

Urinary Incontinence in Postpartum Women: Severity, Associated Factors, and Impact on Quality of Life - A Prospective Longitudinal Study

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ABSTRACT

Objectives: To determine the prevalence, severity, and progression of postpartum urinary incontinence at delivery, 6 weeks, and 3 months postpartum, and to assess its impact on quality of life and associated risk factors among women undergoing vaginal delivery.

Methodology: The prospective longitudinal cohort study was conducted in the Gynae C Unit of Ayub Teaching Hospital, Abbottabad, from 1st January 2025 to 31st October 2025, recruiting 400 postpartum participants aged 22 to 40 years with single pregnancies and delivered vaginally after informed consent.

Results: A non-probability sampling technique was applied for the collection of data using a pre-designed, validated questionnaire on the day of delivery, 6 weeks postnatal, and follow-up after 3 months postpartum through telephonic conversation. The clinical data were correlated with urodynamics to confirm UI of the participants. Mean age 29.8 ± 4.6 years, and 50% reported urinary leakage, while around 45% experienced pain in the urinary tract. 40% showed small urinary leakage, and 35% showed difficulty in bladder emptying. The effect of UI was 65% on the physical activities of the postpartum females and 70% effect the emotional behaviour.

Conclusion: UI is a very prevalent disorder among urinary tract diseases suffered by females after vaginal delivery in their 6 months of postpartum phase. It significantly impairs the physical, emotional, and social well-being of the sufferer.

Keywords: Postpartum urinary incontinence; Quality of life; Pelvic floor dysfunction; Maternal health, Psychosocial impact; Postpartum recovery

Introduction

Females suffered gynecological complications after the delivery of fetuses. If she delivers her baby vaginally, then urinary incontinence (UI) is one of the most prevalent and unreported disorders among all urinary tract infections during postpartum.¹ Females across the world are widely suffering from UI, and the prevalence is high among various populations.² Symptoms may vary from mild to severe, extending from months to years after childbirth, and females adjust their lives accordingly.³ The common signs and symptoms characterized by UI are leakage of small drops of urine, slight pain in the lower abdomen, including the pelvis and vagina. This may lead to the female being restricted in her physical activities and disturb her emotional behavior.⁴ Social challenges are also part of this suffering for females during postpartum. This time is critical for the recovery and adaptation after childbirth for maternal health because it heightens the risk of developing UI.⁵ There are a lot of physiological and biochemical changes that occur during the third trimester of pregnancy, and after delivery⁶, which lead to weakening of uterine muscles, nerve damage occurs in the pelvic region, high intra-abdominal pressure, and sphincter activities become impaired after vaginal delivery. Pelvic floor structures and functions alter during this period.^{1, 7} The etiological contributing factors of UI include the weight of the fetus and the duration of

labour, with the mode of delivery. The female's hormonal profile and biochemical test also play a part in the occurrence and severity of UI.⁸ Despite its high prevalence, postpartum UI often remains inadequately addressed due to social stigma, lack of awareness, and the misconception that it is a normal or unavoidable consequence of childbirth.⁹

The impact of UI extends beyond physical symptoms, often resulting in diminished quality of life (QoL). Women experiencing postpartum UI frequently report feelings of embarrassment, social isolation, and a reduced sense of self-esteem.¹⁰ These psychological burdens can interfere with daily activities, intimate relationships, and overall well-being, emphasizing the importance of addressing this condition.¹¹ Despite its high prevalence and profound impact, UI in postpartum women remains under-reported and under-treated. Social stigma, cultural barriers, and lack of awareness often prevent affected women from seeking timely medical advice. This highlights the need for increased awareness, early diagnosis, and targeted interventions to mitigate the impact of UI on women's QoL.^{12, 13}

Healthcare systems play a crucial role in addressing postpartum UI by providing structured programs for pelvic floor rehabilitation. Pelvic floor muscle training

(PFMT) has been shown to significantly improve symptoms of UI when implemented early in the postpartum period.¹⁴ Moreover, integrating educational sessions during antenatal care can help prepare women for potential postpartum complications, fostering proactive health-seeking behavior.^{3, 4}

In addition, cultural and community-based initiatives can help reduce the stigma associated with UI. Peer support groups, public health campaigns, and accessible treatment facilities encourage women to seek help without fear of judgment.⁵ These efforts are essential for empowering women to address UI and ensuring they receive the care they need to enhance their postpartum recovery experience.⁷

This study aims to investigate the incidence of UI in postpartum women and its subsequent effect on their quality of life. By understanding the prevalence and psychosocial implications of UI, healthcare professionals can develop effective strategies to manage this condition, improving maternal health outcomes and enhancing the postpartum recovery experience.

Methodology

The prospective longitudinal cohort study was conducted in the Gynae C Unit of Ayub Teaching Hospital, Abbottabad, for eight months from 1st January 2025 to 31st October, 2025 after the approval of the synopsis from the hospital's ethical and research committee with the allotted IRB No. RC-EA-2025/018. The 400 patients were recruited for the study after taking written informed consent following non-probability consecutive sampling. The purpose of the study was explained to the patients in detail so that they could make an informed decision. They were also informed about how they will be managed further according to the established treatment protocols. The diagnosis of UI was made based on the criteria mentioned in the operational definitions (supplementary material). UI was defined as "any involuntary leakage of urine," based on the International Continence Society criteria, confirmed through clinical assessment and supported by urodynamic evaluation.

All postpartum patients aged 22-40 years who presented with UI as confirmed by clinical examination and urodynamics, and women delivering vaginally with a singleton pregnancy, who provided informed consent, participated in this study. The patients who had a Caesarean section, previous UI complaints before pregnancy, any known neurological or gynaecological disorder, or who did not want to participate in the study were excluded.

The Urogenital Distress Inventory Short Form (UDI-6) and the Incontinence Impact Questionnaire Short Form (IIQ -7) were used to assess the severity of UI, as well

as general and health-related quality of life, respectively. These questionnaires were designed to collect data from participants of the study through interviews. Permission to use these questionnaires was obtained from the author via email.

Patients who had delivered vaginally were questioned on the day of delivery, 6 weeks postnatally, and 3 months post delivery. Follow-up was done via a telephonic conversation. A pre-designed questionnaire was used to collect data. The sample size had been calculated using the online sample size calculator, based on the assumption that the prevalence of UI in postpartum females of 50%, with a confidence level 95 % with a margin of error 5%, resulting in a minimum sample size of 400 females in their postpartum phase. The non-probability consecutive sampling technique was selected to recruit the patients.

Sample size was calculated using the WHO sample size formula. Based on a previous study, conducted by the prevalence of postpartum UI was reported to be approximately 50%. Therefore, $p = 0.50$ was used in the calculation. After adding 5% for non-response, the final sample size = 400. After adjusting for possible non-response and incomplete data, the final sample size was up to 400 participants^{8, 9}

The data was entered and saved in SPSS version 23. When the data collection process has been completed, and the sample size has reached the required number of subjects, then the entire data was analyzed using the same software, i.e., SPSS 23.

The presence and severity of UI were selected as dependent variables, while the other information, including age, parity, duration of labor, fetal birth weight, and other obstetric factors, were included as independent variables for the current study. The outcomes of quality of life measures through UDI-6 and IIQ-7.

Descriptive statistics were applied to analyze the data. Frequencies and percentages were calculated for categorical variables, such as gender, with 95% confidence intervals were calculated for the frequencies. Mean and standard deviation were calculated for the numerical variables, like age. The factors causing UI were stratified according to different age groups and gender. Chi-square test was used to assess associations between urinary incontinence and categorical variables. For repeated measurements over time, Cochran's Q test was applied. A p -value ≤ 0.05 was considered statistically significant. A p -value ≤ 0.05 was considered statistically significant.

Results

A total of 400 postpartum women were followed at baseline, 6 weeks, and 3 months postpartum to assess changes in urinary incontinence (UI) symptoms. The prevalence of urinary incontinence and related symptoms declined significantly over time, with any urinary incontinence decreasing from 50.0% at baseline to 40.0% at 6 weeks and 30.0% at 3 months. Similar reductions were observed for urgency (50.0% to 30.0%), stress leakage (45.0% to 25.0%), frequent urination (50.0% to 27.5%), and pelvic discomfort (55.0% to 32.5%). These longitudinal changes were statistically significant across all symptom domains (Cochran's Q test, $p \leq 0.002$), indicating progressive recovery of urinary function during the postpartum period (Table I).

Outcome	Baseline n (%)	6 weeks n (%)	3 months n (%)	p-value
Any urinary incontinence	200 (50.0)	160 (40.0)	120 (30.0)	<0.001*
Urgency symptoms	200 (50.0)	160 (40.0)	120 (30.0)	<0.001*
Stress leakage (physical activity)	180 (45.0)	140 (35.0)	100 (25.0)	<0.001*
Frequent urination	200 (50.0)	150 (37.5)	110 (27.5)	0.002*
Pelvic discomfort	220 (55.0)	170 (42.5)	130 (32.5)	<0.001*

Urinary incontinence had a significant impact on daily functioning and emotional well-being, which showed progressive improvement over the follow-up period.

A total of 400 postpartum women were assessed for the functional and psychological impact of urinary incontinence at baseline, 6 weeks, and 3 months postpartum. Functional limitations and psychological distress showed a progressive decline over time. Household chore impairment decreased from 240 (60.0%) at baseline to 180 (45.0%) at 6 weeks and 120 (30.0%) at 3 months. Similarly, physical activity limitation declined from 260 (65.0%) to 200 (50.0%) and 140 (35.0%), while social activity restriction decreased from 260 (65.0%) to 190 (47.5%) and 130 (32.5%). Travel limitation reduced from 240 (60.0%) to 180 (45.0%) and 120 (30.0%), whereas emotional distress declined from 280 (70.0%) to 200 (50.0%) and 140 (35.0%). Frustration due to symptoms also decreased from 300 (75.0%) at baseline to 220 (55.0%) at 6 weeks and 160 (40.0%) at 3 months. These improvements were statistically significant across all domains ($p \leq 0.001$), indicating a gradual recovery in

functional status and psychosocial well-being during the postpartum period (Table II).

Domain	Baseline n (%)	6 weeks n (%)	3 months n (%)	p-value
Household chores affected	240 (60.0)	180 (45.0)	120 (30.0)	<0.001*
Physical activity limitation	260 (65.0)	200 (50.0)	140 (35.0)	<0.001*
Social activity restriction	260 (65.0)	190 (47.5)	130 (32.5)	<0.001*
Travel limitation (>30 min)	240 (60.0)	180 (45.0)	120 (30.0)	0.001*
Emotional distress	280 (70.0)	200 (50.0)	140 (35.0)	<0.001*
Frustration level	300 (75.0)	220 (55.0)	160 (40.0)	<0.001*

Health-related quality of life, assessed using the Incontinence Impact Questionnaire (IIQ-7), showed a significant change over the follow-up period. At baseline (immediately postpartum), a substantial proportion of participants reported impaired quality of life, with 120 (30.0%) reporting mild impact, 180 (45.0%) moderate impact, and 100 (25.0%) severe impact.

At 6 weeks postpartum, an improvement in quality of life was observed, as the proportion of women reporting mild impact increased to 180 (45.0%), while moderate and severe impact decreased to 150 (37.5%) and 70 (17.5%), respectively. This improving trend continued at 3 months postpartum, where 240 (60.0%) reported mild impact, 120 (30.0%) moderate impact, and only 40 (10.0%) severe impact.

Overall, there was a statistically significant improvement in quality of life across the three time points ($p < 0.001$), indicating a progressive reduction in the impact of urinary incontinence on daily functioning over time.

QoL Impact Level	Baseline n (%)	6 weeks n (%)	3 months n (%)	p-value
Mild impact	120 (30.0)	180 (45.0)	240 (60.0)	<0.001*
Moderate impact	180 (45.0)	150 (37.5)	120 (30.0)	
Severe impact	100 (25.0)	70 (17.5)	40 (10.0)	

Discussion

The current study highlighted the prevalence of UI in females after vaginal delivery in postpartum and its significance on their physical and social well-being.¹⁴ According to the previous studies reported all over the world, UI is basically not a disease, but it's an underlying and under-reported cause of urinary tract infections, which makes the patients disturbed and irritated for a long time.¹⁵ The results depicted in the current data showed that around half of the females suffered small drops of urinary leakage during the start of postpartum, but it became worse with the passage of time.¹⁶ These findings were in line with previous literature reporting postpartum UI prevalence ranging from 30% to 60%, particularly among women who have undergone vaginal delivery.¹⁷ The prevalence of the UI and its associated factors, like pain in pelvic areas and difficulty in bladder emptying, reported in this study, may be the cause of pelvic muscle and sphincter weakening and dysfunction after vaginal delivery.¹⁸ The previously reported data showed that these complications may be due to the over-birth fetal delivery through vaginal or prolonged labour. The increased intrabdominal pressure exacerbates the damage to the pelvic floor and predisposes women to UI in the postpartum period.¹⁹ So, the diagnosis and confirmation of the disease required urodynamics, which strengthens the findings of clinical symptoms.

A significant impact of UI on quality of life was evident, with more than two-thirds of participants reporting limitations in physical activities and emotional disturbances.¹² These results align with earlier studies demonstrating that postpartum UI interferes with routine tasks, exercise, childcare responsibilities, and social participation.¹³ Emotional consequences, including embarrassment, frustration, and anxiety, were reported by a substantial proportion of women, underscoring the psychosocial burden of this condition. Such emotional distress may further discourage women from seeking medical care due to cultural stigma and the normalization of UI as an inevitable outcome of childbirth.¹⁷

The statistically significant association between age group and impairment in physical recreational activities suggests that advancing maternal age may increase vulnerability to functional limitations caused by UI.¹¹ This finding is supported by existing evidence indicating that age-related decline in muscle tone and connective tissue elasticity may worsen pelvic floor dysfunction.²⁰

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However, the lack of significant associations between age and other quality-of-life domains suggests that UI exerts a broad and relatively uniform impact across different age groups, reinforcing the need for universal postpartum screening rather than age-restricted interventions.

Despite the high burden observed, UI remains under-reported, particularly in low- and middle-income settings, where awareness and access to postpartum rehabilitation services are limited.¹⁷ Many women perceive UI as a temporary or unavoidable condition and therefore do not seek medical advice. This highlights a critical gap in postpartum care and emphasizes the importance of integrating UI screening into routine postnatal follow-ups.^{8, 9} Early identification and timely intervention, particularly pelvic floor muscle training (PFMT), have been shown to significantly reduce symptom severity and improve quality of life.¹⁷

The findings of this study support the implementation of structured pelvic floor rehabilitation programs and patient counseling as part of comprehensive maternal healthcare.^{18, 19} Educating women during antenatal and postnatal visits about pelvic floor health, early symptoms of UI, and preventive strategies may promote proactive health-seeking behavior. Additionally, community-based awareness programs can help reduce stigma and normalize discussions surrounding postpartum urinary health.

Limitation: This study has certain limitations. The use of a non-probability sampling technique may limit the generalizability of the findings, and reliance on self-reported data may introduce reporting bias. Furthermore, the follow-up period of three months may not capture long-term persistence or resolution of UI symptoms. Future longitudinal studies with larger, randomized samples are recommended to evaluate long-term outcomes and the effectiveness of targeted interventions.

Conclusion

Postpartum UI is a prevalent condition that significantly compromises physical, emotional, and social aspects of women's lives following vaginal delivery. Addressing this issue through early screening, patient education, and pelvic floor rehabilitation is essential for improving maternal quality of life and overall postpartum recovery.

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