

Original Article

# Promoting Urinary Tract Infection Prevention: Knowledge and Practices of Adolescent Girls

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## ABSTRACT

**Objectives:** Urinary symptoms are prevalent among adolescents, particularly in females, where inflammation in any part of the urinary system, whether symptomatic or asymptomatic, is indicative of a urinary tract infection (UTI). The objective of this study is to assess the knowledge of UTIs among adolescent girls and evaluate their self-reported toilet behaviours that contribute to the prevention of UTIs.

**Material and Method:** A descriptive correlational design was employed for this study. A proportionate stratified sampling technique was utilised to select 215 adolescent girls as participants. Data collection was conducted using a self-structured knowledge questionnaire and a practice checklist.

**Results:** Among the participants, 51.2% were 17 years old, and 94% reported having a regular menstrual pattern. A significant proportion (85.1%) had a previous history of UTIs, and 94% used sanitary pads. The study revealed that 52.6% of adolescent girls had poor knowledge about UTIs, while 40.9% demonstrated average toilet behaviour practices. A weak negative correlation ( $r = -0.011$ ) was found between knowledge and toilet behaviour practices among the adolescent girls. There was a significant association between knowledge and practice with selected variables, specifically previous knowledge of UTIs ( $p = 0.007$ ) and class of study ( $p = 0.009$ ).

**Conclusion:** Although UTIs are often perceived as preventable conditions, they pose a significant challenge to millions of people and subsequently to our healthcare system. Even if students knew about UTIs and methods for prevention, suitable instruction to promote acceptable sanitary behaviours, diet, and lifestyle changes were identified as a need. Informational discussions on UTIs and their risk factors should be conducted periodically among adolescent girls to enhance knowledge and promote UTI prevention techniques.

**Keywords:** Adolescent girls, Knowledge, Practice, Promoting, Urinary tract infection

## INTRODUCTION

Urinary symptoms are common in adolescents, particularly among females. Any aspect of the urinary system that is inflamed, whether it is symptomatic or asymptomatic, is considered to have a urinary tract infection (UTI).<sup>[1]</sup> Pyelonephritis is an infection of the kidney, urethritis is an infection of the urethra, and cystitis is a bacterial infection of the bladder.<sup>[2]</sup>

*Escherichia coli* and *Klebsiella pneumoniae*, two members of the Enterobacteriaceae family of Gram-negative bacteria, are the most prevalent uropathogenic bacterial agents that can result in various UTIs. Additionally, UTIs in humans are caused by gram-negative bacteria such as Streptococci, Staphylococci, and Enterococci. Conversely, pathogenic fungi, in particular strains of *Candida albicans* (*C. albicans*),

may behave as opportunistic pathogens implicated in UTIs.<sup>[3]</sup> However, several nations have reported that non-*Candida albicans* (NAC) species, such as *Candida glabrata* and *Candida tropicalis*, are the main species responsible for UTIs.<sup>[4]</sup>

UTIs are a global phenomenon, and the U.S. reports more than 150 cases every year, with an economic burden exceeding \$ 6 billion.<sup>[5]</sup> Recent trends show that 40% of females and 12% of males are at risk of getting a UTI at least once in their lifetime. High chances of relapse are also being noticed.<sup>[6]</sup> After the first episode of UTI, studies have shown that around 27% of females developed recurrent UTI within 6 months, and 2.7% of females developed a second recurrence within the next 6 months.<sup>[7]</sup>

UTIs are more commonly found in females compared to men, but lower UTIs are more prevalent among adolescent

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girls. At least once during their schooling, 5-6% of females face this issue as compared to males. The reason behind this predilection is that the length of the urethra in females is shorter, the external urinary meatus is more sensitive and thinner than most of the skin on the body, and the positioning of the vagina and anus is close to the urinary opening.<sup>[8]</sup> It is possible for people with improper toilet behaviours, such as premature voiding, delayed voiding, changing voiding positions from the usual sitting position, straining to void, using the crouching position in public restrooms due to concerns about cleanliness, lack of privacy, lack of peace, and incorrect traditional habits, to develop UTIs.<sup>[9,10]</sup>

A study conducted in rural Odisha showed that 45.2% of females had an incidence of community-acquired UTI. Due to unhygienic practices, UTI is the most prevalent disease among females of menstruating age. Not following menstrual hygiene creates a moist environment in the genital regions, promoting the growth of infectious microorganisms.<sup>[11]</sup> A cross-sectional study at Mangalore shows that 30.9% of the research participants had UTIs. Only 12.7% of people consumed enough water each day, and 71.8% did not consume enough water while they were at school. Lack of knowledge about the proper amount for consumption was cited as the primary cause of poor intake. The usage of school restrooms, poor menstrual hygiene, and prior UTIs have all been linked in a substantial way to UTI.<sup>[12]</sup>

The use of pads, menstrual cups, and tampons increases the chances of getting a UTI, mostly in adolescent females. If pads are changed every 6 hours, the chances decrease. If not changed frequently, pads trap heat and moisture. Tampons need to be changed every 4 to 6 hours; otherwise flare ups of the genital region lead to UTIs.<sup>[13]</sup> The old practice of using clothes and not taking a bath during menses can cause UTI. The recurrence of UTI is commonly seen in sexually active adolescent females because of not urinating after intercourse. During this process, pathogens invade the vagina.<sup>[14]</sup>

The purpose of the study was to determine the extent of knowledge that adolescent females have regarding the importance of genital hygiene, dysfunctional voiding patterns, and the adequate amount of water to be taken per day. Besides, the study also aims to know more about the usage of western toilets and related unhygienic toilet practices, and menstrual hygiene, which are also leading factors contributing to UTI.

## MATERIAL AND METHODS

A descriptive correlational study was conducted among 215 school-going adolescent females in and around Mangaluru. Ethical clearance was obtained from the Institutional Ethical Committee (FMIEC/CCM/608/2023). The proportionate

stratified sampling technique was adopted for the selection of participants. Data were collected after obtaining permission from principals of each school, and informed consent was taken from students and their parents. Data was collected via a self-structured knowledge questionnaire and a self-reported practice checklist. The data collected were analysed using descriptive and inferential statistics.

## RESULTS

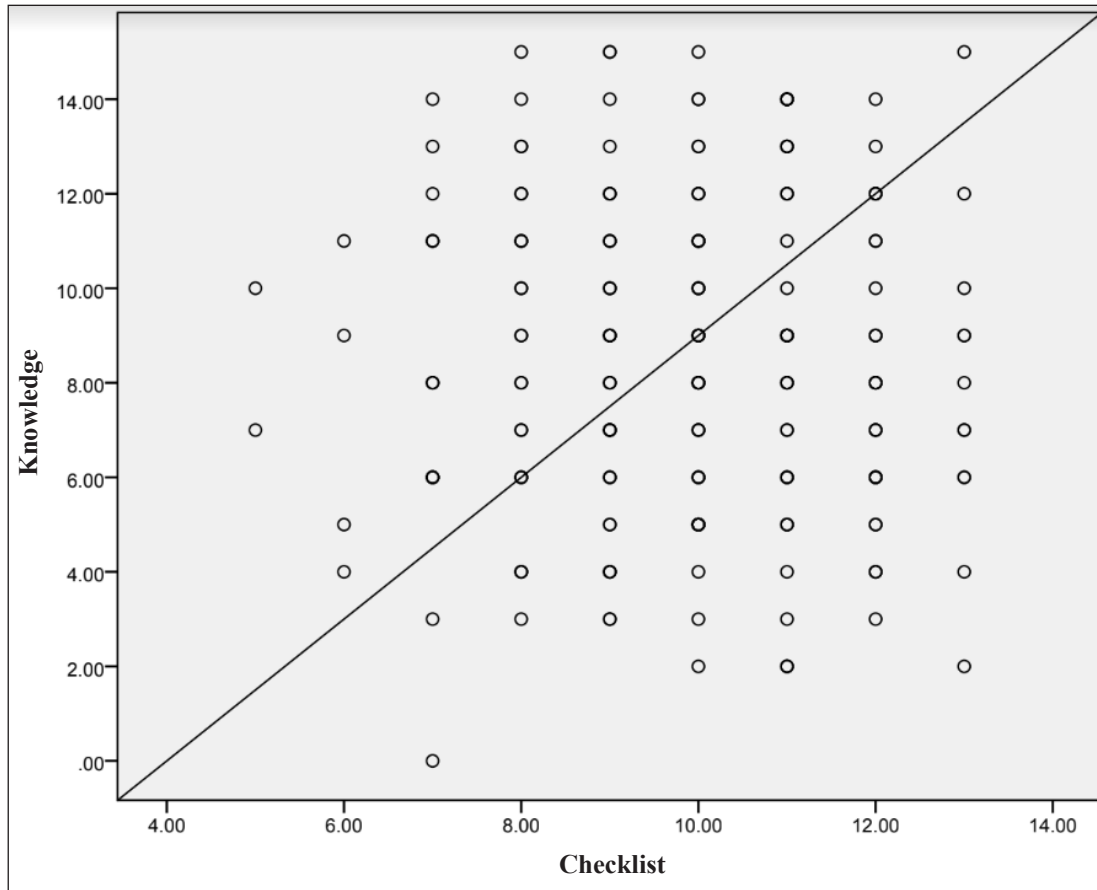
The demographic characteristics shown in Table 1 depict that 51.2% of adolescent females are 17 years old. Among the participants, 65.6% belong to the 12<sup>th</sup> class, and 94% have a regular menstrual pattern. There was a history of UTI among 15% of the participants. The study revealed that 52.6% of adolescent females had poor knowledge; 34.4% had average knowledge, whereas 13% had good knowledge of UTIs.

Among participants, 40.9% of adolescent females had average practices in terms of toilet behaviour, and 38.6% had unsafe practices. There is a weak negative correlation between knowledge of UTI and practice of toilet behaviour among

**Table 1:** Demographic characteristics of the sample

Sr. no.	Variables	f	%
1	Age (years)		
	16	47	21.9
	17	110	51.2
	18	58	27.0
2	Class of study		
	10 <sup>th</sup>	16	7.4
	11 <sup>th</sup>	58	27.0
	12 <sup>th</sup>	141	65.6
3	Menstruation pattern		
	Regular	202	94.0
	Irregular	13	6.0
4	Previous history of urinary tract infection		
	Yes	32	14.9
	No	183	85.1
5	Do you use pads/cloth/Menstrual cup?		
	Pads	202	94.0
	Cloth	8	3.7
	Menstrual cup	5	2.3
6	Having previous knowledge of urinary tract infection		
	Yes	57	26.5
	No	158	73.5

f: Frequency.



**Figure 1:** Correlation between knowledge and practice of toilet behaviour on urinary tract infection among adolescent girls.

adolescent girls ( $r = -0.011$ ) [Figure 1]. Table 2 revealed that the association between demographic variables and knowledge of UTI showed that, out of six parameters, previous knowledge of UTI ( $p = 0.007$ ) had a significant association. It was also shown that there was an association between self-reported practice and class of study ( $p = 0.009$ ), which is depicted in Table 3.

## DISCUSSION

The present study intended to assess the knowledge and self-reported practice on toilet behaviour to prevent UTI among school-going adolescent females.

In the present study, 65.11% of adolescent females belonged to class 12, 26.5% were from class 11, and 7.44% from class 10. Supported study revealed that 1.36% were from junior high school, 2.04% belonged to high school, 72.79%, were students, 14.97% were bachelor's/master's students, and 0.68% were doctoral 0.68% were included in this study.<sup>[15]</sup> In contrast, other studies reveal that 44% of participants are between the ages of 15 and 18, and 24% are more than 18 years of age.<sup>[16]</sup>

The current study reveals that 52.6% of the adolescent girls have poor knowledge, 34.4% have average knowledge, and

13% have good knowledge of UTIs. These findings align with the study's results, which showed that 40.2% of the subjects had average knowledge, while 28% had good knowledge regarding UTIs.<sup>[10]</sup> Similarly, another study reveals that 65.79% did not know about UTIs, whereas 34.21% had knowledge of UTIs.<sup>[17]</sup>

The present study reveals that 40.9% of adolescent females carry out average practice, 38.6% carry out unsafe practice, and 20% carry out safe practice of toilet behaviour. The study, supported by another researcher, reveals that 41.5% of the subjects had safe practices, whereas the others had average practices towards the prevention of UTI, at 53.7%.<sup>[10]</sup> Another study shows that 82% were anxious about public latrine cleanliness, 81% were worried about emptying their bladder when leaving for outside, 85% delayed voiding due to their job pattern, and 57% used to hold urine for a prolonged time.<sup>[18]</sup>

The present study showed a weak negative correlation ( $r = -0.011$ ) between knowledge of UTI and practice of toilet behaviour among school-going adolescent females. This information is supported by a study revealing a weak positive relationship between knowledge and expressed habitual

**Table 2:** Association between demographic variables and knowledge of urinary tract infection (n=215)

Sr. no.	Variables	Knowledge		Chi square	P value
		Median <8	Median ≥8		
1	Age in years				
	16	20	27	-	-
	17	44	66	0.184	0.912
	18	25	33	-	-
2	Class of study				
	10 <sup>th</sup>	9	7	-	-
	11 <sup>th</sup>	23	35	1.582	0.453
	12 <sup>th</sup>	57	84	-	-
3	Menstruation pattern				
	Regular	83	119	-	-
	Irregular	6	7	0.129	0.719
4	Previous history of urinary tract infection				
	Yes	11	21	-	0.382
	No	78	105	0.764	-
5.	Do you use pads/cloth/menstrual cup?				
	Pads	83	119	-	-
	Cloth	4	4	0.437	0.903
	Menstrual cup	2	3	-	-
6.	Having previous knowledge of urinary tract infection				
	Yes	15	42	-	0.007
	No	74	84	7.270	-

practice as depicted by the Karl Pearson correlation coefficient ( $r=0.1$ ).<sup>[10]</sup>

The present study revealed a p-value of 0.007 when computed between knowledge and “Having previous knowledge of UTI” as a demographic variable. In addition to the above findings,  $p=0.009$  was calculated when computed between practice and “class of study” as the demographic variable. Therefore, an association exists between knowledge and practice concerning specific variables, and this study is accordingly corroborated by other researchers, indicating an association between the menstrual absorbent and frequency of infections.<sup>[18]</sup> Similarly, another study found that there is no association between toilet behaviour and lower UTIs.<sup>[19]</sup>

### Clinical significance

The association between previous knowledge of UTIs and self-reported practices highlights the importance of prior education in fostering safe behaviours. However, by executing

**Table 3:** Association between demographic variables and self-reported practice of toilet behaviour

Sr. no.	Variables	Practice		Chi square	P value
		Median <10	Median ≥10		
1	Age in years				
	16	15	32	-	-
	17	44	66	1.166	0.558
	18	24	34	-	-
2	Class of study				
	10 <sup>th</sup>	1	15	-	-
	11 <sup>th</sup>	28	30	9.361	0.009
	12 <sup>th</sup>	54	87	-	-
3	Menstruation pattern				
	Regular	80	112	-	-
	Irregular	3	10	1.408	0.235
4	Previous history of urinary tract infection				
	Yes	11	21	-	-
	No	72	111	0.284	0.594
5.	Do you use pads/cloth/menstrual cup?				
	Pads	78	124		
	Cloth	3	5	0.182	1.000
	Menstrual cup	2	3	-	-
6.	Having previous knowledge of urinary tract infection				
	Yes	17	40	-	-
	No	66	92	2.523	0.112

culturally appropriate, age-specific health promotion programs, healthcare providers can effectively address the unique needs of adolescent females, thereby reducing the incidence and recurrence of UTIs. Routine educational discussions and targeted interventions can significantly enhance the understanding and preventive practices among adolescent girls, contributing to better urinary tract health and overall well-being. The implementation of such preventive strategies could actually reduce the healthcare burden associated with UTIs and improve the quality of life for adolescent girls globally.

### CONCLUSION

Despite the widespread nature of UTIs among adolescent girls, this study has provided valuable and comprehensive data that can inform the development of targeted health intervention strategies for both the prevention and management of UTIs in this demographic. It is crucial for adolescent girls to engage in regular educational discussions about UTIs and

their associated risk factors, as these sessions can significantly enhance their understanding and refine their preventive practices. By addressing these needs, we can foster improved UTI prevention strategies and contribute to the overall well-being of adolescent girls.

**Ethical approval:** The research/study approved by the Institutional Ethics Committee at Father Muller College of Nursing, number FMIEC/CCM/608/2023, dated 30th October 2023.

**Declaration of patient consent:** The authors certify that they have obtained all appropriate participants consent.

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