PREVALENCE AND RISK FACTORS OF URINARY INCONTINENCE IN PERIMENOPAUSAL WOMEN IN A TERTIARY LEVEL HOSPITAL

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KEYWORDS

Prevalence, Risk Factors, Urinary Incontinence

ABSTRACT:

Background: Urinary incontinence (UI) is a prevalent condition with significant physical, psychological, and social impacts on women. This study aimed to evaluate the prevalence and identify the risk factors associated with UI among perimenopausal women in a tertiary-level hospital. **Aim of the study:** The aim of the study was to determine the prevalence and identify the risk factors associated with urinary incontinence among perimenopausal women in a tertiary-level hospital. **Methods:** This cross-sectional study was conducted in the Department of Obstetrics and Gynecology at Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh, from 2018 to 2020, involving 100 perimenopausal women aged 42–52 years with irregular cycles or menopausal symptoms. Data were collected using a structured questionnaire on demographics, UI type/severity, and risk factors. UI was categorized as stress, urgency, or mixed, and severity as slight, moderate, severe, or very severe. Data were analyzed using SPSS version 22.0, with descriptive statistics and chi-square test ($p < 0.05$). **Results:** In this study of 100 perimenopausal women, 41% had urinary incontinence (UI), with stress UI (23%) being most common. Significant risk factors included age ≥ 45 years ($p=0.001$), BMI ≥ 25 kg/m² ($p<0.001$), parity ≥ 1 child ($p=0.005$), and vaginal delivery ($p=0.01$). Among UI cases, 51.2% had moderate severity, while 4.9% had very severe UI. **Conclusion:** This study identifies older age, higher BMI, increased parity, and vaginal delivery as key risk factors for urinary incontinence in perimenopausal women, underscoring the need for targeted interventions to address this prevalent condition.

INTRODUCTION

Urinary incontinence (UI) is a prevalent and distressing condition affecting women of all ages, with significant physical, psychological, and social consequences. The International Continence Society defines UI as the complaint of any involuntary loss of urine, categorizing it into stress urinary incontinence (SUI), urgency urinary incontinence (UUI), or mixed urinary incontinence (MUI) based on symptoms.[1] Recognized as a priority health issue by the World Health Organization (WHO),[2] UI profoundly impacts quality of life and healthcare costs. Studies report prevalence rates ranging from 15% to 50% among adult women, with variations due to differences in study populations, data collection methods, and cultural factors.[3] While aging, menopause, obesity, vaginal deliveries, and pelvic surgeries are well-established risk factors,[4] other contributors such as diabetes mellitus, depression, chronic respiratory conditions, and lifestyle habits like tobacco use remain under investigation. In developing countries, stigma, lack of awareness, and limited access to female healthcare providers contribute to underreporting, affecting prevalence estimates and treatment-seeking behavior.[5]

Consequently, UI remains a major cause of hospitalization among older adults and imposes a significant financial burden on healthcare systems worldwide.

Beyond its physical symptoms, UI significantly affects women's social lives, emotional well-being, and mental health.[6-8] Many women alter their daily routines, avoiding social interactions, physical activities, and sexual intimacy due to fear of odor or visible leakage, leading to social isolation, embarrassment, anxiety, and depression.[9,10] The severity of UI varies widely, from occasional minor leakage to frequent and substantial urine loss, severely impairing quality of life.[11] However, the absence of standardized severity classifications complicates epidemiological assessments, though indices combining frequency and volume have been proposed for better evaluation. In Bangladesh and other developing countries, limited research has explored UI subtypes and specific risk factors, though high parity and elevated BMI are suspected contributors. Additionally, unique regional factors, such as early childbirth, cultural norms influencing health-seeking behavior, and the impact of diet and substance use, remain underexplored. Given the rising global prevalence of obesity and metabolic disorders, targeted interventions are necessary to improve awareness, healthcare accessibility, and management strategies for UI, particularly in resource-limited settings.

Despite its significant impact, research on UI in perimenopausal women, particularly in developing countries like Bangladesh, remains limited. Most studies focus on broader female populations without addressing the unique physiological and hormonal changes of the perimenopausal phase. Furthermore, variations in UI prevalence due to cultural stigma, underreporting, and healthcare accessibility are often overlooked. The influence of lifestyle factors, metabolic disorders, and regional health-seeking behaviors on UI also requires further exploration. Given these gaps, this study aimed to determine the prevalence and identify the risk factors associated with urinary incontinence among perimenopausal women in a tertiary-level hospital.

OBJECTIVE

- The aim of the study was to determine the prevalence and identify the risk factors associated with urinary incontinence among perimenopausal women in a tertiary-level hospital.

METHODOLOGY & MATERIALS

This cross-sectional study was conducted in the Department of Obstetrics and Gynecology at Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh, from 2018 to 2020. The study included 100 perimenopausal women to determine the prevalence and identify risk factors associated with urinary incontinence (UI).

Inclusion Criteria:

- Women aged 42–52 years.
- Perimenopausal status (irregular menstrual cycles or menopausal symptoms).
- Willingness to provide written informed consent.

Exclusion Criteria:

- History of pelvic surgery or radiation therapy.
- Neurological disorders affecting bladder control.
- Active urinary tract infections or other urological conditions.
- Incomplete medical records or refusal to participate.

Written informed consent was obtained from all participants, ensuring confidentiality and ethical compliance. Data were collected through face-to-face interviews using a structured questionnaire, which included sections on demographic characteristics (age, BMI, parity, mode of delivery), urinary incontinence assessment (type and severity of UI), and risk factors (age, BMI, parity, mode of delivery). Urinary incontinence (UI) was diagnosed based on self-reported symptoms and categorized into stress UI, urgency UI, and mixed UI, while severity was classified as slight, moderate, severe, or very severe based on symptom frequency and impact. BMI categories were defined as optimal weight

(18.5–25 kg/m²), overweight (25.1–30 kg/m²), and obese (>30.1 kg/m²), and parity was categorized as 0, 1–3, or ≥4 live births. Data were analyzed using SPSS version 22.0, with descriptive statistics (frequencies, percentages, means, and standard deviations) summarizing demographic and clinical characteristics, and chi-square tests between risk factors and UI, considering a p-value <0.05 as statistically significant.

RESULTS

Table 1: Demographic Characteristics of the Study Population (n=100)

Demographic		**Frequency (n)**	**Percentage (%)**
Age (years)	42–44	22	22.0
	45–47	36	36.0
	48–50	28	28.0
	51–52	14	14.0
	Mean ± SD	46.95 ± 2.80	
BMI Category (kg/m²)	18.5 - 25 (Optimal Weight)	42	42.0
	25.1 - 30 (Overweight)	42	42.0
	30.1 > (Obese)	16	16.0
	Mean ± SD	26.31 ± 4.63	
Parity	0 children	22	22.0
	1-3 children	44	44.0
	≥4 children	34	34.0
Mode of Delivery	Vaginal	72	72.0
	Caesarean	28	28.0

The study population comprised 100 perimenopausal women, with the majority (36, 36.0%) falling in the 45–47 years age group, followed by 28 participants (28.0%) in the 48–50 years age group, and 22 participants (22.0%) in the 42–44 years age group. The mean age of the participants was 46.95 ± 2.80 years. Regarding BMI, 42 participants (42.0%) were within the optimal weight range (BMI 18.5–25 kg/m²), 42 participants (42.0%) were classified as overweight (BMI 25.1–30 kg/m²), and 16 participants (16.0%) were obese (BMI >30 kg/m²), with a mean BMI of 26.31 ± 4.63 kg/m². In terms of parity, 44 participants (44.0%) had 1–3 children, 34 participants (34.0%) had 4 or more children, and 22 participants (22.0%) had no children. Regarding the mode of delivery, 72 participants (72.0%) had vaginal deliveries, and 28 participants (28.0%) underwent caesarean sections.

Table 2: Prevalence of Urinary Incontinence Types in Perimenopausal Women (n=100)

UI Type	**Frequency (n)**	**Percentage (%)**
Stress UI	23	23.0
Urgency UI	6	6.0
Mixed UI	12	12.0
No UI	59	59.0

Table 2 presents the distribution of urinary incontinence (UI) types among 100 perimenopausal women. Stress UI was the most prevalent, affecting 23 women (23.0%), followed by Mixed UI in 12 women (12.0%) and Urgency UI in 6 women (6.0%). The majority of participants, 59 women (59.0%), reported No UI.

Table 3: Risk Factors Associated with Urinary Incontinence in Perimenopausal Women

Risk Factor	UI Present (n=41)	UI Absent (n=59)	p-value
Age ≥ 45 years	25 (61.0%)	53 (89.8%)	0.001*
BMI ≥ 25 kg/m²	31 (75.6%)	27 (45.8%)	<0.001*
Parity ≥ 1 child	26 (63.4%)	52 (88.1%)	0.005*
Vaginal Delivery	17 (41.5%)	11 (18.6%)	0.01*

Table 3 presents the association between various risk factors and urinary incontinence (UI) in perimenopausal women. A significant correlation was observed between UI and increasing age, with 61.0% of UI cases occurring in women aged 45 years or older compared to 89.8% in the UI-absent group (p=0.001). Higher BMI was also strongly associated with UI, as 75.6% of women with UI had a BMI ≥ 25 kg/m², whereas only 45.8% of those without UI fell into this category (p<0.001). Parity showed a similar trend, with 63.4% of women with UI having at least one child compared to 88.1% in the UI-absent group (p=0.005). Additionally, vaginal delivery was more prevalent among women with UI (41.5%) than those without UI (18.6%) (p=0.01), further highlighting its role as a potential risk factor.

Table 4: Severity of Urinary Incontinence in Patients with UI (n=41)

Severity of UI	No. of Subjects	Percentage
Slight	9	22.0
Moderate	21	51.2
Severe	9	22.0
Very Severe	2	4.9

Table 4 displays the distribution of urinary incontinence severity among the 41 patients diagnosed with UI in the study. The majority of the participants (51.2%) experienced moderate UI, followed by 22.0% with slight UI and 22.0% with severe UI. Only 4.9% of the patients reported very severe UI.

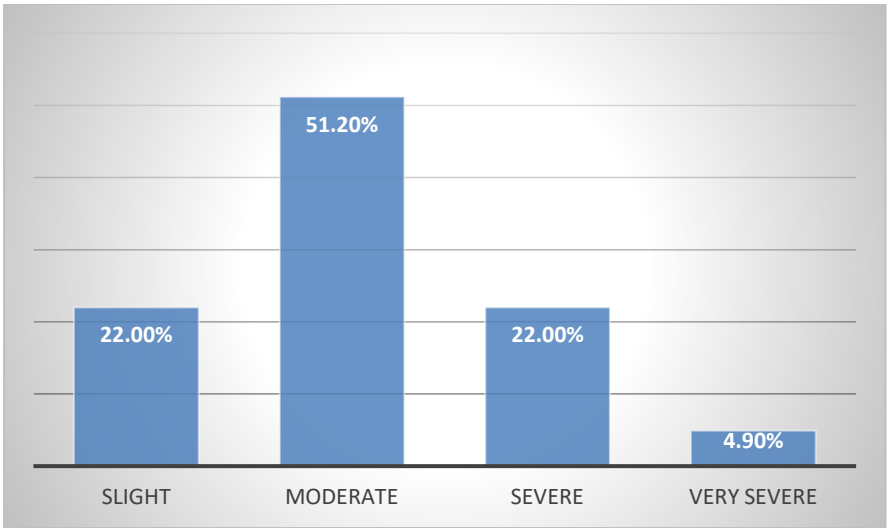

Figure 1: Severity of Urinary Incontinence in Patients with UI

DISCUSSION

This study highlights the prevalence and risk factors associated with urinary incontinence (UI) among perimenopausal women in a tertiary-level hospital in Bangladesh. UI, a common and often distressing condition, significantly impacts the quality of life for affected women, particularly during the perimenopausal period when hormonal and physiological changes can exacerbate symptoms. The findings emphasize the complex interplay of factors such as age, BMI, parity, and mode of delivery in the development of UI. The study underscores the importance of identifying these risk factors to implement timely interventions and improve the management of urinary incontinence in this demographic.

The demographic characteristics of participants in this study closely align with findings from previous research on UI in perimenopausal women. The mean age of participants was 46.95 years (SD ± 2.80), comparable to Sampselle et al.[12], who reported a mean age of 46.4 years (SD ± 2.7) in a similar population. Since age is a known risk factor for UI, the age distribution in this study (majority between 45–50 years) is consistent with previous findings linking advancing age in perimenopausal women to increased UI prevalence. In terms of BMI, 42.0% of participants were of normal weight, 42.0% were overweight, and 16.0% were obese, mirroring trends reported by Dhillon et al.[13] Given that higher BMI has been associated with increased intra-abdominal pressure and a greater risk of UI, the similarity in BMI distribution strengthens the relevance of comparing risk factors across studies. Parity also plays a significant role in UI development, and our findings (with 22.0% nulliparous, 44.0% having 1–3 children, and 34.0% with ≥4 children) closely resemble those reported by Dhillon et al.[13], further emphasizing the well-established link between higher parity and weakened pelvic floor muscles, predisposing women to UI. Additionally, the mode of delivery revealed that 72.0% of participants had vaginal deliveries, while 28.0% underwent cesarean sections, consistent with their findings. Given that vaginal delivery has been strongly associated with pelvic floor dysfunction and increased UI risk, these results align with prior evidence suggesting a higher prevalence of UI in women with a history of multiple vaginal births.

In our study, Stress Urinary Incontinence (SUI) was the most prevalent type, affecting 23 women (23%), followed by Mixed UI in 12 women (12%) and Urgency UI in 6 women (6%). Notably, 59 women (59%) reported no urinary incontinence. These findings are consistent with the results of Baydock et al.[14] and Dhillon et al.[13], both of which reported stress incontinence as the predominant form of urinary incontinence in perimenopausal women. Baydock et al. found a similar trend with stress incontinence being the most commonly diagnosed condition, reinforcing the high prevalence of SUI during this stage of life. Dhillon et al.[13] also reported that stress incontinence was more common than urgency or mixed forms, supporting the consistency of our findings with previous research. The higher

frequency of SUI in our study underscores its significance as a major concern for perimenopausal women, aligning with these established studies in the field.

In our study, we found significant associations between urinary incontinence (UI) and factors such as age, BMI, parity, and mode of delivery, which align with the findings of Ajith et al.[15] and Singh et al.[16] Similar to Ajith et al.[15], we observed that UI was more prevalent in older women, particularly those aged 45 years and above, reinforcing the impact of perimenopausal hormonal changes on pelvic floor strength. Higher BMI also emerged as a major risk factor, with overweight and obese women experiencing a significantly higher prevalence of UI, consistent with Singh et al.'s[16] findings that excess weight increases pressure on the pelvic floor. Additionally, our results indicate that women with at least one child had a greater likelihood of UI, which aligns with Ajith et al.'s[15] conclusion that pregnancy and childbirth contribute to pelvic floor dysfunction. The association between vaginal delivery and UI prevalence further supports previous studies, as vaginal birth is known to cause pelvic floor weakening and structural changes, increasing UI risk. These findings underscore the need for targeted interventions focusing on weight management, pelvic floor rehabilitation, and postpartum care to mitigate UI risk in perimenopausal women.

In our study, the majority of participants experienced moderate urinary incontinence (UI), with 51.2% reporting moderate severity. This finding is consistent with Bhanupriya et al.[17], who also identified moderate UI as the most common severity, accounting for over 50% of cases. They reported that slight and severe UI were similarly represented, with 22% of participants in each group experiencing slight and severe UI. The prevalence of very severe UI in our study (4.9%) was also comparable to their results, which showed a lower percentage of severe forms of UI. These findings suggest that moderate UI is the most common presentation in perimenopausal women, highlighting the need for targeted interventions for this group.

Limitations of the study

This study had the following limitations:

- Conducted in a single tertiary-level hospital.
- Non-random sampling, limiting representativeness.
- Narrow geographic scope, affecting generalizability.

CONCLUSION

This study aimed to determine the prevalence and identify risk factors associated with urinary incontinence (UI) among perimenopausal women in a tertiary-level hospital. The findings revealed a significant prevalence of UI, with stress UI being the most common type. Key risk factors included older age, higher BMI, increased parity, and vaginal delivery, all of which were strongly associated with UI. Most women with UI experienced moderate symptoms, while a smaller proportion reported severe or very severe symptoms. These results highlight the importance of addressing age, obesity, parity, and mode of delivery in the prevention and management of UI among perimenopausal women. Targeted interventions, such as weight management, pelvic floor exercises, and awareness programs, could help reduce the burden of UI in this population.

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