

Urinary incontinence in older women at a tertiary care hospital in Sri Lanka: Prevalence, severity, risk factors, and practices

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Abstract

Background: Urinary incontinence (UI) is a common lower urinary tract symptom that significantly affects the quality of life of older women. However, evidence specifically focused on older women remains limited, particularly in the local context. This study investigated the prevalence, severity, risk factors, and associated practices of UI among older women.

Methods: A cross-sectional study was conducted among older women aged 60 years or older admitted to the medical wards of Colombo South Teaching Hospital, using an interviewer-administered questionnaire. Statistical analysis was performed using SPSS, and significance was set at $p < 0.05$.

Results: A total of 361 women with a mean age of 68.86 ± 6.206 were included in the study. UI was reported in 36.6% of participants during the 3 months before admission. The most common UI subtypes were mixed UI (MUI) (18%), urge UI (UUI) (12.7%), and stress UI (SUI) (4.9%). A significant proportion (16.4%) experienced UI in nearly every voiding episode, and almost a third reported that their urinary problems greatly affected their lives. Additionally, 17% used pads to manage their UI. Various factors, including the number of vaginal deliveries, age at menopause, and history of gynaecological surgeries, were significantly linked to UI. While some practised good habits, a fifth chose self-treatment with herbs and prayers.

Conclusion: Among older women admitted to the medical wards of Colombo South Teaching Hospital, UI was frequently reported in the preceding months,

with a significant impact on quality of life; however, care-seeking behaviour and the adoption of positive practices remained suboptimal.

Key words: urinary incontinence, older women, prevalence, severity, risk factors, awareness, practices, Sri Lanka

Introduction

Urinary incontinence (UI), described as the involuntary loss of urine,¹ is a common yet often underreported and undertreated condition. In epidemiological studies, female UI is defined as “the complaint of involuntary loss of urine”. It mainly affects older adults, particularly women, and is recognised as one of the “geriatric giants” alongside falls, delirium, and dementia.²

Global data on the prevalence of UI vary widely across studies due to methodological and cultural differences in reporting, but generally increase with age, ranging from 5% to 70% according to a 2019 review.³ A meta-analysis of 29 studies estimated a global prevalence of 37.1% in older women, with the highest rates in Asia (45.1%).⁴ Studies in Sri Lanka report widely varying prevalence of UI in women, ranging from 11.4% in clinic attendees to 55.5% in community-based samples.^{5,6} However, data specifically on older women in Sri Lanka remains scarce.^{5,6}

Multiple factors such as age, obstetric and gynaecological history, comorbidities, medications, and functional dependence have been shown to contribute

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to UI in women.⁴ The prevalence and impact of these factors vary across populations, emphasising the importance of identifying key risk factors locally for effective prevention and management strategies.

UI significantly impacts the physical, psychological, social, and functional well-being of individuals, with greater consequences in older women due to associated comorbidities and frailty.⁷ However, its impact on the older population in Sri Lanka remains under-researched.

In a UK study of over 3,000 women aged 18 and above attending general practices, nearly half reported UI, yet only half of them had sought medical help.⁸ Similarly, a local study on stress UI (SUI) found that only 12.9% of individuals with stress incontinence in a population had sought medical care.⁹ This indicates poor care-seeking for UI across settings.

Sri Lanka is recognised as a country in the South Asian region with a rapidly increasing elderly population.¹⁰ The predominantly female elderly demographic is likely to encounter a rising burden of UI, yet data on its prevalence, risk factors, and management, especially among older women, remain limited.^{5,6} With this context, we aimed to assess the prevalence, severity, associated factors, and practices regarding UI among older female patients admitted to medical wards in a tertiary care hospital in Sri Lanka to gain insights into the problem and identify potential areas for health interventions.

Methods

An observational cross-sectional study was carried out in three female medical wards of the Colombo South Teaching Hospital (CSTH) in Sri Lanka from February to May 2022. The main aim of this study was to determine the prevalence, severity, and associated factors of female UI, as well as to assess practices regarding UI among older women admitted to medical wards during the study period. Ethical approval was obtained from the Ethics Committee of the CSTH. The sample size was calculated using the Lwanga and Lemeshow formula (1991),¹¹ based on a previously estimated prevalence of UI of 50%, given the wide variability in prevalence data both internationally and locally.

All patients aged 60 or older who were able to provide informed consent were recruited from the three medical wards of the CSTH. Patients who were unable to communicate effectively were excluded from the study. The investigators collected data on Mondays, Wednesdays, and Fridays during their ward visits. Data were collected using a pre-tested, interviewer-administered questionnaire available in the three main local languages of Sri Lanka: Sinhala, Tamil, and English. Interviews were conducted by the principal investigator

and two trained research assistants. A pilot study was conducted on 12 patients to assess the feasibility, acceptability, comprehensibility, and appropriateness of the questionnaire's wording.

The questionnaire consisted of five parts: A: Sociodemographic data; B: Prevalence and subtypes of UI; C: Assessment of severity and impact on health using Likert-type rating scales; D: Associated factors; and E: Practices related to UI. Participants were classified as having pre-admission urinary incontinence if they answered "yes" to the screening question: "During the past three months, have you had any urine leakage before this hospital stay, even a small amount?"

The data analysis was carried out using SPSS version 21. Quantitative data were summarised as means and standard deviations, and qualitative data were presented as proportions. Chi-square tests were used to identify relationships between UI and associated factors, and statistical significance was determined by a P value <0.05. We evaluated participants' and practices related to UI, assessing each variable separately to determine corresponding percentages and the overall proportions of good versus poor practices.

Results

Socio-demographic characteristics

The study population consisted of 361 women with a mean age of 68.8 (SD 6.2, range 60-93 years). Most participants (81.2%) were currently unemployed, and nearly half had never been employed. Most lived with either their children (53.7%), spouse (16.1%) or extended family (15%). Primary caregivers predominantly were children (69%) or spouses (10.8%) (Table 1).

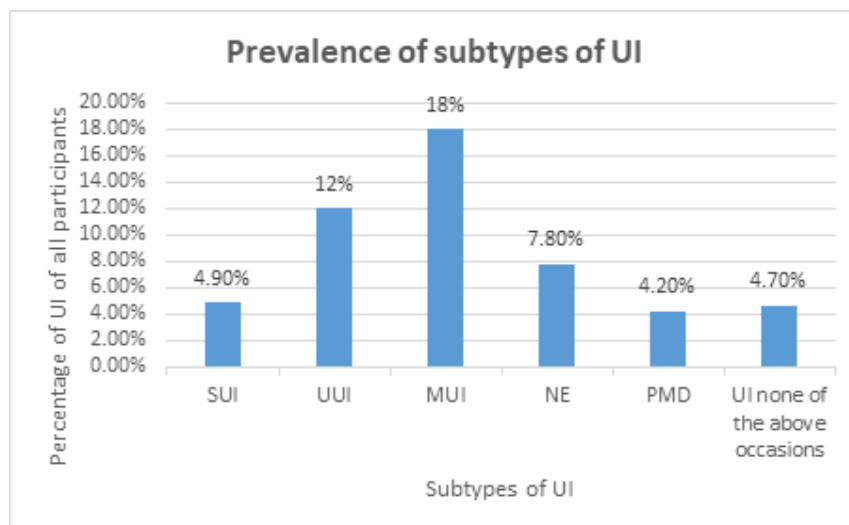
Prevalence and types of UI

UI affected 36.6% (n=132) of participants in the three months before hospital admission. Additionally, 45 of the remaining 229 participants developed new onset UI during their hospital stay, resulting in an overall point prevalence of 49.0% in the study population. The most common subtype of UI was mixed UI (MUI), affecting 18% (n=65) of participants, followed by urge UI (UUI) (12.7%, n=46) and stress UI (SUI) (4.9%, n=18). Among those with MUI, urge incontinence was the most frequently reported type. Furthermore, 7.8% (n=28) reported urine leaks during sleep (nocturnal enuresis, NE), and 4.2% (n=15) experienced leaks while getting dressed after urination (post-micturition dribble). A small proportion (4.7%, n=17) experienced incontinence on none of these occasions (Figure 1).

Severity of UI

Table 1. Socio-demographic characteristics of participants (n=361)

Characteristics	Total	Urinary incontinence		P Value
		Yes n (%)	No n (%)	
Age				0.484
60-70	232 (64.3%)	90 (68.2%)	142 (64.3%)	
71-80	109 (30.2%)	35 (26.5%)	74 (32.3%)	
>80	20 (5.5%)	7 (5.3%)	13 (5.7%)	
Education				0.20
Never schooled	16 (4.44%)	8 (6.06%)	8 (3.49%)	
Till grade 5	138 (38.2%)	48 (36.36%)	90 (39.3%)	
Till grade 11	126 (34.9%)	49 (37.12%)	77 (33.62%)	
Till A/L	63 (17.45%)	16 (12.12%)	47 (20.52%)	
Undergraduate	16 (4.43%)	11 (8.33%)	5 (2.18%)	
Postgraduate	2 (0.55%)	0 (0%)	2 (0.87%)	
Race				0.079
Sinhala	315 (87.3%)	121 (91.6%)	194 (84.7%)	
Tamil	24 (6.6%)	8 (6%)	16 (6.98%)	
Muslim	13 (3.6%)	3 (2.27%)	10 (4.36%)	
Burger	9 (2.5%)	0 (0%)	9 (3.93%)	
Marital status				0.683
Single	19 (5.26%)	6 (4.54%)	13 (5.67%)	
Married	265 (73.4%)	101 (76.5%)	164 (71.6%)	
Widowed	76 (21.05%)	25 (18.3%)	51 (22.27%)	
Separated	1 (0.2%)	0 (0%)	1 (0.43%)	
Total	361	132	229	

**Figure 1. Prevalence of subtypes of UI.**

Associations between severity and risk factors were analysed using data from 132 patients (36.6%) who reported UI in the three months before admission. This was done to avoid skewing the analysis by including potentially more severe but transient UI cases attributable to hospital factors (Table 2).

Of the 128 participants out of 132 who could recall the frequency of UI, 16.4% reported experiencing UI almost constantly. Concerning the volume of urine leaked per episode, 46.9% experienced only a few drops, while more than half faced more severe leakage that wet their underwear or outer garments. Additionally, 17% used some form of pad to lessen the impact of their UI.

The “bother” of UI was measured using a Likert scale. While just over half of the respondents (50.7%) perceived a minimal “bother (not at all” or “slightly”), a notable number reported moderate to significant levels of ‘bother’, indicating that UI impacted the daily

functioning of many individuals (Table 2).

Impact on physical, psychological and social health

Approximately one-third reported skin issues and reduced ability to exercise, while nearly 45% experienced restricted mobility and difficulty with self-care. Half of the participants with UI had sleep disturbances, with 1 in 5 reporting severe sleep disruptions. Psychologically, 45% felt depressed, 40% experienced anxiety, and one-third had lowered self-esteem due to UI (Table 3).

Regarding social well-being, a significant number of patients (20-35%) did not respond to specific questions, and nonverbal cues suggested reluctance. Despite the non-responders, over 50% of respondents reported no social impact. Only one-fifth reported being at least somewhat housebound due to UI, and less than 5% reported disturbances in relationships, sexual life, social visits, or caregiver abuse (Table 3).

Table 2. Severity of UI in terms of frequency, amount and overall “bother”

<i>Characteristic</i>	<i>N (128)</i>	<i>%</i>
Frequency		
Less than once a month	35	27.3%
Few times a month	20	15.6%
About once a week	8	6.25%
2 or 3 times a week	22	17.1%
About once a day	3	2.3%
Several times a day	19	14.8%
Almost all the time	21	16.4%
No response	04	
Amount of urine leak in an episode		
Only a few drops of leakage per episode	62	46.9%
Wetting their underwear	30	22.7%
Wetting their outer clothing	31	23.4%
Urine running down their legs	9	6.8%
How much does urine leakage bother you during your daily activities?		
Not at all	36	28.57%
Slightly	28	22.2%
Moderately	24	19.04%
A lot	38	30.15%
No response	06	

Table 3. Impact of UI on physical, psychological and social well-being (n=132)

<i>Characteristics</i>	<i>Not at all</i>	<i>Slightly</i>	<i>Moderately</i>	<i>A lot</i>	<i>Not answered</i>
Physical Health					
Affect the mobility (45.44%)	60 (45.45%)	27 (20.45%)	13 (9.84%)	20 (15.15%)	15 (11.36%)
Affect the self-care (43.93%)	67 (50.75%)	24 (18.18%)	16 (12.12%)	18 (13.63%)	10 (7.57%)
Affect the exercises (31.04%)	79 (59.84%)	17 (12.87%)	9 (6.81%)	15 (11.36%)	16 (12.12%)
Affect the sleep (50.4%)	57 (43.18%)	29 (21.96%)	11 (8.33%)	27 (20.45%)	12 (9.09%)
Affect the skin wellbeing (29.53%)	80 (60.6%)	21 (15.9%)	12 (9.09%)	66 (4.54%)	11 (8.33%)
Psychological well-being					
Feel depressed (45.44%)	58 (43.93%)	21 (15.9%)	27 (20.45%)	12 (9.09%)	16 (12.12%)
Feel anxious or nervous (39.38%)	74 (56.06%)	17 (12.87)	24 (18.18%)	11 (8.33%)	10 (7.57%)
Make feel bad about themselves (33.32%)	79 (59.84%)	19 (14.39%)	18 (13.63%)	7 (5.3%)	12 (9%)
Social well-being					
Affect relationship with the partner (5.28%)	85 (64.39%)	1 (0.75%)	4 (3.03%)	2 (1.5%)	44 (33.33%)
Affect the sex life (5.29%)	78 (59.09%)	5 (3.78%)	2 (1.51%)	0 (0%)	47 (35.6%)
Limit the ability to see and visit friends (5.29%)	72 (54.54%)	21 (15.9%)	7 (5.3%)	2 (1.51%)	33 (25%)
Limit to one's home (21.2%)	82 (62.12%)	19 (14.39%)	5 (3.78%)	4 (3.03%)	26 (19.69%)
Have resulted in abuse by caregiver (4.46%)	80 (60.6%)	8 (2.2%)	1 (0.75%)	2 (1.51%)	45 (34.09%)

Associated factors

The study examined factors linked to UI, including age, gynaecological history, geriatric syndromes, comorbidities, and medications. Significant associations (P value <0.05) were identified with UI, the number of vaginal deliveries (particularly of large babies), age at menopause, history of gynaecological surgery, and uterovaginal prolapse (Table 4). Other notable risk factors included diabetes, diuretic use,

current and recurrent UTIs, and family history of UI (Table 5). However, variables such as constipation and falls were not significantly linked to UI in this population (Table 5). Due to limited reporting, alcohol and smoking could not be evaluated. Some participants did not answer specific questions, often because of physical discomfort.

Practices related to UI

Table 4. Comparison of potential gynaecological risk factors with association of UI (n=132)

<i>Characteristics</i>	<i>Total</i>	<i>Urinary incontinence</i>		<i>P value</i>
		<i>Yes N (%)</i>	<i>No N (%)</i>	
Parity				0.53
Nulliparity	21 (5.81%)	7 (5.3%)	14 (6.11%)	
Primiparous	40 (11.08%)	13 (9.84%)	27 (11.79%)	
Multiparous (2-4)	268 (74.23%)	95 (71.96%)	173 (75.54%)	
Grand multipara (≥5)	29 (8.03%)	14 (10.6%)	15 (6.55%)	
Missing data	3 (0.83%)	3 (2.27%)	0 (0%)	
Number of Vaginal deliveries				0.015
None	36 (9.97%)	13 (9.84%)	23 (10.04%)	
Once	45 (12.46%)	7 (5.3%)	38 (16.59)	
2-4	246 (68.14%)	95 (71.96%)	151 (65.93%)	
≥5	30 (8.31%)	14 (10.6%)	16 (6.98%)	
Missing data	4 (1.1%)	3 (2.27%)	1 (0.43%)	
Number of large babies delivered vaginally				0.0016
None	290 (80.33%)	93 (70.45%)	197 (86.02%)	
Once	56 (15.51%)	32 (24.24%)	24 (10.48%)	
More than once	12 (3.32%)	4 (3.03%)	8 (3.49%)	
Missing data	3 (0.83%)	3 (2.27%)	0 (0%)	
Age at menopause				0.017
Before 45 years	60 (16.62%)	14 (10.6%)	46 (20.08%)	
After 45 years	301 (83.47%)	118 (89.38%)	183 (79.91%)	
Any gynaecological or urological surgery				0.005
Yes	68 (18.8%)	34 (25.75%)	34 (14.84%)	
No	282 (78.11%)	90 (68.18%)	192 (83.84%)	
Don't know	8 (2.21%)	5 (3.78%)	3 (1.31%)	
Missing data	3 (0.83%)	3 (2.27%)	0 (0%)	
Presence of faecal incontinence				0.279
Yes	16 (4.43%)	10 (7.57%)	6 (2.62%)	
No	337 (93.35%)	115 (87.12%)	222 (96.94%)	
Missing data	8 (2.21%)	7 (5.30%)	1 (0.43%)	
Presence of a lump at the vulva or diagnosis of any UV prolapse				.00001
Yes	27 (7.47%)	22 (16.66%)	5 (2.18%)	
No	325 (90.02%)	103 (78.03%)	222 (96.94%)	
Missing data	9 (2.4%)	7 (5.3%)	2 (0.87%)	
Total	361	132	229	

Table 5. Other associated factors of UI

Characteristics	Urinary incontinence			P value
	Total	Yes N (%)	No N (%)	
Presence of diabetes mellitus				0.0002
Yes	208 (57.61%)	91 (68.3%)	117 (51.09%)	
No	148 (40.99%)	37 (28.03%)	111 (48.47%)	
Don't know	2 (0.55%)	1 (0.75%)	1 (0.43%)	
Missing data	3 (0.83%)	3 (2.27%)	0 (0%)	
Presence of chronic cough				0.789
Yes	41 (11.35%)	14 (10.6%)	27 (11.79%)	
No	317 (87.81%)	115 (87.12%)	202 (88.2%)	
Missing data	3 (0.83%)	3 (2.27%)	0 (0%)	
Presence of chronic constipation				0.140
Yes	36 (9.97%)	17 (12.87%)	19 (8.29%)	
No	322 (89.19%)	112 (84.84%)	210 (91.7%)	
Missing data	3 (0.83%)	3 (2.27%)	0 (0%)	
Diuretic use				0.0257
Yes	38 (10.52%)	21 (15.9%)	17 (7.42%)	
No	261 (72.29%)	95 (71.96%)	166 (72.48%)	
Don't know	59 (16.34%)	13 (9.84%)	46 (20.08%)	
Missing data	3 (0.83%)	3 (2.27%)	0 (0%)	
Urinary infection at the times of incontinence episodes				0.007
Yes	49 (13.57%)	26 (19.69%)	23 (10.04%)	
No	309 (85.59%)	103 (78.03%)	206 (89.95%)	
Missing data	3 (0.83%)	3 (2.27%)	0 (0%)	
Having recurrent UTI				0.0004
Yes	41 (11.45%)	25 (18.93%)	16 (6.98%)	
No	317 (87.81%)	104 (78.78%)	213 (93.01%)	
Missing data	3 (0.83%)	3 (2.27%)	0 (0%)	
Family history of urinary incontinence				0.016
Yes	25 (6.2%)	15 (11.36%)	10 (4.36%)	
No	299 (82.82%)	107 (81.0%)	192 (83.84%)	
Don't know	34 (9.41%)	7 (5.3%)	27 (11.79%)	
Missing data	3 (0.83%)	3 (2.27%)	0 (0%)	
History of heavy lifting				0.532
Yes	93 (25.76%)	36 (27.27%)	57 (24.89%)	
No	265 (73.46%)	93 (70.45%)	172 (75.1%)	
Missing data	3 (0.83%)	3 (2.27%)	0 (0%)	
Falls during last one year				0.764
None	268 (74.2%)	91 (68.93)	177 (77.29%)	
One	49 (13.57%)	20 (15.15%)	29 (12.66%)	
More than one	44 (12.18%)	21 (15.9%)	23 (10.04%)	
Total	361	132	229	

Table 6. Practices related to UTI

	<i>Good practice</i>	<i>Bad practice</i>	<i>Missing data</i>
Feels comfortable discussing the problem with a doctor	248 (68.7%)	59 (16.3%)	54 (15%)
Self-treating with herbs or prayers	220 (60.9%)	74 (20.5%)	67 (18.6%)
Joining a peer group to share the experience	241 (66.8%)	63 (17.5%)	57 (15.8%)
Practicing pelvic floor exercises	140 (38.8%)	156 (43.2%)	65 (18%)
Using sanitary pads to avoid getting wet with urine	135 (37.4%)	160 (44.3)	66 (18.3%)
Limiting the fluid intake to control urine leakage	186 (51.5%)	112 (31%)	63 (17.5%)
Adjusting the timing of fluid intake	100 (27.7%)	191 (52.9%)	70 (19.4%)
Average practice scores	52.52 %	47.88%	17.23%

On average, half of the participants demonstrated good practices in UI management. While 68.7% were willing to disclose the UI issue to a doctor, 20.5% preferred self-treatment with herbs and prayers, and only 38.8% would perform pelvic floor exercises (Table 6).

While 68.7% of participants felt comfortable discussing UI with doctors, particularly family physicians and routine clinic doctors, of the 177 participants experiencing urinary incontinence at the time of the study, only 34 (9.4%) had sought medical attention. Most who sought help consulted a single physician, and only nine received treatment, with limited effectiveness and satisfaction. Barriers to seeking care included beliefs that UI is a regular part of ageing (15.2%), lack of awareness that it is treatable (22.4%), embarrassment (10.8%), and concerns over time and cost. Additionally, 97.8% had never performed pelvic floor exercises.

Discussion

UI is a common yet often underreported condition among women, with significant implications for physical, psychological, and social well-being.^{4,7,8} This study was conducted to investigate the prevalence, severity, risk factors, and practices related to UI among older women, to enhance understanding within the local healthcare context.

In our study, 36.6% of participants, slightly above one-third, reported UI during the three months before hospital admission, indicating a significant burden. This figure contrasts with the reported figures in two previous studies conducted in Sri Lanka. A study by Pethiyagoda et al. (2018) at a tertiary care hospital in Sri Lanka found that the prevalence of UI among women attending gynaecology clinics was 11.4%.⁵ In contrast, a community-based study (2017) reported a much higher prevalence of 55.5% among women aged 18-90 years.⁶ This variation in findings could be due to differences in study populations, such as age, and study settings. Furthermore, in a systematic review conducted by Batmani et al. (2021), the overall prevalence of UI was 37% among older adult women.⁴ These findings closely align with the prevalence observed in our study.

The increase in prevalence with hospital admission may be temporary, attributable to environmental changes, medication, acute illness, or reduced mobility during hospitalisation.¹² However, they are vulnerable women with limited reserves in their uro-gynaecological systems, who are at greater risk of progressing to chronic incontinence if not adequately cared for, thus requiring targeted interventions.¹²

The most common type of UI in our study was MUI, which aligns with a previous study by Pathiraja et al, in which UUI and MUI were the most prevalent types (each 4.8%), followed by stress incontinence (1.7%).⁶

The study assessed UI severity among 132 women who had reported symptoms 3 months prior to hospitalisation, thereby ensuring that hospital-related factors did not confound results. UI severity varied widely: nearly half experienced only minor leakage, while many reported more severe symptoms, including leakage that soiled clothing and required the use of sanitary pads or other absorbent products. A previous Sri Lankan study by Pathiraja et al. found that regular pad use was uncommon among women with urge incontinence (5.4%) and even less common among those with stress incontinence (82.3% never used pads).¹³ The assessment of “bother” severity, based on its impact on participants’ daily lives, revealed a negative influence on their quality of life, underscoring the need for further research on women’s self-care challenges and the development of supportive interventions.

The findings of our study highlight the significant impact of UI on the physical, psychological, and social well-being of affected women. Notably, it reduces exercise participation, a vital factor in maintaining overall physical health and well-being. A Turkish study found a significant link between UI and depression, as measured by the Yesavage Geriatric Depression Scale in both male and female elders.¹⁴ Similarly, the current study found a connection between UI and self-reported feelings of depression and low self-esteem, indicating a possible association with clinical depression. It was clear that female UI can negatively affect individuals’ social participation and community engagement, although only a small proportion of respondents reported challenges in this area.

Ostaszkievicz et al. described a conceptual model outlining how incontinence and care dependence may increase the risk of elder abuse,¹⁵ and existing literature demonstrates a significant relationship between caregiver burden and UI in older adults.¹⁶ Our study reported a relatively low number of cases of abuse, which is reassuring. Still, the high non-response rate may indicate discomfort, fear of reprisal, or an inability to disclose such experiences safely.

The study identified significant links between female UI and known gynaecological risk factors such as multiple vaginal deliveries, delivering large babies, prior gynaecological or urological surgery, and utero-vaginal prolapse.¹⁷ Although the pathophysiology of UI and faecal incontinence is linked through pelvic floor dysfunction,^{18,19} the literature indicates that their aetiologies are multiple and complex, which may explain the lack of strong associations observed in this study.²⁰

There was no positive association between early menopause and UI in our study. Instead, UI was more common among women who experienced menopause later, contradicting the expectation that early menopause increases UI risk due to a longer postmenopausal period.²¹ This aligns with some previous research showing no link between age at menopause and UI after adjusting for chronological age and other contributing factors.²²

Consistent with previous research, significant associations were noted between female UI and conditions such as diabetes, diuretic use, acute or recurrent UTIs and a family history of UI all of which have proven explanations.^{6,17}

We observed that only a small minority (9.4%) sought medical care for their UI. Findings from the Nurses’ Health Studies (NHS) indicated that women with SUI, those aged 80 years of older, and those with less severe symptoms were less likely to seek help.²³ Conversely, women with UUI or MUI, those under 55 years old, and women experiencing large-volume daily leakage were more willing to discuss their symptoms with clinicians.²³ Our study also revealed that participants engaged in both beneficial and non-recommended practices regarding UI. Educational programs should focus on promoting good practices and discouraging inappropriate self-management among older women.

Limitations

This study was conducted in a single tertiary care hospital and on hospitalised older women, limiting the generalisability of the findings. Excluding individuals unable to provide consent may have led to an under-estimation of the true prevalence of UI. The practices questionnaire, adapted from international tools and modified for local relevance, reduces comparability with other studies. Additionally, reliance on self-reported information, particularly for quality-of-life measures, may have introduced reporting bias.

Conclusions and recommendations

The study identified UI in over one-third of older women admitted to CSTH, highlighting a significant issue within this demographic. An increase in incident UI during hospitalisation was also observed, suggesting reduced physiological reserves. A significant impact of UI on the physical, psychological, and social well-being of affected women was also noted. The study advocates for developing a structured UI screening and management programme specifically designed for older women. Such a programme should aim to educate the public, improve access to care, and promote preventive measures such

as pelvic floor exercises. Further research is needed to evaluate how this programme could help lessen the burden of UI among older women.

Author declaration

Conflict of interests

The authors declare no conflict of interests.

Ethics declaration

Ethical approval was granted by the Ethics Committee of the Csth. Participants provided informed consent before data collection.

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No external funding received for this study.

Criteria for the authorship

DS: conception, design, data collection, analysis, interpretation of data, drafting manuscript, and revision; SD: conception, supervision, critical evaluation; WK: interpretation of data, critical revision, and supervision; IJ: critical revision, supervision; de Lanerolle ND: conception, design, analysis, interpretation of data. All authors approved the final draft of the manuscript.

Availability of data and materials

The dataset used and analysed during the current study is available from the corresponding author on reasonable request.

References

- Haylen BT, De Ridder D, Freeman RM, et al. An international urogynecological association (IUGA)/international continence society (ICS) joint report on the terminology for female pelvic floor dysfunction. *Neurourology and Urodynamics*. 2009; **29**(1): 4-20. doi:10.1002/nau.20798
- Norton P, Brubaker L. Urinary incontinence in women. *The Lancet*. 2006; **367**(9504): 57-67. doi:10.1016/s0140-6736(06)67925-7
- Milsom I, Gyhagen M. The prevalence of urinary incontinence. *Climacteric*. 2019; **22**(3): 217-22. doi: 10.1080/13697137.2018.1543263.
- Batmani S, Jalali R, Mohammadi M, Bokaei S. Prevalence and factors related to urinary incontinence in older adult women worldwide: a comprehensive systematic review and meta-analysis of observational studies. *BMC Geriatrics*. 2021; **21**(1). doi: 10.1186/s12877-021-02135-8
- Pethiyagoda AUB, Pethiyagoda K, Manchanayake JP. Prevalence of urinary incontinence in women: Experience of a single tertiary referral centre in Sri Lanka. *European Journal of Biomedical and Pharmaceutical Sciences*. 2018; **5**(12): 477-80.
- Pathiraja RP, Prathapan S, Goonewardena S. Urinary incontinence of women in a nationwide study in Sri Lanka: Prevalence and risk factors. *Urology Journal*. 2017; **14**(3): 3075-80
- Park J, Jang Y. Urinary incontinence as a risk to physical, mental, and social health among older Korean Americans in senior housing. *Innov Aging*. 2024; **8**(Suppl 1):1041. doi: 10.1093/geroni/igae098.3350. PMID: PMC11693056.
- Shaw C, Gupta RD, Bushnell DM, et al. The extent and severity of urinary incontinence amongst women in UK GP waiting rooms. *Fam Pract*. 2006; **23**(5): 497-506. doi: 10.1093/fampra/cml033. Epub 2006 Jul 13. PMID: 16840498.
- Perera J, Kirthinanda DS, Wijeratne S. et al. Descriptive cross-sectional study on prevalence, perceptions, predisposing factors and health-seeking behaviour of women with stress urinary incontinence. *BMC Women's Health*. 2014; **14**: 78. doi: 1186/1472-6874-14-78
- Ageing Population in Sri Lanka. 2017. Available at: <https://srilanka.unfpa.org/en/publications/ageing-population-sri-lanka> (Accessed: September 10, 2024).
- Lwanga SK, Lemeshow S. Sample size determination in health studies: a practical manual. Geneva: World Health Organization; 1991. Available from: http://www.tbrieder.org/publications/books_english/lemeshow_samplesize.pdf
- Koelbl H, Nitti V, Baessler K, Salvatore S, Sultan A, Yamaguchi O. Pathophysiology of Urinary Incontinence, Faecal Incontinence and Pelvic Organ Prolapse. Section H: Causes of Transient Incontinence in Older Adults. International Consultation on Incontinence; 2005. p. 308-311. Available at: https://www.ics.org/publications/ici_4/files-book/comite-4.pdf
- Pathiraja R, Prathapan S, Cse G. Impact of urinary incontinence on quality of Life of women in a community sample in three districts of Sri Lanka – A cross-sectional study. *Sri Lanka Journal of Obstetrics and Gynaecology*. 2017; **39** (3): 43-8.
- Sahin-Onat S, Unsal-Delialioglu S, Güzel O, Uçar D. Relationship between urinary incontinence and quality of life/depression in elderly patients. *Journal of Clinical Gerontology and Geriatrics* 2014; **5** (3): 86-90. doi:10.1016/j.jcgg.2014.03.002.
- Ostaszkiwicz, J. A conceptual model of the risk of elder abuse posed by incontinence and care dependence. *International Journal of Older People Nursing*. 2018; **13**(2): e12182. <https://doi.org/10.1111/opn.12182>
- Tamanini JTN, Lebrão ML, Duarte YAO, Santos JL, Laurenti R. Association between urinary incontinence in elderly patients and caregiver burden in the city of São Paulo/Brazil: Health, Wellbeing, and Ageing Study. *Neurourol Urodyn*. 2011; **30**(7): 1281-5. doi:10.1002/nau.21040

17. Cardozo L, Rovner ER, Wagg A, Wein AJ, Abrams P, editors. Potential risk factors. In: Incontinence. 7th ed. Bristol (UK): International Continence Society; 2023. p. 33-41.
18. Jackson SL, Weber AM, Hull TL, Mitchinson AR, Walters MD. Fecal incontinence in women with urinary incontinence and pelvic organ prolapse. *Obstet Gynecol.* 1997; **89**(3): 423-7. doi: 10.1016/S0029-7844(96)00499-1. PMID: 9052598.
19. Koelbl H, Nitti V, Baessler K, Salvatore S, Sultan A, Yamaguchi O. Pathophysiology of Urinary Incontinence, Faecal Incontinence and Pelvic Organ Prolapse. Section F. Epidemiology of faecal incontinence. International Consultation on Incontinence; 2005. p. 286-290.
20. Shaw H, Wagg A. Urinary and faecal incontinence in older adults. *Medicine.* 2021; **49**(1): 44-50. doi: 10.1016/j.mpmed.2020.10.012.
21. Allafi A, Al-Johani A, Babukur R M, et al. The link between menopause and urinary incontinence: A systematic review. *Cureus.* 2024; **16**(10): e71260. DOI 10.7759/cureus.71260
22. Trutnovsky G, Rojas RG, Mann KP, Dietz HP. Urinary incontinence: the role of menopause. *Menopause.* 2014; **21**(4): 399-402. doi: 10.1097/GME.0b013e31829fc68c.
23. Lane GI, Hagan K, Erikson E, Minassian VA, Grodstein F, Bynum J. Patient-Provider Discussions About Urinary Incontinence Among Older Women. *J Gerontol A Biol Sci Med Sci.* 2021; **76**(3): 463-69. doi: 10.1093/gerona/glaa107.