Al-Kunooze Scientific Journal
e-ISSN: 2706-6223
P-ISSN: 2706-6231
https://www.asj.kunoozu.edu.iq/
2026, 12(3):1-18

Assessment of Knowledge of Urinary Tract Infections Among Male and Female Patients in Wasit Governorate, Iraq

Rasool Jarh Saad[1], Wasen Abdul-Ameer Ali Farid[2] , Abber Ghazie Azize[3]

[1]Southern Technical University/ College of Health and Medical Techniques/ Department of Community Health Techniques, Basrah/ Iraq.

[2]Southern Technical University/ College of Health and Medical Techniques, Basrah/ Iraq.

[3]Southern Technical University/ College of Health and Medical Techniques, Basrah/ Iraq

Correspondence E-mail: rasool.sead.c@fgs.stu.edu.iq

- Receive Date **06 March 2026** Revise Date **18 April 2026**
- Accept Date **19 April 2026** Publish Date **01 July 2026**

Doi: https://doi.org/10.36582/ksj.2026.169913.1033

Abstract

Urinary tract infections (UTIs) are inflammations of the urinary system that can affect both men and women, although they are more common in women, also referred to as urinary infections. Evaluate the level of knowledge regarding UTIs among male and female patients. A descriptive cross-sectional study conducted in two hospitals in Wasit Governorate, Iraq, by using non-random convenient sampling was conducted. It includes 350 participants. The study reveals a demographic composition of 66.9% female and 33.1% male participants. It was found that 76.3% of the participants have information about a UTI, with 60.3% demonstrating an understanding of UTI prevention. Additionally, 76.3% of participants are aware of the signs and symptoms associated with UTIs. This study shows that half of the individuals have a fair knowledge score about UTIs. Whereas it indicates that knowledge levels are not influenced by gender. Additionally, a history of UTIs and SES among participants emerged as significant variables impacting the overall knowledge score.

Keywords: Urinary Tract Infections; Knowledge Level; Health Awareness; Socioeconomic Status; Cross-Sectional Study.

Published by: Al-Kunooze University, Basrah, Iraq

Introduction:

Urinary tract infections (UTIs) represent a significant public health concern affecting individuals of all age groups, are among the most common bacterial infections worldwide, and [1]. Globally, UTIs account for millions of healthcare visits annually and impose a considerable burden on health systems and communities [2;3]. The incidence of UTIs among females is generally higher due to anatomical and physiological factors, and varies by age and sex. However, males are also affected, particularly in older age groups [3].

Urinary tract infections (UTIs) can occur anywhere along the urinary system, including the ureters, urethra, bladder, and kidneys [4]. It typically presents with pain or burning, changes in urine color or appearance (such as cloudy, dark, or bloody urine), fever during urination, and lower back or lower abdominal pain (flank or suprapubic pain) when the infection affects the kidneys or bladder [5]. Poor hygiene, pregnancy, recent sexual activity, diabetes (which weakens the immune response and promotes bacterial growth), incomplete bladder emptying, and delaying urination are all risk factors for UTIs because they all encourage bacterial colonization and ascendancy. These factors facilitate bacterial colonization and ascendancy within the urinary tract [6]. While clinical examination (urinalysis, medical history, and, where necessary, culture) guides appropriate treatment, rapid diagnosis of these symptoms and attention to modifiable risk factors can reduce complications such as pyelonephritis [7].

Klebsiella species and *Escherichia coli* (*E. coli*) are the primary causes of UTIs, which are prevalent in Arab nations such as Iraq [8]. Recent research (2021–2025) demonstrates an increase in Extended-Spectrum Beta-Lactamases. It is enzymes produced producing strains and antibiotic resistance by certain gram-negative bacteria, mainly *E. coli* and *Klebsiella species* [9]. According to the World Health Organization (WHO) data, the Eastern Mediterranean region and Iraq face some of the highest resistance rates globally. To manage this growing problem, antibiotic stewardship and surveillance need to be improved [10].

Preventive measures, such as emptying the bladder regularly, maintaining proper genital hygiene, drinking sufficient water, and urinating after sexual activity, play a crucial role in reducing the risk of infection [11; 12]. However, the effectiveness of these preventive strategies depends heavily on individual knowledge. Sufficient knowledge about UTIs is essential for effective prevention, early diagnosis, and timely medical intervention. Individuals with sufficient awareness are more likely to adopt preventive behaviors [13]. Furthermore, understanding risk factors contributes to reducing the frequency of infection and complications [14]. Evidence from previous studies indicates that targeted educational interventions significantly improve health practices and patients' knowledge [15].

Despite the high prevalence of UTIs, there is limited local data in Iraq assessing patients' level of awareness. In particular, there is a lack of studies comparing knowledge levels between male and female

patients in Wasit Governorate. Therefore, this study aims to assess the level of knowledge regarding UTIs among male and female patients in Wasit Governorate, Iraq.

Materials and Methods

Study Period:

September 1, 2025, was the start date of this investigation, and it ended on January 20, 2026.

Study Design:

It is a descriptive (cross-sectional) study designed to evaluate UTIs knowledge among males and females at Al-Zahraa Teaching Hospital in Wasit Governorate, Iraq.

Population source:

The sample population comprises adults, both male and female (aged 18 years and above), who attend public and government hospitals in Al-Kut City, Wasit Governorate, Iraq.

Inclusion Criteria:

- Participants (Both males and females) aged 18 years and above who attended the urology outpatient clinics.
- Participation was based on informed consent, and only those able to understand and complete the questionnaire in Arabic were included.

Exclusion Criteria:

Health care professionals or medical students. Patients who declined participation or provided incomplete questionnaires.

Sample size and Sampling techniques

Based on population size, "the Daniel and Cross formula" for calculating sample size was used to account for the sample size. As a result, the minimal sample size is 300, while we have taken 350 to boost the study, as shown below:[16].

$$n = \frac{Z^2\, P\, (1 - P)}{d^2}$$

Where:

n = sample size (=350)

Z = Z-score corresponding to the degree of assurance (for a 95% confidence level, Z ≈ 1.96)

P =Expected prevalence (according to the previous study in Baghdad, Iraq [17], which found that the prevalence of UTIs was found to be 26.6%, with 62.9% among females and 37.1% among males.

d = Precision (*d*= 0.05) (The greatest permitted discrepancy between the proportions of the population and the sample)

Variables of the study

Dependent variables:

The dependent variables were the levels of knowledge regarding UTIs, categorized into

poor, fair, and good, for knowledge based on percentage scores.

Independent variables:

The independent variables included age groups, gender, marital status, socio-economic status (SES), and history of UTIs.

Sample techniques

The study was conducted in two major hospitals, Al-Zahraa Teaching Hospital and Al-Karama Teaching Hospital. A convenience non-probability sample of 350 patients was selected from both major hospitals. The hospitals were chosen based on their geographic location within the governorate. The sample from each hospital was proportionally allocated based on the number of UTIs patients in each location.

Data Collection Method:

The data was obtained through in-person interviews after the translation of the survey with closed-ended questions into Arabic. Participants were informed of the study's objectives and assured that the data would remain confidential. During the interview, the researcher filled out the structured questionnaire.

Questionnaire

The questionnaire was designed based on a comprehensive review of relevant literature. It includes two sections; the first section includes socio-demographic and clinical data comprising 11 items. The second section assesses the knowledge of patients regarding UTIs, comprising 11 items.

The questionnaire validity and reliability

The results indicated that the questionnaire demonstrated a good level of reliability, with an overall Cronbach's alpha of 0.82. The questionnaire's content validity is determined by a committee of experts from different specializations. All expert comments were taken into account for slight modifications.

Data scoring

In this study, SES was assessed using a structured scoring system based on the WHO guidelines. The SES score was calculated from five domains: educational level (0–5), occupation (0–2), income level (0–2), house ownership (0–2), and car ownership (0–1), with a total possible score of 12. Participants were classified into three categories according to their total score: "low" (1–4), "medium" (5–8), and "high" (9–12).

Knowledge regarding UTIs was assessed using 11 items. Each correct response was scored as (1), and each incorrect response was scored as (0), giving a maximum possible score of 11. The overall knowledge score was calculated using the formula (observed score / highest score × 100). Knowledge levels were categorized as "poor" (<50%), "fair" (50%–<75%), and "good" (≥75%) according to the classification adopted [18].

Statistical Analyses:

Each questionnaire item's data was transferred to code sheets, entered into a personal computer, and analyzed using the statistics program SPSS-27. The data was shown using basic statistics such as range, standard deviation, average, frequency, and percent. The significance of percentage distinctions in the qualitative data was determined using either the Fisher Exact test or the Chi-square test (X2-test). When the P-value was equal to or less than 0.05, it was deemed statistically significant [19].

Ethical Considerations:

Official approval to conduct the study was obtained from the College of Health and Medical Techniques in Basra, as well as from the Wasit Health Directorate (Human Development and Training Center) to visit the selected hospitals in Al-Kut City. The study was carried out in Al-Zahraa Teaching Hospital and Al-Karama Teaching Hospital after securing the required administrative permissions. Participants were interviewed after obtaining their informed consent, both verbally and through confirmation of their willingness to participate.

Study limitations

The study was limited by its cross-sectional design, which does not allow for establishing causation. The sample was limited to two hospitals in Al-Kut, which may limit the generalizability of the findings. Furthermore, the data relied on self-reporting (convenience sampling), which may have introduced recall or response bias.

Results

Socio-demographic variables and anthropometric measures for participants:

In **Table 1**, the results indicated the distribution of patients according to sociodemographic characteristics of the study population. It indicates that most patients belonging to ages 26-33 years (26.9%), followed by those aged 18-25 years (20.0%), 42-49 years (16.6%), 34-41 years (14.3%), 50-57 years (13.4%), 58-65 years (4.9%), and 66-74 years (4.0%). The mean age was 37.9±13.7 (with range, 18-74) years. The gender proportion is 66.9% female to 33.1% male. Regarding marital status, 44.9% of patients were married, 40.0% of patients were single, while low percentages of patients were divorced (8.0%) and widowed (7.1%). More than half of patients have medium SES (52.9%), followed by high SES (26.9%), and low SES (20.3%). Finally, 57.1% of participants had a history of UTIs.

Table (1). The distribution of patients according to sociodemographic characteristics of the study population.

Socio-demographic Characteristics		Freq.	%
Age groups	18-25 years	70	20.0
	26-33 years	94	**26.9**
	34-41 years	50	14.3
	42-49 years	58	16.6
	50-57 years	47	13.4
	58-65 years	17	4.9
	66-74 years	14	4.0
	Mean± SD (Range)	**37.9±13.7 (18-74)**	
Gender	Male	116	33.1
	Female	234	**66.9**
Marital status	Single	140	40.0
	Married	157	**44.9**
	Divorced	28	8.0
	Widowed	25	7.1
SES	Low (1-4 scores)	71	20.3
	Medium (5-8 scores)	185	**52.9**
	High (9-12 scores)	94	26.9
	Mean± SD (Range)	**6.8±2.4 (1-12)**	
History of UTIs	Yes	200	**57.1**
	No	150	42.9

The distribution of patients' responses according to their knowledge about UTIs

In Table 2, the current results showed the distribution of patients' responses according to their knowledge about UTIs. It found that the highest percentages (76.3%, 73.4%, 97.7%, 76.3%, 77.7%, 68.3%, 69.1%, and 68.6%) of the patients were acknowledgeable about "information about a UTIs", "bacteria are the most common cause of UTIs", "UTIs is more common in females than in males", and "UTIs are more common in elderly people", respectively. While the highest percentages (70.3% and 60.3%) of the patients were unaware of "UTIs are a contagious disease", and "the prevention of UTIs", respectively.

Table (2). The distribution of patients' responses according to their knowledge about UTIs

Knowledge Questions	Yes		No	
	Freq.	%	Freq.	%
1. Do you have any information about a UTIs?	267	**76.3**	83	23.7
2. Are bacteria the most common cause of UTIs?	257	**73.4**	93	26.6
3. Do you think UTIs is a contagious disease?	104	29.7	246	**70.3**
4. Which of the following is/are the risk factors of UTIs?				
• Poor personal hygiene	7	2.0	343	98.0
• Sexual activity	4	1.1	346	98.9
• Pregnancy	0	.0	350	100.0
• Diabetes	0	.0	350	100.0
• Delaying urination	0	.0	350	100.0
• All above	342	**97.7**	8	2.3
5. Which of the following is/are the signs and symptoms of UTIs?				
• The pain during urination	28	8.0	322	92.0
• Fever	8	2.3	342	97.7
• Frequent urination	8	2.3	342	97.7
• Change in urine color/appearance	22	6.3	328	93.7
• Is back or lower abdominal pain a symptom of UTIs?	17	4.9	333	95.1
• All Above	267	**76.3**	83	23.7
6. Which of the following is/are the complications of UTIs?				
• Recurrent UTIs lead to kidney damage	0	.0	350	100.0
• Bladder dysfunction	0	.0	350	100.0
• Chronic kidney disease (CKD)	8	2.3	342	97.7
• All above	0	.0	350	**100.0**
7. Which of the following is the main diagnosis of UTIs?				
• Urinalysis	272	**77.7**	78	22.3
• General stool examination	2	.6	348	99.4
• All above	76	21.7	274	78.3
8. Which of the following is/are the main management of UTIs?				
• Antibiotics	239	**68.3**	111	31.7
• Antiviral	2	.6	348	99.4
• Analgesic	6	1.7	344	98.3
• All Above	102	29.1	248	70.9
9. Which of the following is/ the prevention of UTIs?				
• Drinking large amounts of water	278	79.4	72	20.6
• Urinating after sexual intercourse	323	92.3	27	7.7
• Cleaning the genital area from front to back	326	93.1	24	6.9
• All above	139	39.7	211	**60.3**
10. Do you think UTIs is more common in females than in males?	242	**69.1**	108	30.9
11. Do you think UTIs are more common in elderly people?	240	**68.6**	110	31.4

The total knowledge score of the participants

Figure 1 illustrates the total knowledge scores of the participants. The results found that (173) 49.4% of patients have a fair knowledge score, followed by (124) 35.4% of the participants have a good knowledge score, and only (53) 15.1% of patients have a poor knowledge score.

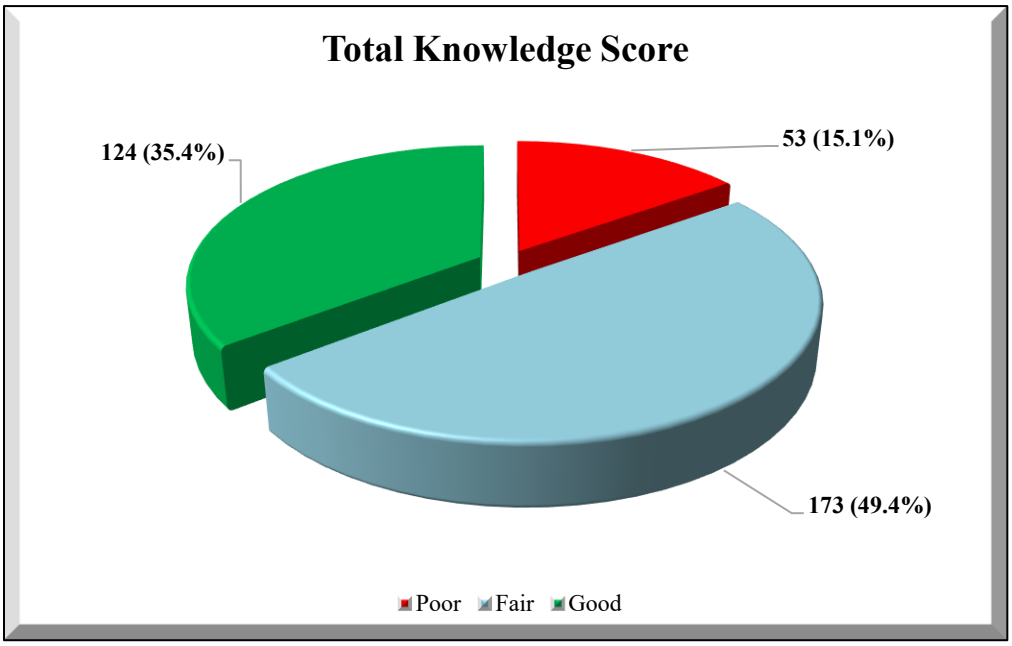

Figure (1): The pie chart illustrates the total knowledge score of the

Relationship between total knowledge score and socio-demographic characteristics:

Table 3 shows the relationship between total knowledge score and the socio-demographic characteristics of patients. The results revealed that there was a significant relationship between socio-demographic characteristics (such as SES and history of UTIs) and the total knowledge score (P. value <0.05). These results explain that those with high SES and those who had no history of UTIs have good assessment scores for knowledge about UTIs. While the results revealed that there was no significant relationship between other variables (Age groups, Gender, Marital status) and the total knowledge score (P. value >0.05).

Table (3). The relationship between the total knowledge score and the socio-demographic characteristics of patients

		Total Knowledge Score						P-value
		Poor		Fair		Good		
		Freq.	%	Freq.	%	Freq.	%	
Age groups	18-25 years	13	18.6	29	41.4	28	40.0	0.148
	26-33 years	11	11.7	51	54.3	32	34.0	
	34-41 years	11	22.0	21	42.0	18	36.0	
	42-49 years	6	10.3	34	58.6	18	31.0	
	50-57 years	3	6.4	24	51.1	20	42.6	
	58-65 years	5	29.4	6	35.3	6	35.3	
	66-74 years	4	28.6	8	57.1	2	14.3	
Gender	Male	13	11.2	67	57.8	36	31.0	0.076
	Female	40	17.1	106	45.3	88	37.6	
Marital status	Single	20	14.3	69	49.3	51	36.4	0.462
	Married	22	14.0	75	47.8	60	38.2	
	Divorced	6	21.4	13	46.4	9	32.1	
	Widowed	5	20.0	16	64.0	4	16.0	
SES	Low (1-4 scores)	25	35.2	26	36.6	20	28.2	**<0.001**
	Medium (5-8 scores)	23	12.4	104	56.2	58	31.4	
	High (9-12 scores)	5	5.3	43	45.7	46	**48.9**	
History of UTIs	Yes	33	16.5	109	54.5	58	29.0	**0.015**
	No	20	13.3	64	42.7	66	**44.0**	

Discussion

In **Table 1**, the results show that the majority of participants are aged 26 to 33 years (26.9%). This trend may be attributed to younger individuals being more willing to participate in surveys, as they tend to be more cooperative and responsive. Our findings align with a study conducted in Saudi Arabia, which revealed that the largest proportion of participants fell within the 20 to 40 age range with a mean age of 36.2 ± 10.5 years [20]. The mean age in our study was 37.9 ± 13.7, with an age range of 18 to 74 years. This result closely mirrors a similar study in the USA, which analyzed 10,835 patients and reported a mean age of approximately 38.1 years [21]. While sex distribution as 66.9% of participants are female. This disparity may be due to the fact that females are generally more likely to seek medical consultation and more health-conscious when experiencing symptoms. Notably, these findings are consistent with a study conducted in Jordan, which reported a female participation rate of 68.4% [22]. The marital status of the participants in our study indicates that the highest percentage of patients were married (44.9%). The explanation for these results is likely attributed to the fact that sexual activity, which is more common among married individuals, is a known risk factor for the transmission of urinary tract pathogens and the occurrence of UTIs. Our findings are consistent with a recent study conducted in the United Arab Emirates. This study reported that married individuals accounted for the majority of UTIs cases (48.2%) [23]. Our study using indirect questions, SES was evaluated following WHO recommendations [24]. The majority of participants (52.9%) in our study stated that their SES was medium (5-8 score), since many members of the community would rather not be asked directly about their SES and monthly income. Our study's results are consistent with another study conducted in Jordan. This found that a high percentage were in the moderate state for SES [25]. In terms of UTIs history, our research showed that the majority of participants (57.1%) had a documented history of UTIs. This may indicate the extent of sewage contamination within Wasit Governorate.. Our findings are consistent with a previous study in Baghdad, which reported 58.5% of patients had a history of UTIs [26]. Our results also largely agree with a large-scale international study conducted in France. Which found that 59.2% of patients had a history of UTIs [27].

In **Table 2**, the results indicate that a significant majority of the participants, 76.3%, answered "Yes" to having information about UTIs. Our results indicate that UTIs are a common health condition in the community, which contributes to their high clinical prevalence and frequent mention in family and social settings as a common ailment. Our findings are consistent with a recent study in Saudi Arabia, which found that 78.5% of the general population had a good basic knowledge about UTIs. This convergence is likely due to similar levels of health awareness and high incidence of UTIs across the Middle East [28]. The results of our study indicate that a significant majority of the participants, 73.4%, answered "Yes" to Bacteria as a major cause of UTIs. This reflects a good level of basic health awareness, which attributes to the fact that most patients in our community receive

direct explanations from healthcare providers about the "bacterial" nature of their illness during clinical visits. Our findings are consistent with a study in Egypt, where 70% of respondents identified bacteria as the main causative agent [29]. Our findings suggest that participants are aware that UTIs are primarily caused by internal factors rather than being transmitted through social or casual contact. Our outcomes are in line with a study conducted in Jordan, involving 420 participants, which found that 68.2% of the sample correctly classified UTIs as non-infectious [30]. In our study of risk factors associated with UTIs, the vast majority of participants (97.7%) selected the "all of the above" option, which included factors such as poor hygiene and pregnancy. However, it is striking that 0% of them did not identify diabetes as an individual risk factor. Our findings suggest a clear indication of "superficial knowledge," where participants are aware of a general set of risk factors. Our results show a significant difference compared to a study in Italy. This study reported 58% of participants correctly identified diabetes as a major risk factor for UTIs [31]. This discrepancy is attributed to the effectiveness of patient-centered European health education programs, where diabetic patients receive regular education about their increased susceptibility to UTIs as part of standard care. In our study of signs and symptoms of UTIs, the majority of participants (76.3%) selected the "all of the above" option regarding their symptoms. Our outcomes explain this finding as reflecting the actual clinical experience of patients; most UTIs are not characterized by a single isolated symptom, but rather by a combination of symptoms. This leads participants to consider the infection as a complete "symptom cluster," finding it more accurate to select all symptoms together since they typically present as a common clinical presentation. Our findings are consistent with a study in Jordan. This study found that 74.8% of the sample who selected "all of the above" correctly identified the main symptoms of UTIs (which include: the pain during urination, fever, frequent urination, change in urine color/ appearance, and back or lower abdominal pain as symptoms of UTIs) [32]. Regarding complications of UTIs, the largest proportion of participants in our study (100.0%) answered "No", although "all of the above" was the correct answer. Our findings indicate a significant lack of health awareness among participants. Although they recognized the traditional connection between UTIs and kidney failure, they were not informed about other serious, life-threatening complications. Our findings are consistent with a Saudi Arabian study. This study reported 75% of the sample, neglecting other systemic complications, and focused solely on kidney damage [33]. Regarding the main diagnosis of UTIs, the majority of participants in our study (77.7%) specifically identified urinalysis as the primary diagnostic method. Our results reflect a high level of diagnostic health awareness among the participants. Our findings are in line with a study conducted in Egypt, which reported that 79% of the sample correctly focused on urinalysis-based tests as the gold standard, indicating a solid understanding of clinical diagnostic pathways [34]. Regarding the main management of UTIs, which includes the largest proportion of participants in our

study (68.3%), correctly identified "Antibiotics" as the primary management method. Our findings suggest that the participants demonstrated the ability to accurately identify the specific treatment for bacterial infections, correctly recognizing that "Antivirals" are irrelevant to UTI management and that "Analgesics" are merely supportive rather than curative. Our findings are consistent with a study in Egypt, which reported that 70.5% of the sample correctly identified antibiotics as the only definitive treatment for UTIs [35]. Regarding preventive measures for UTIs, only a small number of participants (39.7%) in our study identified "all of the above" as the best preventive strategy. Our results suggest a clear indication of fragmented health awareness; while participants possess excellent knowledge of specific individual preventive habits, they lack an understanding of the importance of a comprehensive, multi-faceted approach to prevention. Our findings are consistent with a study conducted in Jordan with 542 participants. Which reported that despite participants' good knowledge of individual preventive measures, only 41.2% of the sample chose the comprehensive all above option [32]. The present study found that the largest proportion of participants (69.1%) correctly identified that "UTIs are more common in females than in males". This result is a reflection of clinical exposure of the patients in our study; being part of a patient population, many participants have likely observed the higher frequency of these infections among female relatives or fellow patients in clinical settings. This finding is in close alignment with a study conducted in Iraq (Baghdad). The study found that 70.2% of participants agreed that women are the most vulnerable group [36]. This high level of agreement is attributed to the shared clinical environment in Iraq and the fact that most educational efforts in local hospitals prioritize women's urological health. The present study found that the largest proportion of participants (68.6%) correctly identified that "UTIs are more common among the elderly". This result is a reflection of the participants' awareness of the physiological and immunological changes associated with aging. Scientifically, due to a combination of factors, including immunosenescence (the gradual deterioration of the immune system), the elderly are more susceptible to UTIs. This finding is in close alignment with a study conducted in Saudi Arabia. The study found that 72% of participants agreed that the elderly are at a significantly higher risk [37].

In **Figure 3**, the results show that the majority of participants (49.4%) had an average level of knowledge. This may be attributed to the fact that sewage infections are a common health problem. Our findings are consistent with a study conducted in Sudan, where the majority of patients (52.4%) were found to have an average level of knowledge regarding UTIs [38]. On the other hand, our results contrast with research conducted on 750 participants in South Korea, where many participants were found to have sufficient and high levels of knowledge about urinary tract infections and their treatment [39]. This may be attributed to varying levels of health awareness and the intensity of public health education across communities.

Table 3, findings indicate that participants with higher SES demonstrated significantly better knowledge regarding UTIs (48.9% of good scores). This can be interpreted as higher SES often have higher educational attainment lead to improved health literacy. Our results are consistent with a study conducted in Iraq (Hillah/Babylon), which found a statistically significant positive correlation between higher SES and health awareness of chronic and infectious diseases ($p < 0.001$) [40]. In contrast, our findings do not align with a study in India, which included 550 participants. That study found that SES was not a significant predictor of UTIs knowledge, as public health initiatives in that region provided equal educational outreach to all social classes [41].Regarding the history of UTIs, our outcome found a statistically significant relationship between previous infection and overall knowledge level ($P = 0.015$). Interestingly, the results show that participants with no history of UTIs scored higher on the good knowledge scale (44.0%). Our findings suggest that this reflects a proactive approach to seeking healthcare among individuals without UTIs. Our findings are in line with a study conducted in Jordan, which observed that individuals who had never experienced a UTIs often demonstrated better theoretical knowledge about the infection. [42]. On the other hand, our study's findings differ from a study conducted in Saudi Arabia, which sampled 408 participants. That study found that participants with a history of recurrent UTIs demonstrated significantly higher knowledge levels than those without a history of infection [43]. This discrepancy is attributed to the systematic patient education programs in Saudi primary healthcare centers.

Conclusions: This study shows that half of the individuals have a fair knowledge score about UTIs. Whereas awareness of the risk factors associated with UTIs was high, awareness of the potential complications was low. This study demonstrated that knowledge levels are not influenced by gender. Still, impacted by SES and a history of UTIs.

Recommendations

Health education programs should be directed toward lower-income and less-educated groups and women to promote preventive behaviors against infection, reduce the frequency of UTIs, and reduce antibiotic resistance in the community.

Acknowledgments:

We express our gratitude to all study participants for their steadfast participation during the trial, especially the staff of the Al-KutCenter hospitals.

Funding: None.

Conflict of interest statement: No conflict of interest is declared.

References:

[1]Long D, Mao C, Liu Y, Zhou T, Xu Y, Zhu Y. Global, regional, and national burden of intestinal obstruction from 1990 to 2019: an analysis from the Global Burden of Disease Study 2019. Int J Colorectal Dis. 2023;38(1):755–63. https://doi.org/10.1007/s00384-023-04522-6

[2]Shrestha BK, Tumbahangphe M, Shakya J, Chauhan S. Uropathogenic *Escherichia coli* in urinary tract infections: A review on epidemiology, pathogenesis, clinical manifestation, diagnosis, treatments and prevention. Nov Res Microbiol J. 2022;6(4):1614–34. https://doi.org/10.21608/nrmj.2022.251024

[3]Chen Z, Wang J, Liu K, Gong J, Sun L, Wu Z, et al. NTIRE 2025 Challenge on Real-World Face Restoration: Methods and Results. In: IEEE Computer Society Conference on Computer Vision and Pattern Recognition Workshops. 2025. p. 1527–38. https://doi.org/10.1109/CVPRW67362.2025.00142

[4]Franjić S. Urinary Tract Infections Can Occur in Any Part of the Urinary Tract. Adv J Urol Nephrol. 2023;5(2):14–9. https://doi.org/10.33140/ajun.05.02.01

[5]Scherberich JE, Fünfstück R, Naber KG. Urinary tract infections in patients with renal insufficiency and dialysis - epidemiology, pathogenesis, clinical symptoms, diagnosis and treatment. GMS Infect Dis [Internet]. 2021;9:Doc07. Available from: http://www.ncbi.nlm.nih.gov/pubmed/35106269%0Ahttp://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=PMC8777485.

[6]Giamarellou H. Uncomplicated urinary tract infections. In: Nephrology Dialysis Transplantation. StatPearls Publishing; 2001. p. 129–3. https://doi.org/10.1093/ndt/16.suppl_6.129

[7]Hudson C, Mortimore G. The diagnosis and management of a patient with acute pyelonephritis. Br J Nurs. 2020;29(3):144–50. https://doi.org/10.12968/bjon.2020.29.3.144

[8]Al-Khfaji ZA, Sagban SH, Al-Musawi AF. Prevalence of Drug-Resistant Strains of *Escherichia coli* and Klebsiella pneumoniae Isolated from Women with Urinary Tract Infections in Karbala City, Iraq. Egypt J Bot. 2023;63(1):295–303. https://doi.org/10.21608/ejbo.2022.155164.2089

[9]Mai HTT, Espinoza JL. The Impact of COVID-19 Pandemic on ESBL-Producing Enterobacterales Infections: A Scoping Review. Antibiotics. 2023;12(6):1064. https://doi.org/10.3390/antibiotics12061064

[10] Zeyad M, Saudi L, Maraqa B, Musmar B, Nazzal Z. Prevalence of prediabetes and associated risk factors in the Eastern Mediterranean Region: a systematic review. BMC Public Health. 2025;25(1):1382. https://doi.org/10.1186/s12889-025-22598-3

[11] Lean K, Nawaz RF, Jawad S, Vincent C. Reducing urinary tract infections in care homes by improving hydration. BMJ Open Qual. 2019;8(3). https://doi.org/10.1136/bmjoq-2018-000563

[12] Saad SM, Bahadori R, Bhovar C, Zhang H. Industry 4.0 and Lean Manufacturing – a systematic review of the state-of-the-art literature and key recommendations for future research. Int J Lean Six Sigma.

2024;15(5):997–1024. https://doi.org/10.1108/IJLSS-02-2022-0021

[13] Nouh Ibrahim H, salah Abd elgawad M, Saad Mahmoud Shoukhbs N, Saeed Mohammed Abd Elaziz M, saad Ali Abu Elbaka S. Knowledge and practices of female nursing students regarding the preventive measures of vaginal and urinary tract infections. Egypt J Heal Care. 2025;16(2):846–64. https://doi.org/10.21608/ejhc.2025.435530

[14] Ferdous S, Islam KMS, Barai L, Mitu MZA, Rahman T, Uddin MJ. Antimicrobial Susceptibility Pattern of Community Isolates of Urinary Tract Infection in Bangladesh. Cent Med Coll J. 2024;8(1):38–46.https://doi.org/10.3329/cemecj.v8i1.78143

[15] Singh P, Ahmed MN, Thakur AK, Srivastava AK, Puraswani M, Das BC, et al. Epidemiological and antimicrobial resistance profile of catheter-associated and non-catheter urinary tract infections in trauma patients (2017–2024). BMC Infect Dis. 2025;25(1):1810.https://doi.org/10.1186/s12879-025-12028-5

[16] Marriott FHC, Daniel WW. Biostatistics: A Foundation for Analysis in the Health Sciences. 11th editi. Vol. 40, Biometrics. Georgia: Wiley; 1984. 281 p. https://doi.org/10.2307/2530782

[17] Al-Gasha'a FAS, Al-Baker SM, Obiad JM, Alrobiai FA. Prevalence of urinary tract infections and associated risk factors among patients attending medical city hospital in Baghdad City, Iraq. Rev Bras Gest e Desenvolv Reg. 2020;16(2):77–84. https://doi.org/10.3844/ajidsp.2020.77.84

[18] Othman AA, Al-Maamar AF, Al-Manmi DAMA, Liesenberg V, Hasan SE, Obaid AK, et al. GIS-Based modeling for selection of dam sites in the Kurdistan Region, Iraq. ISPRS Int J Geo-Information. 2020;9(4):244. https://doi.org/10.3390/ijgi9040244

[19] Daniel J, James O, Brian A, Kenneth A, Christopher D, Thomas D, et al. Redefine Statistical Significance. Nat Hum Behav. 2018;2(1):6–10. https://doi.org/10.1038/s41562-017-0189-z

[20] Alhhazmi AA, Alhazmi RA, Alahmadi ES, Almuallim WM, Aljurfi ZI, Alturkostani MA. Prevalence and Resistance Patterns of Urinary Tract Infection in Al-Madinah Al-Munawarah, Saudi Arabia: A Retrospective Study. Discov Med. 2024;36(183):853. https://doi.org/10.24976/discov.med.202436183.80

[21] Medina M, Castillo-Pino E. An introduction to the epidemiology and burden of urinary tract infections. Ther Adv Urol. 2019; 11: 1756287219832172. https://doi.org/10.1177/1756287219832172

[22] Moghnia OH, Al Otaibi HS, Al Haqqan AM, Sokhn ES, Pathan SS, Abdulaziz NE, et al. Prevalence of Urinary Tract Infections and Antibiotic Susceptibility Patterns of Uropathogens among Neonates in Maternity Hospital, Kuwait: A Six-Year Retrospective Study. Med

Princ Pract. 2025;34(3):250–61. https://doi.org/10.1159/000543368

[23]H. O. Al-Shamsi et al., "Urology in the UAE," in Healthcare in the United Arab Emirates, Springer, 2025, pp. 521–543. https://doi.org/10.1007/978-981-96-0523-1_34

[24] Sacre A, Bambra C, Wildman JM, Thomson K, Bennett N, Sowden S, et al. Socioeconomic inequalities in vaccine uptake: A global umbrella review. PLoS One. 2023;18(12 December):e0294688, https://doi.org/10.1371/journal.pone.0294688

[25]Gebretensaie Y, Atnafu A, Girma S, Alemu Y, Desta K. Prevalence of Bacterial Urinary Tract Infection, Associated Risk Factors, and Antimicrobial Resistance Pattern in Addis Ababa, Ethiopia: A Cross-Sectional Study. Infect Drug Resist. 2023;16:3041–50. https://doi.org/10.2147/IDR.S402279

[26] Hussain AF, Hashim HR, Mohamed TA, Abdel-Azeem AM. An annotated bibliography of medical mycology in Iraq: 1962-2021. Microb Biosyst. 2021;6(1):11–31., https://doi.org/https://doi.org/10.21608/MB.2021.90064.1035

[27] de Lafforest S, Magnier A, Vallée M, Bey E, Le Goux C, Saint F, et al. FUrTIHF: French urinary tract infections in healthcare facilities – five-year historic cohort (2014–2018). J Hosp Infect. 2021;116:29–36. https://doi.org/10.1016/j.jhin.2021.04.035

[28] Zewdie A, Gebremariam T, Asfaw SN, Alemwork S, Bahir D. Knowledge and practice of nurses towards preventing Catheter-related Urinary Tract Infection and its associated factors at the governmental referral hospitals of West Oromia, Ethiopia, 2022. A facility-based cross-sectional study design. Res Artic [Internet]. 2023;(16):1–23. Available from: https://doi.org/10.21203/rs.3.rs-2534151/v1

[29] Abd-Elwahab B, Ibrahim, H, Gouda, Z, Hussein H. Effect of Education Nursing Program on Preventive Practices of Urinary Tract Infection among Community-Dwelling Older Adults. Alexandria Sci Nurs J. 2021;23(1):40–62., https://doi.org/10.21608/asalexu.2021.206053

[30] Al Obeisat SM, Oleimat BA, Alnuaimi K, Hani SB, AbuJilban S, Nashwan AJ. Syrian refugees Women's urinary tract infection knowledge, attitudes, and practices in Al-Mafraq Governorate: A Cross-Sectional study. Int J Africa Nurs Sci. 2024;20:100707 https://doi.org/10.1016/j.ijans.2024.100707

[31] Rossignol L, Maugat S, Blake A, Vaux S, Heym B, Le Strat Y, et al. Risk factors for resistance in urinary tract infections in women in general practice: A cross-sectional survey. J Infect. 2015;71(3):302–11, https://doi.org/10.1016/j.jinf.2015.05.012

[32] Bakleezi A, Taybeh EO, Binodeh A, Alsharif AA, Alhamed M, Naser AY.

Prevalence, risky behaviors, and antimicrobial resistance of urinary tract infections in pregnant women: A study in Jordan. Med (United States). 2025;104(17):e41986, https://doi.org/10.1097/MD.0000000000041986

[33] Bawazir A, Fayoumi M, Alharbi A, Alakeel A, Alskait B, Alsanawi A, et al. The awareness of chronic kidney disease in non-medical female university students: A cross-sectional in Riyadh, Saudi Arabia. PLoS One. 2025;20(5 May):e0324634, https://doi.org/10.1371/journal.pone.0324634

[34] Salama HS, Shaaban MT, Dawood AS, Soliman AM, Shaheen MN. Studies on Candida albicans causing vaginal and urinary tract inflammation: Prevalence, antifungal resistance, and natural product susceptibility. Microb Biosyst. 2024;9(2):189–94., https://doi.org/10.21608/mb.2024.325202.1185

[35] Moustafa B, Soliman NA, Badr A, et al. Egyptian paediatric kidney transplantation pre-transplant guidance highlights on donor and recipient assessment (R. N. 364). Egypt Pediatr Assoc Gaz. 2024;72(1):67. https://doi.org/10.1186/s43054-024-00299-7

[36] Al-Jumaili AA, Ahmed KK. A review of antibiotic misuse and bacterial resistance in Iraq. East Mediterr Heal J. 2024;30(10):663–70., https://doi.org/10.26719/2024.30.10.663

[37] Almutairi NG, Alzahrani HM, Alhomrani MA, Alowid FK, Alghaith DM, Almutairi RH, et al. Prevalence of nocturnal enuresis among children and adults in Saudi Arabia: a systematic review and meta-analysis. Ann Saudi Med. 2024;44(5):349–59 https://doi.org/10.5144/0256-4947.2024.349

[38] Abdelbadee Abdallah S, Mohamed H, Hasab Allah M, Soliman H. Knowledge and Habitual practice Regarding Prevention of Genito-urinary Tract Infection among Adolescent Nursing Girls Students. Minia Sci Nurs J. 2024;015(2):21–30. https://doi.org/10.21608/msnj.2024.282231.1118

[39] Wu KC, Belza B, L Berry D, M Lewis F, L Hartzler A, Zaslavsky O. UTI risk factors in older people living with dementia: A conceptual framework and a scoping review. Dementia. 2025;24(7):1417–46. https://doi.org/10.1177/14713012251326129

[40] Al-Hakak ZM. Epidemiological and microbiological study of urinary tract infections in children in Babylon Governorate. Alnakhla J Sci. 2025;14(1):27–32. https://doi.org/10.63799/ajos/14.1.68

[41] Sharma M, Qanoongo FN, Doley PK, Pegu G, Pegu M. Drug-induced Acute Kidney Injury: A Clinico-etiological Study from a Tertiary Care Center in Northeast India. J Nat Sci Med. 2024;7(4):284–92 ,

[43] Keshk EA, Alghamdi GS, Alghamdi MA, Alzahrani MS, Alzahrani RM, Alzahrani AS, et al. Knowledge and Attitude Toward Modes of Delivery and Possible Complications Among Women in Al-Baha Region, Saudi Arabia. Cureus. 2024;16(5):e59988. https://doi.org/10.7759/cureus.59988

https://doi.org/10.4103/jnsm.jnsm_85_24

[42] Hatamleh R, Al-Akour N, Al-Bakheet W, Atout M, El-Banna M. Urinary tract infection among primigravid singleton pregnancies: a retrospective study from the North of Jordan. Front Glob Women's Heal. 2025;6:1654691. https://doi.org/10.3389/fgwh.2025.1654691

تقييم مستوى المعرفة حول التهابات المسالك البولية لدى المرضى الذكور والإناث في محافظة واسط، العراق

رسول جارح سعد *، وسن عبد الأمير علي، عبير غازي الصوافي*****

البريد الالكتروني: * rasool.sead.c@fgs.stu.edu.iq

الجامعة التقنية الجنوبية / كلية التقنية الصحية والطبية البصرة / العراق ***

الخلاصة

تُعدّ التهابات المسالك البولية والتي يُشار إليها أيضًا بعدوى البول، من الحالات الالتهابية التي تصيب الجهاز البولي، ويمكن أن تؤثر في كلٍّ من الرجال والنساء، إلا أنها أكثر شيوعًا بين النساء. هدفت الدراسة إلى تقييم مستوى المعرفة المتعلقة بالتهابات المسالك البولية لدى المرضى من الذكور والإناث. أُجريت دراسة وصفية مقطعية باستخدام أسلوب العينة غير الاحتمالية (العينة الملائمة) في مستشفيين بمحافظة واسط – العراق، وشملت الدراسة 350 مشاركًا. أظهرت النتائج أن التركيبة الديموغرافية للمشاركين كانت بنسبة 66.9% من الإناث و33.1% من الذكور. وتبيّن أن 76.3% من المشاركين لديهم معلومات حول التهابات المسالك البولية، كما أظهر 60.3% منهم فهمًا لطرق الوقاية منها. بالإضافة إلى ذلك، فإن 76.3% من المشاركين كانوا على دراية بالعلامات والأعراض المرتبطة بهذه الالتهابات. تشير نتائج الدراسة إلى أن نصف الأفراد تقريبًا يمتلكون مستوى معرفة متوسطًا (مقبولًا) بشأن التهابات المسالك البولية. كما أظهرت النتائج أن مستوى المعرفة لا يتأثر بعامل الجنس. في المقابل، برز كلٌّ من الحالة الاجتماعية والاقتصادية والتاريخ المرضي السابق للإصابة بالتهابات المسالك البولية كمتغيرات مؤثرة بشكل معنوي في مستوى المعرفة الكلي.

الكلمات المفتاحية: التهابات المسالك البولية؛ مستوى المعرفة؛ الوعي الصحي؛ الحالة الاجتماعية والاقتصادية؛ دراسة مقطعية.