

Urinary Incontinence in Postmenopausal Women: Assessment of Factors Responsible

Wajeeha Khurshid^{*1}, Bushra Zafar², Muqadas Tariq², Ata Ur Rehman, Asad Zia Khan², Ayesha Ismail¹, Ali Mujtaba², Bahar Ali², Fajar Ahmad², Areeba Jadoon²

¹Department of Obstetrics & Gynaecology, Ayub Teaching Hospital, Abbottabad, Pakistan

²Final Year MBBS Students, Ayub Medical College, Abbottabad, Pakistan

*Corresponding author's email address: waheer300@gmail.com

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Abstract: Postmenopausal women frequently experience urinary incontinence (UI), a condition often overlooked due to social stigma and lack of awareness. This study aimed to assess the risk factors that contribute to the development of urinary incontinence in postmenopausal women. **Objective:** To determine the risk factors associated with the development of urinary incontinence in postmenopausal women. **Methods:** This is a cross-sectional study conducted at the Uro-Gynae Unit of Ayub Teaching Hospital, Abbottabad, on 126 patients, following approval from the Ethical Committee of Ayub Teaching Hospital, using a non-probability consecutive sampling technique. Data was collected through face-to-face interviews on a self-structured questionnaire. Analysis was conducted using IBM SPSS-22. **Results:** Among 126 postmenopausal women having urinary incontinence, 93.65% were multi-parous, and 38.10% had a BMI over 30. LMP was 1–5 years ago in 44.44% of participants. In contrast, 55.55% of women had a history of urinary tract infections, 37.30% had a history of previous surgeries, and 27.78% were using medications such as diuretics and sedatives. Family history of UI was found in 22.22% of participants. **Conclusion:** Factors responsible for UI in this study are multi-parity, BMI>30, UTI, previous surgery, medication, and family history of UI. There is a need to implement measures and interventions to reduce these factors.

Keywords: Urinary Incontinence, Urinary Tract Infection, BMI, Parity

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Introduction

Menopause marks the end of a woman's reproductive years and involves hormonal changes, including a drop in estrogen levels. This affects body processes, including the urinary system, and can significantly impact a woman's quality of life (1). One of the most common lower urinary tract symptoms in women is urinary incontinence (UI), which is the complaint of involuntary voiding, is familiar with three main types: stress urinary incontinence (SUI) leakage occurs with physical activity, sneezing, and coughing; urgency urinary incontinence (UUI), which involves a sudden, strong urge to urinate; and mixed urinary incontinence (MUI) with features of both UI (2). The lower urinary tract is sensitive to steroid hormones, including estrogen, androgen, and progesterone. Menopause can affect collagen remodeling, negatively impacting urethral mobility and closure mechanisms and increasing collagen in the detrusor smooth muscle, which can lead to overactive bladder symptoms. The genitourinary syndrome of menopause (GSM) unifies symptoms associated with vulvovaginal atrophy (3). Although urinary incontinence is not a fatal condition, it can have an impact on a patient's physical, sexual, social, psychological, familial, and occupational elements of their lives. Due to social isolation and a reduction in social activities, UI lowers quality of life (4). It is necessary to investigate risk factors for SUI to facilitate early management, especially given its high prevalence of 83.3% in women in Pakistan, as reported in a 2021 study (5).

Age, obesity, diabetes, menopause, and obstetric stress have all been connected to the development and progression of SUI. It has been demonstrated that the predisposing, triggering, and malfunctioning elements that make up the multi-factorial risk of SUI have a complex effect on the development of SUI (6). Factors like urinary tract infections, chronic constipation, diabetic neuropathy, Parkinson's disease, multiple sclerosis, poly-radculopathy, and medications like diuretics and antihypertensives can cause UI, which is often overlooked or untreated (7). Both conservative and surgical approaches are used to treat UI, although physiotherapy is advised as

the initial course of treatment due to its low risk, low cost, and effectiveness (8). A large number of women with SUI choose not to seek treatment for their illness. Some women have minor cases of SUI and may not believe that treatment is necessary; others are afraid that surgery will be required for therapy, or they are ashamed to discuss their problem with a healthcare professional. The widespread lack of training among medical professionals in diagnosing and treating SUI is another obstacle to its treatment (9).

Postmenopausal women's urine incontinence is a complex issue that has a significant impact on their health and well-being. Developing successful preventive and treatment measures requires an understanding of the various factors that contribute to urinary incontinence (UI), ranging from lifestyle choices and genetic predisposition to hormonal changes and weakening of the pelvic floor muscles. There is no local data on the factors that contribute to urine incontinence in postmenopausal women. This study will contribute to the development of regional data on the topic above. The findings will help gynecologists, hospital administrators, and policymakers create efficient plans for these patients. This study aimed to determine the frequency of factors contributing to urinary incontinence among postmenopausal women presenting to the Uro-gynaecology Outpatient Department (OPD) of Ayub Teaching Hospital.

Methodology

A cross-sectional study was conducted at the Uro-Gynae Unit of Ayub Teaching Hospital, Abbottabad, from September 2023 to February 2024, using a non-probability consecutive sampling technique. The sample size was 126, representing a 29.6% proportion of obese patients with urinary incontinence, with an 8% margin of error and a 95% confidence level (10). All postmenopausal patients aged 45–90 years presenting with urinary incontinence who gave informed consent for answering the questionnaire were included in the study. Mentally unstable patients with GCS scores less than 15, patients who used sex hormones within the previous 3 months, and



patients who did not give consent for participation were excluded from the study. Data were collected from eligible patients on a pre-designed proforma, which included demographic data and risk factors (UTIs, previous surgery, family history, use of medications, obesity, and parity).

The statistical analysis was conducted using IBM SPSS-22. Descriptive statistics were applied to continuous variables, with results reported as means and standard deviations. Frequencies and percentages were collected for categorical variables, including obesity, parity, history of previous gynecological surgeries, family history of urinary tract infections (UTI), and use of medications.

Results

smaller proportions (3.97%) were nulliparous or primigravida (2.38%). The majority (38.10%) had a BMI over 30, followed by 32.54% with a BMI ranging from 18 to 24.9, and 27.78% falling within BMI 25–30. Regarding the duration since menopause, 44.44% of participants were 1–5 years postmenopausal, 9.52% were less than one year postmenopausal, and 22.22% had been postmenopausal for over 10 years. The duration since menopause and urinary tract infections (UTIs), reported by 55.55% of participants, were identified as the most significant factors associated with urinary incontinence. Additionally, 37.30% of participants had a history of previous surgeries. Medication, such as diuretics and sedatives, was reported by 27.78% of participants, and 22.22% had a family history of urinary incontinence. However, these factors were less strongly associated with UI compared to the other risk factors.

Table 1: Frequencies of urinary incontinence in postmenopausal women

Variable	Category	Frequency	Percentage
BMI (Kg/m ²)	<18	2	1.58
	18–24.9	41	32.54
	25–30	35	27.78
	>30	48	38.1
Duration sine menopause	<1 year	12	9.52
	1–5 years	56	44.44
	6–10 years	30	23.81
	>10 years	28	22.22
Presence of UTI	Yes	70	55.55
	No	56	44.44
Parity	Nulliparous	5	3.97
	Primigravida	3	2.38
	Multiparous	118	93.65
Previous Surgery	Yes	47	37.30
	No	79	62.70
Family History of UI	Yes	28	22.22
	No	98	77.78
Use of Medication	Yes	35	27.78
	No	91	72.22

Discussion

Preoperative medication and psychological preparation are essential. Our study identifies the risk factors for urinary incontinence in postmenopausal women. The results show that out of 126 participants, 35 (27.78%) were overweight, with a BMI between 25–30 Kg/m², and 48 (38.1%) were obese, with a BMI greater than 30 kg/m². This is because obesity increases abdominal pressure and bladder compression, leading to UI. According to another study (11) considering postmenopausal women facing UI, 46% of participants were overweight and 28% were obese. Another study from Spain (12) concluded that 64.6% of women being overweight or obese were facing urinary incontinence (2). Variations in the study population's age distribution, dietary or cultural practices, and levels of physical activity may contribute to the discrepancy. The observed discrepancy may also have been caused by variations in the sample size, inclusion criteria, or techniques for categorizing

BMI groups. Regional and genetic factors may significantly influence BMI and its association with urine incontinence in postmenopausal women.

According to our study, only 12 (9.52%) of the participants with UI were in their perimenopausal period, whereas 56 (44.44%) were 1–5 years postmenopausal, constituting the majority group. A descriptive study from Nepal (13) shows that 51.64% of patients reporting to the hospital for urinary incontinence were in their perimenopausal period. Thirty (23.81%) women were postmenopausal for 6–10 years in our study, whereas another study (14) shows 34.5% participants in the same group. The differences could be attributed to different geographical locations and genetic factors. Estrogen levels decline after menopause, causing changes to the bladder and urethral tissues and pelvic floor muscle weakness, leading to UI.

Seventy (55.55%) of our study participants had urinary tract infections in conjunction with urinary incontinence, indicating a significant association between the two conditions. It is inconsistent with other studies (15). This is because a UTI causes inflammation and irritation of the urinary bladder, leading to an overactive bladder and urgency. The majority of our patients were multiparous, which is consistent with the results of a cross-sectional study in Saudi Arabia (16) that showed 54.05% of patients with more than eight children experienced urinary incontinence, and only 12% of patients with UI had fewer than four children. This suggests that parity is directly related to the risk of urinary incontinence. A possible reason for this association may be that, in addition to causing harm to the connective and neurological tissues of the pelvic organs and pelvic floor, mechanical strain during recurrent deliveries can also disturb the muscles, fascia, and ligaments. Forty-seven (37.3%) participants had undergone previous gynecological surgeries, showing an association between urinary incontinence and prior surgeries. As per the results of a meta-analysis (17), a significant association was found between previous surgeries and *de novo* urinary incontinence.

A family history of UI was also identified as a risk factor. A study from Saudi Arabia (18) also demonstrated a link between UI and family history, with 21% of the participants having a positive family history. Another study (19) revealed that participants with a family history of UI were more likely to develop UI than those without a family history. Collagen and other connective tissues that reinforce ligaments and muscles, including those in the pelvic floor, may be influenced by genetic factors.

The use of medications like sedatives or diuretics could lead to UI. A systematic review (20) showed UI as a side effect of various anti-psychotics with a prevalence of 1–42%. The possible reason could be an alpha-adrenergic blockade, the anticholinergic effect of drugs, or the sedative effect of drugs preventing them from emptying the bladder. Use of diuretics may cause UI (19). This could be attributed to increased urinary frequency, which causes urinary urgency.

This study had a diverse population at various durations of menopause. It provides data specifically for this locality, which currently lacks it, as it contributes to the framing of healthcare policies. It also compares our population with national and international studies explaining the regional and cultural differences in the prevalence of UI. This study is conducted in a tertiary care hospital with a high patient volume. Still, it may not include those with severe symptoms who are not seeking treatment for various reasons, such as embarrassment, stigma, or difficulty accessing the center, or who are consulting another multi-specialty clinic for a urinary issue. In line with our findings, a study conducted in Pakistan reported a high (83.3%) prevalence of urinary leakage in women, particularly in those aged 55–65 years (54.32%) (5), this highlights the varying frequency and severity of urinary incontinence. It is essential to note that, similar to the 2021 study, our results are based on self-reported symptoms, which may introduce reporting bias, as urodynamic tests were not conducted to confirm the type of incontinence.

Conclusion

The factor that significantly contributes to UI is multi-parity. Measures such as family planning should be undertaken to reduce parity. Other modifiable factors that lead to UI are BMI, UTI, and surgery. Emphasis should be placed on lowering abdominal and pelvic surgeries, promoting weight reduction, and maintaining proper hygiene.

Declarations

Data Availability statement

All data generated or analyzed during the study are included in the manuscript.

Ethics approval and consent to participate

Approved by the department concerned. (IRBEC-AYUMC-012-23)

Consent for publication

Approved

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Conflict of interest

The authors declared the absence of a conflict of interest.

Author Contribution

WK: Concept, design, critically reviewed, and approved the final manuscript.

BZ: Contributed to the design of work, drafted and reviewed the work, final approval of the manuscript.

AI: Study design and literature search

MT: Contributed to the design of work, drafted and reviewed the work, final approval of the manuscript.

AUR: Contributed to the design of work, performed data analysis, drafted and reviewed the job, and finalized approval of the manuscript.

AZK: Contributed to the design of work, drafted and reviewed the work, final approval of the manuscript.

AM: Contributed to the design of work, drafted and reviewed the work, final approval of the manuscript.

BA: Contributed to the design of work, drafted and reviewed the work, final approval of the manuscript.

FA: Contributed to the design of work, drafted and reviewed the work, final approval of the manuscript.

AJ: Contributed to the design of work, drafted and reviewed the work, final approval of the manuscript.

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