



PREVALENCE OF URINARY TRACT INFECTIONS AMONG MEDICAL AND NON-MEDICAL STUDENTS: AN OBSERVATIONAL STUDY

General Medicine

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ABSTRACT

Objective: To compare the prevalence and severity of urinary tract infections (UTIs) in medical and non-medical university students using a validated symptom scoring tool (UTI-SIQ-8) and identify associated risk factors. **Design & Setting:** A two-month cross-sectional observational study at a university campus with medical and non-medical faculties. **Participants:** 500 students (250 medical, 250 non-medical), aged 18–26 years. **Main Outcomes:** Prevalence of UTI symptoms, UTI-SIQ-8 severity scores, and risk factors such as gender, hygiene, and sexual activity. **Results:** UTI prevalence was 15%. Medical students showed higher prevalence (18%) compared to non-medical students (12%; $p=0.04$). Female gender (23.3%) had significantly more UTI symptoms than males (2.5%). UTI-SIQ-8 scores were higher among medical students (mean 14.2 ± 5.3) than non-medical students (11.1 ± 4.7). Independent risk factors were female gender (OR 3.45), recent sexual activity (OR 2.56), and past UTI history (OR 5.58). **Conclusion:** Medical students had significantly higher UTI prevalence and symptom severity. Screening and prevention programs are needed for high-risk groups, especially young adult females in academic environments.

KEYWORDS

INTRODUCTION

Urinary tract infections (UTIs) are among the most prevalent bacterial infections worldwide, with over 150 million cases annually, predominantly affecting women and young adult 1. Despite a well-documented burden among adult women, limited data exist comparing healthcare and non-healthcare university students, particularly in developing countries 2.

Young adult students are susceptible to UTIs due to factors like increased sexual activity, hygiene limitations, poor hydration, and academic stress 3. Among college-going females, up to 28% report at least one UTI annually 4 5. Medical students, while better informed about hygiene, face unique risks from hospital exposure and stress-related immune suppression 6. In contrast, non-medical students may delay seeking care or misuse antibiotics 7.

Previous studies have observed varied UTI rates in student populations. A Nigerian study noted 10% UTI prevalence among female health science students, with higher rates in nursing than medical students 8. An Indian study reported 13.2% prevalence among hostel students linked to low fluid intake and limited bathroom access 9.

Despite these findings, comparative studies using validated symptom scoring tools are rare. The UTI-SIQ-8 questionnaire offers a standardized, scale-based method for quantifying symptom burden 10. This study aimed to:

- Compare UTI prevalence between medical and non-medical students.
- Use UTI-SIQ-8 to assess symptom severity.
- Identify associated risk factors like gender, sexual activity, hygiene, and history.
- Understand how healthcare literacy influences symptom awareness.

MATERIALS AND METHODS

Study Design & Population:

A two-month (Nov–Dec 2024) cross-sectional study at a South Indian multidisciplinary university. Inclusion criteria: students aged 18–26, currently enrolled, and gave informed consent. Excluded: students on antibiotics, or with chronic illness or anatomical urinary issues.

Sample Size:

Based on 13% expected prevalence, with 5% margin of error and 95% confidence, 500 students were sampled (250 each group), including a 10% buffer for non-responses.

Data Collection:

Participants completed a two-part questionnaire:

1. **Demographic & Risk Factors:** age, gender, year, hygiene practices, sexual activity, previous UTI history, hydration.
2. **UTI Symptom Score:** UTI-SIQ-8 (validated; 0–32 scale; Cronbach's $\alpha = 0.81$). Scores ≥ 9 were considered symptomatic.

Scoring:

0–8: Mild | 9–16: Moderate | 17–24: Severe | >24 : Very Severe

Data Analysis:

Used SPSS v26. Statistical tests included chi-square, t-tests, and logistic regression. Significance threshold: $p < 0.05$.

RESULTS

Among the total of 500 university students included in the study, the **mean age was 22.5 ± 2.1** years, with a balanced distribution across academic disciplines—250 students from medical faculties and 250 from non-medical streams. Gender distribution was also identical across both cohorts, with 60% female and 40% male participants. No statistically significant differences were observed between the two groups in terms of age or academic year, ensuring baseline comparability and eliminating confounding demographic variability.

Of the total participants, 75 students (15%) reported experiencing UTI symptoms within the preceding three months. Notably, medical students had a significantly higher prevalence rate of 18%, compared to 12% among non-medical students, a difference that reached statistical significance ($p = 0.04$). When analyzed by gender, the prevalence of UTI symptoms was found to be disproportionately higher among females (23.3%) than among males (2.5%), reaffirming the well-established gender disparity associated with urinary tract infections due to anatomical and physiological predispositions.

The severity of UTI symptoms was evaluated using the UTI-SIQ-8 score, a validated symptom scale. The mean symptom severity score was significantly higher among medical students (14.2 ± 5.3) as compared to non-medical students (11.1 ± 4.7), with a p -value of 0.019, indicating a statistically significant difference in the burden of symptoms. Furthermore, grading of symptom severity revealed that a substantial 42.2% of medical students with symptoms experienced either severe or very severe symptom burden, in contrast to only 16.6% of symptomatic non-medical students. Conversely, a higher proportion of non-medical students (33.3%) reported mild symptoms, compared to only 11.1% in medical students.

Item-wise comparison of individual symptoms further highlighted a greater symptom intensity among medical students, particularly for

classical UTI indicators. The mean score for burning micturition was 2.8 in medical students, significantly higher than 2.3 among non-medical students ($p = 0.021$). Similarly, the urgency to urinate was more pronounced in medical students (2.4 vs 1.9; $p = 0.037$), as was painful urination, with scores of 2.5 versus 2.0 respectively ($p = 0.049$). These findings suggest either a higher actual symptom burden or possibly earlier and more precise symptom recognition among medically trained participants.

A multivariate logistic regression analysis was performed to identify independent risk factors associated with UTI symptoms. The results showed that female gender was the strongest predictor, with an odds ratio (OR) of 3.45 and a 95% confidence interval (CI) of 2.08–5.69 ($p < 0.001$). Recent sexual activity was another significant risk factor (OR 2.56; CI 1.50–4.37; $p = 0.001$), indicating behavioural contributions to infection risk. However, the most powerful predictor was a previous history of UTI, which increased the odds by more than five times (OR 5.58; CI 3.12–9.99; $p < 0.001$), underlining the role of recurrence in symptomatic cases. Surprisingly, other lifestyle-related factors such as poor perineal hygiene and low fluid intake, though expected to contribute, did not reach statistical significance in this model.

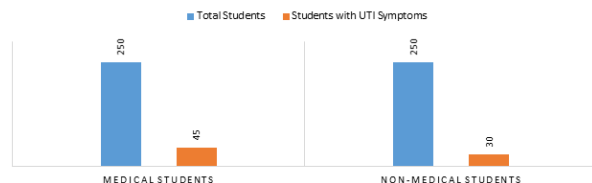
These findings collectively suggest that while medical students may have better health awareness, they also report greater symptom burden, possibly due to a combination of occupational exposure, stress, and increased diagnostic sensitivity.

1. Prevalence of Self-Reported UTI (Past 3 Months)

Group	Total Students	Students with UTI Symptoms	Prevalence (%)	p-value
Medical Students	250	45	18.0%	0.04*
Non-Medical Students	250	30	12.0%	
Total	500	75	15.0%	

Medical students showed a significantly **higher UTI prevalence (18%)** compared to non-medical students (12%), with a p-value of 0.04, indicating statistical significance.

PREVALENCE OF SELF-REPORTED UTI



Graph.1 A bar graph representation of the prevalence of self-reported UTI among medical and non-medical students

Table.2 UTI Severity Grading Based on Total Score

Severity Grade	Medical Students (n=45)	Non-Medical Students (n=30)	Total Cases (n=75)
Mild (0–8)	5 (11.1%)	10 (33.3%)	15 (20%)
Moderate (9–16)	21 (46.7%)	15 (50.0%)	36 (48%)
Severe (17–24)	15 (33.3%)	4 (13.3%)	19 (25.3%)
Very Severe (>24)	4 (8.9%)	1 (3.3%)	5 (6.7%)

DISCUSSION

This study highlights a significant UTI burden among university students, with medical students reporting higher prevalence and more severe symptoms than their non-medical peers. The overall prevalence of 15% aligns with previous literature on asymptomatic and symptomatic UTIs in student populations⁸⁹.

The gender disparity is striking. Female students reported 93% of all symptomatic cases, consistent with anatomical and physiological vulnerabilities^{2,3}. Foxman et al. found that nearly half of young women experience a UTI before age 30², supporting the observed 23.3% prevalence among females in this study.

Symptom severity was also notably higher in medical students. This may be due to better symptom recognition and awareness of UTI-related issues. However, paradoxically, their higher symptom burden might also result from exposure to clinical environments, insufficient hydration, or stress-induced immune suppression⁶.

Our use of the UTI-SIQ-8 allowed for a nuanced, graded evaluation of

symptom intensity. Medical students scored significantly higher in classic symptoms like burning, urgency, and dysuria—possibly due to both true disease and heightened self-awareness. Wagenlehner et al. emphasized the role of patient-reported outcome tools like this to quantify UTI-related impairment¹⁰.

Key risk factors identified—female gender, sexual activity, and previous history—mirror findings from Hooton et al. and Gupta et al., who also linked recurrence with sexual behaviour and past episodes^{4,5}. Surprisingly, poor hygiene and low fluid intake were not significant, possibly due to baseline health education provided across student cohorts.

Differences in healthcare-seeking behaviour may explain underreporting among non-medical students. Prior research from Egypt showed that non-medical students were less likely to seek care or report symptoms and more likely to self-medicate⁷. This highlights the role of educational background in health behaviour and symptom reporting.

Given the high symptom load and recurrence risk in young women, especially healthcare students, institutions should consider regular screening using validated tools like UTI-SIQ-8. Gender-specific awareness sessions and hygiene promotion could reduce infection burden. Orientation programs might also benefit from incorporating hydration habits and symptom recognition training.

Limitations:

- Self-reported symptoms without microbiological confirmation
- Possible recall and reporting bias
- Cross-sectional nature limits causal inference

Future research should include urinalysis and long-term follow-up to validate symptom-based tools and assess treatment outcomes.

CONCLUSION

This study confirms a higher burden of urinary tract infections among medical students, especially females. Symptom severity and prevalence were both elevated in this group, influenced by gender, sexual activity, and past UTI history. Validated tools like the UTI-SIQ-8 enable effective screening and stratification. Implementing preventive strategies, health education, and early intervention in academic settings can significantly reduce UTI-related morbidity and improve student quality of life.

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