

ANALYSE THE KNOWLEDGE AND PRACTICE REGARDING PREVENTIVE MEASURES OF UTI IN NURSING STUDENTS OF UNIVERSITY OF LAHORE, PAKISTAN

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Abstract

Background: Urinary tract infections are among the most common health issues worldwide, and assessing nursing students' knowledge and prevention practices is essential for strengthening infection control and improving patient outcomes.

Materials and Methods: A descriptive cross-sectional study was conducted among nursing students at the Lahore School of Nursing, University of Lahore, using a structured questionnaire to assess their knowledge and preventive practices regarding urinary tract infections. A total sample of 126 students was selected through convenient sampling, and the data were analyzed using descriptive statistics in SPSS version 21.

Results: The results showed that 46.85% of nursing students had poor knowledge regarding UTI prevention, while 51.6% demonstrated good knowledge and only 1.6% achieved excellent knowledge. In terms of practice, 42.1% of students exhibited poor preventive practices, 57.1% showed good practices, and only 0.8% demonstrated excellent practice levels.

Conclusion: The study concludes that although many nursing students possess moderate knowledge of UTI prevention, significant gaps remain in both understanding and practice, underscoring the need for strengthened educational and training interventions.

INTRODUCTION

Urinary tract infections (UTIs) are among the most common bacterial infections worldwide, affecting the kidneys, ureters, bladder, or urethra when microorganisms—primarily bacteria—invade a normally sterile urinary system (Wagenlehner, Bjerklund Johansen et al., 2020; Mona Alshahrani, Alsakiti et al., 2022). UTIs are typically caused by pathogenic microorganisms, especially *Escherichia coli*, which accounts for 75–90% of uncomplicated cases, while other pathogens such as *Staphylococcus saprophyticus*, *enterococcus*, and gram-negative rods

also contribute (Alshahrani, Alzahrani et al., 2022; Sartori, Padilla-Fernández et al., 2022). These infections affect all age groups but are disproportionately more common in females due to anatomical factors such as shorter urethras and physiological changes during pregnancy. Globally, UTIs rank second after respiratory infections in primary care visits, contributing to millions of outpatient consultations and hospital admissions annually (Nikhila, Varghese et al., 2023; Jelly, Verma et al., 2022).

UTIs can be classified as upper or lower and may be categorized as uncomplicated or complicated depending on patient-related conditions (Esan, Sokan-Adeaga et al., 2023). They represent a major burden in healthcare settings, accounting for over 40% of hospital-reported infections and 600,000 nosocomial cases annually. Clinical symptoms range from dysuria, urgency, and frequency to fever, suprapubic discomfort, and in severe cases, pyelonephritis. If left untreated, UTIs can lead to serious complications, including hypertension, renal failure, preterm labor, intrauterine growth restriction, and low birth weight in pregnant women (Alshahrani, Alzahrani et al., 2022). Recurrent infections are also common, affecting up to 80% of individuals within three months of an initial episode, with young girls and women being particularly vulnerable (Medina & Castillo-Pino, 2019; Storme, Tirán Saucedo et al., 2019).

Multiple risk factors contribute to UTIs, including sexual activity, age, menstrual status, socioeconomic and educational levels, toileting habits, toilet type, and prior UTI history (Bilsen, Jongeneel et al., 2023; Selamat, Martinez et al., 2020). Nursing and medical students may be at increased risk due to clinical exposure and lifestyle factors. Effective self-care practices are essential for reducing infection risk, yet inappropriate or incorrect practices can increase susceptibility to UTIs (Cyran, Jagodzińska et al., 2019). Given the widespread prevalence, recurrence, and potential severity of UTIs, understanding their causes, risk factors, and prevention strategies remains crucial for promoting urinary health and preventing complications across diverse populations.

Materials and Methods

This study employed a cross-sectional quantitative design to assess the knowledge and preventive practices regarding urinary tract infections (UTIs) among 3rd- and 4th-year nursing students of the

Lahore School of Nursing, University of Lahore. The target population consisted of undergraduate nursing students, and a convenient sampling technique was applied. Using Slovin's formula, a sample size of 126 participants was calculated from a population of 186 students.

Two main variables were examined: knowledge and preventive practices (dependent variables), while nursing students served as the independent variable. UTI was conceptually defined as an infection affecting any part of the urinary system. Operationally, knowledge and practice were measured through structured scoring: "Yes" = 3, "No" = 2, "Don't know" = 1. Knowledge levels were categorized as poor (<50%), good (50–70%), and excellent (>70%). Prevention practice was classified using the same scoring model, with poor (<50%), good (50–70%), and excellent (>70%) practice levels.

Data were collected using a structured, closed-ended questionnaire consisting of demographic information, eight knowledge-related questions, and six prevention-practice questions. The study was completed over approximately three months. Inclusion criteria involved 3rd- and 4th-year nursing students of both genders, while 1st- and 2nd-year students, students from other departments, and postgraduate students were excluded.

Data analysis was performed using SPSS version 21, where descriptive statistics, including frequencies and percentages, were used and results presented in tables, graphs, and charts. Ethical approval was obtained from the University of Lahore Ethical Committee. Written informed consent was secured, confidentiality and anonymity were ensured, participation was voluntary, and no risks were associated with the study. Privacy of participants was fully protected, and their identities were not disclosed in any publication.

Results

Table 1: Demographic Characteristics of participants

Sr #	Variable		Frequency	Percentage
1	Age	20 -23 years	73	57.9%

		24-27 years	47	95.2%
		Above 27 years	06	100%
2	Gender	Male	51	40.5%
		Female	75	100%
3	Marital Status	Single	116	92.1%
		Married	10	100%
4	Education	3 rd year	69	54.8%
	Bsn year	4 th year	57	100%

The study included 126 nursing students, with the majority aged 20–23 years (57.9%), followed by 24–27 years (37.3%), while only 6 students (4.8%) were above 27 years. In terms of gender distribution, 75 females (59.5%) and 51 males (40.5%) participated. Most respondents were single (92.1%), whereas only

10 students (7.9%) were married. Regarding educational level, 54.8% were 3rd-year students, and 45.2% were 4th-year BSN students, showing a balanced representation from both senior academic years.

Table 2: Knowledge of participants regarding preventive measures of UTI

No	Item		Frequency	Percentage
01	Have you ever heard of UTI?	Yes	126	100%
		No	0	0
		Don't know	0	0
02	Do you have any knowledge about what UTI is?	Yes	113	100%
		No	13	10.3%
		Don't know	0	0
03	Do you know the causes of UTI?	Yes	88	69.8%
		No	19	15.1%
		Don't know	19	15.1%
04	Have you ever experienced UTI?	Yes	54	22%

		No don't know	44 28	100% 57.1%
05	Are you aware that cleaning the perineum from front to back helps in prevention of UTI?	Yes No don't know	106 14 06	100% 15.9% 4.8%
06	Are you aware that keeping the genital area clean and dry helps in prevention of UTI?	Yes No don't know	70 30 26	55.6% 23.8% 20.6
07	Do you know that avoiding fluids that irritate the bladder such as alcohol aids in UTI prevention?	Yes No dont know	86 25 15	100% 31.7% 11.9%

All participants (100%) had previously heard of urinary tract infections, and the majority (89.7%) reported having knowledge about what a UTI is. Awareness of UTI causes was moderately strong, with 69.8% indicating they understood the causes, while 15.1% reported no knowledge and an equal proportion were unsure. Regarding personal experience, 54 students (42.9%) reported having experienced a UTI, while the rest either had not or were unsure.

Most participants demonstrated good awareness of preventive hygiene practices. A large proportion

(84.1%) knew that cleaning the perineum from front to back helps prevent UTIs, and 55.6% recognized that keeping the genital area clean and dry contributes to prevention, although 44.4% either lacked awareness or were unsure. Additionally, 68.3% understood that avoiding bladder-irritating fluids such as alcohol can help prevent UTIs, whereas a smaller percentage (31.7%) lacked this knowledge or were uncertain.

Table 3: Practices of participants regarding prevention practice of UTI

NO	Item		Frequency	Percentage
01	Do you clean the perineum from front to back after Elimination (Urination/defecation)?	Yes No don't know	95 24 07	100% 24.6% 5.6%
02	Do you keep the genital area clean and dry?	Yes	73	100%

		No don't know	21 26	39.2%
03	Do you wear cotton underwear and loose fitting clothing?	Yes no Don't know	77 21 28	100% 38.9% 22.2%
04	Do you drink plenty of water daily?	Yes No Don't know	63 39 34	100% 57.9% 27%
05	Do you empty your bladder frequently when full?	Yes No don't know	77 49 0	100% 38.9%
06	Do you avoid fluids that irritate the bladder?	Yes No	52	100%

This table shows that 73 participants keep the genital area neat and clean while 21 do not follow it. 77 participants wear the cotton underwear loose fitting clothings. 63 participants drink plenty of water daily

while 39 participants do not drink plenty of water. 52 participants avoid fluids that irritate the bladder however 33 participants do not avoid those fluids which irritate the bladder.

Table 4. Level of Knowledge regarding UTI

Category	Frequency	Percentage
<50% (<24 out of 48) Poor Knowledg.	59	46.8%
>50% to 70% (> 35out of 48) good knowledge	65	51.6%
>70% to 100% (> 48 out of 48) excellent knowledge	02	1.6%

The results show that nearly half of the nursing students (46.8%) demonstrated poor knowledge about urinary tract infections, indicating substantial gaps in understanding. A slightly larger proportion (51.6%) had good knowledge, reflecting a moderate

level of awareness regarding UTI causes and prevention. Only 1.6% of participants achieved an excellent knowledge score, suggesting that very few students possessed comprehensive and in-depth knowledge about UTIs.

Table 5. Level of prevention practice regarding UTI

Category	Frequency	Percentage
<50% (< 18 out of 36) Poor practices.	53	42.1%
<50% (< 24 out of 36) Poor practices.	72	57.1%
>70% to 100% (> 36 out of 36) excellent practices.	01	.8%

The results indicate that a large proportion of nursing students demonstrated inadequate preventive practices toward UTIs. A total of 42.1% of participants fell into the poor practice category (<50%), and an additional 57.1% were also categorized as having poor practice levels (<24 out of 36), indicating that almost all students lacked sufficient preventive behaviors. Only 0.8% of the respondents achieved an excellent level of prevention practice, showing that effective UTI prevention behaviors were extremely rare among the participants.

Discussion

This descriptive cross-sectional study conducted at the Lahore School of Nursing assessed nursing students' knowledge and preventive practices regarding UTIs. The findings revealed that nearly half of the students (46.8%) had poor knowledge, while 51.6% demonstrated good knowledge, and only 1.6% showed excellent knowledge. Prevention practices were also inadequate, with the majority showing poor practice levels and only 0.8% achieving excellent practices. These results indicate substantial gaps in both understanding and application of UTI prevention behaviors among nursing students. Comparison with earlier research further highlights these gaps. A study by Jelly, Verma et al. (2022) among 338 medical and nursing students reported that 10.05% of female participants had experienced UTIs,

with higher reporting among nursing students (67.6%). Factors such as age, marital status, and hostel duration were significantly associated with UTI occurrence, and students commonly used hygiene measures such as peri-washing, increased water intake, and Tea Tree Oil products. Similarly, previous studies found that most respondents were young adults aged 18–22 years (62.5%), mostly single (83.4%), and predominantly female (52%). The present study showed comparable trends, with most participants aged 20–23 years (57.9%), single (92.1%), and female (59.5%).

Knowledge indicators from previous studies also align closely with current findings. Earlier research reported that 82.2% had heard of UTIs, 80.3% had knowledge of UTIs, and 71.1% knew the causes; the present study shows slightly higher awareness (100% had heard of UTIs and 89.7% had knowledge). Preventive behaviors, however, remain inconsistent. While 69.7% previously knew that front-to-back cleaning helps prevent UTIs, current findings show a higher awareness (84.1%). Conversely, fewer students in the present study knew that keeping the genital area clean and dry prevents UTIs (55.6%) compared to earlier reports (82.2%). Awareness about avoiding bladder-irritating fluids was higher in the present study (68.3%) compared to prior findings (53.9%). A 2022 study at Basrah University also reported that most nursing students had good UTI-related knowledge

(Ali et al., 2023), supporting the overall trend of moderate understanding but variable preventive practice.

Conclusion

This study demonstrates that while over half of the nursing students possessed good knowledge about UTI prevention, a substantial proportion still lacked adequate understanding, with 46.85% showing poor knowledge. Preventive practices were also insufficient, as many students failed to translate their knowledge into effective behaviors. These findings highlight the need for strengthened educational interventions and practical training to enhance both awareness and the consistent adoption of UTI prevention practices among nursing students.

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