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PREVALENCE, RISK STRATIFICATION, AND DETERMINANTS OF URINARY INCONTINENCE AMONG WOMEN IN A TERTIARY CARE SETTING IN PAKISTAN: A CROSS-SECTIONAL STUDY

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ABSTRACT

Background: Many women experience involuntary urine leakage, a condition commonly known as urinary incontinence. While it significantly impacts physical, psychological and social quality of life, many women fail to seek treatment due to shame and stigma. Urinary incontinence has been linked to a number of demographic and obstetric factors, including advancing age, obesity, multiparity and vaginal childbirth.

Objective: 'To determine the prevalence and associated risk factors of urinary incontinence among women presenting to a tertiary care hospital'.

Methodology: This descriptive cross-sectional study was conducted in the Department of Gynecology and Obstetrics at Shifa International Hospital, Islamabad, Pakistan, from October 2025 to March 2026. Participants (n=295) were recruited using non-probability consecutive sampling in the age range of 18-70 years. A proforma was used to gather details related to age, marital status, body mass index, childbirth history, mode of delivery, and associated health problems were recorded. SPSS version 25 was used for data analysis. The chi-square test and logistic regression model were used to examine the association of urinary incontinence with various potential risk factors.

Results: Urinary incontinence was identified in 118 (40.0%) participants. Significant associations were observed between urinary incontinence and age ≥60 years ($p<0.001$), BMI ≥25 kg/m² ($p=0.008$), high parity ($p<0.001$), vaginal births ($p=0.003$), and presence of comorbidities ($p=0.001$). Higher parity, increased body weight, vaginal childbirth, and older age remained significantly linked with urinary incontinence after regression analysis.

Conclusion: Urinary incontinence is highly prevalent among women attending tertiary healthcare facilities and is strongly associated with several demographic and obstetric risk factors. Early screening and preventive interventions targeting high-risk women may help reduce the burden of urinary incontinence and improve quality of life.

KEYWORDS: Urinary incontinence; Women's health; Pelvic floor disorders; Obesity; Parity; Vaginal delivery

INTRODUCTION

Urinary incontinence is the unintentional loss of urine, and is one of the most prevalent pelvic floor dysfunctions in women. This disorder can affect women across all ages, and can have a profound effect on quality of life, psychological well-being, physical activity and social participation. While urinary incontinence is despite rarely causing mortality, the disorder can negatively influence physical comfort, emotional health, and social functioning especially those who suffer from persistent symptoms without seeking medical care. Urinary incontinence affects women worldwide to varying degrees due to variations in the population, diagnostic criteria, lifestyle and access to health care[1-3].

The prevalence of urinary incontinence is affected by various physiological, demographic and obstetric factors. Age is thought to be a major factor as the muscles and support structures of the pelvic floor become weaker as people age. Weight gain is also a significant contributor, as it increases abdominal pressure and places additional demands on the pelvic floor. Also, consecutive pregnancies and vaginal delivery may lead to stretching and trauma of the pelvic floor muscles, nerves and ligaments, which can increase the risk of urinary incontinence. Underlying medical and lifestyle factors may also exacerbate bladder dysfunction and symptoms in affected women [4-6].

Despite being common, urinary incontinence is often under-reported, especially in low- and middle-income countries. Women often consider urinary leakage to be a normal part of the ageing process or childbirth, and they may not report symptoms due to shame and stigma. This results in a delay in medical treatment, which leads to increased symptoms

and decreased overall well-being. These have either been based on a limited number of participants or have been poorly evaluated for associated risk factors [7-9].

Understanding the factors associated with urinary incontinence is essential for its early diagnosis, prevention and management. Understanding the burden of the condition within the local population may also help healthcare professionals improve patient counseling and pelvic floor rehabilitation programs. Therefore, the 'present study was conducted to determine the prevalence and associated determinants of urinary incontinence among women presenting to a tertiary care hospital in Islamabad, Pakistan'.

METHODOLOGY

A 'descriptive cross-sectional study was conducted in the Department of Gynecology and Obstetrics at Shifa International Hospital, Islamabad, Pakistan, from October 2025 to March 2026'. The study was approved by the institutional ethical review committee and the research protocol was approved as per institutional guidelines. Informed consent was obtained from all women before their participation.

The sample size was determined by using the WHO formula for calculating sample size for estimation of population proportion, with a 95% confidence level, an estimated prevalence of 25.9% and the desired margin of error. A sample of 295 participants was calculated. The study used a non-probability consecutive sampling method for recruitment of participants.

The study subjects were women of reproductive age (18-70 years) who attended the gynecology outpatient department and met the inclusion criteria. The study included non-pregnant women with a body mass index between 19 and 45 kg/m². Women with a known history of diabetes mellitus, hypertension, asthma, connective tissue disease or history of urinary tract surgery were excluded to avoid the impact of confounding variables on the results of the study.

A pre-designed data collection proforma was used for data collection. Clinical and demographic data including age, marital status, parity, body mass index, vaginal delivery history and presence of other medical conditions were collected. The diagnosis of urinary incontinence was made by a self-reported history of involuntary leakage of urine during the interview. Height and weight were measured using a standardised measuring scale, and body mass index was calculated.

Data was collected and analysed using the Statistical Package for Social Sciences (SPSS) version 25. Participant characteristics were summarized by using averages with their corresponding variability measures, whereas qualitative findings were presented in the form of counts and proportional distributions. The relationship of urinary incontinence with different participant characteristics was examined through the chi-square test. . Logistic regression was also used to determine the predictors of urinary incontinence. A p-value of ≤0.05 was used as the cut-off for statistical significance.

RESULTS

A total of 295 women attending the gynecology outpatient department were included in the study. 'The mean age of the participants was 42.8 ± 11.6 years, while the mean BMI was 28.1 ± 4.9 kg/m²'. The majority of women were married and middle aged.

Table 1: Demographic Characteristics of the Study Participants (n = 295)

Variable	**Frequency (%) / Mean ± SD**
Age (years)	42.8 ± 11.6
Height (m)	1.58 ± 0.08
Weight (kg)	70.4 ± 12.5
BMI (kg/m²)	28.1 ± 4.9
Parity	3.2 ± 1.7
Age Group (Years)	**Frequency (%)**
18–30	58 (19.7)
31–40	84 (28.5)
41–50	79 (26.8)
51–60	48 (16.3)
>60	26 (8.8)
BMI Category	**Frequency (%)**
Normal (19–24.9)	86 (29.2)
Overweight (25–29.9)	121 (41.0)
Obese (≥30)	88 (29.8)
Marital Status	**Frequency (%)**
Married	239 (81.0)
Unmarried	56 (19.0)

The women were mostly multiparous and had vaginal deliveries. Multiparity and vaginal delivery were frequently noted in women with urinary incontinence.

Table 2: Obstetric and Clinical Characteristics of Participants

Variable	Frequency (%)
Nulliparity	42 (14.2)
High parity (≥3)	176 (59.7)
Vaginal births	214 (72.5)
At least one comorbidity	91 (30.8)

Over one-third of the study subjects were found to experience urinary incontinence.

Table 3: Prevalence of Urinary Incontinence among Participants

Urinary Incontinence Status	Frequency (%)
Present	118 (40.0)
Absent	177 (60.0)

Moderate urinary incontinence was the most common form among women with urinary incontinence.

Table 4: Severity Pattern of Urinary Incontinence (n = 118)

Severity of Urinary Incontinence	Frequency (%)
Mild	39 (33.1)
Moderate	52 (44.1)
Severe	27 (22.9)

Urinary incontinence was found to be significantly associated with advanced age, high body mass index, high parity, vaginal delivery and other medical conditions.

Table 5: Association between Risk Factors and Urinary Incontinence

Associated Variable	Participants with UI n (%)	Participants without UI n (%)	'p-value'
Age ≥60 years	21 (17.8)	5 (2.8)	<0.001
BMI ≥25 kg/m²	94 (79.7)	115 (65.0)	0.008
Married	103 (87.3)	136 (76.8)	0.026
High parity (≥3)	85 (72.0)	91 (51.4)	<0.001
Vaginal births	97 (82.2)	117 (66.1)	0.003
At least one comorbidity	49 (41.5)	42 (23.7)	0.001

χ^2 test applied; p ≤0.05 considered statistically significant.

Urinary incontinence was more common with increasing age, and was highest in women age 60 years or older.

Table 6: Stratification of Urinary Incontinence According to Age Group

Age Group (Years)	UI Present n (%)	UI Absent n (%)
18–30	12 (10.2)	46 (26.0)
31–40	28 (23.7)	56 (31.6)
41–50	35 (29.7)	44 (24.9)
51–60	28 (23.7)	20 (11.3)
>60	15 (12.7)	11 (6.2)

p-value = 0.002

Multiparous women, obese women, parity with vaginal delivery and older age were independent predictors of urinary incontinence in this cohort.

Table 7: Independent Factors Related to Urinary Incontinence

Study Factor	'Adjusted OR'	'95% CI'	'p-value'
Age ≥60 years	2.94	1.48–5.83	0.002
BMI ≥25 kg/m²	2.11	1.19–3.74	0.010
High parity (≥3)	3.28	1.82–5.90	<0.001

Vaginal births	2.45	1.31–4.58	0.005
At least one comorbidity	1.97	1.08–3.60	0.027

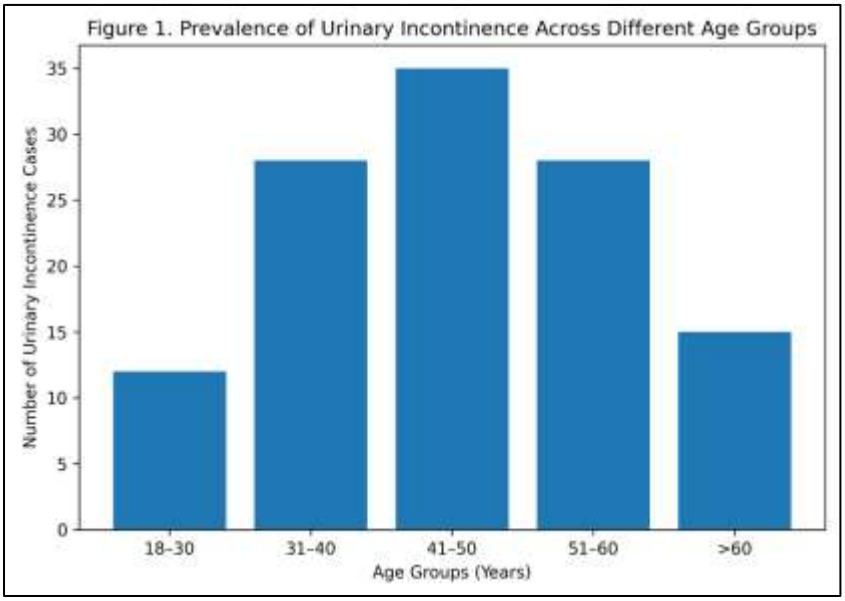

Figure 1. Prevalence of Urinary Incontinence across Different Age Groups

The frequency of urinary incontinence increased with advancing age, with the highest number of cases observed among women aged 41–50 years and 51–60 years. This finding suggests that middle-aged and older women are at greater risk of developing urinary incontinence.

DISCUSSION

In this study found that urinary incontinence in 40.0% of the women indicating that it is still a prevalent but often overlooked problem amongst Pakistani women. The reported prevalence is clinically important since the urinary incontinence seems to have adverse effect on the 'social, psychological, physical functioning and quality of life'. The results of this study compares favourably with the international research. The results from a population based studieshave shown that the prevalence of urinary incontinence is still high among women in the community, especially in middle-aged and elderly women[10-12].

In the current study, age was significantly related to urinary incontinence. Women over the age of 50 had significantly more symptoms than younger women. This could be a result of age-related changes in the pelvic floor muscles, loss of estrogen during menopause, and age-related changes in bladder support. This is in line with the study by studies found that urinary incontinence is more prevalent in postmenopausal women due to hormonal and anatomical modifications in the pelvis. Likewise, Asian and European studies have shown that the prevalence of urinary incontinence is high among older women [13-15].

The present study also found body mass index (BMI) to be a predisposing factor. Obese and overweight women were more likely to have urinary incontinence compared to women with normal BMI. The higher intra-abdominal pressure in obese women may lead to bladder neck hypermobility and pelvic floor dysfunction. This finding found obesity to be one of the strongest modifiable predictors of urinary incontinence in females in the Middle East. Inconsistent results have also been reported in recent epidemiological studies of female pelvic floor dysfunctions [16-18].

Multiparity and vaginal delivery were positively associated with urinary incontinence in this study. Multiparous women with three or more pregnancies were found to have greater urinary leakage than women of lower parity. The cumulative effect of multiple pregnancies and vaginal childbirths may compromise the integrity of pelvic connective tissues, and damage the neuromuscular structures of the pelvic floor that maintain continence. These observations are in accordance with published literature that obstetric injury plays an important role in pelvic floor dysfunction. 'Childbirth, especially multiple vaginal deliveries, has been noted as a significant risk factor for stress urinary incontinence in women of child bearing age and postmenopausal women' [19, 20].

The association of other medical conditions and urinary incontinence was also statistically significant. Participants with at least one chronic medical illness had higher symptom frequency than other participants. Medical illness may exacerbate bladder dysfunction due to neurological, metabolic or vascular complications. These findings are consistent with other studies that have shown an association of chronic respiratory disease, diabetes and hypertension with pelvic floor dysfunction and urinary symptoms [21].

Multivariable logistic regression modelling also revealed that older age, higher BMI, multiple pregnancies, history of vaginal delivery and coexistence of various diseases independently predicted the urinary incontinence. Our research show that various demographic, obstetric and clinical factors interact to define urinary incontinence. Thus, early detection of potential risk factors may help in the prevention of urinary incontinence through interventions such as pelvic floor muscle exercises, lifestyle changes, weight loss and education programs [22].

There are several strengths to our study. It has a large sample size and it examined a number of demographic and clinical variables. In addition, this study adds data from a tertiary care hospital in Pakistan where little is known about urinary incontinence. The study has some limitations, though. The study design is cross-sectional, that the risk factors cause urinary incontinence. The study asked women to report urinary symptoms that can be affected by recall and reporting biases as urine incontinence is a stigmatising condition. Furthermore, it was a single-site study, which may limit the generalisability.

CONCLUSION

Urinary incontinence was found to be highly prevalent among women attending a tertiary care hospital and was significantly associated with increasing age, obesity, high parity, vaginal childbirth, and coexisting medical illnesses. These findings emphasize the need for early screening, patient awareness, and preventive pelvic floor health strategies, particularly among women with established risk factors. Timely identification and management may reduce disease burden and improve quality of life among affected women.

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