

## Urinary Incontinence in Healthy Saudi Women

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### ABSTRACT

**Background:** urinary incontinence is a distressing common medical disease in which patient cannot control leakage of urine. The prevalence of urinary incontinence differs between countries and between different studies. The risk factors for urinary incontinence including increasing age, chronic cough, medical co-morbidity, childbirth, obesity, depression, smoking, gender and previous hysterectomy.

**Aim of the work:** this study aimed to assess the prevalence of urinary incontinence in Saudi females and its associated risk factors.

**Methods:** this was a cross-section study based on a survey on the internet, it included 400 female participants with a minimum age of 30 years old.

**Results:** the prevalence of urinary incontinence was 44.25%, 66.3% of them were in age of 50 years and above. 43.5% of participants were obese, 19.5% were post-menopausal, 6.25% performed hysterectomy, 37.5 % had parity more than 3 times, 33% had depression and 35.5% had diabetes.

**Conclusion:** prevalence of urinary incontinence was moderate. The most common risk factors for urinary incontinence were older age, menopause and high parity.

**Keywords:** urinary incontinence, urinary incontinence prevalence, urinary incontinence in females, Saudi Arabia.

### INTRODUCTION

Urinary incontinence (UI) is an involuntary leakage of urine <sup>(1)</sup>; it is a distressing common medical disease, <sup>(2)</sup>. Almost, over 200 million individuals in the world had UI with more prevalence in females <sup>(3)</sup>. Several studies from European population and North America reported a prevalence of 8.5% to 58% <sup>(4-6)</sup>. In a Saudi study <sup>(7)</sup>, the prevalence of UI between females who attended PHCCs in Jeddah was 41.4%. Others mentioned that UI was experienced by more than 30% of adult females <sup>(8)</sup>.

UI prevalence is increasing with increasing age, childbirth, medical co-morbidity and obesity of females <sup>(9)</sup>.

Gender, previous hysterectomy, pregnancy, chronic cough, depression smoking, genetics and menopause are the other risk factors <sup>(9-11)</sup>. It was reported that the UI in females is most common between the advanced age women and those with multi-parity <sup>(4)</sup>. Also, it was reported that one-third of females were suffered from stress incontinence after 5 years of their vaginal delivery <sup>(12)</sup>. In a cross-sectional study on 400 menopausal women <sup>(13)</sup> it was found that obesity was a risk factor for UI. UI results in limitation in the daily activities, loss of self-esteem and decrease in the quality of life <sup>(7)</sup> as it limits

exercising, sexual activity, traveling, shopping and it causes emotional disorders such as depression <sup>(3)</sup>.

It was demonstrated that women with UI symptoms tend to experience depression, feel more humiliated and have higher anxiety levels than women without UI symptoms <sup>(14)</sup>.

The aim of the present study was to estimate the prevalence of UI between Saudi women and investigate some of UI risk factors.

### PATIENTS AND METHODS

This study was a cross-sectional survey-based study, it included 400 female participants whose age not less than 30 years, there were 53 participants were excluded as their age were less than 30 years old. A survey via the internet was established to investigate the demographics, chronic diseases and urine incontinence of females. The study was conducted in the period from August 2017 to September 2017. Data were analyzed by using Statistical Package for Social Studies (SPSS 22; IBM Corp, New York, NY, USA). Categorical variables were expressed as percentages. Chi-square test was used for categorical variables. P-value <0.05 was considered statistically significant.

The study was approved by the Ethics Board of Jazan University.

## RESULTS

The current study included 400 female participants, according to age there were 3 age groups; females whose age ranged from 30-39 years represented 37.75 %, females with age range of 40-49 represented 40% and females whose age was 50 years and above represented 22.25%. Regarding BMI, the most dominant group was the obese group 43.5%, followed by normal weight females 31.5% and finally overweight females 25%. Most of participants 38.5% had primary education, while 31.75% had intermediate education, 12.5% had university education and 17.25 % were post graduated. 40 % had monthly income of 1000-3000 SR, 27.25% had 3001-5000 SR, 21.25% had 5001-10000 SR and 11.5% had above 10000 SR monthly incomes.

There were 80.75 % of participants worked full time and 19.25% worked part-time. The large majority of females (92.5%) didn't smoke, while 7.5% only were smokers. Regarding menopausal status, the large majority of women were peri-menopausal 80.5%, while 19.5 % only were post-menopausal. There was 6.25% performed hysterectomy, whereas 93.75% didn't perform this surgery.

Most of females were delivered vaginally (78.25%) and 21.75% delivered by cesarean surgery. There were 16% that had parity once and 26 % delivered two times, while 20.5% and 37.5% delivered 3 times and more than 3 times respectively. 11.25 % delivered babies with weight at birth more than 4 Kg, while 88.75% delivered babies with weight less than 4Kg. 33% of women suffered from depression, while 35.5% had diabetes, the demographics of participants are shown in **table1**.

The prevalence of urine incontinence between participants was 44.25% (177 females),

where 72.3% (128) had slight urine incontinence, 22% (39) had mild urine incontinence, whereas 5.7% (10) had severe urine incontinence, the prevalence of urine incontinence is shown in **figure 1**.

The correlation between prevalence of urinary incontinence and several factors is shown in **table 2**.

Regarding to age, there was a significant difference between females with UI and females without UI (P-value=0.001), most patients with UI were in older age group. BMI was different between the two females group with a significant difference (P-value=0.01), where most of the patient's group were obese. There was no significant difference regarding smoking between healthy females and patients females (P-value=0.09). The menopausal status was significantly affected females (P-value=0.003), where most of patients were post-menopausal, while fewer post-menopausal women were healthy.

There were 31 females who performed hysterectomy; most of them were UI patients. However, there was no significant difference between prevalence of UI regarding performing of hysterectomy (P-value=0.07). Regarding mode of delivery, the large majority of participants who delivered vaginally were healthy, while most of participants who performed cesarean delivery suffered from UI (P-value=0.02). Increasing number of parities was correlated to females who were suffered from UI (P-value=0.001). There were 45 females who delivered babies whose weight was more than 4Kg for each baby, most of those mothers were suffered from UI (P-value=0.01). Depression and diabetes were more common in UI patients than healthy women with a significant differences of (P-value=0.01) regarding depression and diabetes between healthy and patient's group.

**Table1: demographics of the participants**

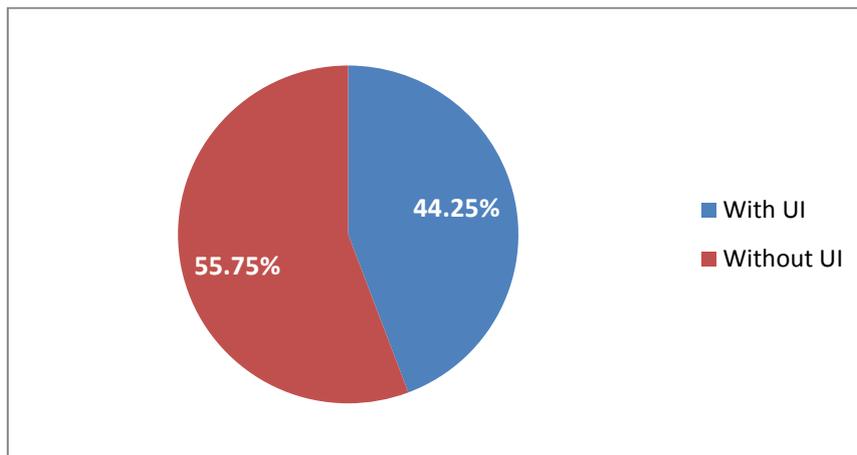
<b>Characteristics of participants</b>	<b>N (%)</b>
Age	
30-39	<b>151 (37.75%)</b>
40-49	<b>160 (40%)</b>
50 and above	<b>89 (22.25%)</b>
BMI	
Normal	<b>126 (31.5%)</b>
Overweight	<b>100 (25%)</b>
Obese	<b>174 (43.5%)</b>
Education level	
Primary	<b>154 (38.5%)</b>
Intermediate	<b>127 (31.75%)</b>
University	<b>50 (12.5%)</b>
Post graduate	<b>69 (17.25%)</b>
Monthly income	
1000-3000	<b>160 (40%)</b>
3001-5000	<b>109 (27.25%)</b>
5001-10000	<b>85 (21.25%)</b>
Aabove10000	<b>46 (11.5%)</b>
Occupation	
Full time	<b>323 (80.75%)</b>
Part time	<b>77 (19.25%)</b>
Smoking	
Yes	<b>30 (7.5%)</b>
No	<b>370 (92.5%)</b>
Menopausal status	
Perimenopausal	<b>322 (80.5%)</b>
Postmenopausal	<b>78 (19.5%)</b>
Hysterectomy performance	
Yes	<b>25 (6.25%)</b>
No	<b>375 (93.75%)</b>
Type of delivery	
Vaginal (normal)	<b>313 (78.25%)</b>
Cesarean	<b>87 (21.75%)</b>
Parity	
Once	<b>64 (16%)</b>
Two times	<b>104 (26%)</b>
3 times	<b>82 (20.5%)</b>
More than 3 times	<b>150 (37.5%)</b>
Baby weight at birth >4 Kg	
Yes	<b>45 [(11.25%) reg 400]</b>
No	<b>355 (88.75%)</b>
Do you suffer from depression	
Yes	<b>132 (33%)</b>
No	<b>268 (67%)</b>
Are you diabetic patient	
Yes	<b>142(35.5%)</b>
No	<b>258 (64.5%)</b>

**Table2: correlation between prevalence of UI and different variables**

## Urinary Incontinence in Healthy Saudi Women

Characteristics	With UI N=177	Without UI N=223	P-value
Age			
30-49	118 (37.9%)	193 (62.1%)	<b>0.001*</b>
50 and above	59 (66.3%)	30 (33.7%)	
BMI			
Normal/Overweight	53 (23.5%)	173 (76.5%)	<b>0.01*</b>
Obese	124 (71.3%)	50 (28.7%)	
Smoking			
Yes	12 (40%)	18 (60%)	<b>0.09</b>
No	165 (44.6%)	205 (55.4%)	
Menopausal status			
Perimenopausal	134 (41.6%)	188 (58.4%)	<b>0.003*</b>
Postmenopausal	43 (55.12%)	35 (44.87%)	
Hysterectomy performance			
Yes	31 (68.9%)	14 (31.1%)	<b>0.07</b>
No	146 (41.12%)	209 (58.87%)	
Type of delivery			
Vaginal (normal)	120 (38.3%)	193 (61.7%)	<b>0.02*</b>
Cesarean	57 (65.5%)	30 (34.5%)	
Parity			
≤3 times	94 (37.6%)	156 (62.4%)	<b>0.001*</b>
>3 times	83 (55.3%)	67 (44.7)	
Baby weight at birth >4 Kg			
Yes	28 (62.2%)	17 (37.8%)	<b>0.01*</b>
No	149 (42%)	206 (58%)	
Do you suffer from depression			
Yes	101 (76.5%)	31 (23.5%)	<b>0.01*</b>
No	76 (28.4%)	192 (71.6%)	
Are you diabetic patient			
Yes	89 (62.4%)	53 (37.3%)	<b>0.01*</b>
No	88 (34%)	170 (68%)	

\*P-value; significant



**Figure 1: prevalence of urine incontinence (UI)**  
**DISCUSSION**

The present study was conducted to assess the prevalence of UI between females in Saudi Arabia, this study included 400 female participants whose age was not less than 30 years old. The prevalence among participants was found to be 44.25%, with a common prevalence of slight UI degree (72.3%). Results from US study were in agreement with ours, where the prevalence in the previous study was reported to be 45%<sup>(9)</sup>. Close rate of UI prevalence was reported in a previous Saudi study<sup>(7)</sup>, where 41.4% of females in Jeddah were suffering from UI. Another Saudi study<sup>(15)</sup> reported an overall prevalence of 29%.

In an Egyptian study<sup>(16)</sup> it was found that the overall prevalence of UI was 55%, while in Jordan it was 31.3%<sup>(17)</sup> and UI prevalence was 20.6% and 20.3% in Qatar<sup>(18)</sup> and UAE<sup>(19)</sup> respectively. The UI prevalence in our was lower than the prevalence in a British study<sup>(20)</sup>, where the prevalence demonstrated to be 69% ; in France and China the prevalence was 26.8% and 30.9% respectively<sup>(21,22)</sup>. The lowest rate of UI prevalence was reported in Singapore (4.8%)<sup>(23)</sup>.

Difference in prevalence between different studies can be attributed to variation in study design and study population<sup>(7)</sup>, variation in UI definition<sup>(24)</sup> also the variety and presence of several risk factors between the participants in each study were other causes. Several risk factors for UI were reported, while other studies reported contrary results. In a study from US<sup>(8)</sup> it was demonstrated that BMI, medical co-morbidity, increasing age, current major depression and a history of hysterectomy were associated with UI. Vaginal delivery, older age, high parity and obesity were reported in Saudi study to be significantly associated with UI<sup>(15)</sup>.

The current study showed that older age, obesity, menopausal status, cesarean delivery, high parity, baby weight at birth, depression and diabetes were risk factors for UI. In the present study, increasing age was a risk factor for UI, where females with UI were those with the older age, 66.3% of female whose age were 50 years and above were UI patients, while in the female without UI, only 33.7% their age were 50 years and above (P-value=0.001). A study from US reported that 25% of women in the age range of 30-39 and 50% of those between the ages of 50 and 90 years had

urinary leakage<sup>(9)</sup>. A study from Saudi Arabia<sup>(15)</sup> showed that UI prevalence was increased with age by two peaks.

Regarding BMI, the present study showed that most of obese females (71.3%) were UI patients, whereas most of those with normal or overweight (76.5%) and fewer percent of obese didn't suffer from UI (P-value=0.01). **Panugthong *et al.***<sup>(13)</sup> found that obesity was a risk factor and **Subak *et al.***<sup>(25)</sup> observed that loss of 5% to 10% of body weight resulted in a reduction in urinary incontinence. The current study revealed that smoking and hysterectomy were not risk factors for UI, there were no significant differences (P-value= 0.09) between UI patients and those without UI regarding being smoker or not. Although most of those who performed hysterectomy were suffered from UI (68.9%). There was no significant difference between female with or without UI regarding performing hysterectomy or not (P-value=0.07). An American study<sup>(9)</sup> reported that women who performed hysterectomy were 33% more likely to have UI than women who didn't perform it with a significance of 0.001. In contrast to our results, **Donforth *et al.***<sup>(26)</sup> reported an association between smoking and UI.

The menopausal status was a risk factor for UI, where higher percentages of our participants with UI were in post-menopausal status (55.12%), while fewer percent (44.87%) of post-menopausal women had no UI. Also, most of peri-menopausal women (58.4%) didn't suffer from UI; there was a significant difference between those with and without UI regarding the menopausal state (P-value=0.003). A study found that menopause was significantly correlated with UI development<sup>(27)</sup>, this association can be explained by the effect of menopause on estrogen production, where the shortage of estrogen can impair the normal physiological functions of the lower urinary tract<sup>(28)</sup>.

Several previous studies<sup>(29,30)</sup> studied the role of delivery type on the prevalence of UI, they reported a possible protective role of cesarean delivery. However, the present study showed that cesarean delivery was correlated to suffering from UI, where 65.5% of female who experienced cesarean delivery were suffered from UI, vaginal delivery was less common between UI patients (38.3%), there was a

significant difference between UI female patients and healthy female regarding type of delivery (P-value=0.02). In a previous Saudi study <sup>(7)</sup> it was demonstrated that UI was increased among women who had undergone vaginal delivery which supports the protective effect of cesarean delivery, however the relationship between cesarean delivery and UI was mentioned to be controversial <sup>(7)</sup>. Two studies <sup>(24,31)</sup> showed that the type of delivery wasn't a risk factor for UI.

Our study revealed that multi-parity was related to the UI prevalence, where 55.3 % of females who had more than 3 times of parity were UI patients, while 37.6% only of the females who had less than 3 times were suffered from UI (P-value=0.001). Our results are in agreement with that of previous studies <sup>(9,19)</sup>. It was reported that UI prevalence was more common in females who had 5 or more births <sup>(7)</sup>. A study from Qatar <sup>(24)</sup> failed to find clear association between parity and UI.

Most of females with IU were those who had baby with weight at birth exceeded 4 Kg (62.2%); there was a significant difference between females with and without UI regarding their babies weight at birth (P-value=0.01). This is in agreement with findings of Saudi study <sup>(15)</sup> and Chinese study <sup>(32)</sup>. Regarding depression and diabetes, in our study most of females who were suffered from depression (76.5%) and diabetes (62.4%) were also suffered from UI (P-value=0.01 for each of depression and diabetes). Previous two studies <sup>(15,26)</sup> reported that diabetes was a risk factor for UI, however in the contrary to our study and the previous two studies, other studies showed that diabetes was not a risk factor <sup>(9,33)</sup>.

In conclusion, the present study showed a moderate prevalence of urine incontinence between Saudi females. The associated risk factors of urine incontinence were older age, obesity, menopause, high parity, diabetes, depression and baby weight more than 4Kg, also we found that cesarean delivery was correlated to urine incontinence prevalence in contrast to other several studies.

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