



# Prevalence Of Urinary Incontinence Among Postmenopausal Women

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## Abstract:

This study was designed to investigate the prevalence of urinary incontinence (UI) among postmenopausal women. Five hundred postmenopausal women were selected from different hospitals and health care provider in Cairo and Giza, their age ranged from 55 to 65 years old, body mass index (BMI) was less than 30 Kg/m<sup>2</sup> and their last menstruation was from at least 12 months ago. They answered the urinary incontinence questionnaire (UIQ).

Results of this study showed that the prevalence of UI in this study was (57.8%). The results of the prevalence of stress urinary incontinence (SUI) of this study was (40%), urge urinary incontinence (UUI) of this study was (30%) and mixed urinary incontinence (MUI) of this study was (30%). There was a significant increase in the prevalence of UI in subjects with mixed types of deliveries (vaginal deliveries and cesarean sections) compared with other types. There was a significant increase in the prevalence of UI in subjects with 4-10 vaginal deliveries (VD) compared with that of 0-3 VD. There was no significant difference in the prevalence of UI between subjects with normal weight and subjects with overweight. Therefore, it could be concluded that a higher prevalence of UI was found.

**Key words:** Urinary incontinence, post menopause.

## 1. Introduction

Urinary incontinence is a public health concern worldwide that affects thousands of women and has a significant socio-economic impact. It may also affect the quality of life or contribute to depression or isolation (1). The latest researches conducted a percentage of 50 percent of postmenopausal women have UI and this percentage is growing from year to year (2).

Therefore, there are many important causes to analyze the prevalence of urinary incontinence and factors affect it that may help in treatment of the

problem. There are distinct bases for factors predisposing to the occurrence UI (3) (4).

Genetic factors stand out among the most significant, since, as noted, this factor is greater in women suffered from incontinence. Age is important as well. The risk increases directly in relation to age. The number of pregnancies and childbirths, especially those induced with oxytocin, is an important factor. Caesarean deliveries are proposed to be better in terms of UI incidence. Also, as the weight of the fetus reaches 4 kg, the risk of illness increases. Obesity is another major factor. Abdominal obesity is among the most dangerous. Studies indicate that obese women are

4-5 times more likely than normal-weight women to have incontinence. Urinary tract infections, recurrent constipation, diabetic neuropathy, Parkinson's disease,

multiple sclerosis, polyradiculopathy, drugs or medicines such as diuretics, anti-hypertensives and anxiolytic drugs are among other factors that can influence the incidence of UI that are also overlooked or inappropriately handled. Another risk is chronic respiratory diseases, particularly those caused by a cough that causes an increase in abdominal pressure, such as chronic obstructive pulmonary disease (5) (6). Some research study writers classify patients to three major groups, distinguishing between SUI, UUI and MUI (7).

The prevalence of UI is most prevalent in older females. The cumulative incidence of UI in postmenopausal females was 37.2 percent over ten years (8). The largest group of UI patients, both male and female, is the elderly population (9). The prevalence of UI is relatively high, but care is pursued by less than half of the patients. European studies indicate a diverse prevalence of UI in female subjects, which is 42% in the UK, 23% in Spain, 44% in France and 41% in Germany (10).

Pelvic floor muscle training (PFMT) is a physical therapy intervention that yielded beneficial results in women with SUI (11). Biofeedback (BF) is an adjunct method to PFMT for women with urinary incontinence. This method can motivate the patients to achieve a stronger muscle contraction and thus, stimulate high adherence and intensive training (12).

It was proved that the effects of Electric Stimulation (ES) in treating stress urinary incontinence, which can be performed with intravaginal, anal and superficial electrodes, can improve quality of life, urinary leakage, and the strength and pressure of pelvic floor muscle contraction. Intravaginal electrical stimulation (IVES) is frequently used in clinical practice (13).

Acupuncture points are thus named for the organs of these meridians. The BL, or bladder points, follow the meridian of the bladder. Several theories exist regarding the therapeutic effect of medical acupuncture. It is performed to stimulate energy circulation to ameliorate imbalances caused by disease state. Needling of acupuncture points in these areas relieves blocks in this energy, or qi, which is perceived to underlie the pathology of disease (14).

The significance of studying the prevalence is a necessary prerequisite for establishing the distribution of the UI in the population in addition for projecting the need for physical therapy services.

## 2. Patients and Methods

### 2.1. Subjects:

This study was carried out on five hundred postmenopausal women were selected from different hospitals and health care provider in Cairo and Giza. Their age ranged from 55 to 65 years old, BMI was less than 30 kg/m<sup>2</sup> and their last menstruation was from at least 12 months ago.

Women who had undergone one surgery or more in the pelvic region, with history of hormonal medications, or intrinsic pelvic pathology including: endometriosis, acute or chronic pelvic inflammatory disease, cervicitis, benign or malignant gynecologic tumors or uterine pathology including adenomyosis, leiomyoma or postoperative adhesions, or urinary tract infection or any bladder pathology, , any systemic disease for example: hypertension, diabetes mellitus were excluded from this study. This study was performed under the ethical committee No: P.T.REC/012/002718, Faculty of Physical Therapy, Cairo University.

### 2.2. Materials:

2.2.1- Informed consent form.

2.2.2- Weight-height scale: It was used to quantum the body weight and height to calculate the BMI for all participants.

2.2.3-The UIQ: It was used to measure urinary leakage problems for all participants.

### 2.3. Procedures:

All women were given a full explanation of the protocol of the study and consent form was signed by each woman before participating in the study.

#### 2.3.1. Evaluation procedures:

A detailed medical history was taken from each woman before starting the study.

##### 2.3.1.1- Body mass index:

Weight and height were measured to detect the BMI according to the following equation:  $BMI = \text{weight}/\text{height}^2$  (Kg/m<sup>2</sup>).

2.3.1.2- The UIQ: It was used to measure urinary leakage problems. It consisted of twenty one questions: 17 items for problems of urinary leakage, 2 for problems of frequency, and 2 for problems of retention. Rating scale structure is individual for each item. The UIQ was reliable and precise for measuring most patients at different levels of urinary function (15).

### Data analysis

Descriptive statistics of mean, standard deviation, frequencies, percentages and confidence interval (CI) were utilized in presenting the subjects demographic and measured data. Quantitative variables were summarized using mean and standard deviation while categorical variables were summarized using frequencies and percentage. Chi-square statistics and logistic regression were utilized to examine

associations between UI and risk factors. The level of significance for all statistical tests was set at  $p < 0.05$ . All statistical measures were performed through the statistical package for social studies (SPSS) version 25 for windows.

### 3. Results

#### 3.1. Subjects characteristics

Five Hundred postmenopausal women aged 55 to 65 years participated in this study. The mean  $\pm$  SD age of the study group was  $59.54 \pm 3.28$  years with minimum of 55 years and maximum of 66 years. The mean  $\pm$  SD BMI of the study group  $24.65 \pm 2.87$  kg/m<sup>2</sup> with minimum of 18 kg/m<sup>2</sup> and maximum of 29.4 kg/m<sup>2</sup>. Table 1 showed the subject characteristics.

#### 3.2. Prevalence of UI among participants

289 (57.8%) subjects suffered from UI out of them 30% urge incontinence, 40% stress incontinence and 30% mixed. The prevalence of UI of the study group was 57.8% with 95% CI of 53.42- 62.05%. The prevalence of urge incontinence of the study group was 17.4% with 95% CI of 14.32-20.96%. The prevalence of stress incontinence of the study group was 23.2% with 95% CI 19.71-27.1%. The prevalence of mixed incontinence of the study group was 17.2% with 95% CI 14.14-20.75%. (Table 2).

#### 3.3. Association between UI and subject characteristics (Different types of deliveries):

There was a significant increase in the prevalence of UI in subjects with both vaginal and CS deliveries compared with other types ( $p = 0.0001$ ). There was a significant increase in the prevalence of UI in subjects with 4-10 vaginal deliveries compared with that of 0-3 vaginal deliveries ( $p = 0.02$ ). There was no significant difference between subjects with normal and subjects with overweight in the prevalence of UI ( $p = 0.48$ ).

#### 3.4. Prediction of UI in the participants

A Binary logistic regression was performed to determine the variables that can predict UI among the participants. Univariate analysis revealed that BMI had not significant association with UI. Number of vaginal delivers and type of delivery were associated with UI. Variables with significant association with IU were entered in multivariate logistic regression to identify the significant predictors for UI. Subjects with 4-10 vaginal deliveries were 1.57 times more likely to have UI compared with those with 0-3 vaginal deliveries (Odds Ratio = 1.57, 95% CI 1.06-2.32,  $p = 0.02$ ). Subjects with both VD & CS were 2.4 times more likely to have UI compared with subjects with no delivery (Odds Ratio = 2.4, 95% CI = 0.37-15.26,  $p = 0.35$ ). While subjects with VD or CS were less likely

to have UI compared with subjects with no delivery. (table4).

**Table 1. Participants' characteristics**

Participants' characteristics	N	%
<b>Weight status</b>		
Normal (18 to 24.9 kg/m <sup>2</sup> )	235	47%
Overweight (25 to 29.9 kg/m <sup>2</sup> )	265	53%
<b>Type of delivery</b>		
Vaginal delivery	329	66%
CS	60	12%
Mixed (vaginal & CS)	106	21%
None	5	1%
<b>Number of vaginal deliveries</b>		
No vaginal delivery	65	13%
1-3 Vaginal delivery	277	55.4%
4-10 Vaginal delivery	158	31.6%

**Table 2: Prevalence of UI of the study group.**

Type of UI	Prevalence of UI	95% CI
UI	289 (57.8%)	53.42- 62.05%
UUI	87 (17.4%)	14.32-20.96%.
SUI	116 (23.2%)	19.71-27.1%.
MUI	86 (17.2%)	14.14-20.75%.

CI, Confidence interval

**Table 3. The frequency distribution of UI and association between UI and risk factors.**

General characteristics	Presence of UI		$\chi^2$ value	p - value
	Yes	No		
<b>Weight status</b>				
Normal (18 to 24.9 kg/m <sup>2</sup> )	132 (56.2%)	103 (43.8%)	0.48	0.48
Overweight (25 to 29.9 kg/m <sup>2</sup> )	157 (59.2%)	108 (40.8%)		
<b>Type of delivery</b>				
Vaginal delivery	173 (52.6%)	156 (47.4%)	24.71	0.001
CS	30 (50%)	30 (50%)		

Mixed (vaginal & CS)	83 (78.3%)	23 (21.7%)		
None	3 (60%)	2 (40%)		
<b>Number of vaginal deliveries</b>				
0-3 Vaginal delivery	186 (54.4%)	156 (45.6%)	5.17	0.02
4-10 Vaginal delivery	103 (65.2%)	55 (34.8%)		

$\chi^2$ , Chi squared value; p value, Probability value

**Table 4. Predictors of UI among participants.**

Variables	Univariate analysis			Multivariate analysis		
	Odds ratio	95% CI	p-value	Odds ratio	95% CI	p-value
<b>BMI</b>	<b>0.98</b>	0.92-1.05	<b>0.71</b>			
<b>Number of vaginal deliveries</b>	1.57	1.06-2.32	0.02	1.84	1.2-2.8	0.005
<b>Type of delivery</b>			0.001			0.0001
<b>None</b>						
<b>Vaginal delivery</b>	0.73	0.12-4.48	0.74	0.64	0.1-3.95	0.63
<b>CS</b>	0.66	0.1-4.28	0.66	0.75	0.11-4.91	0.77
<b>Both (vaginal &amp; CS)</b>	2.4	0.37-15.26	0.35	2.29	0.35-14.72	0.38

CI, Confidence interval; p value, Probability value

<b>Mean</b>	13.78 %	86.22%
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## 4. Discussion

Urinary incontinence is a highly prevalent condition that affects millions of women throughout the world with a profound influence on well-being and quality of life as well as being of immense economic importance for the health service (16).

This study was aiming to find out the prevalence of UI among postmenopausal women. It was carried out upon five hundred postmenopausal women, their age ranged from 55 to 65 years old, BMI less than 30 Kg/m<sup>2</sup> and their last menstruation was from at least one year ago. They answered the UIQ.

The results of the prevalence of UI was (57.8%). The results of the prevalence of SUI was (23.2%), UUI was (17.4%) and MUI was (17.2%). Comparatively Senturk et al., (17) stated that UI prevalence in Turkey has been recorded (45.6 percent). Whereas Fred et al., (18) reported UI prevalence in postmenopausal Estonian women (18.12%), Townsend et al., (19) UI prevalence in Mexican women was reported (14 percent) and UI prevalence in Khonkaen women was reported by Sakondhavat et al., (20) (38.86 percent).

The results revealed that, the prevalence of UI was a significantly increased in subjects with mixed types of deliveries (vaginal and CS) compared with other types. Pregnancy itself appears to be a risk factor for postpartum pregnancy, regardless of labour and method of delivery (21) (22).

The prevalence of UI was a significantly increased in subjects with 4-10 VD (65.2%) compared with that of 0-3 VD (54.4%), this explained by Schreiber Pedersen et al., (23) who stated that with age and VD, the risk of UI has increased significantly. More over after VD, It was found that the chance of UI development was 71 percent greater than after CS. (24). However, studies have been published using magnetic resonance imaging, ultrasound and neurophysiological techniques that support a causal relationship between VD and pelvic floor injury, summarized in a review of UI pathophysiology (25).

The prevalence of UI had no significant difference in subjects with BMI < 25 kg/m<sup>2</sup> (56.2%) and in subjects with BMI ≤ 30 kg/m<sup>2</sup> (59.2%). This result is in agreement with Khullar et al., (26) who explained that in women with BMI > 30 kg/m<sup>2</sup>, a poor correlation between UI and BMI. While Deshmukh et al., (27) stated that having BMI 25-29 kg/m<sup>2</sup> appeared to increase the risk of UI.

## 5. Conclusion

It can be concluded that: a higher prevalence of UI was found.

## Conflict of Interests

The authors state no conflict of interest or any financial interest or benefit from this research.

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## Abbreviations:

**UI:** Urinary incontinence, **UIQ:** Urinary incontinence questionnaire, **BMI:** body mass index, **SUI:** Stress urinary incontinence, **UUI:** Urge urinary incontinence, **MUI:** Mixed urinary incontinence, **VD:** Vaginal delivery, **CS:** cesarean section, **PFMT:** Pelvic floor muscle training, **BF:** Biofeedback, **ES:** Electric Stimulation, **IVES:** Intravaginal electrical stimulation.

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