5)	
65 and above	5 (3.5)	137 (96.5)	
Total	174 (4.0)	4207 (96.0)	
4- Education:			
High school- University	44 (3.0)	1412 (97.0)	0.056
Primary – Secondary school	95 (4.3)	2133 (95.7)	
Illiterate	38 (4.9)	735 (95.1)	
Total	177 (4.0)	4280 (96.0)	
5- Q17:			
Yes	21(3.6)	556 (96.4)	0.657
No	155 (4.0)	3694 (96.0)	
Total	176 (4.0)	4250 (96.0)	
6- Q22:			
Never	147 (4.0)	3520 (96.0)	0.557
1-5	11 (3.4)	308 (96.6)	
6-10	8 (2.8)	278 (97.2)	
11 and above	12 (5.1)	223 (94.9)	
Total	178 (3.9)	4329 (96.1)	
7- Q25:			
Never	61 (3.6)	1629 (96.4)	0.528
1-2	54 (3.8)	1378 (96.2)	
3-4	43 (4.4)	940 (95.6)	
5 and above	20 (5.0)	382 (95.0)	
Total	178 (3.9)	4329 (96.1)	
8-Q26:			
2499	15 (4.6)	314 (95.4)	0.817
2500-4000	99 (5.0)	1900 (95.0)	
4001 and above	20 (5.6)	338 (94.4)	
Total	134 (5.0)	2552 (95.0)	

Table 2. The relation of stres incontinence with various parameters in the questionnaire form (continue)

Parameters	Stres Incontinence		p
	Positive(%)	Negative(%)	
9-Q29:			
1-3	163 (4.1)	3850 (95.9)	0.781
4 and above	4 (3.5)	109 (96.5)	
Total	167 (4.0)	3959 (96.0)	
10-Q32:			
Yes	35 (5.4)	613 (94.6)	0.039
No	140 (3.7)	3647 (96.3)	
Total	175 (3.9)	4260 (96.1)	
11-Q33:			
Normal vaginal delivery	116 (4.9)	2255 (95.1)	0.001
Assisted Delivery	21 (8.8)	218 (91.2)	
C/S	27 (3.1)	832 (96.9)	
Total	164 (4.7)	3305 (95.3)	

In another study, it has been reported that SUI prevalence peaks at the 4th decade of life and UUI and MUI peaks after the 6th decade of life (33). According to our questionnaire results, while SUI prevalence was 68.3% in women aged 30 years and under (157/230), it was 75.9% in women aged 30 years and over (461/607). UUI prevalence was 67.5% in women aged 30 years and under (156/2301) it was 73.6% in women aged 30 years and over (443/602). Again, in the same aforementioned study, 83% of UIs have been found to be associated with physical activity, 43.5% have reported UUI. It has been noted that the prevalence is 61% in those aged 30 years and under and 42% in those aged 30 and over and that frequent urinary and genital infections at ages between 20 and 30 is associated with this prevalence (1). In our study, it was detected that 23.6% of the women (622/850) leaked urine with physical strain and 72% (609/850) experienced UUI. While there was a 2.4 folds increase in experiencing MUI in the age group of 35-44 years when compared to those aged between 15-24 years, this increase was 3.12 folds, 3.44 folds, and 6.1 folds in the age groups of 45-54 years, 55-64 years, and 65 years and over, respectively when compared to those aged between 15-24 years.

In a study in Belgium, UI has been reported to increase with decreasing physical activity (22). Physical activity in our study was evaluated by questioning how many hours in a day is spent sitting down. UI was found at a rate of 3.1% (56/1830) in those who spent four hour or less sitting down and 3.4% (56/1646) in those who spent 5-8 hours sitting down. It was detected as 7% (39/557) in those who spent nine hours or more sitting down. This difference was statistically significant. While MUI rate was found as 9.1% in those spending four hours or less sitting down (167/1830), this rate was 9.9%

(163/1646), and 11.1% (62/557) in those spending 5-8 hours and nine hours and more sitting down, respectively. UUI was 2.17 folds higher in those spending nine hours or more sitting down when compared to those spending four hours or less sitting down.

It was determined in our study that there was a direct proportion between BMI and UUI, if BMI increased so did UUI prevalence and that with increased BMI, SUI and MUI prevalences also increased. In underweight and normal weight individuals, UUI prevalence was 2% (39/1958), SUI prevalence 2.1% (42/1958), and MUI prevalence 6.6% (130/1958). In overweight individuals, UUI prevalence was 3.9% (53/1370), SUI prevalence 5.3% (73/1370), and MUI prevalence 9.7% (133/1370). In obese and morbidly obese individuals, UUI prevalence was 7.1% (61/865), SUI prevalence 6.0% (52/865), and MUI prevalence 16.9% (146/865). It has been reported that UI risk increases in obese patients and continence state is significantly associated with BMI (22,24,34). In our study, UUI risk was 2.29 folds higher in the obese-morbidly obese group when compared to the underweight and normal weight group. In a study from our country, although obesity and BMI are well-known risk factors for SUI, a relation has not been found between UI and obesity (29).

All incontinence types were detected to be inversely proportionate. In a study, a statistically significant relation has not been established between UI and education status and per capita income, but a decrease has been observed in urinary incontinence with higher education level (22). In our study, while MUI risk was 1.61-fold higher in women residing in the 3rd region when compared to those residing in the 1st region, the risk was 2.93 folds higher in women residing in the 4th region as opposed to those residing in the 1st region.

Table 3. The relation of mixed incontinence with various parameters in the questionnaire form

Parameters	Mixed type Incontinence		p
	Positive(%)	Negative (%)	
1- Zone:			
1.	111 (8.5)	1192 (91.5)	0.035
2.	91 (8.9)	932 (91.1)	
3.	123 (11.8)	923(88.2)	
4.	120 (10.6)	1014 (89.4)	
Total	445 (9.9)	4061 (90.1)	
2- BMI:			
Underweight-normal	130 (6.6)	1828 (93.4)	<0.05
Overweight	133 (9.7)	1237 (90.3)	
Obese-Morbid obese	146 (16.9)	719 (83.1)	
Total	409 (9.8)	3784 (90.2)	
3- Age:			
15-24	33 (3.1)	1048 (96.9)	<0.05
25-34	109 (7.1)	1436 (92.9)	
35-44	131 (13.4)	847 (86.6)	
45-54	79 (17.2)	380 (82.8)	
55-64	37 (21.0)	139 (79.0)	
65 and above	41 (28.9)	101 (71.1)	
Total	430 (9.8)	3951 (90.2)	
4- Education:			
High school- University	74 (5.1)	1382 (94.9)	<0.05
Primary – Secondary school	209 (9.4)	2019 (90.6)	
Illiterate	161 (20.8)	612 (79.2)	
Total	444 (10.0)	4013 (90.0)	
5-Q17:			
Yes	75 (13.0)	502 (87.0)	0.003
No	352 (9.1)	3497 (90.9)	
Total	427 (9.6)	3999 (90.4)	
6-Q22:			
Never	370 (10.1)	3297 (89.9)	0.426
1-5	34 (10.7)	285 (89.3)	
6-10	23 (8.0)	263 (92.0)	
11 and above	18 (7.7)	217 (92.3)	
Total	445 (9.9)	4062 (90.1)	
7-Q25:			
Never	140 (8.3)	1550 (91.7)	<0.05
1-2	100 (7.0)	1332 (93.0)	
3-4	111 (11.3)	872 (88.7)	
5 and above	94 (23.4)	308 (76.6)	
Total	445 (9.9)	4062 (99.1)	
8-Q26:			
2499	23 (7.0)	306 (93.0)	0.022
2500-4000	235 (11.8)	1764 (88.2)	
4001 and above	47 (13.1)	311 (86.9)	
Total	305 (11.4)	2381 (88.6)	

Table 3. The relation of mixed incontinence with various parameters in the questionnaire form (continue)

Parameters	Mixed type Incontinence		p
	Positive(%)	Negative (%)	
9-Q29:			
1-3	376 (9.4)	3637 (90.6)	0.019
4 and above	18 (15.9)	95 (84.1)	
Total	394 (9.5)	3732 (90.5)	
10-Q32:			
Yes	129 (19.9)	519 (80.1)	<0.05
No	299 (7.9)	3488 (92.1)	
Total	428 (9.7)	4007 (90.3)	
11-Q33:			
Normal vaginal delivery	307 (12.7)	2064 (87.1)	<0.05
Assisted Delivery	27 (11.3)	212 (88.7)	
C/S	54 (6.3)	805 (93.7)	
Total	38 (11.2)	3081 (88.8)	
12-Q18:			
Yes	262 (10.5)	2228 (89.5)	0.032
No	167 (8.6)	1774 (91.4)	
Total	429 (9.7)	4002 (90.3)	
13-Q14:			
Yes	330 (9.9)	2990 (90.1)	<0.05
No	50 (15.8)	267 (84.2)	
Total	380 (10.4)	3257 (89.6)	
14-Q27:			
Yes	255 (12.3)	1816 (87.7)	<0.05
No	190 (7.8)	2246 (92.2)	
Total	445 (9.9)	4062 (90.1)	
15-Q34:			
4 hours and below	167 (9.1)	1663 (90.9)	0.356
5 – 8 hours	163 (9.9)	1483 (90.1)	
9 hours and above	62 (11.1)	495 (88.9)	
Total	392 (9.7)	3641 (90.3)	

In our study, UUI risk was 2.24 folds higher in those in the primary school-secondary school group when compared to those in the high school-university degree group, and the risk in the illiterate group was found to be 2.17 folds higher when compared to the high school-university degree group.

Milsom et al. have reported that UI prevalence in women shows strong correlation with parity and that the most evident risk has been seen after the birth of the first child (24). In another study, the number of births given has been shown to be a strong risk factor for UI (29). In our study, UI prevalence in those giving birth was 21.9% (893/3460), and the increase in the number of births also increased UI prevalence [17.6% in those that had not given birth (290/1650), 21.7% in those that gave birth 3-4 times (211/972), and 37.9% in those that

gave birth five times and more (151/398)]. Siracusano et al. have reported in their study that UI is seen more in women who has given birth than nulliparous women in all age groups and is more frequent in women who has given birth to four and more children. Nonetheless, it has been concluded that the relation between childbearing and incontinence is not clear (1). While Nygaard et al. has found no relation between UI and those giving birth with C/S, they have found a relation between parity and number of vaginal births and UI development (24). In another study, a relation could not be found between UI and mode of delivery (29). We also investigated the relation between UI and mode of delivery and detected the following: UUI was 4.6% (109/2371) in those giving normal vaginal birth (NVB), 2.9% in those giving assisted birth

(AB) (7/239), and 2.9% in those giving birth with C/S (25/859). These differences were not statistically significant. The prevalence of SUI in those giving NVB was 4.9% (116/2371), 8.8% in those giving AB (21/239), and 3.1% in those giving birth with C/S (27/859). These differences were statistically significant. MUI was seen at a rate of 12.9% in those giving NVB (307/2371) and 11.3% in those giving AB (27/239). MUI was detected as 6.3% in those giving birth with C/S (54/859). These differences were also statistically significant. The risk of MUI was 1.5-fold higher in those giving at least one AB compared to those giving NVB. The risk of SUI was 2.41 folds higher in those giving at least one birth with C/S compared to those giving NVB.

CONCLUSION

Urinary incontinence can be an important health problem especially for women. Its prevalence has increased with increasing average life expectancy and social awareness. Determining the type of incontinence and treating it accordingly has a fundamental role in the management of public health policy. On the other hand, patients' quality of life increases significantly with proper diagnosis and treatment.

Ethics Committee Approval: This study was conducted in 2006 by derived from the post-specialization thesis of Dr. Can Benlioğlu. There was no ethics committee approval at that time.

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