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Clinical Symptoms and Factors Associated with Culture-Positive Urinary Tract Infection Among Patients with Suspected UTI in a Tertiary Hospital in Bangladesh

Shatabdi Mallick[1*], Shikha Paul[2], Samir Ranjan Joarder[3], Moshabha Akter Anika[4], Sefat-E-Rabbi Eva[5], Aditi Dey[6]

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*Corresponding author

ABSTRACT

Background: Clinical symptoms are commonly used to identify patients with suspected urinary tract infection (UTI), although individual symptoms do not uniformly correspond with positive urine cultures. Evidence regarding clinical factors independently associated with culture positivity remains limited in Bangladeshi tertiary-care settings. **Objective:** To assess clinical symptoms and patient characteristics associated with positive urine culture among patients with suspected UTI in a tertiary hospital in Bangladesh. **Methods & Materials:** A secondary analysis of a cross-sectional analytical study was conducted in the Department of Microbiology, Sir Salimullah Medical College Mitford Hospital, Dhaka, Bangladesh, from January to December 2020 using data from 229 patients with clinically suspected UTI attending inpatient and outpatient services of Mitford Hospital, Dhaka. Demographic characteristics, urinary symptoms, antibiotic history, hospitalization status, and urine culture findings were analyzed. Pearson's chi-square test and univariable logistic regression were used for initial associations, followed by multivariable logistic regression. Adjusted odds ratios (aORs) with 95% confidence intervals (CIs) were reported, with $p<0.05$ considered statistically significant. **Results:** Bacterial growth was detected in 138/229 (60.26%) patients, and Escherichia coli accounted for 113/138 (81.88%) positive cultures. Burning during micturition, increased urinary frequency, and urgency were significantly more frequent among culture-positive patients, all $p<0.001$. After multivariable adjustment, urgency showed the strongest association with culture positivity, aOR 2.83, 95% CI 1.55–5.17, p=0.001, followed by increased urinary frequency, aOR 2.70, 95% CI 1.48–4.92, p=0.001, and burning during micturition, aOR 2.55, 95% CI 1.41–4.61, p=0.002. Female sex, aOR 1.83, 95% CI 1.05–3.19, p=0.033, and age 20–39 years, aOR 2.31, 95% CI 1.08–4.94, p=0.031, were also independently associated with culture positivity. Fever and antibiotic history were not independently associated. **Conclusion:** Positive urine culture was common among clinically suspected UTI patients. Urgency, increased frequency, burning during micturition, female sex, and age 20–39 years were independently associated with culture positivity and may help characterize patients more likely to have microbiologically confirmed infection.

Keywords: *Urinary tract infection; Urine culture; Clinical symptoms; Culture positivity; Bangladesh*

1. *Assistant Professor, Department of Microbiology, Khulna Medical College, Khulna, Bangladesh (ORCID: 0009-0009-0544-9011)*
2. *Retired Professor & Head, Department of Microbiology, Sir Salimullah Medical College Mitford Hospital, Dhaka, Bangladesh*
3. *Lecturer, Department of Anatomy, Khulna Medical College, Khulna, Bangladesh*
4. *Assistant Surgeon, OSD (DGHS), Mohakhali, Dhaka, Bangladesh*
5. *Assistant Professor, Department of Microbiology, Sir Salimullah Medical College Mitford Hospital, Dhaka, Bangladesh*
6. *Senior Lecturer, Department of Microbiology, Dhaka Community Medical College, Dhaka, Bangladesh*

INTRODUCTION

Urinary tract infection (UTI) remains a common bacterial infection encountered in both community and hospital practice, with substantial variation in occurrence according to age, sex, healthcare setting, and underlying clinical characteristics. Globally, approximately 404.61 million UTI cases were estimated in 2019, representing an increase of about 60% in absolute case numbers compared with 1990, while the age-standardized incidence rate was substantially higher among females than males [1]. A similar 3.59-fold higher age-standardized incidence among females was reported in another Global Burden of Disease analysis, in which a substantial UTI burden was also observed in South Asia [2]. Among adult women, a lifetime UTI occurrence of approximately 50–60% has been described, with prevalence increasing with advancing age [3]. Although UTI can affect individuals across the lifespan, differences in anatomical, physiological, behavioral, and healthcare-related characteristics contribute to considerable heterogeneity in its epidemiological distribution. Clinical suspicion of UTI is usually based on symptoms such as dysuria or burning during micturition, increased urinary frequency, urgency, lower abdominal or suprapubic pain, and, in some patients, fever. However, symptoms alone do not consistently establish the presence of bacterial infection. Urine culture therefore remains an important component of microbiological confirmation, particularly among patients with uncertain presentation, recurrent symptoms, complicated disease, or hospital exposure. The predominance of uropathogenic *Escherichia coli*, together with the contribution of *Klebsiella*, *Proteus*, enterococci, and other organisms, has been consistently described in contemporary reviews [4]. Variation in the diagnostic value of individual symptoms has also been demonstrated. Among 1,178 women with suspected UTI, bacteriuria prevalence ranged from 30% to 67% across age groups, while the diagnostic performance of dysuria differed considerably according to age in the study by Holm et al [5]. Among 152 symptomatic women seeking urogynecologic care, positive cultures were found in 59.2%, and associations with culture positivity were observed for age, recurrent UTI history, and urinary symptom severity scores in the study by Meckes et al [6]. Considerable variation in culture positivity has also been documented in South Asian populations. Among 355 adults with suspected UTI in a tertiary hospital in Nepal, positive bacterial cultures were reported in 148, 41.69%, with *E. coli* comprising 81.08% of positive cultures [7]. Within Bangladesh, significant bacterial growth was identified in 537 of 1,255, 42.8%, hospitalized patients with clinically suspected UTI in a tertiary-care study by Dasgupta et al., with *E. coli* accounting for 61.6% of isolates [8]. In another Bangladeshi tertiary hospital, microbial growth was reported in 995 of 3,521, 28.3%, urine cultures assessed across three study periods by Majumder et al [9]. Among 4,500 patients tested in Dhaka, significant community-acquired UTI was identified in 920, approximately 20.4% of the total tested

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population, and higher adjusted odds were observed among females and adults in the study by Islam et al [10]. Despite these observations, available Bangladeshi studies have primarily emphasized culture yield, etiological organisms, and antimicrobial susceptibility patterns. Comparatively limited evidence is available regarding the independent associations of presenting urinary symptoms and patient characteristics with culture positivity among clinically suspected UTI patients in tertiary-care settings. Identification of such associations may help describe which clinical features are more frequently accompanied by microbiological growth while also demonstrating the limitations of symptom-based clinical suspicion alone. Therefore, the present study was conducted to assess the clinical symptoms and patient characteristics associated with positive urine culture among patients with suspected UTI attending a tertiary hospital in Bangladesh.

METHODS & MATERIALS

This study represents a secondary clinical analysis of data collected during a cross-sectional analytical study conducted in the Department of Microbiology, Sir Salimullah Medical College Mitford Hospital, Dhaka, Bangladesh, from January to December 2020. The study population consisted of patients of any age and sex attending the inpatient or outpatient departments of Mitford Hospital who were referred to the Department of Microbiology for urine culture and antimicrobial susceptibility testing with a clinical suspicion of urinary tract infection. Patients who had received antibiotics within the preceding 14 days, those receiving an ongoing course of antibiotics, and patients providing catheterized urine specimens were excluded from the parent study. A purposive sampling technique was used, and a total of 229 patients were included in the present analysis. Clinical and demographic information was collected using a pretested structured questionnaire and checklist. Recorded variables relevant to the present analysis included age, sex, inpatient or outpatient status, duration of hospitalization among admitted patients, history of antibiotic therapy as documented in the questionnaire, burning sensation during micturition, increased frequency of micturition, urgency of micturition, lower abdominal pain, and fever. Age was categorized as 0–19, 20–39, 40–59, and ≥60 years for the association analyses, while duration of hospital stay among inpatients was categorized as ≤7 days and >7 days. Approximately 10 mL of urine was collected in a sterile, wide-mouthed container following standard aseptic procedures. Urine specimens were subjected to microbiological examination and semi-quantitative culture using the standard loop method on MacConkey agar and blood agar, followed by aerobic incubation at 37°C for 24 hours. Culture outcome was classified as growth present or no growth according to the recorded microbiological findings. Bacterial isolates from culture-positive specimens were identified on the basis of colony morphology, Gram-staining characteristics, and standard biochemical tests, including Kligler iron agar, motility-indole-urea medium, citrate utilization, oxidase testing, and other appropriate tests according to organism type. For the present manuscript, urine culture positivity was the primary outcome, and the analysis was performed at the patient level using all 229 participants rather than being restricted to *Escherichia coli* isolates. Categorical variables were summarized as frequencies and percentages. Culture-positive and culture-negative patients were compared according to clinical symptoms and patient characteristics using Pearson's chi-square test. Duration of hospitalization was evaluated only among the 123 inpatients. Univariable logistic regression was used to estimate crude odds ratios (ORs) with 95% confidence intervals (CIs) for the association between demographic and clinical variables and culture positivity. Variables with a univariable p-value <0.20 were considered candidate variables for the multivariable logistic regression model. The final multivariable model included sex, age group, burning sensation during micturition, increased frequency of micturition, urgency of micturition, fever, recorded history of antibiotic therapy, and inpatient versus outpatient status; lower abdominal pain was not entered because it did not meet the prespecified screening criterion, while duration of hospitalization was not included because this variable was applicable only to the inpatient subgroup. Adjusted odds ratios (aORs) with 95% CIs were reported, and statistical significance was defined as $p<0.05$. Model calibration was assessed using the Hosmer-Lemeshow goodness-of-fit test, while overall explanatory performance was summarized using Nagelkerke R^2 and the percentage of correctly classified observations. Statistical analyses were performed using SPSS version 26.0. The original study protocol was approved by the Protocol Approval and Ethical Review Committee of Sir Salimullah Medical College and Mitford Hospital, and written informed consent was obtained from each participant or, where appropriate, from a parent, guardian, or attendant before specimen collection.

RESULTS

Among the 229 patients with clinically suspected urinary tract infection who were included in the analysis, urine culture yielded bacterial growth in 138 patients, while 91 had no bacterial growth. Subsequent analyses compared clinical and patient-related characteristics according to urine culture status. Among all suspected UTI cases, 138 of 229 urine samples were culture-positive, giving an overall culture positivity of 60.26%. No bacterial growth was detected in the remaining 91 samples, representing 39.74% of the study population (*Table I*).

Table I
Culture Yield from Urine Samples Among Patients with Suspected Urinary Tract Infection (*n* = 229).

Culture result	n	%
Growth present	138	60.26
No growth	91	39.74
Total	229	100.00

Among the 138 culture-positive samples, *Escherichia coli* was the predominant organism, accounting for 113 isolates, 81.88%. This was followed by *Klebsiella* spp. in 12, 8.70%, and *Pseudomonas* spp. in 9, 6.52%. *Citrobacter* spp., *Proteus* spp., and *Staphylococcus aureus* were uncommon, together accounting for fewer than 3% of culture-positive samples (*Table II*).

Table II
Distribution of Bacterial Isolates from Culture-Positive Urine Samples (*n* = 138).

Bacterial isolate	n	%
Escherichia coli	113	81.88
Klebsiella spp.	12	8.70
Pseudomonas spp.	9	6.52
Citrobacter spp.	2	1.45
Proteus spp.	1	0.72
Staphylococcus aureus	1	0.72
Total	138	100.00*

Percentages may not total exactly 100 because of rounding.

Among the culture-positive patients, 82, 59.42%, were male and 56, 40.58%, were female. Across age groups, the largest proportions of culture-positive patients were aged 20–39 years, 51, 36.96%, and 40–59 years, 49, 35.51%. Patients aged ≥60 years accounted for 24, 17.39%, while those aged 0–19 years represented 14, 10.14% of culture-positive cases (*Table III*).

Table III
Demographic Distribution Among Culture-Positive Patients (*n* = 138).

Characteristic	n	%
Sex		
Male	82	59.42
Female	56	40.58
Age group, years		
0–19	14	10.14
20–39	51	36.96
40–59	49	35.51
≥60	24	17.39
Total	138	100.00

Compared with culture-negative patients, substantially higher proportions of culture-positive patients reported burning during micturition, 56.52% versus 30.77%, increased urinary frequency, 66.67% versus 38.46%, and urgency, 61.59% versus 32.97%. Significant associations with culture positivity were observed for each of these three urinary symptoms, all $p < 0.001$. In contrast, lower abdominal pain occurred in 45.65% of culture-positive and 41.76% of culture-negative patients, with no significant association, $p = 0.561$. Similarly, fever was reported by 42.75% and 34.07%, respectively, without a statistically significant difference, $p = 0.188$ (*Table IV*).

Table IV
Clinical Symptoms and Signs According to Urine Culture Result Among Patients with Suspected Urinary Tract Infection (*n* = 229).

Clinical feature	Response	Culture positive, n = 138, n (%)	Culture negative, n = 91, n (%)	Total, N = 229, n (%)	p-value*
Burning sensation during micturition	Yes	78 (56.52)	28 (30.77)	106 (46.29)	<0.001
	No	60 (43.48)	63 (69.23)	123 (53.71)	
Increased frequency of micturition	Yes	92 (66.67)	35 (38.46)	127 (55.46)	<0.001
	No	46 (33.33)	56 (61.54)	102 (44.54)	
Urgency of micturition	Yes	85 (61.59)	30 (32.97)	115 (50.22)	<0.001
	No	53 (38.41)	61 (67.03)	114 (49.78)	
Lower abdominal pain	Yes	63 (45.65)	38 (41.76)	101 (44.10)	0.561
	No	75 (54.35)	53 (58.24)	128 (55.90)	
Fever	Yes	59 (42.75)	31 (34.07)	90 (39.30)	0.188
	No	79 (57.25)	60 (65.93)	139 (60.70)	

Values are presented as n (%). Percentages within the culture-positive and culture-negative groups are column percentages. P-values were calculated using Pearson's chi-square test.

Among culture-positive patients, 44.20% had a recorded history of antibiotic therapy compared with 30.77% among culture-negative patients, and this difference was statistically significant, $p = 0.041$. Likewise, inpatient status was more frequent among culture-positive than culture-negative patients, 59.42% versus 45.05%, with a significant association with culture positivity, $p = 0.033$. Among the 123 inpatients, a hospital stay of more than 7 days was recorded in 43.90% of culture-positive and 31.71% of culture-negative patients, although the difference was not statistically significant, $p = 0.193$ (*Table V*).

Table V
Antibiotic History and Hospitalization Characteristics According to Urine Culture Result (*n* = 229).

Variable	Category	Culture positive, n = 138, n (%)	Culture negative, n = 91, n (%)	Total, N = 229, n (%)	p-value*
History of antibiotic therapy	Yes	61 (44.20)	28 (30.77)	89 (38.86)	0.041
	No	77 (55.80)	63 (69.23)	140 (61.14)	
Patient setting	Inpatient	82 (59.42)	41 (45.05)	123 (53.71)	0.033
	Outpatient	56 (40.58)	50 (54.95)	106 (46.29)	
Duration of hospital stay†	≤7 days	46 (56.10)	28 (68.29)	74 (60.16)	0.193
	>7 days	36 (43.90)	13 (31.71)	49 (39.84)	

P-values were calculated using Pearson's chi-square test. †Duration-of-stay analysis was restricted to 123 inpatients, including 82 culture-positive and 41 culture-negative patients.

In univariable analysis, female patients had 1.89-fold higher odds of culture positivity than male patients, 95% CI 1.12–3.19, p = 0.017. Compared with patients aged 0–19 years, higher odds were observed among those aged 20–39 years, OR 2.45, 95% CI 1.19–5.04, and 40–59 years, OR 2.29, 95% CI 1.11–4.73. Among clinical symptoms, urgency showed the largest crude association, OR 3.26, 95% CI 1.87–5.68, followed by increased urinary frequency, OR 3.20, 95% CI 1.84–5.55, and burning during micturition, OR 2.93, 95% CI 1.67–5.11, with all three associations reaching p < 0.001. Higher odds of culture positivity were also observed among patients with a history of antibiotic therapy, OR 1.78, 95% CI 1.02–3.11, and among inpatients, OR 1.79, 95% CI 1.05–3.05. No significant crude associations were observed for lower abdominal pain or fever (*Table VI*).

Table VI
Univariable Association of Demographic and Clinical Factors with Culture-Positive Urine Culture (*n* = 229).

Category	Culture-positive n	Crude OR	95% CI	p-value
Sex				
Male	82	1.00, reference	1.12–3.19	0.017
Female	56	1.89		
Age group, years				
0–19	14	1.00, reference	---	---
20–39	51	2.45	1.19–5.04	0.015
40–59	49	2.29	1.11–4.73	0.025
≥60	24	0.52	0.22–1.23	0.137
Burning sensation during micturition				
No	60	1.00, reference	1.67–5.11	<0.001
Yes	78	2.93		
Increased frequency of micturition				
No	46	1.00, reference	1.84–5.55	<0.001
Yes	92	3.20		
Urgency of micturition				
No	53	1.00, reference	1.87–5.68	<0.001
Yes	85	3.26		
Lower abdominal pain				
No	75	1.00, reference	0.69–2.00	0.562
Yes	63	1.17		
Fever				
No	79	1.00, reference	0.83–2.50	0.189
Yes	59	1.45		
History of antibiotic therapy				
No	77	1.00, reference	1.02–3.11	0.042
Yes	61	1.78		
Patient setting				
Outpatient	56	1.00, reference	1.05–3.05	0.034
Inpatient	82	1.79		

OR, odds ratio; CI, confidence interval. Variables with p < 0.20 in the univariable analysis were considered for inclusion in the multivariable logistic regression model.

After adjustment for other variables in the model, urgency of micturition remained strongly associated with culture positivity, with approximately 2.83-fold higher odds, 95% CI 1.55–5.17, p = 0.001. Increased urinary frequency, aOR 2.70, 95% CI 1.48–4.92, p = 0.001, and burning during micturition, aOR 2.55, 95% CI 1.41–4.61, p = 0.002, also remained independently associated with culture positivity. Higher adjusted odds were additionally observed among female patients, aOR 1.83, 95% CI 1.05–3.19, p = 0.033, and among patients aged 20–39 years compared with those aged 0–19 years, aOR 2.31, 95% CI 1.08–4.94, p = 0.031. Associations for age 40–59 years and inpatient status were borderline at p = 0.050, while age ≥60 years, fever, and history of antibiotic therapy were not independently associated with culture positivity. Overall, the model demonstrated adequate calibration by the Hosmer-Lemeshow test, p = 0.375, explained approximately 24.1% of the variation according to the Nagelkerke R^2, and correctly classified 71.6% of patients (*Table VII*).

Table VII
Multivariable Logistic Regression Analysis of Factors Associated with Culture-Positive Urine Culture (n = 229).

Variable	Comparison	Adjusted OR	95% CI	p-value
Sex	Female vs male	1.83	1.05–3.19	0.033
Age group, years	20–39 vs 0–19	2.31	1.08–4.94	0.031
	40–59 vs 0–19	2.15	1.00–4.62	0.050
	≥60 vs 0–19	0.49	0.20–1.20	0.117
Burning sensation during micturition	Yes vs no	2.55	1.41–4.61	0.002
Increased frequency of micturition	Yes vs no	2.70	1.48–4.92	0.001
Urgency of micturition	Yes vs no	2.83	1.55–5.17	0.001
Fever	Yes vs no	1.34	0.76–2.36	0.312
History of antibiotic therapy	Yes vs no	1.65	0.92–2.96	0.092
Patient setting	Inpatient vs outpatient	1.72	1.00–2.96	0.050

OR, odds ratio; CI, confidence interval. Variables with $p < 0.20$ in the univariable analysis were entered into the multivariable model. Statistical significance was defined as $p < 0.05$. Hosmer-Lemeshow goodness-of-fit test: $\chi^2 = 8.62$, $df = 8$, $p = 0.375$; Nagelkerke $R^2 = 0.241$; overall classification accuracy = 71.6%.

DISCUSSION

Among patients with clinically suspected urinary tract infection in the present study, bacterial growth was identified in 138 of 229 urine samples, giving an overall culture positivity of 60.26%. A closely comparable culture yield of 59.2% was reported among symptomatic women in the study by Meckes et al [6]. Lower yields have been reported in South Asian hospital populations. Among adults with suspected UTI in Nepal, culture positivity of 41.69% was reported by Jwarchan et al., while significant bacterial growth was identified in 42.8% of hospitalized patients with clinically suspected UTI in Bangladesh by Dasgupta et al [7,8]. Considerably lower proportions have also been reported from large laboratory-based surveillance populations, including 15.8% in Nepal by Shakya et al [11]. Such differences are likely to reflect variation in study population, clinical selection, inpatient and outpatient composition, culture thresholds, and laboratory procedures; therefore, direct interpretation of these percentages as differences in disease prevalence would not be appropriate. Among the culture-positive samples, *Escherichia coli* was the predominant organism, accounting for 113 of 138 isolates, 81.88%. A nearly identical proportion was reported in the study by Jwarchan et al., in which *E. coli* constituted 81.08% of positive cultures [7]. Lower proportions were observed in other regional studies, including 61.6% in the Bangladeshi study by Dasgupta et al., 51.6% in the Dhaka study by Islam et al., and approximately 62% in the Nepalese study by Shakya et al [8,10,11]. In another tertiary-care study from Dhaka, *E. coli* represented 54.35% of all UTI-positive cases, including bacterial, fungal, and polymicrobial infections, as reported by Chowdhury et al [12]. Overall, the predominance of *E. coli* in the present study was consistent with regional evidence, although its proportion was toward the upper end of reported values. Clear associations were observed between culture positivity and the classical lower urinary tract symptoms of burning during micturition, increased urinary frequency, and urgency. After adjustment, burning during micturition remained associated with culture positivity, aOR 2.55, 95% CI 1.41–4.61. Support for this finding was observed in the study by Dune et al., in which dysuria, defined as pain or burning during urination, was significantly more frequent among culture-positive patients under both standard and enhanced quantitative culture definitions [13]. Similarly, greater dysuria symptom severity was independently associated with positive culture in the study by Meckes et al., aOR 1.53, 95% CI 1.10–2.12 [6]. Although the symptom definitions differed across studies, these findings consistently indicate that dysuria or burning is among the more informative clinical manifestations accompanying microbiologically confirmed UTI. Increased urinary frequency and urgency were also independently associated with culture positivity in the present study, with aORs of 2.70, 95% CI 1.48–4.92, and 2.83, 95% CI 1.55–5.17, respectively. More mixed findings have been reported elsewhere. In the study by Dune et al., frequency and urgency differed significantly between positive and negative groups when conventional urine culture was used, but these associations did not remain statistically significant when enhanced quantitative culture was applied [13]. A contrasting finding was reported by Meckes et al., where greater urinary-frequency symptom severity was inversely associated with culture positivity, aOR 0.59, 95% CI 0.40–0.91 [6]. Among culture-positive Pakistani women, dysuria and daytime frequency were commonly reported by Niaz et al., although those data were descriptive and did not establish independent associations with culture positivity [14]. Therefore, the strong associations observed for frequency and urgency in the present study appear to be population-specific rather than uniformly reproduced across clinical settings. Female sex remained independently associated with culture positivity, aOR 1.83, 95% CI 1.05–3.19. Similar directionality has been observed in Bangladesh. In the study by Islam et al., female sex remained independently associated with community-acquired UTI, aOR 1.39, 95% CI 1.17–1.66 [10]. More recently, female sex was also independently associated with significant bacteriuria among symptomatic patients in Ethiopia, aOR 4.21, 95% CI 1.43–8.29, in the study by Kebede et al [15]. However, no significant association between sex and culture positivity was identified in the large laboratory-based study by Shakya et al., indicating that the strength of this relationship may vary with the underlying patient population [11]. A significant adjusted association was also observed for patients aged 20–39 years compared with those aged 0–19 years, aOR 2.31, 95% CI 1.08–4.94. Available evidence regarding age has been heterogeneous. Higher culture positivity among adults than children was reported by Islam et al., but their age categories were not directly comparable with those used in the present study [10]. Conversely, increasing age was associated with culture positivity in the study by Meckes et al., while patients aged ≥60 years had higher prevalence of culture positivity than younger adults in the study by Shakya et al., aPR 1.6, 95% CI 1.4–1.7 [6,11]. The present age-specific association therefore differs from studies in which older age carried the greater culture burden. Neither lower abdominal pain nor fever was independently associated with culture positivity. Similar limitations in the discriminatory value of individual symptoms have been documented in other clinical populations. In the study by Meckes et al., abdominal pressure or pain did not clearly distinguish positive from negative cultures [6]. Considerable overlap in presenting urinary symptoms among bacterial UTI, sexually transmitted infections, and negative investigations was also demonstrated by Olaru et al [16]. These observations support the finding that not all symptoms conventionally attributed to UTI are equally informative for microbiological confirmation. A recorded history of antibiotic therapy showed a crude association with culture positivity but was no longer significant after adjustment, aOR 1.65, 95% CI 0.92–2.96. Because the

recorded exposure could not be characterized further in the present secondary analysis, this finding should be interpreted cautiously. Prior antimicrobial exposure was common among symptomatic patients with low culture yield in the study by Olaru et al., but a causal effect on culture negativity was not established [16]. Similarly, inpatient status showed a crude association in the present study but became borderline after adjustment, aOR 1.72, 95% CI 1.00–2.96, while duration of hospitalization was not significantly associated with culture positivity. Overall, the multivariable findings indicate that the strongest independent associations were observed for specific lower urinary tract symptoms, particularly urgency, increased frequency, and burning during micturition, together with female sex and the 20–39-year age group.

LIMITATIONS

As a single-center study using purposive sampling, the findings may have limited generalizability to other healthcare settings or populations. Because a cross-sectional secondary analysis was performed using available clinical variables, temporal or causal relationships could not be established, and residual confounding from unmeasured factors could not be excluded.

CONCLUSION

Among patients with clinically suspected UTI, bacterial growth was detected in 60.26% of urine cultures, with *Escherichia coli* accounting for 81.88% of positive cultures. After adjustment, urgency of micturition, increased urinary frequency, burning sensation during micturition, female sex, and age 20–39 years remained significantly associated with culture positivity. In contrast, fever, recorded history of antibiotic therapy, and inpatient status were not independently associated after adjustment, while lower abdominal pain showed no significant crude association. These findings indicate that selected lower urinary tract symptoms, particularly urgency, frequency, and burning during micturition, were more strongly associated with microbiologically positive urine cultures than several other commonly reported clinical features.

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CONFLICT OF INTEREST

None declared.

ETHICAL APPROVAL

The study was approved by the Institutional Ethics Committee.

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