



Urinary Incontinence in Pakistani Women: Impact on Quality of Life and Treatment-Seeking Behavior

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ABSTRACT

Objectives: To determine the prevalence of urinary incontinence and assess its impact on these women's quality of life and treatment-seeking behaviour.

Methods: This study was carried out at consultant clinics of tertiary care hospital. The study design was cross-sectional, and 560 women over the age of 18 were interviewed. We used the "short form of the international consultation on incontinence questionnaire." The effect of urine leakage on their life was evaluated, and their attitude toward obtaining treatment.

Results: UI was prevalent in 32.5% (n=182) and showed an increasing trend with age, BMI, and parity. The distributions of urge UI, stress UI and mixed UI were 40.11% (n=75), 35.71% (n=62) and 24.73% (n=45) respectively. A total of 69.23% of patients experienced negative effects of UI, affecting their QoL; this effect was moderate to severe. Around 77 (42.3%) women (total n=182) sought medical help; most approached gynaecologists (P <0.001). Urge UI caused women to seek medical help more frequently, whereas stress UI severely impacted their QoL.

Conclusion: One of three women had UI. There was an increasing trend with age, BMI and parity. UI affected QoL in more than half of the women; only patients with moderate to severe symptoms sought medical help.

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Introduction

Incontinence of Urine is a frequent issue affecting women in the middle age and the peri and postmenopausal age group [1,2]. The International Continence Society (ICS) has defined incontinence of urine as "the complaint of any involuntary leakage of urine" [3,4]. Severe incontinence of urine might significantly affect women's lives, but even mild urinary incontinence can distinctively affect daily life [5,6]. Based on symptoms, incontinence of urine is mainly grouped into stress urinary incontinence, urge urinary incontinence and mixed symptoms.

Prevalence estimates for urinary incontinence are extremely varied, even in the international literature. This has been attributed to the varied definitions of urinary incontinence. The geographical

distribution of studied populations and variability in methods used for data collection contributed to the wide variations in the prevalence. The assessment was done by questioning through postal correspondence, personal interviews or clinical assessment [7,8]. A review of 48 epidemiological studies showed a variation of 12% and 53% in prevalence [9]. A study in 2003 showed a median prevalence of 27.6% in urinary incontinence among females of different non-institutional populations [10]. A lack of significant studies gives an epidemiological outlook to this problem. However, it is of value to evaluate the spectrum of incontinence of urine in the population we are encountered to. It helps to organize clinical services accordingly.

Certain factors influence the occurrence of urinary incontinence in females. It has been found that age, education, reproductive history, BMI, chronic medical diseases, and personal and social

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factors directly or indirectly affect urinary incontinence [11].

Urinary incontinence negatively affects the quality of life. It has many physical, emotional and mental effects on the patient in the form of shame, curtailing their social activities and sometimes loss of esteem [12-14]. Voluntary control of the bladder is associated with the sense of normality in an individual. Their daily well-being depends on the personalized insight of urinary incontinence and its management [15]. Generally, females consider that urinary incontinence impacts their bodily and community-based activities and do not affect their daily activities [15-17]. Many studies have reported the possibility of psychological morbidity in the form of major depression, self-blame, behavioural problems and negative religious coping [18-20]. The study was performed in a Muslim country where prayers and ablution are major religious beliefs. So having incontinence of any type impacts their daily life activities to a significant extent.

The lack of robust data on the magnitude of urinary incontinence and how it impacts the quality of life in our clinical population guided us to carry out this cross-sectional study. The main objective of the present work was to find out the prevalence of women presenting in the outpatient clinics in our hospital, a tertiary care medical facility. We also assessed the risk factors and the types and severity of urinary incontinence. The impact of the acuteness of incontinence on the quality of life of these females was also evaluated.

Material and Methods

It was a cross-sectional research study. The relevant information was gathered from the women presenting in the outpatient gynaecological clinics in tertiary care hospital. The participants were enrolled in the outpatient wing of the department of OB&GYN in a tertiary care hospital. These participants came to the consultant clinics of the hospital. It was carried out between March 2019 to February 2020. The institutional review board is the competent authority of research approval. Permission was granted.

The research report included all women aged > 18 years who had urine leakage at least once during the past four weeks. The study was explained, and informed consent was taken before presenting them with the questionnaire. Exclusion criteria were pregnancy, current urological problems, urinary obstruction, any urinary pathologies, use of a catheter, diuretics and previous urological surgery, diabetes mellitus and all degrees of uterovaginal prolapse. The initial part included the female's demographical attributes and obstetrics record: age, weight, height and number of children.

In the next part, the "international consultation on incontinence questionnaire - short form (ICIQ-SF)" was used to ascertain the frequency and severity of incontinence of urine and its consequences on the patient's quality of life. ICIQ-Short Form is a brief, specific survey form consisting of three items: Frequency of urinary incontinence, quantifying into whether she experiences urine leakage many times in a day to no complaint of involuntary loss of urine [1,2]. Volume was quantified from nothing to large quantities [3]. The effect of urinary leakage on their daily lives was divided into mild, moderate, severe, and great extent. The

total ICIQ score was computed by adding the frequency, volume and effect on their daily activities.

The next part of the question sheet was drafted to describe various tasks influenced by urinary leakage. Everyday activities (outing, walking up or downstairs, interference in work) interference with prayers, anxiousness, and need to wear a pad.

The fourth part of the interviews covered the attitudes of women towards treatment seeking. The women were inquired about any need for medical consultation for urinary incontinence and whether they preferred to attend the GP clinic, gynaecological consultant or urological consultant.

Definitions

Urinary incontinence has been defined as "any leakage or involuntary loss of urine" by The International Continence Society (ICS). Urge incontinence is described as incontinence of urine that goes with or is instantly anteceded by urgency. Stress incontinence is defined as spontaneous leakage on strenuous physical labour, sternutation or coughing out. Mixed incontinence is reflex Urination associated with both urge and stress.

Statistical Methods and Data Analysis

The frequency of urinary leakage was calculated as the ratio of females who had urinary leakage to the total figure of women interviewed. Statistical analysis included descriptive analysis, comparison tests using Fisher exact test for qualitative factors and Kruskal – Wallis test for continuous variables. Models of Logistic regression were employed to analyze the clinical characteristics associated with urinary incontinence.

Results

A total number of 560 consecutive females were eligible for recruitment between October 2019 to September 2020. One hundred eighty-two confirmed that they had experienced urinary incontinence in the last four weeks, giving an overall prevalence of 32.5% (n=162). In our analysis the commonest variety of urinary incontinence identified was urge 41.21% (n=75) followed by stress urinary incontinence 34.07% (n=62) and then mixed urinary incontinence 24.73% (n=45).

The mean age of the sample was 56.16 years (± 9.67), mean BMI 30.10 kg/m² (± 4.29) and delivered a mean number of 4.49 (± 1.39) children. The incontinent women were older (56.16 years vs 36 years), had an elevated BMI (30.10 kg/m² vs 26.8 kg/m²) and delivered a larger number of children (4.49 vs 4.0) than continent women. An Independent two-sample T-test was used to calculate P-values, which was significant (0.00).

The gross prevalence of urinary incontinence in our group was 32.5%. It showed an increasing trend with an increase in age, BMI and parity. In the final logistic regression model, age 60–69 years. [OR: 0.9 95% CI: 0.6–1.49], BMI more than 30 kg/m² (OR 0.63, 95% CI: 0.43–0.94) and an average of six deliveries (OR 0.95 95% CI: 0.59–1.53) corresponded with higher odds of experiencing urinary incontinence. (ref; Table:1)

Table 1: Prevalence of urinary incontinence to clinical characteristics

Age (Years)	Numbers (560)	Frequency (%)	Odds Ratio (95%CI)
18–29	23	4.34 (1)	1
30–39	67	16.41 (11)	0.23 (0.03–1.9)
40–49	112	20.53 (23)	0.76 (0.34–1.68)
50–59	162	40.74 (66)	0.38 (0.22–0.66)
60–69	173	41.61 (72)	0.96 (0.62–1.49)
70+	23	39.13 (9)	1.11 (0.46–2.7)
BMI (kg/m ²)			
< 25	119	16.8 (20)	1
25–30	238	31.93 (76)	0.43 (0.25–0.75)
≥ 30	203	42.36 (86)	0.63 (0.43–0.94)
Parity			
1	20	10% (2)	1
2–3	173	23% (40)	0.37 (0.08–1.66)
4–5	267	38% (101)	0.49(0.32–0.76)
6+	100	39% (39)	0.45 (0.59–1.53)

There was a rising trend in age and parity from urge urinary incontinence to stress urinary incontinence to Mixed urinary leakage, i.e., patients who were younger and who had a lesser number of children were mostly suffering from Urge UI, and with increasing age and parity, there was a shift from urge UI to stress UI and to mixed UI. Patients of mixed UI were older and were grand multiparous. Most patients with higher BMIs were in the mixed UI category, followed by urge UI and then stressed UI. (Table: 2)

Table 2: Summary Statistics of Interval and Ratio Variables by Type Incontinence

Variables	Urge UI	Stress UI	Mixed UI	p
Age	53.77 ± 9.52	55.10 ± 10.06	61.02 ± 9.21	0.07
BMI	29.79 ± 4.03	29.71 ± 4.42	31.18 ± 4.43	0.50
Parity	4.07 ± 1.28	4.74 ± 1.51	4.87 ± 1.20	0.028

UI Urinary Incontinence

Urgency and stress associated with urinary incontinence were predominant in females aged 55 years (± 9.30). In contrast, mixed urinary leakage was more common in older women.

Shapiro-Wilk tests were used to determine whether the distributions of Age, BMI, and parity were significantly different from a normal distribution. Which showed that the data was not normally distributed. Therefore, we applied nonparametric tests. Continuous variables were compared among types of UI by applying the Kruskal-Wallis test. In contrast, Fisher's exact test was used for qualitative variables. The results of the Kruskal-Wallis test were not significant for Age and BMI ($p=0.07$ & $p=0.50$), whereas substantial in the case of parity ($p=0.028$). They indicated that even though there was an increasing trend of the age, BMI and Parity from Urge urinary leakage to stress urinary flow to mixed incontinence, the rising trend was not substantially different for age and BMI.

The intensity of urine incontinence and effect on the standard of life was established by employing the ICIQ-Short Form questionnaire regarding the voiding habits, i.e., the prevalence of urinary incontinence, the quantity of leakage and ICIQ score. The frequency of urination was noted to be once a week in thirty-two (17.5%) patients, two or three times a week in thirty patients (16.48%), once daily in thirty-five (19.23%) patients, few times a day in 59 (32%) patients and always in twenty-six (14.29%) patients. Moreover, the amount of urine leakage was reported as none in eleven (6.04%) patients, a small amount in sixty-five (35.71%) patients, a moderate amount in eighty-four (46.15%) patients and a large amount in twenty-two (12.09%) patients. (Table: 3).

Table 3: The severity of Urinary Incontinence

Variable	n	%	
How often			
About Once a Week	32	17.58	
2 or 3 times a week	30	16.48	
Once-daily	65	19.23	
Few times a day	59	32.42	
Always	26	14.29	
How much			
None	11	6.04	
A small amount	65	35.71	
Moderate amount	84	46.15	
Large Amount	22	12.09	
Daily Life affect	n	%	P<0.001
0; Not at all	24	13.19	
1-3: Mild	32	17.58	
4-6: Moderate	70	38.46	
7-9: Severe	56	30.77	

These categorical variables of severity were compared among the subtypes of urinary incontinence by applying Fisher's exact test. The comparison showed that the prevalence of urinary incontinence was highest in women with stress-related urinary leakage followed by urge UI & then mixed UI (21.84%, 4.39% and 3.29%, $p < .001$). Similarly, the urine leakage followed the same pattern, i.e., SUI>UI>MUI (4.94%, 3.84% and 3.29%, $p=.020$). Additionally, the ICIQF-SF score was calculated, which categorized urinary incontinence into different grades of severity. These scores varied among different subtypes. As indicated in Table-3, a total of 6.04 % with stress UI were reported to be in the very severe category of the ICIQF-SF UI score, followed by 4.94 % with urge UI and 2.74 % of mixed UI patients. Urinary leakage did not affect the daily life in 13.1% of patients. 17.5% of patients were mildly affected. Most of the patients reported a moderate (38.4%) and severe (30.7%) effect of urinary leakage on their everyday activities. The results, when compared among types of urinary incontinence, manifested a substantial effect on everyday life. ($P<0.001$). These results are shown in Table: 4.

Table 4: Comparing the severity of urinary incontinence among the types of Urinary Incontinence

VARIABLE	URGE UI	STRESS UI	MIXED UI	P-Value
How often				< .001
About Once a Week	22 (12.08%)	9 (4.94%)	1 (0.54%)	
2 or 3 times a week	16 (8.79%)	8 (4.39%)	6 (3.29%)	
Once daily	17 (9.34%)	9 (4.94%)	9 (4.94%)	
Few times a day	12 (6.59%)	24 (13.1%)	23 (12.63%)	
Always	8 (4.39%)	12 (6.59%)	6 (3.29%)	
How much				.020
None	5 (2.74%)	5 (2.74%)	1 (0.54%)	
A small amount	37 (20.32%)	12 (6.59%)	16 (8.79%)	
Moderate amount	26 (14.2%)	36 (19.7%)	22 (12.08%)	
Large Amount	7 (3.84%)	9 (4.94%)	6 (3.29%)	
ICIQF-SF score				< .001
Slight (1-5)	42 (23.07%)	12 (6.59%)	2 (1.09%)	
Moderate (5-12)	15 (8.24%)	14 (7.69%)	25 (13.7%)	
Severe (13-18)	9 (4.94%)	25 (13.73%)	13 (7.14%)	
Very Severe (19-21)	9 (4.94%)	11 (6.04%)	5 (2.74%)	

UI Urinary Incontinence

The impact of urinary leakage on the quality of daily life was also evaluated through patients' social complaints and whether urinary incontinence dictated any changes in their lifestyle. Of the total 182 patients, urge urinary incontinence affected the shopping or excursion outside the home more than stress UI and mixed urinary incontinence, i.e., [(17.5%, 5.49% and 1.64%, $p < 0.001$)].

In our study, working performance and friendship was affected only by urge UI. Furthermore, the effect of UI on daily home activities was noticed highest in stress urinary leakage followed by mixed incontinence and then urge incontinence [(23.6%) vs (21.97%) vs (18.13 %), $p < 0.001$].

General health status was merely disrupted by urge urinary incontinence only. The factors of nervousness and anxiety were more prevalent in patients with a stress factor in urinary leakage. Therefore their need to take additional precautionary measures against urinary leakage was more as well. As shown in (Table: 5)

Table 5: Impact of urinary incontinence on lifestyle change among subtypes of urinary incontinence

VARIABLE	URGE UI	STRESS UI	MIXED UI	P-Value
Lifestyle change				< .001
Affect shopping or excursions outside the home	32 (17.5%)	10 (5.49%)	3 (1.64%)	
Affect working performance and friendship	4 (2.19%)	0 (0%)	0 (0%)	
Affect daily home activities	33 (18.13%)	43 (23.62%)	40 (21.97%)	
Affect general health status	1 (0.54%)	0 (0%)	0 (0%)	
Makes you nerves and anxious	3 (1.64%)	5 (2.74%)	2 (1.09%)	
Need for wearing pad or protector	2 (1.09%)	4 (2.19%)	0 (0%)	

Seeking Medical Assistance and Treatment

Among 182 patients with incontinence of urine, more than half (57.7%) of the patients never visited any doctor for their problem. Among those who did seek medical assistance. (42.31%), the majority consulted a gynaecologist (53%) followed by a urologist (31%). General practitioners (16%) were among the least consulted category in women with urinary incontinence ($p < 0.001$). These results have been shown in (Table: 6). Surprisingly none of the subtypes of urinary incontinence was common among patients who did not seek medical advice. Of those who availed medical advice, the majority of them were suffering from urinary incontinence due to urge, followed by stress urinary leakage and lastly mixed urinary leakage, [(49.3%) vs (37.66%) vs (12.98%), $p < 0.001$]. As most of the consultations were of a gynaecologist, most of them were suffering from incontinence of urine due to urge (32%). Among patients who visited a urologist, mixed urinary incontinence (16%) was commonly followed by urinary incontinence due to urge (15%) and then urinary incontinence due to stress (9%).

Table 6: Treatment-seeking behaviour of women towards different categories of medical assistance

Variable		P Value
General Practitioner		<0.001
No	65 (84%)	
Yes	12 (16%)	
Gynaecologist		<0.001
No	37 (48%)	
Yes	40 (53%)	
Urologist		<0.001
No	53 (69%)	
Yes	24 (31%)	

Discussion

This cross-sectional study assessed the frequency of incontinence of urine in women > 18 years and the clinical characteristics of women presenting with various categories of urinary incontinence. It also studied the impact of urinary incontinence on the quality of daily life and treatment-seeking behaviour of the studied women. Overall, 32.5% experienced urinary incontinence at a minimum of once a month. The frequency of urinary incontinence increased with age, parity and BMI. Urge urinary incontinence was the most frequent type of urinary incontinence, followed by stress incontinence and mixed incontinence of urine.

Female urinary leakage has not been a very popular subject in our local literature. Most local literature shows a wide prevalence range of 11.5% and 44.4% [21,22]. Our research study's all-inclusive prevalence rate (32.50%) falls somewhere in the middle of the observations made in the above studies.

Even international literature assessing prevalence rates of urinary incontinence ranges between 24.5% and 49.7% [23-28]. Ozerdogan N, Beji NH, Yalcin O used an authenticated questionnaire indicating a prevalence rate of 25.8% in patients above the age of 20 years, similar to a French study showing a prevalence rate of 26.8% [1,25]. In Australian women above the age of 20 years, 26.3% were found to have some form of incontinence [26]. A community-based epidemiological survey in Norway in the year 2000 showed incontinence in 25% of cases and severe urinary incontinence in 7% of cases in the same age strata [27]. The overall prevalence rates (32.5%) were higher than the above studies but lower than most European populations [4].

In this research study, the prevalence of urinary incontinence increased with age, increasing BMI and increasing parity. Indeed age > 50 years, BMI > 25kg/m² and delivery of more than three children were the most predictive factors. Most of the literature potentiates our observations [1,3].

In this representative cohort, urge urinary incontinence was the preponderate form of urinary incontinence, followed by urinary stress leakage and mixed urinary leakage. The elevated rate of urge urinary incontinence was encountered in females 70 years of age and more.

Urinary incontinence due to stress was predominant before the age of 70 years, while mixed urinary incontinence was more prevalent in the age range of 60–69 years. The steepest rate of stress incontinence was in the patients between 30–39 years

of age. These findings are in agreement with a French (1) and a Turkish Study [3].

Similar to age, BMI and parity were significant variables in the prevalence pattern of incontinence of urine. Parity was the main risk factor for stress urinary incontinence, whereas BMI was significant in urge urinary incontinence [22].

While studying the effect of urinary leakage on quality of life, it was found that incontinence of urine significantly affected the patients' daily activities. Eighty-five percent of women said that it negatively affected them. This was moderate to severe in the majority. However, many studies have shown that the effect is only mild to moderate Mansoor Khalifa et al [1,3]. while assessing that psychological issues and standard of life among Yemeni, Egyptian females founded that urinary incontinence moderately affected their quality of life, which is in consistence with our study [23]. This finding was consistent with a study by Charalambous S, Trantafylidis A (2009). It was ascertained that 65.7% of the Austerian females held the disorder damaging to their quality of life, and 18.3% stated that their symptoms were bothersome to a minimal extent [29,30]. Women may be more embarrassed to report urinary incontinence in the developing world because of shame and stigma. As a result, they seek medical assistance only when the condition becomes severe and they cannot cope with it. Studies on urinary incontinence found more severe symptoms and moderate to severe impact on life quality [21].

The interference of urinary leakage symptoms regarding life quality diversified with the severity of symptoms and type of incontinence. A higher score was reported in patients with stress incontinence, followed by urge incontinence and mixed incontinence. Although there was no statistical difference in the BMI, parity and age in various types of urinary incontinence, the higher ICIQ score could be attributed to the life activities of these women. Our country was a Muslim country, with most of the population performing prayers and ablution five times a day, part of their daily routines. And women consider it a hindrance to the performance of their religious activities. Contrary to our observation. A French study in 2009 found mixed urinary incontinence as having the height ICIQ scores. In their study, females with mixed urinary incontinence were in higher age strata, considering that other co-morbidities, such as diabetes mellitus, neurological pathologies, could affect bladder control [1]. The same associations were found in an Egyptian and a Danish study [12,30].

In our study, 42.3% of women sought medical help, and the majority (53%) consulted a gynaecologist. Although high ICIQ scores were found in females with stress urinary incontinence, those who consulted a doctor were suffering from urge incontinence. This discrepancy could be associated with the observation that urinary incontinence due to stress was more bothersome while performing their household activities. In contrast, urge urinary incontinence affected their activities outside the home in which it is more difficult to manage. In our study, we can interpret that interruptions of activity outside the home were the predictors for seeking help. However, other studies found a direct relationship between high ICIQ scores and treatment-seeking behaviours [1,3,10].

In most Western countries, GP is the first medical assistance for the patients, getting the maximum number of all types of patients, including women with urinary incontinence. Women are more comfortable seeking advice from a gynaecologist in our society, as observed in our study.

A few constraints of this current study need to be mentioned. Urinary incontinence types were diagnosed based on history only, whereas difficult to classify cases may need clinical urodynamic studies. The cohort belonged to only one tertiary care centre.

Our study demonstrated that urinary incontinence is widespread in women attending gynaecological clinics. The intensity and type of urinary leakage dictate the quality of life and treatment-seeking behaviours.

Main Points

- [1] Determination of prevalence and clinical attributes of female urination incontinence. Prevalence being 32.5%, and an increasing trend of incontinence with age, BMI and parity.
- [2] Description of types and gravity of urinary incontinence. The distribution of urge, stress and mixed urinary incontinence was 40.11%, 35.71% and 24.73%.
- [3] Assessment of effects of urinary leakage on their daily activities. Almost 69.23% of women reported moderate to severe effects on their QoL. 13.73% of females with stress incontinence reported severe effects, and a similar percentage with mixed incontinence reported moderate effects. Most of the women with urge incontinence showed only mild effects in QOL.
- [4] Assessment of treatment-seeking behaviour in women suffering from urinary incontinence showed that 42.3% sought medical help, and 53% of those seeking medical help approached gynaecologists. Although symptoms were severe in females with stress urinary incontinence, more women with the urgency of urination seek medical treatment. It could be attributed to the interference in their activities outside the home.

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References

- [1] Lasserre A, Pelat C, Guérault V, Hanslik T, Chartier-Kastler E, et al. Urinary incontinence in French women: Prevalence, risk factors, and impact on quality of life. *Eur Urol.* 2009; 56: 177-83.
- [2] Waetjen LE, Ye J, Feng WY, Johnson WO, Greendale GA, et al. Association between menopausal transition stages and developing urinary incontinence. *Obstet Gynecol.* 2009; 114: 989-98.
- [3] Kocak I, Okyay P, Dundar M, Erol H, Beser E. Female urinary incontinence in the west of Turkey: prevalence, risk factors and impact on quality of life. *Eur Urol.* 2005; 48: 634-41.
- [4] Hunskaar S, Lose G, Sykes D, Voss S. The prevalence of urinary incontinence in women in four European countries. *BJU Int.* 2004; 93: 324-30.
- [5] Mishra GD, Cardozo L, Kuh D. Menopausal transition and the risk of urinary incontinence: results from a British prospective cohort. *BJU Int.* 2010; 106: 1170-5.
- [6] van der Vaart CH, de Leeuw JR, Roovers JP, Heintz AP. The effect of urinary incontinence and overactive bladder symptoms on quality of life in young women. *BJU Int.* 2002; 90: 544-9.
- [7] Hunskaar S, Burgio K, Diokno A, Herzog AR, Hjälmsås K, et al. Epidemiology and natural history of urinary incontinence in women. *Urology.* 2003; 62: 16-23.
- [8] Al-Hayek S, Abrams P. Women's lower urinary tract function and dysfunction: definitions and epidemiology. *Minerva Ginecol.* 2004; 56: 311-25.
- [9] Hampel C, Wienhold D, Benken N, Eggersmann C, Thüroff JW. Prevalence and natural history of female incontinence. *Eur Urol.* 1997; 32: 3-12.
- [10] Minassian VA, Bazi T, Stewart WF. Clinical, epidemiological insights into urinary incontinence. *Int Urogynecol J.* 2017; 28: 687-96.
- [11] Mitchell ES, Woods NF. Correlates of urinary incontinence during the menopausal transition and early postmenopause: observations from the Seattle Midlife Women's Health Study. *Climacteric.* 2013; 16: 653-62.
- [12] Aly WW, Sweed HS, Mossad NA, Tolba MF. Prevalence and Risk Factors of Urinary Incontinence in Frail Elderly Females. *J Aging Res.* 2020; 2020: 2425945.
- [13] Corcos J, Beaulieu S, Donovan J, Naughton M, Gotto M. Symptom Quality of Life Assessment Committee of the First International Consultation on Incontinence. Quality of life assessment in men and women with urinary incontinence. *J Urol.* 2002; 168: 896-905.
- [14] Krause C, Wells T, Hughes S, Brink C, Mayer R. Incontinence in women: effect of expectancy to regain control and severity of symptoms on treatment outcomes. *Urol Nurs.* 2003; 23: 54-61.
- [15] Senra C, Pereira MG. Quality of life in women with urinary incontinence. *Rev Assoc Med Bras (1992).* 2015; 61: 178-83.
- [16] Papanicolaou S, Hunskaar S, Lose G, Sykes D. Assessment of bothersomeness and impact on quality of life of urinary incontinence in women in France, Germany, Spain and the UK. *BJU Int.* 2005; 96: 831-8.
- [17] Santos PC, Mendonça D, Alves O, Barbosa AM. Prevalência e impacto da incontinência urinária de stress antes e durante a gravidez [Prevalence and impact of stress urinary incontinence before and during pregnancy]. *Acta Med Port.* 2006; 19: 349-56.
- [18] Yip SK, Cardozo L. Psychological morbidity and female urinary incontinence. *Best Pract Res Clin Obstet Gynaecol.* 2007; 2: 321-9.
- [19] Abbott J, Hart A, Morton A, Gee L, Conway S. Health-related quality of life in adults with cystic fibrosis: the role of coping. *J Psychosom Res.* 2008; 64: 149-57

- [20] Stanton AL, Danoff-Burg S, Cameron CL, Bishop M, Collins CA, Kirk SB, Sworowski LA, Twillman R. Emotionally expressive coping predicts psychological and physical adjustment to breast cancer. *J Consult Clin Psychol*. 2000; 68: 875-82.
- [21] Jokhio AH, Rizvi RM, Rizvi J, MacArthur C. Urinary incontinence in women in rural Pakistan: prevalence, severity, associated factors and impact on life. *BJOG*. 2013; 120: 180-6.
- [22] Rizvi RM, Nazim MH. The frequency of urinary symptoms in women attending gynaecology clinics at the Aga Khan University Hospital Karachi, Pakistan. *J Pak Med Assoc*. 2005; 55: 489-92.
- [23] GÜNEŞ G, GÜNEŞ A, PEHLİVAN . Urinary incontinence prevalence among adult women in the area of the yeşilyurt health centre. *Ann Med Res* 2000; 7: 54-7.
- [24] Turan C, Zorlu CG, Ekin M, Hancerlioğullari N, Saraçoğlu F. Urinary incontinence in women of reproductive age. *Gynecol Obstet Invest*. 1996; 41: 132-4.
- [25] Ozerdoğan N, Beji NK, Yalçın O. Urinary incontinence: its prevalence, risk factors and effects on the quality of life of women living in a region of Turkey. *Gynecol Obstet Invest*. 2004; 58: 145-50.
- [26] Temml C, Haidinger G, Schmidbauer J, Schatzl G, Madersbacher S. Urinary incontinence in both sexes: prevalence rates and impact on quality of life and sexual life. *Neurourol Urodyn*. 2000; 19: 259-71.
- [27] Hannestad YS, Rortveit G, Sandvik H, Hunskaar S. Norwegian EPINCONT study. Epidemiology of Incontinence in the County of Nord-Trøndelag. A community-based epidemiological survey of female urinary incontinence: the Norwegian EPINCONT study. *Epidemiology of Incontinence in the County of Nord-Trøndelag*. *J Clin Epidemiol*. 2000; 53: 1150-7.
- [28] Khalifa M, Farag MA, Abd El Aziz AM, Ali SS, Ahmed NT, et al. Assessment of Psychological Symptoms and Quality of Life among Women with Urinary Incontinence. *J. Gynecol. Res. Obstet*. 2017; 3: 064-9.
- [29] Trantafylidis SC. Impact of urinary incontinence on quality of life. *Pelviperrineology*. 2009; 28: 51-3.
- [30] Schreiber Pedersen L, Lose G, Høybye MT, Elsner S, Waldmann A, et al. Prevalence of urinary incontinence among women and analysis of potential risk factors in Germany and Denmark. *Acta Obstet Gynecol Scand*. 2017; 96: 939-948.