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RESEARCH ARTICLE

Urinary Incontinence among Postmenopausal Women: Types, Severity, Associated Factors, and Impact on Life

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Abstract: ***Background:*** Urinary incontinence (UI) is a common condition among postmenopausal women, negatively affecting QOL and daily functioning. ***Aim:*** This research aimed to determine the occurrence, types, severity, correlated factors, and quality-of-life impact of urinary incontinence in postmenopausal women. ***Methods:*** A cross-sectional research has been done among 369 postmenopausal women. Information has been gathered utilizing a structured questionnaire involving risk factors, the Questionnaire for Urinary Incontinence Diagnosis (QUID), socio-demographic features, and the International Consultation on Incontinence Questionnaire–Short Form (ICIQ-SF). ***Results:*** The prevalence of UI was 39.3%. Stress urinary incontinence (SUI) was the most common (20.6%), followed by urgency (10.3%) and mixed type (8.4%). Most cases were mild (81.3%), while severe and very severe forms were rare (6.5%). UI was significantly associated with higher parity (≥4 vaginal deliveries), mixed delivery types, low education, unemployment, insufficient income, and lack of exercise ($p < 0.05$). Higher education and employment were protective. Age, menopause age, and menopause duration were not significant predictors. UI moderately impaired quality of life, with the greatest impact in physical and psychosocial domains, while vasomotor and sexual symptoms were less affected. ***Conclusion:*** UI is a prevalent problem among postmenopausal women, most often the stress type and mild in severity. It is strongly associated with socioeconomic and reproductive factors and has a moderate impact on QOL, underscoring the need for preventive strategies, awareness, and non-surgical management.

Keywords: Urinary incontinence, Postmenopausal women, Risk factors, Quality of life.

INTRODUCTION

UI is a frequent illness that significantly affects well-being and quality of life, while also holding substantial economic implications for healthcare services. Millions of women globally are affected, and there is a rising interest in these symptoms due to heightened awareness of the personal and societal ramifications for the woman afflicted **(1)**.

UI refers to the involuntary expulsion of urine. The occurrence of urinary incontinence in women varies between twenty-five and fifty-one percent. Urinary incontinence is related to significant treatment expenses and medical complications, including perineal candidiasis, cellulitis, urinary tract infections, falls and fractures, and sleep disturbances. Moreover, it significantly impacts various aspects of a woman's quality of life and is related to depression, occupational impairment, and sexual dysfunction **(2)**.

UI is defined as the involuntary discharge of urine at an unsuitable time and location. The classifications of urinary incontinence include stress, nocturnal, mixed, urge, continuous type, and others **(3)**.

Urinary incontinence can be classified into three types: urge incontinence (involuntary urine loss triggered by a sudden urge to urinate), stress incontinence (involuntary leakage during activities such as coughing, sneezing, or lifting), and mixed incontinence (involuntary leakage related to both urgency and stress, sneezing, exertion, or coughing) **(4)**.

The menopausal transition is a biological condition characterized by the cessation of reproductive function and an array of health issues. Menopause, the definitive termination of menstruation, arises from the decline of ovarian follicular function; it typically transpires among the ages of forty-five and fifty-five. Women typically spend approximately one-third of their lives in the postmenopausal phase. Menopausal symptoms involve somatic and vasomotor manifestations (such as hot flushes and night sweats), urinary tract atrophy, osteoporosis, urinary infections, and UI **(5)**.
This research aimed to identify prevalent kinds and severity of UI in postmenopausal women, investigate its risk factors, evaluate its influence on QOL, and analyze the relation between socio-demographic features and UI types.

MATERIAL AND METHODS

Patients and methods

Inclusion criteria: Our research included all women who had not menstruated for one year and experienced urinary incontinence.

Exclusion criteria: Women with mental or motor problems, those who have undergone gynecological or lower urinary tract surgery in the past three months, or cases who decline to participate will be excluded from the research.

Sample size

Sample size has been calculated based on the following equation: (6)

Where

n= sample size

Z α/2 = 1.96 (The critical value that separates the central ninety-five percent of the Z distribution from the five percent in the tail)

p = the occurrence of UI among postmenopausal women = 39.2%. **(5)**

E = the margin of error (=width of CI) = 0.05

So, the total required sample size will be 369 postmenopausal women.

Methods

All patients were subjected to the following:

Socio-demographic characteristics: age, marital status, education level, menopause age, menopause duration, parity, occupation, use of hormone replacement therapy (HRT), sufficiency of income, weight, and height. Body mass index (BMI) has been calculated and categorized into two groups: BMI < 25 and BMI ≥ 25.

Urinary Incontinence Diagnosis: Assessed using the QUID, a six-item tool distinguishing SUI and urgency urinary incontinence (UUI). Scores ≥4 in the first three items indicated SUI, scores ≥6 in the last three indicated UUI, and the presence of both defined mixed urinary incontinence (MUI). Responses have been recorded on a 5-point Likert scale (0 = never, 5 = always).

Associated Risk Factors: Including hysterectomy, chronic cough, diabetes mellitus, smoking, parity, utilization of diuretics, and history of cesarean section.

Severity of UI: Assessed with the ICIQ-SF. Items 3–5 have been scored, with total scores ranging from 0 to 21 and categorized as mild (one to five), moderate (six to twelve), severe (thirteen to eighteen), or very severe (nineteen to twenty-one).

Impact on Quality of Life: Five items assessed psychosocial effects of UI, including housework, exercise, social participation, use of public transport (>30 minutes), and self-esteem.

Outcome Measures

Classification of UI: SUI, UUI, and MUI. **Severity assessment:** ICIQ-SF scores, **associated risk factors:** demographic and clinical variables (age, BMI, parity, mode of delivery, menopausal status, comorbidities such as diabetes and hypertension, pelvic organ prolapse), and **quality of life impact:** based on reported psychosocial limitations.

Statistical Analysis

Information has been cleaned, entered, and analyzed utilizing IBM SPSS Statistics version 25. Categorical parameters have been summarized as frequencies and percentages, whereas continuous parameters have been presented as mean ± standard deviation (SD). The Kolmogorov–Smirnov test has been utilized to assess normality and revealed non-normal distribution for continuous variables. Group comparisons were performed utilizing the chi-square test or Fisher's exact test. Multivariate logistic regression has been applied to recognize independent risk factors for UI, expressed as odds ratios (OR) with ninety-five percent confidence intervals (CI). Statistical significance was set at *p* below 0.05.

Ethical Considerations

The research has been performed in line with the principles of the **Declaration of Helsinki**. Approval had been secured before information collection, and case confidentiality and privacy were rigorously upheld.

RESULTS AND OBSERVATIONS:

Most participants were aged 51–55 years, with menopause commonly occurring at 46–50 and lasting 4–7 years. The majority had 1–3 vaginal deliveries, and vaginal delivery was the predominant mode of birth. Over half had low educational levels, most were housewives, and about two-thirds reported sufficient income. Only one-third exercised regularly.(Table 1)

The overall prevalence of UI was 39.3% (n=145). Among those affected, SUI was the most common type, reported by 20.6% of participants. UUI has been observed in 10.3%, while mixed urinary incontinence (MUI) affected 8.4% of the research population. (Table 2)

The majority of the studied group (81.3%) experienced mild urinary incontinence. Moderate incontinence has been stated by 12.2% of the group, while severe and very severe cases were relatively uncommon, accounting for 5.7% and 0.8%, respectively. (Table 3)

UI was significantly associated with multiple vaginal deliveries, mixed delivery types, low education, being a housewife, insufficient income, and lack of regular exercise ($p < 0.05$), while higher education and employment were protective. Age, menopause age, and duration were not statistically significant ($p > 0.05$). (Table 4

Table (1): Distribution of Participants' features.

		Study group (num.=369)
Age (Years)	≤50	21 (5.7%)
	51–55	209 (56.6%)
	≥56	139 (37.7%)
Number of vaginal deliveries	No	48 (13%)
	1-3	204 (55.3%)
	4-10	117 (31.7%)
Type of delivery	Vaginal delivery	244 (66.1%)
	CS	44 (11.9%)
	Vaginal &CS	77 (21%)
	no	4 (1%)
Menopause age	≤40	36 (9.8%)
	46–50	203 (55%)
	≥51	130 (35.2%)
Menopause duration	≤3	135 (36.6%)
	4–7	163 (44.2%)
	≥8	71 (19.2%)
Education	illiterate	74 (20%)
	primary school	131 (35.5%)
	secondary school	63 (17.1%)
	high school	31 (8.4%)
	diploma	47 (12.7%)
	university	23 (6.3%)
Job	employed	44 (12%)
	housewife	325 (88%)
Income	Completely sufficient	27 (7.3%)
	Relatively sufficient	230 (62.3%)
	Insufficient	112 (30.4%)
Doing exercise		140 (37.9%)

Table (2): Prevalence and Types of Urinary Incontinence.

	Study group (n=369)
Type of UI	
Stress incontinence (SUI)	76 (20.6%)
Urgent urinary incontinence (UUI)	38 (10.3%)
Mixed urinary incontinence (MUI)	31 (8.4%)
Total with Incontinence	145 (39.3%)

Table (3): Severity of Urinary Incontinence in the studied group.

	Study group (n=369)
Severity of Urinary Incontinence	
Mild	300 (81.3%)
Moderate	45 (12.2%)
Severe	21 (5.7%)
Very Severe	3 (0.8%)

Table (4): Associated Factors with Urinary Incontinence.

		Presence of UI		P value
		Yes (n=145)	No (n=224)	
Age (Years)	≤50	13 (8.9%)	8 (3.6%)	0.052
	51–55	84 (57.9%)	125 (55.8%)	
	≥56	48 (33.1%)	91 (40.6%)	
Number of vaginal deliveries	0-3	93 (64.1%)	159 (70.9%)	**< 0.001***
	4-10	52 (35.9%)	65 (29.01%)	
Type of delivery	Vaginal delivery	87 (60%)	157 (70.1%)	**0.021***
	CS	15 (10.3%)	29 (12.9%)	
	Vaginal &CS	42 (29%)	35 (15.6%)	
	no	1 (0.7%)	3 (1.3%)	
Menopause age	≤40	18 (12.4%)	18 (8.03%)	0.321
	46–50	80 (55.2%)	123 (54.9%)	
	≥51	47 (32.4%)	83 (37.05%)	
Menopause duration	≤3	60 (41.4%)	75 (33.5%)	0.115
	4–7	64 (44.1%)	99 (44.2%)	
	≥8	21 (14.5%)	50 (22.3%)	
Education	Secondary and Lower education	126 (86.9%)	142 (63.4%)	**< 0.001***
	High school & beyond	19 (13.1%)	82 (36.6%)	
Job	Employed	6 (4.1%)	38 (17%)	**0.0002***
	Housewife	139 (95.9%)	186 (83.04%)	
Income	Completely sufficient	5 (3.4%)	22 (9.8%)	**0.011***
	Relatively sufficient	86 (59.3%)	144 (64.3%)	
	Insufficient	54 (37.2%)	58 (25.9%)	
Doing exercise		45 (31.03%)	95 (42.4%)	**0.027***

Table (5): Relationship among socio-demographic characteristics and types of UI.

		Stress UI Num.=76	Urgent UI Num.=38	Mixed UI Num.=31	P value
Age (Years)	≤50	7 (9.2%)	4 (10.5%)	2 (6.4%)	0.95
	51–55	43 (56.6%)	23 (60.5%)	18 (58.1%)	
	≥56	26 (34.2%)	11 (29%)	11 (35.5%)	
Number of vaginal deliveries	0-3	46 (60.5%)	27 (71%)	20 (64.5%)	0.54
	4-10	30 (39.5%)	11 (29%)	11 (35.5%)	
Type of delivery	Vaginal delivery	50 (65.8%)	21 (55.3%)	16 (51.6%)	0.35
	CS	9 (11.8%)	3 (7.9%)	3 (9.7%)	
	Vaginal &CS	17 (22.4%)	13 (34.2%)	12 (38.7%)	

	No	0 (0%)	1 (2.6%)	0 (0%)	
Menopause age	≤40	12 (15.8%)	3 (7.9%)	3 (9.7%)	0.63
	46–50	38 (50%)	24 (63.1%)	18 (58.1%)	
	≥51	26 (34.2%)	11 (29%)	10 (32.2%)	
Menopause duration	≤3	31 (40.8%)	16 (42.1%)	13 (41.9%)	0.64
	4–7	31 (40.8%)	19 (50%)	14 (45.1%)	
	≥8	14 (18.4%)	3 (7.9%)	4 (13%)	
Education	Secondary and Lower education	65 (85.5%)	32 (84.2%)	29 (93.6%)	0.46
	High school & beyond	11 (14.5%)	6 (15.8%)	2 (6.4%)	
Job	employed	3 (3.9%)	2 (5.3%)	1 (3.2%)	0.9
	housewife	73 (96.1%)	36 (94.7%)	30 (96.8%)	
Income	Completely sufficient	3 (3.9%)	1 (2.6%)	1 (3.2%)	0.8
	Relatively sufficient	48 (63.1%)	22 (57.9%)	16 (51.6%)	
	Insufficient	25 (33%)	15 (39.5%)	14 (45.2%)	
Doing exercise		26 (34.2%)	11 (28.9%)	8 (25.8%)	0.66

There were no statistically significant differences in socio-demographic factors across the types of urinary incontinence (stress, urgent, mixed), as all P values are above 0.05. Age, deliveries, menopause, education, job, income, and exercise appear similarly distributed among the groups. (Table 5)

Table (6): Quality of life in postmenopausal women.

	Study group (n=369)
Quality of life	
Vasomotor	8.6 ± 5.2
Psychosocial	18.5 ± 6.7
Physical	32.1 ± 15.4
Sexual	10.4 ± 4.2
Total	69.6 ± 21.4

Postmenopausal women experience a moderate overall impact on quality of life (QOL), with a mean total QoL score of 69.6 ± 21.4. Among the individual domains, the physical domain showed the greatest impairment (32.1 ± 15.4), and the psychosocial domain also revealed a considerable effect (18.5 ± 6.7), reflecting emotional challenges such as anxiety, mood changes, or social withdrawal. The sexual domain had a mean score of 10.4 ± 4.2; the vasomotor symptoms were relatively less impactful with a mean of 8.6 ± 5.2. (Table 6)

DISCUSSION

Postmenopausal women typically experience peak prevalence of UI, which adversely affects quality of life (QOL) and interferes with everyday activities. Recently, with the rise in average life expectancy among women and a growing number of women sustaining diverse social responsibilities post-menopause, UI has emerged as a significant medical and social concern. It is believed that twenty-five to forty-five percent of women across various age groups experience involuntary pee loss, whereas nine to thirty-nine percent of women over sixty report everyday urinary leakage (7).

Our study showed that the majority of participants were aged 51–55 (56.6%), with 37.7% aged ≥56 and 5.7% aged ≤50. Most had 1–3 vaginal deliveries (55.3%), while 31.7% had 4–10, and 13% had none. Vaginal delivery was most common (66.1%), followed by both vaginal and cesarean (21%); over half had menopause at 46–50 (55%), with 35.2% at ≥51 and 9.8% at ≤40. The most common menopause duration was 4–7 years (44.2%), followed by ≤3 years (36.6%); 35.5% had primary education, and 20% were illiterate. Most were housewives (88%), with only 12% employed. While 62.3% reported sufficient income, 30.4% found it insufficient. Only 37.9% exercised regularly.

In alignment with our study, Dellú et al. (8) aimed to assess the occurrence and recognize related factors to UI. Women had a mean age of 51.9 years; most were in menopause (59.4%) and married (87.5%), and the mean age of menopause of women with UI was 47.3 years.

In agreement with our research, Buchsbaum et al. (9), aiming to assess the occurrence of UI among a group of

nulliparous nuns and to evaluate risk factors for developing incontinence, stated that the mean (± SD) age of our sample of nuns was sixty-eight (±11.7).

Our study showed that the overall occurrence of UI was 39.3% (n=145). Among those affected, SUI was the most common type, reported by 20.6% of participants. UUI was observed in 10.3%, while MUI affected 8.4% of the study population.

In agreement with our research, Alizadeh et al. (5), aiming to determine the occurrence and severity of UI and related risk factors in postmenopausal women, stated that the overall occurrence of UI was 39.5%: 10.4% UUI, 20.6% SUI, and 8.5% MUI.

In line with Karaçam et al. (10), who aimed to determine the occurrence and risk factors of UI in menopausal women, reported that the evaluated UUI rate was 5.1%, the SUI rate was 19.1%, and the MUI rate was 13.4%.

Additionally, Buchsbaum et al. (9) found that eighteen (twenty-four percent) had UUI, twenty-two nuns (thirty percent) had SUI, and twenty-six (thirty-five percent) had MUI.

In contrast with our study, Agarwal & Agarwal (11), aiming to determine the occurrence of urinary incontinence among middle-aged women, to identify its correlated risk factors, and to evaluate its impact on QOL, reported that twenty-two percent of women had SUI, thirty-eight percent had urgency incontinence, and thirty-eight percent had a mixed type of urinary incontinence.

Our research showed that the majority of the studied group (81.3%) experienced mild urinary incontinence. Moderate incontinence has been stated by 12.2% of the group, while severe and very severe cases were relatively uncommon, accounting for 5.7% and 0.8%, respectively.

In agreement with our study, Minassian et al. (12), aiming to evaluate how the severity of symptoms, extent of bother, and QOL differ across UI subtypes, reported that around half had slight UI, twenty-six percent had moderate UI, and twenty-three percent had severe UI.

In contrast with our study, Karem (13) aimed to evaluate UI prevalence and risk factor impact among menopausal women; this was followed by severe incontinence in 52 (16%) women and mild incontinence in 47 (25.5%) women.

Our study showed that there was Statistically significant associations (p below 0.05) were observed between UI and the number of vaginal deliveries, type of delivery, education level, job status, income level, and regular exercise. Specifically, a greater number of vaginal deliveries (4–10), mixed delivery types (vaginal and cesarean), lower education levels (secondary or less), being a housewife, insufficient income, and lack of regular exercise were significantly related with higher prevalence of UI. Employment and higher education degrees appeared protective. Although age, menopause age, and menopause duration showed observable trends, they were not statistically significant.

Alizadeh et al. (5) conducted a multivariate logistic regression analysis revealing that the prevalence of stress urinary incontinence (adjusted odds ratio [aOR] 0.38; 95% confidence interval [CI] 0.18–0.77) and urgency urinary incontinence (aOR 0.38; 95% CI 0.15–0.94) was considerably diminished in women who had experienced three childbirths compared to those with fewer childbirths. The likelihood of UUI significantly escalated in women aged fifty to fifty-five (aOR 3.88; 95% CI 1.16–12.93) compared to those under fifty.

Karaçam et al. (10) identified that the risk factors influencing UI include advanced age, menopause, mode of delivery, and having four or more deliveries.

In contrast with our study, Agarwal & Agarwal (11) reported that there was a significant correlation between increasing age and the presence of UI.

Our research illustrated that, there was statistically insignificant differences in socio-demographic factors across the types of urinary incontinence (stress, urgent, mixed), as all P values are above 0.05. Age, deliveries, menopause, education, job, income, and exercise appear similarly distributed among the groups.

Consistent with our research, Alizadeh et al. (5) aimed to determine the prevalence and severity of UI and its related risk factors in postmenopausal women, finding statistically insignificant variance in socio-demographic factors across the various types of UI (urgent, stress, mixed) concerning age and menopause.

In contrast with our study, Karem (13) reported that there was a direct and significant relationship between age, change in employment status, social status, parity, and the number of vaginal deliveries with the types of UI ($P \leq 0.001$).

Our research illustrated that postmenopausal women experience a moderate overall impact on QOL, with a mean total QoL score of 69.6 ± 21.4. Among the individual domains, the physical domain showed the greatest impairment (32.1 ± 15.4), and the psychosocial domain also revealed a considerable effect (18.5 ± 6.7), reflecting emotional challenges such as anxiety, mood changes, or social withdrawal. The sexual domain had a mean score of 10.4 ± 4.2; the vasomotor symptoms were relatively less impactful with a mean of 8.6 ± 5.2.

In agreement with our research, Kwon et al. (14) aimed to review studies that have studied the QOL of women with UI and reported that the physical and psychological have been stated as influencing factors on the QOL of women with incontinence.

According to Barati et al. (15), who aimed to determine the relationship with the QOL among postmenopausal women, the mean MENQOL score in menopausal women was 2.45 ± 1.04. Also, vasomotor symptoms underwent the highest score, and sexual symptoms underwent the lowest score rather than other dimensions.

CONCLSION

Urinary incontinence affected 39.3% of postmenopausal women, most commonly the stress type, and was generally mild. It was significantly linked to higher parity, delivery type, low education, unemployment, insufficient income, and lack of exercise, but not to age or menopause duration. UI moderately impacted quality of life, mainly in physical and psychosocial domains.

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