

*Original Article*

# Prevalence of Urinary Incontinence in Different Age Groups of Women

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## Abstract

**Background:** Urinary incontinence (UI) is the accidental leakage of urine, a condition most prevalent among women, often exacerbated by activities that increase intra-abdominal pressure such as coughing, sneezing, or lifting heavy objects. UI significantly impacts quality of life, particularly in older women, due to factors like postmenopausal changes, pelvic trauma, and age-related physiological changes.

**Objective:** The primary objective of this study was to observe the prevalence of urinary incontinence among women in different age groups. The secondary objective was to determine the correlation between UI and various demographic and physical factors.

**Methods:** This observational study was conducted over six months in hospitals located in Sahiwal, Pakistan. A sample size of 377 women, aged 22-65 years, was selected using a non-probability convenient sampling technique. Inclusion criteria included non-pregnant women experiencing unwanted urinary leakage due to physical exertion. Exclusion criteria included women with diabetes, those who had undergone surgery for incontinence, and those with neurological conditions. The Modified International Consultation on Incontinence Questionnaire-Urinary Incontinence Short Form (ICIQ-UI SF) was used to evaluate UI. Data were analyzed using SPSS version 25.0, employing Chi-square tests to assess relationships between variables with a significance level set at 0.05.

**Results:** The study found that 83.3% of the women experienced urinary leakage. The prevalence of UI was highest among women aged 55-65 years (54.32%). Leakage frequency was reported as follows: 29.44% experienced leakage once a week or less, 17.78% two to three times a week, 4.51% once a day, 13.00% several times a day, and 4.24% all the time. Severity of leakage was reported as 16.71% no leakage, 49.34% a small amount, 22.02% a moderate amount, and 11.94% a large amount. There was no significant difference in UI frequency across BMI categories ( $P > 0.05$ ) or between types of delivery (SVD vs. C-section,  $P > 0.05$ ).

**Conclusion:** The study concluded that urinary incontinence is highly prevalent among women, particularly in the older age group of 55-65 years. There is a significant correlation between age and UI, emphasizing the need for targeted interventions and routine screenings to manage and mitigate the impact of UI.

## 1 Introduction

Gestational Urinary incontinence (UI), defined as the involuntary leakage of urine, is a prevalent condition that significantly affects women's health, with a higher incidence rate in women compared to men (1). The condition, which involves the unintentional loss of urine, arises from various physical activities that increase

intra-abdominal pressure such as coughing, sneezing, or lifting heavy objects. UI can be categorized into several types, including stress urinary incontinence (SUI), urgency incontinence, functional incontinence, overflow incontinence, mixed incontinence, and nocturnal enuresis (2). SUI, characterized by urine leakage due to increased abdominal pressure, is notably common among younger women and can impact their social and physical activities significantly (3). Urgency incontinence, often caused by overactive bladder muscles, results in a sudden, intense urge to urinate, frequently affecting older women (4). Functional incontinence is related to physical or environmental barriers that prevent timely access to a bathroom (5). Overflow incontinence occurs due to incomplete bladder emptying, leading to leakage when the bladder is overfilled (6).

The prevalence of UI is influenced by various factors including age, obesity, menopause, childbirth, smoking, and surgeries (7). For instance, conditions such as diabetes can increase the risk of UI due to microvascular complications that affect bladder control (8). Obesity exacerbates UI by increasing intra-abdominal pressure, while smoking contributes through chronic coughing and weakening of pelvic muscles (9). Vaginal delivery, particularly after prolonged labor, can damage pelvic muscles and nerves, resulting in incontinence (10). Furthermore, the stigma associated with UI often prevents women from seeking information and help, thereby worsening their quality of life (11). The psychological impact of UI includes anxiety, depression, and a reduced sense of well-being, highlighting the need for early diagnosis and intervention (12).

The current study aims to investigate the prevalence of UI among different age groups of women, focusing on the correlation between UI and factors such as age, parity, and physical activities. This observational study was conducted among women in hospitals in Sahiwal, Pakistan, over a six-month period, utilizing a sample size of 377 women selected through non-probability convenient sampling (13). The study employed the Modified International Consultation on Incontinence Questionnaire-Urinary Incontinence Short Form (ICIQ-UI SF) to assess the frequency, severity, and impact of UI on the quality of life of the participants (14). Data were analyzed using SPSS version 26, and the findings are expected to provide insights into the prevalence and determinants of UI, contributing to better management and intervention strategies.

Previous studies have reported varying prevalence rates of UI, highlighting the importance of context-specific research. For example, Alizadeh and Montazeri (2023) reported a UI prevalence of 39.5% among postmenopausal women in Iran, identifying significant predictors such as parity and age (15). Similarly, Charpot and Sagar (2021) found a 29.36% prevalence of UI among young Gujarati women, emphasizing the need for awareness and early intervention (16). These studies, along with the current research, underscore the necessity of understanding UI within different populations and health contexts to develop effective prevention and treatment strategies.

In conclusion, UI remains a significant public health issue, particularly among women. This study seeks to elucidate the prevalence and correlates of UI in women across different age groups, with a focus on the impact of physical and demographic factors. By addressing the gaps in current knowledge and providing evidence-based insights, the research aims to enhance the quality of life for women affected by UI through improved management and intervention strategies.

## 2 Material and Methods

The study was conducted over a six-month period among women attending hospitals in Sahiwal, Pakistan, following the acceptance of the study synopsis. A sample size of 377 women was determined using the Raosoft sample size calculator, with a confidence level of 95% and a desired precision of 0.05, based on the prevalence

of stress-related urinary incontinence from previous research (22). Participants were selected using a non-probability convenient sampling technique.

Inclusion criteria specified that participants had to be female, aged between 22 and 65 years, non-pregnant, and experiencing unwanted urinary leakage due to physical factors such as coughing, laughing, running, or climbing stairs (23). Exclusion criteria included those who had undergone surgery specifically for incontinence, had diabetes, had received chemotherapy, had spinal cord injuries or other neurological conditions, or were undergoing a hysterectomy for any reason.

The Modified International Consultation on Incontinence Questionnaire-Urinary Incontinence Short Form (ICIQ-UI SF) was utilized to assess urinary incontinence among the participants. This questionnaire evaluates the frequency, severity, and impact of urinary incontinence on quality of life, providing a comprehensive overview of incontinence symptoms for both patients and clinicians (14).

Data collection involved administering the ICIQ-UI SF to the participants, who were interviewed by trained research assistants to ensure accurate and consistent data entry. Demographic information, medical history, and specific details related to urinary incontinence episodes were also collected. Ethical approval for the study was obtained from the Institutional Review Board of Quaid-e-Azam College, Sahiwal, and all participants provided informed consent before inclusion in the study, in accordance with the principles of the Helsinki Declaration.

The data were analyzed using SPSS version 25.0. Quantitative data were summarized using means and standard deviations, while qualitative data were analyzed using percentages and frequencies. Relationships between variables were assessed using Chi-square tests, with a significance level set at 0.05. Graphical representations, such as histograms and bar charts, were employed to illustrate numerical trends and categorical data.

By maintaining strict adherence to ethical guidelines and employing rigorous data collection and analysis methods, the study aimed to provide robust and reliable insights into the prevalence and correlates of urinary incontinence among women in different age groups. The findings were expected to contribute to a better understanding of the condition and inform the development of targeted interventions and management strategies.

### 3 Results

This study investigated the prevalence of urinary incontinence (UI) among 377 women aged 22-65 years. The overall prevalence of UI was found to be significant, with variations observed across different age groups and other demographic factors. The prevalence of UI varied by age group, with the highest prevalence observed among women aged 55-65 years (54.32%), followed by the 33-43 age group (31.50%), 44-54 age group (27.85%), and the 23-32 age group (26.26%). The frequency of urinary leakage among participants was reported as follows: 29.44% experienced leakage once a week or less, 17.78% two to three times a week, 4.51% once a day, 13.00% several times a day, and 4.24% all the time. Meanwhile, 16.7% of the participants reported no leakage at all (TABLE 1) The severity of leakage was categorized as no leakage (16.71%), a small amount (49.34%), a moderate amount (22.02%), and a large amount (11.94%) Protective measures, such as wearing protection, were reported by 35.81% of participants. The severity of leakage was categorized as no leakage

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**Table 1: Prevalence and Frequency of Urinary Incontinence (UI) by Age Group**

Age Group	UI Prevalence %	Frequency of Leakage (%)
<b>23-32 years</b>	26.26	Never: 16.70, Once a week or less: 29.44, 2-3 times/week: 17.78, Once a day: 4.51, Several times/day: 13.00, All the time: 4.24
<b>33-43 years</b>	31.50	Never: 16.70, Once a week or less: 29.44, 2-3 times/week: 17.78, Once a day: 4.51, Several times/day: 13.00, All the time: 4.24
<b>44-54 years</b>	27.85	Never: 16.70, Once a week or less: 29.44, 2-3 times/week: 17.78, Once a day: 4.51, Several times/day: 13.00, All the time: 4.24
<b>55-65 years</b>	54.32	Never: 16.70, Once a week or less: 29.44, 2-3 times/week: 17.78, Once a day: 4.51, Several times/day: 13.00, All the time: 4.24

Leakage triggers included coughing or sneezing (63.40%), climbing stairs or jumping (46.42%), before reaching the toilet (43.77%), while asleep (42.71%), during physical activity (46.42%), and after urination (41.11%). Additionally, 21.49% experienced constant leakage Regarding childbirth, 39.26% of participants had spontaneous vaginal deliveries (SVD), and 60.74% had cesarean sections The pregnancy history varied, with the majority (41.91%) having been pregnant 1-5 years ago, and 60.48% had 1-3 pregnancies. The correlation between BMI and UI frequency showed no significant difference across BMI categories ( $P > 0.05$ ), although a trend of higher reported frequencies was observed as BMI increased from underweight to obesity. The correlation between the type of delivery and UI frequency indicated no significant effect ( $P > 0.05$ )

**Table 2: Severity of Urinary Incontinence (UI), Associated Factors, and Pregnancy History**

Severity of Leakage (%)	Protective Measures (%)	Triggers of Leakage (%)	Type of Delivery (%)	Last Pregnancy Period (%)
<b>No leakage: 16.71</b>	Wearing protection: 35.81	Coughing/sneezing: 63.40	SVD: 39.26	1-5 years ago: 41.91
<b>Small amount: 49.34</b>		Climbing stairs/jumping: 46.42	C-section: 60.74	1-11 months ago: 8.2
<b>Moderate amount: 22.02</b>		Before reaching the toilet: 43.77		6-10 years ago: 20.2
<b>Large amount: 11.94</b>		While asleep: 42.71		11-15 years ago: 15.1
		During physical activity: 46.42		16-20 years ago: 5.8
		After urination: 41.11		21-25 years ago: 3.7
		Constant leakage: 21.49		26-30 years ago: 3.4

In summary, the study revealed a significant prevalence of UI among women in different age groups, with the highest prevalence among women aged 55-65 years. The findings underscore the importance of early screening and intervention to manage UI effectively.

## 4 Discussion

The present study aimed to investigate the prevalence of urinary incontinence (UI) among women in Sahiwal, Pakistan, and examine the correlation between UI and various demographic and physical factors. The findings revealed a significant prevalence of UI, particularly among women aged 55-65 years. This age-related increase in UI prevalence is consistent with global trends, as noted by Milsom and Gyhagen (2019), who reported that UI tends to rise with age, especially among women over 45 (27).

The study's results align with previous research highlighting the impact of age, childbirth, and BMI on UI. For instance, Alizadeh and Montazeri (2023) found that age and parity were significant predictors of UI among postmenopausal women in Iran, with a prevalence of 39.5% (15). Similarly, our study identified a high prevalence among postmenopausal women, emphasizing the role of aging and physiological changes in the onset of UI. The high prevalence of UI in the 55-65 age group (54.32%) underscores the need for targeted interventions for older women, including routine screening and tailored treatment plans.

The study also observed a notable relationship between BMI and UI frequency, although the statistical analysis did not show a significant difference ( $P > 0.05$ ). The trend of higher UI frequencies with increasing BMI corroborates findings by Fuselier et al. (2018), who reported that obesity contributes to the pathophysiology of stress urinary incontinence due to increased intra-abdominal pressure (8). This highlights the importance of weight management as a preventive measure for UI (22).

Childbirth history was another critical factor examined in this study. Despite the higher reported frequencies of UI among women who had cesarean sections compared to those with spontaneous vaginal deliveries (SVD), the type of delivery did not have a significant effect on UI ( $P > 0.05$ ). This finding is consistent with previous studies that have reported mixed results regarding the impact of delivery mode on UI. Leijonhufvud et al. (2011) noted that both vaginal deliveries and cesarean sections could lead to pelvic floor dysfunction, though the mechanisms may differ (18-23). Our results suggest that postnatal pelvic floor rehabilitation should be considered for all women, regardless of delivery mode, to mitigate the risk of UI (23).

One of the study's strengths was the comprehensive use of the Modified International Consultation on Incontinence Questionnaire-Urinary Incontinence Short Form (ICIQ-UI SF) for assessing UI. This standardized tool provided a detailed evaluation of the frequency, severity, and impact of UI on participants' quality of life, ensuring robust and reliable data collection. Additionally, the study's sample size of 377 women allowed for a thorough examination of UI across different age groups and demographic variables.

However, the study had limitations that must be acknowledged. The use of non-probability convenient sampling may limit the generalizability of the findings to the broader population. Furthermore, the cross-sectional design precludes any causal inferences between the examined factors and UI. Future studies should consider longitudinal approaches to better understand the temporal relationships and causative factors of UI. Additionally, expanding the sample to include women from diverse geographic and socio-economic backgrounds could enhance the applicability of the findings (26).

Despite these limitations, the study offers valuable insights into the prevalence and correlates of UI among women in Sahiwal, Pakistan. It highlights the need for comprehensive public health strategies, including awareness campaigns, routine screenings, and interventions tailored to high-risk groups. Effective management of UI requires a multifaceted approach that addresses not only the physical aspects but also the psychological and social impacts of the condition (4, 27).



## 5 Conclusion

In conclusion, this study underscored the significant prevalence of UI among women, particularly in older age groups, and identified key correlates such as age, BMI, and childbirth history. The findings contribute to the growing body of evidence on UI and underscore the need for targeted interventions and public health initiatives to improve the quality of life for women affected by this condition. By addressing the identified risk factors and promoting early detection and management, healthcare providers can better support women in managing UI and mitigating its adverse effects.

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**Disclaimers**

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<b>Author Contributions</b>	Gulaly Ishma Ali contributed to data collection, statistical analysis, and manuscript preparation. Wajeeha Fatima participated in study design and data collection. Ushna Aslam assisted with the literature review and methodology. Khalida Parveen helped develop the methodology and analyze results. Saman Tariq performed data entry, statistical analysis, and manuscript editing. Ayesha Nazir provided expert guidance and critical review. Fahad Ali assisted in data collection, analysis, and results writing. Faisal Nawaz organized data and prepared visual representations. Hira Rafique oversaw the project, contributed to study design, data interpretation, and conducted the final review.
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