

PREVALENCE OF UNDIAGNOSED URINARY INCONTINENCE AMONG WOMEN PRESENTING FOR ROUTINE PAP SMEAR: A CROSS-SECTIONAL QUESTIONNAIRE STUDY

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ABSTRACT

Background: Urinary incontinence (UI) is a common yet underreported condition among women and significantly affects quality of life, social functioning, and psychological well-being. Due to embarrassment, social stigma, and lack of awareness, many women remain undiagnosed and untreated. Routine gynecological visits such as Pap smear screening provide an opportunity for early detection of urinary incontinence. The aim is to determine the prevalence of undiagnosed urinary incontinence among women presenting for routine Pap smear screening at District Hospital, Sheoganj, Sirohi, Rajasthan and to assess associated risk factors. **Materials and Methods:** This cross-sectional questionnaire-based study was conducted at District Hospital, Sheoganj, Sirohi, Rajasthan, from January 2024 to August 2025. A total of 80 women attending for routine Pap smear screening were enrolled consecutively after obtaining written informed consent. Data regarding sociodemographic characteristics, obstetric history, menopausal status, and urinary symptoms were collected using a structured questionnaire. Women reporting involuntary leakage of urine without prior diagnosis or treatment were considered to have undiagnosed urinary incontinence. Data were analyzed using descriptive and inferential statistical methods. **Result:** A considerable proportion of women attending routine Pap smear screening reported symptoms suggestive of urinary incontinence despite having no prior diagnosis. Stress urinary incontinence was the most commonly reported subtype. Increasing age, multiparity, menopausal status, obesity, and history of vaginal delivery were found to be associated with urinary incontinence. **Conclusion:** Undiagnosed urinary incontinence is common among women presenting for routine Pap smear screening. Incorporating simple screening questions during routine gynecological examinations may facilitate early diagnosis, counseling, and timely management, thereby improving women's quality of life.

INTRODUCTION

Urinary incontinence (UI), defined as the involuntary leakage of urine, is a common health problem among women and represents a significant medical, social, and psychological concern. Although urinary incontinence is not a life-threatening condition, it adversely affects quality of life by interfering with daily activities, social interactions, emotional well-being, and sexual health. Women with urinary incontinence often experience embarrassment, anxiety, reduced self-confidence, and social isolation.^[1-4]

The prevalence of urinary incontinence among women varies widely across different populations, with reported rates ranging from 10% to 50%. The variation in prevalence may be due to differences in study populations, definitions used, cultural attitudes,

and methodologies employed. Several risk factors have been associated with urinary incontinence, including advancing age, obesity, multiparity, menopause, chronic cough, pelvic floor weakness, and vaginal childbirth.^[5-9]

Urinary incontinence is broadly categorized into stress urinary incontinence, urge urinary incontinence, and mixed urinary incontinence. Stress urinary incontinence is the most common type in women and occurs during activities that increase intra-abdominal pressure such as coughing, sneezing, laughing, or physical exertion. Urge urinary incontinence is characterized by involuntary leakage associated with a sudden compelling urge to void, while mixed urinary incontinence includes features of both stress and urge incontinence.^[10-12]

Despite the availability of effective treatment options, urinary incontinence remains substantially

underdiagnosed and undertreated. Many women do not seek medical advice because they consider urinary leakage a normal consequence of aging or childbirth. In addition, embarrassment, social stigma, and lack of awareness regarding available treatment options contribute to delayed reporting and diagnosis.^[13-15]

Routine gynecological visits provide an important opportunity for opportunistic screening of urinary symptoms. Women presenting for routine cervical cancer screening through Pap smear examinations may be more comfortable discussing reproductive and urinary health concerns in a healthcare setting. Incorporating simple screening questions regarding urinary symptoms during Pap smear visits may help identify women with previously undiagnosed urinary incontinence and facilitate timely counseling and management.^[16-18]

In India, particularly in rural and semi-urban communities, there is limited data regarding the prevalence of undiagnosed urinary incontinence among women attending routine gynecological screening services. Understanding the burden of this condition is important for planning preventive strategies and improving women's health services. Therefore, the present study was undertaken to determine the prevalence of undiagnosed urinary incontinence among women presenting for routine Pap smear screening at District Hospital, Sheoganj, Sirohi and to assess associated risk factors.^[19,20]

MATERIALS AND METHODS

Study Design: This was a cross-sectional questionnaire-based study conducted to assess the prevalence of undiagnosed urinary incontinence among women presenting for routine Pap smear screening.

Study Setting: The study was conducted at District Hospital, Sheoganj, Sirohi district, Rajasthan, India.

Study Duration: The study was carried out from January 2024 to August 2025.

Study Population: Women attending District Hospital, Sheoganj for routine Pap smear screening during the study period were included in the study.

Sample Size

The sample size for the present study was calculated using the formula for estimating prevalence in cross-sectional studies:

$$n = \frac{Z^2 \times p \times q}{d^2}$$

Where:

- n = required sample size
- Z = standard normal deviate at 95% confidence interval (1.96)
- p = expected prevalence
- q = 1 - p
- d = allowable error

Based on feasibility and availability of eligible participants during the study period, a total of 80

women attending District Hospital, Sheoganj for routine Pap smear screening from January 2024 to August 2025 were included in the study using a consecutive sampling technique.

Inclusion Criteria

- Women aged 21 years and above
- Women attending District Hospital, Sheoganj for routine Pap smear screening during the study period
- Women who were able to understand and respond to the questionnaire
- Women willing to participate voluntarily in the study
- Women who provided written informed consent for participation in the study.

Exclusion Criteria

- Women with a previous diagnosis of urinary incontinence
- Women currently receiving treatment for urinary incontinence
- Pregnant women
- Women in the postpartum period (within 6 weeks after delivery)
- Women with active urinary tract infection at the time of the study
- Women with known pelvic malignancy
- Women with neurological disorders affecting bladder function

Sampling Technique: A consecutive sampling technique was employed in the present study. All women attending the District Hospital, Sheoganj for routine Pap smear screening during the study period from January 2024 to August 2025 were screened for eligibility. Participants fulfilling the inclusion criteria and willing to provide written informed consent were enrolled consecutively until the required sample size of 80 participants was achieved.

Data Collection Procedure: After obtaining written informed consent, eligible participants were interviewed using a structured and pretested questionnaire in a private setting. Information regarding age, parity, menopausal status, mode of delivery, and urinary symptoms was collected.

Participants were specifically asked about involuntary leakage of urine, frequency of symptoms, and circumstances associated with leakage. Women reporting urinary leakage without any previous diagnosis or treatment for urinary incontinence were considered to have undiagnosed urinary incontinence.

Based on symptoms, urinary incontinence was classified into:

- Stress urinary incontinence: leakage during coughing, sneezing, laughing, or physical exertion
- Urge urinary incontinence: leakage associated with sudden urge to void
- Mixed urinary incontinence: presence of both stress and urge symptoms

All collected data were recorded systematically and maintained confidentially throughout the study.

Outcome Measures

Primary Outcome Measure

- Prevalence of undiagnosed urinary incontinence among women presenting for routine Pap smear screening.

Secondary Outcome Measures

- Types of urinary incontinence (stress, urge, and mixed urinary incontinence)
- Association of urinary incontinence with age, parity, menopausal status, body mass index (BMI), and mode of delivery.

Statistical Analysis: Data collected from the participants were entered into Microsoft Excel and analyzed using Statistical Package for Social Sciences (SPSS) version 25.0. Descriptive statistics were used for data analysis. Continuous variables were expressed as mean and standard deviation, whereas categorical variables were expressed as frequencies and percentages.

The prevalence of undiagnosed urinary incontinence was calculated as a proportion of the total study participants. The association between urinary incontinence and variables such as age, parity, menopausal status, body mass index (BMI), and mode of delivery was assessed using the Chi-square test. A p-value of <0.05 was considered statistically significant.

Ethical Considerations: Ethical approval for the study was obtained from the Institutional Ethics Committee prior to commencement of the study. Written informed consent was obtained from all participants before enrollment. Participants were informed about the purpose of the study, and confidentiality of all collected information was strictly maintained throughout the study period. Participation was voluntary, and participants were free to withdraw from the study at any time without affecting their medical care. Women identified with symptoms suggestive of urinary incontinence were counseled and referred for further evaluation and management.

RESULTS

Sociodemographic Characteristics: A total of 80 women presenting for routine Pap smear screening at the District Hospital, Sheoganj, Sirohi were included in the study. The mean age of the participants was 39.6 ± 8.4 years. Majority of the participants

belonged to the age group of 31–40 years (40.0%), followed by 41–50 years (27.5%), 21–30 years (20.0%), and more than 50 years (12.5%).

Most of the participants were multiparous (85.0%), while 15.0% were nulliparous. Regarding menopausal status, 65.0% of the participants were premenopausal and 35.0% were postmenopausal. Vaginal delivery was the predominant mode of delivery observed among the study participants (72.5%), whereas 27.5% had undergone cesarean section.

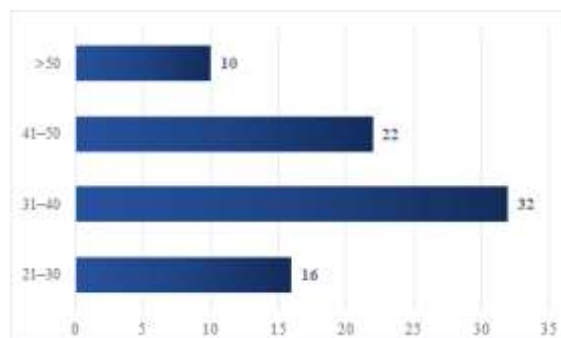


Figure 1: Age-wise Distribution of Study Participants (n = 80)

Note: The majority of study participants belonged to the age group of 31–40 years (40.0%), followed by 41–50 years (27.5%). Participants aged 21–30 years constituted 20.0% of the study population, while women aged more than 50 years accounted for 12.5%. Values are presented as frequency (n) and percentage (%).

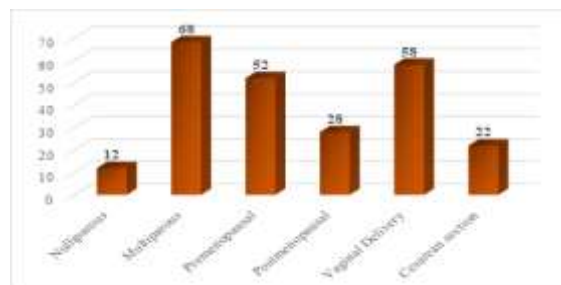


Figure 2: Distribution of Parity, Menopausal Status, and Mode of Delivery Among Study Participants (n = 80)

Figure Note: The majority of the study participants were multiparous (85.0%) and premenopausal (65.0%). Vaginal delivery was the predominant mode of delivery among the participants (72.5%), while 27.5% had undergone cesarean section. Values are presented as frequency (n) and percentage (%).

Table 1: Sociodemographic Characteristics of Study Participants (n = 80)

Variables	Frequency (n)	Percentage (%)
Age Group (years)		
21–30	16	20.0
31–40	32	40.0
41–50	22	27.5
>50	10	12.5
Parity		
Nulliparous	12	15.0
Multiparous	68	85.0
Menopausal Status		

Premenopausal	52	65.0
Postmenopausal	28	35.0
Mode of Delivery		
Vaginal Delivery	58	72.5
Cesarean section	22	27.5

Note: Values are presented as frequency (n) and percentage (%). Percentages were calculated using the total study population (n = 80) as the denominator. The majority of participants belonged to the age group of 31–40 years and were multiparous. Vaginal delivery was the most common mode of delivery among the study participants.

Prevalence of Undiagnosed Urinary Incontinence: Among the 80 women included in the study, 24 participants reported symptoms suggestive of urinary incontinence without any prior diagnosis, resulting in an overall prevalence of 30.0%. The majority of affected women had stress urinary incontinence (58.3%), followed by mixed urinary incontinence (25.0%) and urge urinary incontinence (16.7%).

Table 2: Prevalence and Types of Urinary Incontinence Among Study Participants (n = 80)

Variables	Frequency (n)	Percentage (%)
Women with urinary incontinence	24	30.0
Women without urinary incontinence	56	70.0
Types of Urinary Incontinence (n = 24)		
Stress urinary incontinence	14	58.3
Urge urinary incontinence	4	16.7
Mixed urinary incontinence	6	25.0

Note: Values are presented as frequency (n) and percentage (%). The prevalence of undiagnosed urinary incontinence among the study participants was 30.0%. Stress urinary incontinence was the most commonly observed subtype, followed by mixed and urge urinary incontinence. Percentages for the types of urinary incontinence were calculated based on participants with urinary incontinence (n = 24).

Types of Urinary Incontinence: Among the 24 participants identified with urinary incontinence, stress urinary incontinence was the most common subtype observed in 14 women (58.3%). Mixed urinary incontinence was reported in 6 women (25.0%), while urge urinary incontinence was observed in 4 women (16.7%).

Table 3: Distribution of Types of Urinary Incontinence Among Affected Participants (n = 24)

Type of Urinary Incontinence	Frequency (n)	Percentage (%)
Stress urinary incontinence	14	58.3
Urge urinary incontinence	4	16.7
Mixed urinary incontinence	6	25.0
Total	24	100.0

Note: Values are presented as frequency (n) and percentage (%). Among the participants with urinary incontinence (n = 24), stress urinary incontinence was the predominant subtype observed. Mixed urinary incontinence and urge urinary incontinence were less commonly reported. Percentages were calculated using the total number of affected participants as the denominator.

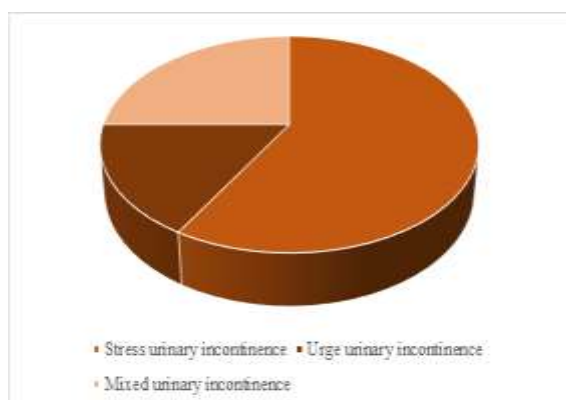


Figure 3: Distribution of Types of Urinary Incontinence Among Affected Participants (n = 24)

Note: Stress urinary incontinence was the predominant subtype among women with urinary incontinence, accounting for 58.3% of cases. Mixed urinary incontinence and urge urinary incontinence were observed in 25.0% and 16.7% of participants, respectively. Values are expressed as frequency (n) and percentage (%).

Association with Risk Factors: Urinary incontinence was more commonly observed among women aged more than 40 years, multiparous women, postmenopausal women, and those with a history of vaginal delivery. A statistically significant association was observed between urinary incontinence and age, parity, menopausal status, and mode of delivery (p < 0.05).

Table 4: Association Between Urinary Incontinence and Selected Risk Factors

Variables	Urinary Incontinence Present n (%)	Urinary Incontinence Absent n (%)	p-value
Age >40 years	15 (62.5)	17 (30.4)	0.01
Multiparity	22 (91.7)	46 (82.1)	0.03
Postmenopausal status	14 (58.3)	14 (25.0)	0.01
Vaginal delivery	20 (83.3)	38 (67.9)	0.04

BMI >25 kg/m ²	13 (54.2)	18 (32.1)	0.05
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Note: Values are presented as frequency (n) and percentage (%). Urinary incontinence was more commonly observed among women aged more than 40 years, multiparous women, postmenopausal women, and those with a history of vaginal delivery. A statistically significant association was observed between urinary incontinence and the selected risk factors ($p < 0.05$). Percentages were calculated within each comparison group.



Figure 4: Association Between Urinary Incontinence and Selected Risk Factors

Note: Urinary incontinence was more frequently observed among women aged more than 40 years, multiparous women, postmenopausal women, and those with a history of vaginal delivery. Significant associations were observed between urinary incontinence and the selected risk factors ($p < 0.05$). Values are expressed as frequency (n) and percentage (%).

DISCUSSION

The present cross-sectional questionnaire-based study was conducted to determine the prevalence of undiagnosed urinary incontinence among women presenting for routine Pap smear screening at District Hospital, Sheoganj, Sirohi. The study demonstrated that urinary incontinence is a common but underrecognized health problem among women, with an overall prevalence of 30.0% among the study participants. The findings highlight the hidden burden of urinary incontinence in women attending routine gynecological services.

In the present study, stress urinary incontinence was identified as the most common subtype, accounting for 58.3% of cases, followed by mixed urinary incontinence and urge urinary incontinence. Similar findings have been reported in previous studies, where stress urinary incontinence was found to be the predominant form among women. The higher prevalence of stress urinary incontinence may be attributed to pelvic floor weakness associated with childbirth, aging, and increased intra-abdominal pressure.

The present study also observed a significant association between urinary incontinence and increasing age. Women above 40 years of age were more likely to report urinary symptoms compared to younger women. Advancing age is known to contribute to weakening of pelvic floor musculature, hormonal changes, and reduced bladder support, thereby increasing the risk of urinary incontinence. Multiparity was another important risk factor identified in the study. A higher proportion of

multiparous women reported urinary incontinence compared to nulliparous women. Repeated vaginal deliveries can lead to stretching and weakening of pelvic floor muscles and connective tissue support, predisposing women to urinary leakage. Similarly, women with a history of vaginal delivery showed a higher prevalence of urinary incontinence than those delivered by cesarean section.

Postmenopausal women were also found to have a significantly higher prevalence of urinary incontinence. Estrogen deficiency following menopause may contribute to atrophic changes in the pelvic tissues and lower urinary tract, thereby increasing susceptibility to urinary symptoms.

Despite experiencing urinary symptoms, many women had not previously sought medical consultation or treatment. This may be due to embarrassment, social stigma, lack of awareness, or the misconception that urinary leakage is a normal consequence of aging and childbirth. The findings of the present study emphasize the importance of opportunistic screening during routine gynecological visits such as Pap smear examinations.

Routine screening for urinary incontinence during cervical cancer screening visits may facilitate early identification, counseling, and timely management of affected women. Early interventions including lifestyle modification, pelvic floor exercises, bladder training, and appropriate referral can significantly improve quality of life and reduce the psychosocial burden associated with urinary incontinence.

However, the present study has certain limitations. The study was conducted at a single center with a relatively small sample size, which may limit the generalizability of the findings. In addition, urinary symptoms were assessed using self-reported questionnaires without objective urodynamic evaluation. Further multicentric studies with larger sample sizes are recommended to better understand the burden of undiagnosed urinary incontinence in the community.

Limitations: The present study had certain limitations. As the study was conducted at a single hospital with a relatively small sample size, the findings may not be generalizable to the larger population. The study was based on self-reported symptoms collected through a questionnaire, which may have introduced reporting bias and underreporting due to social stigma or embarrassment. Objective diagnostic investigations such as urodynamic studies were not performed to confirm the diagnosis of urinary incontinence. Furthermore, the cross-sectional design of the study limited the ability to establish a causal relationship between urinary incontinence and the associated risk factors.

CONCLUSION

The present study demonstrated that undiagnosed urinary incontinence is a common health problem among women presenting for routine Pap smear screening at District Hospital, Sheoganj, Sirohi, with an overall prevalence of 30.0%. Stress urinary incontinence was the most commonly observed subtype. Increasing age, multiparity, postmenopausal status, and vaginal delivery were identified as significant risk factors associated with urinary incontinence. The findings of the study highlight the importance of incorporating routine screening for urinary symptoms during gynecological visits such as Pap smear examinations. Early identification and timely management of urinary incontinence may help improve the quality of life and overall well-being of affected women.

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