

Prevalence of Urinary Incontinence Among Pregnant Women Attending Antenatal Clinic at Tertiary Care Hospital Lahore, Pakistan

Nadia Khurshid,¹ Hooria Rahim,² Alia Masood,³ Zubda Aimen⁴

¹Professor, KEMU Lady Aitchison Hospital, Lahore, Pakistan.

²Student, Shaikh Zayed Medical College, Lahore, Pakistan.

³Assistant Professor, KEMU Lady Aitchison Hospital, Lahore, Pakistan.

⁴Senior Registrar, KEMU Lady Aitchison Hospital, Lahore, Pakistan.

Author's Contribution

^{1,3}Substantial contributions to the conception or design of the work; or the acquisition, Final approval of the version to be published

²analysis, or interpretation of data for the work

^{4,5}Drafting the work or revising it critically for important intellectual content

Conflict of interest: None

Funding source: None

Article received: 11-03-26

Article accepted: 02-06-26

Correspondence

*E: meetnadiakkhan@gmail.com

ABSTRACT

Objective: To evaluate the prevalence of incidentally detected urinary incontinence (UI) occurring in women who have been referred to a tertiary care hospital in Lahore, Pakistan for antenatal care.

Methodology: A retrospective, cross-sectional study was conducted at the antenatal clinic of Lady Aitchison Hospital, Lahore between January and December of 2025 using the medical records of 149 pregnant women. All subjects had to meet inclusion criteria based on adequate responses to the International Consultation on Incontinence Questionnaire (ICIQ) regarding UI frequency, quantity and impact. Women who had recorded birth defects affecting their urinary systems and/or neurological disorders, urinary tract infections at the initial evaluation, or preexisting UI were excluded from the analysis. SPSS version 26 was used to extract and analyse data concerning UI, obstetric history, and demographic characteristics.

Results: Gestational age at evaluation was 33.9±3.2 weeks and maternal age was 29.8±4.6 years. The total population of women with UI was 72 (48.3%), with the highest prevalence of SUI at 65.3% of the women, followed by mixed at 22.2%, urge at 12.5%. Most of the women were classified with mild (56.9%) or moderate (33.3%) symptoms based on the ICIQ impact score. The prevalence of UI increased as gestational age increased, with UI prevalence up to 31.5% at 28-30 weeks, 42.8% at 31-34 weeks, and 52.6% at >34weeks. Of the impacted women, only 24.2% reported UI on their own; the others were identified by accident.

Conclusion: UI affects a significant number of pregnant women, and without active assessment, the majority of cases go undiagnosed. These results highlight the necessity of early pelvic floor interventions and routine screening during pregnancy and the postpartum period in order to enhance the quality of life for mothers.

Keywords: Antenatal Care; Pelvic Floor; Pregnancy; Pregnant Women; Urinary Incontinence; Stress Urinary Incontinence.

Introduction

Involuntary urine leakage, or urinary incontinence (UI), is a common but frequently overlooked issue that affects women.¹ It is commonly seen incidentally during routine antenatal care. UI is classified into stress urinary incontinence (SUI), which occurs during coughing, sneezing, or exertion; urge urinary incontinence (UUI), is a sudden and strong urge to pass urine; and mixed urinary incontinence (MUI), which includes characteristics of both.^{2,3} In gestational period, the prevalence of UI may be as much as 75%, though rates vary with gestational age, study design, and cultural factors.⁴ UI may proceed even after parturition, influencing 6% to > 30% of women. SUI is the most widespread type seen in pregnancy, specifically from the late second trimester to term.⁵

Hormonal effects on connective tissue and increased intra-abdominal pressure during pregnancy place additional load on pelvic floor muscles, which may cause or aggravate urinary leakage.⁶ Although UI is not life-threatening, it can cause embarrassment, restrict daily activities, disrupt sleep, and produce mental stress, thereby affecting quality of life and social participation.

Many women consider urine leakage a normal symptom of pregnancy and therefore do not report it unless specifically asked.⁷

Several factors contribute to UI during pregnancy, including advancing maternal age, multiparity, higher pre-pregnancy BMI, constipation, dietary stimulants, and medical conditions such as diabetes mellitus and hypertension.⁸ Physiological changes in bladder function during pregnancy also result in increased urinary frequency and nocturia, affecting nearly 80% of pregnant women at some point during gestation.⁹⁻¹⁰ Studies have reported a progressive increase in UI prevalence during pregnancy, for example from 26% before pregnancy to 58% at 30 weeks of gestation.^{2,11}

In low- and middle-income settings, including Pakistan, UI remains a "silent burden" because of social stigma, lack of awareness, and absence of routine screening in antenatal clinics.³ Early identification allows timely interventions such as pelvic floor muscle training and behavioural measures.¹² Therefore, this study aimed to determine

the prevalence of urinary incontinence among pregnant women attending an antenatal clinic at a tertiary care hospital in Lahore, Pakistan.

Methodology

This retrospective cross-sectional study was conducted at the antenatal clinic of Lady Aitchison Hospital, a tertiary care maternity hospital providing obstetric and antenatal services to a large population of women in Lahore and surrounding areas. The study included medical records of pregnant women attending the antenatal clinic from January to December 2025.

The sample size was calculated using the WHO calculator for prevalence studies. Considering a 95% confidence level, 8% absolute precision, and an expected prevalence of UI during pregnancy of 49%, the required sample was 149 pregnant women.³ A non-probability convenience sampling technique was applied. Medical records available in the antenatal clinic registry during the study period were reviewed, and records fulfilling the eligibility criteria were included until the required sample size was achieved.

Data were retrieved from the antenatal clinic registry and individual patient medical records. The records were carefully reviewed and relevant information was extracted using a predesigned data extraction form. Demographic and obstetric information including maternal age, gestational age, and parity were noted along with documentation related to UI. Assessment of UI was based on the recorded responses to the International Consultation on Incontinence Questionnaire (ICIQ) items documented in the medical records, particularly focusing on the frequency of urine leakage, amount of urine leakage, and the impact of leakage on daily life.

Only records having complete responses to the three ICIQ items—frequency, amount, and impact—were included in the study. Records were excluded if ICIQ data were incomplete, if there was a documented history of UI prior to the current pregnancy, known neurological disease-causing bladder functional abnormality, evidence of urinary tract infection at the initial presentation, or documented congenital urinary tract anomalies or previous fistula surgery.

The primary outcome of the study was the prevalence of UI among pregnant women attending the antenatal clinic. UI was considered present when any degree of involuntary leakage of urine was documented in the ICIQ assessment.

Data were entered and analysed using SPSS version 26. The data was presented as descriptive statistics. Categorical variables like the presence of UI and parity categories were expressed as frequencies and

percentages, while continuous variables like maternal age and gestational age were shown as mean and standard deviation. The percentage of pregnant women with documented urinary leakage among all the records examined was used to determine the prevalence of UI, and where appropriate, 95% CI were computed. A statistically significant p-value was defined as ≤ 0.05 .

Before the study started, it received ethical approval from the institutional ethical review committee (Ref. No. 103/RC/KEMU, Dated: 09/02/2026). Informed consent was not necessary because the study involved a retrospective review of medical records rather than direct patient contact.

Results

For this study, 149 antenatal records of pregnant women were examined. Table I displays the study population's baseline obstetric and demographic characteristics.

Table I: The study population's baseline obstetric and demographic characteristics. (n = 149)

Variable	n (%) / Mean $\pm$ SD
Maternal age (years)	29.8 $\pm$ 4.6
Age group	
≤ 24 years	28 (18.8)
25–35 years	97 (65.1)
> 35 years	24 (16.1)
Gestational age at assessment (weeks)	33.9 $\pm$ 3.2
Gestational age category	
28–30 weeks	38 (25.5)
31–34 weeks	56 (37.6)
>34 weeks	55 (36.9)
Parity	
Primigravida	56 (37.6)
Multiparous	93 (62.4)
Body mass index (kg/m ²)	
< 25	73 (49.0)
≥ 25	76 (51.0)
Previous mode of delivery	
None	21 (14.1)
Vaginal delivery	87 (58.4)
Caesarean section	41 (27.5)

During the current pregnancy, UI was prevalent overall at 48.3%. SUI was the most prevalent subtype among women who leaked urine, followed by MUI and UII. The ICIQ impact report indicated that there was a high percentage of women suffering from mild and moderate UI and that most of the leakage occurred with cough, sneeze or physical activity. It was also reported that most of the women were identified through documentation review with limited number of women self-reporting during their routine antenatal visit (Table II).

Additional analysis revealed a statistically significant correlation between UI and increasing gestational age, with later weeks of pregnancy showing a higher incidence (Table III). UI and parity were also found to be significantly correlated, with multiparous women more often impacted than primigravida.

The incidence of UI was also substantially correlated with the mother's BMI and her prior delivery method. Urinary leakage was more common in women with higher BMIs and in those who had previously given birth vaginally as opposed to those who had previously given birth by caesarean section or had never given birth. Table IV provides a summary of these associations.

Table II: Prevalence, type, and reporting pattern of UI. (n = 149)

Variable	n (%)
Overall prevalence of UI	72 (48.3)
Type of UI (n = 72)	
Stress urinary incontinence (SUI)	47 (65.3)
Mixed urinary incontinence (MUI)	16 (22.2)
Urge urinary incontinence (UUI)	9 (12.5)
Severity (ICIQ impact score)	
Mild	41 (56.9)
Moderate	24 (33.3)
Severe	7 (9.8)
Timing of detection	
Self-reported during ANC visit	17 (24.2)
Incidentally identified on screening	55 (75.8)

Table III: Association of UI with gestational age and parity.

Variable	UI Present n (%)	UI Absent n (%)	p-value
Gestational age category			0.021
28–30 weeks (n = 38)	12 (31.5)	26 (68.5)	
31–34 weeks (n = 56)	24 (42.8)	32 (57.2)	
>34 weeks (n = 55)	29 (52.6)	26 (47.4)	
Parity			0.009
Primigravida (n = 56)	19 (34.1)	37 (65.9)	
Multiparous (n = 93)	49 (52.3)	44 (47.7)	

Table IV: Association of UI with BMI and previous mode of delivery.

Variable	UI Present n (%)	UI Absent n (%)	p-value
BMI (kg/m ²)			0.015
<25 (n = 73)	28 (38.4)	45 (61.6)	
≥25 (n = 76)	43 (56.2)	33 (43.8)	
Previous mode of delivery			0.004
None (n = 21)	6 (27.9)	15 (72.1)	
Vaginal delivery (n = 87)	50 (57.1)	37 (42.9)	
Caesarean section (n = 41)	16 (39.8)	25 (60.2)	

Discussion

Urinary incontinence (UI) was found in 48.3% of pregnant women in the current study; SUI accounted for 65.3%, followed by MUI (22.2%) and UUI (12.5%). The majority of cases were identified by chance during antenatal visits rather than being self-reported, and the majority of women had mild to moderate symptoms. These results show that UI is a prevalent but frequently overlooked condition during pregnancy. According to studies done in the USA, Europe, Australia, Brazil, and Asia, reported prevalence rates of UI during pregnancy range from 18% to 75% among parous women and from 36% to 70% among primigravida. The study showed that the proportions of women with UI were different regionally with the prevalence among Turkish women being reported to be 27%.

A smaller population had reported severe symptoms or daily episode whereas most women reported mild to moderate UI. This pattern is similar to earlier reports, although the distribution varies depending on populations, assessment tools, and gestational timing. Overall, the literature demonstrates wide variability in both prevalence and severity of UI in pregnancy. In this study, the prevalence of UI increased with advancing maternal and gestational age, which has also been described in several earlier studies, although some investigations have reported no association between age and UI during pregnancy, indicating that the condition is multifactorial.

The prevalence of UI among women of reproductive age has been reported to range from 13% to 35%.¹³ Pregnancy is the biggest contributing factors, along with anatomical changes following labor, hormonal influences, alterations in the urethra-vesical angle, and greater strain on the levator muscles, connective tissue, and pelvic ligaments. Other risk factors include advancing age, multiparity, multiple pregnancies, smoking, alcohol and caffeine intake, higher body mass index, diabetes mellitus, and constipation. While factors leading to remission of UI are not studied enough, reversible conditions such as urinary tract infections, urogenital atrophy, pregnancy-related changes, and weight fluctuations are thought to contribute.¹⁴

During pregnancy, the reported prevalence of UI tends to increase as gestation progresses, ranging from approximately 23% in the first trimester to as high as 67% at term, with persistence rates of 6% to 29% reported between six months and one year postpartum.¹⁵ Recent studies by Zhu et al and Jung et al have demonstrated that pregnant women with UI experience poorer quality of life compared with those without symptoms, and the severity of symptoms

tends to increase as pregnancy advances.^{16,17} Clinically, UI is classified into UUI, SUI, and MUI, with SUI consistently reported as the most common type during pregnancy.

The prevalence of UI during pregnancy varies considerably across studies due to differences in study design, gestational timing, and diagnostic definitions. Most available data originate from high-income countries compared with those from South and Southeast Asia.^{6,18} Studies that use broader definitions of UI, such as any involuntary leakage of urine, tend to report higher prevalence compared with studies relying solely on self-reported symptoms. Parity has also been shown to have a significant association with UI, and delayed booking for antenatal care as well as limited symptom reporting may contribute to higher observed prevalence in some settings, emphasizing the importance of routine screening during antenatal visits.

SUI was the most common subtype identified in the present study, which is consistent with previous research findings, followed by mixed and urge urinary incontinence. The reported prevalence of SUI during pregnancy varies widely in the literature, ranging from 18.6% to 75%, which is comparable with the distribution observed in this study.¹⁹ This wide variation highlights differences in study populations, diagnostic criteria, and gestational timing across studies.

The exact mechanism underlying pregnancy-related stress urinary incontinence is not entirely understood. Pelvic floor muscle weakness, leading to increased bladder neck mobility and urethral sphincter incompetence, might be the key contributing factor.²⁰ Pelvic floor muscle exercises are safe, and effective intervention for both prevention and treatment of SUI in pregnancy and postpartum period. In the present study, very few participants reported regular physical exercise, and none indicated receiving guidance regarding pelvic floor muscle training during pregnancy. These findings highlight the need for improved patient education and counselling regarding pelvic floor health.

UI is a disabling condition with a negative impact on quality of life. This study highlights the need for

awareness and routine assessment of urinary symptoms during antenatal care, as it is largely under-reported. A limitation of this study is that urinary symptoms can vary across gestation, while the analysis mainly reflected findings from late pregnancy; therefore, the results may not be generalizable to the entire duration of pregnancy.

Emphasis on continence advisory services reflects growing recognition of the prevalence of UI. This research shows that routine screening for UI should take place as part of antenatal care, especially in late second trimester, with the use of simple, validated tools (ICIQ). All pregnant women should receive antenatal education pertaining to pelvic floor health and exercises for the pelvic floor muscles. Encouraging lifestyle modifications such as weight control, smoking cessation, management of constipation, and prompt treatment for UTI's may help reduce the likelihood of long-term UI postpartum and improve quality of life when diagnosed and treated conservatively.

LIMITATIONS: As with all clinical studies, results need to be viewed considering study limitations that include diagnostic methods used in this study. Diagnostic classifications (subtypes) were based on symptoms reported by the mother, using the ICIQ. No urodynamic tests were performed on mothers to provide an objective diagnosis of UI. Self-reported data can potentially create reporting biases, even though the ICIQ is consistent with International Continence Society (ICS) definitions. Additionally, this study was limited to one tertiary care facility, making it difficult to generalize results for women from other parts of Pakistan. The retrospective nature of the study also limits the ability to determine cause and effect across all stages of pregnancy.

Conclusion

A significant portion of pregnant women experience UI symptoms that are not identified until a woman is assessed specifically for them. This supports establishing urogynaecology services in a hospital setting to ensure early assessments and pelvic floor rehabilitation postpartum and afterward because pelvic floor disorders can occur early in a woman's reproductive life.

References

1. Moosdorff-Steinhauser HF, Berghmans BC, Spaanderman ME, Bols EM. Prevalence, incidence and bothersomeness of urinary incontinence in pregnancy: a systematic review and meta-analysis. *Int Urogynecol J*. 2021;32(7):1633-1652. <https://doi.org/10.1007/s00192-020-04636-3>
2. Syeda FF, Aldobashi A, Kapadia S, Bondili A. Prevalence of urinary incontinence among pregnant women: a cross-sectional study in the Outpatient Department of Al-Ain Hospital. *Sch Int J Obstet Gynec*. 2022;5(6):288-293. <https://doi.org/10.36348/sijog.2022.v05i06.002>
3. Masood Z, Mushtaq M, Javed A, Shafi M, Majeed R. Prevalence and knowledge of urinary incontinence and awareness about physical therapy treatment among young females of Lahore. *J Health Rehabil Res: JHRR*. 2024;4(2):1406-1410. <https://doi.org/10.61919/jhrr.v4i2.973>
4. Burki F, Muqarrab K, Rehman SU, Fahim F. Incidence of urinary incontinence among pregnant females. *Pak J Med Health Sci*. 2022;16(1):824.

- <https://doi.org/10.53350/pjmhs22161824>
5. Yang X, Sayer L, Bassett S, Woodward S. The prevalence, associated factors, and impact of urinary incontinence in pregnant and postpartum women in Nanjing, China: a cross-sectional study. *Asian J Urol*. 2023;10(3):337-343. <https://doi.org/10.1016/j.ajur.2022.03.016>
 6. Parlas M, Bilgic D. Awareness of urinary incontinence in pregnant women as a neglected issue: a cross-sectional study. *Malawi Med J*. 2024;36(1):53-63. <https://doi.org/10.4314/mmj.v36i1.9>
 7. Daly D, Clarke M, Begley C. Urinary incontinence in nulliparous women before and during pregnancy: prevalence, incidence, type, and risk factors. *Int Urogynecol J*. 2018;29(3):353-362. <https://doi.org/10.1007/s00192-018-3554-1>
 8. Rajavuori A, Repo JP, Häkkinen A, Palonen P, Multanen J, Aukee P. Maternal risk factors of urinary incontinence during pregnancy and postpartum: A prospective cohort study. *Eur J Obstet Gynecol Reprod Biol X*. 2022;13:100138. <https://doi.org/10.1016/j.eurox.2021.100138>
 9. Hammad FT. Prevalence, social impact and help-seeking behaviour among women with urinary incontinence in the Gulf countries: a systematic review. *Eur J Obstet Gynecol Reprod Biol*. 2021;266:150-156. <https://doi.org/10.1016/j.ejogrb.2021.10.005>
 10. Gul T, Naqvi SF, Obaid S, Shahid MH. Frequency of stress urinary incontinence in pregnant females. *JIMDC*. 2021;10(4):216-220. <https://doi.org/10.35787/jimdc.v10i4.603>
 11. Zhang RQ, Xia MC, Cui F, Chen JW, Bian XD, Xie HJ, et al. Epidemiological survey of adult female stress urinary incontinence. *BMC Womens Health*. 2021;21(1):172. <https://doi.org/10.1186/s12905-021-01319-z>
 12. Kashif F, Gulzar K, Islam F, Seemab Z. Knowledge, attitude and practice regarding antenatal and postnatal Kegel exercises among parous women. *Neuroquantology*. 2023;21(6):1700-1707.
 13. Nigam A, Ahmad A, Gaur D, Elahi AA, Batra S. Prevalence and risk factors for urinary incontinence in pregnant women during late third trimester. *Int J Reprod Contracept Obstet Gynecol*. 2016;5(7):2187-2191. <https://doi.org/10.18203/2320-1770.ijrcog20162090>
 14. Demircan N, Özmen Ü, Köktürk F, Küçük H, Ata Ş, Harma M, et al. What are the probable predictors of urinary incontinence during pregnancy?. *PeerJ*. 2016;4:e2283. <https://doi.org/10.7717/peerj.2283>
 15. Bekele A, Adefris M, Demeke S. Urinary incontinence among pregnant women, following antenatal care at University of Gondar Hospital, North West Ethiopia. *BMC Pregnancy Childbirth*. 2016;16(1):333. <https://doi.org/10.1186/s12884-016-1126-2>
 16. Zhu Y, Cai W, Liu S, Zhang D, Luo D, Huang S, et al. Mobile app-based self-management of urinary incontinence in pregnant women: Multicenter pragmatic randomized controlled trial. *J Med Internet Res*. 2025;27:e72883. <https://doi.org/10.2196/72883>
 17. Jung H, Hwang DW, Chun KC, Kim YA, Koh JW, Han JY, et al. Prevalence and risk factors of urinary incontinence in pregnant Korean women. *Obstet Gynecol Sci*. 2024;67(5):481-488. <https://doi.org/10.5468/ogs.24156>
 18. Diez-Itza I. Urinary incontinence during pregnancy and in the postpartum period. *Nat Rev Urol*. 2025;23:184-195. <https://doi.org/10.1038/s41585-025-01091-x>
 19. Liang S, Huang S, Andarini E, Wang Y, Li Y, Cai W. Development and internal validation of a risk prediction model for stress urinary incontinence throughout pregnancy: A multicenter retrospective longitudinal study in Indonesia. *Neurourol Urodyn*. 2024;43(2):354-363. <https://doi.org/10.1002/nau.25364>
 20. Harati PG, Hosseini SM, Javaheri A, Manshadi FD, Baghban AA, Hoseini M, et al. Prevalence of Lower Urinary Tract Symptoms in Pregnant Women in Yazd, Iran: A Cross-Sectional Study. *Cureus*. 2025;17(5):e84190. <https://doi.org/10.7759/cureus.84190>