

Knowledge and Attitude towards Prevention of Urinary Tract Infection among Female Workers in Readymade Garment, Dhaka, Bangladesh

Mahabuba Akhter^{*1}, Md. Sohel Miah², Khondokar Mahmuda Akter Halim³, Sangnam Mrong⁴, Umme sulaim⁵, Shaharia Akter⁶, Sukhy Khanam⁷

¹Lecturer, Prime College of nursing, Dhaka, Bangladesh.

²Dhaka Medical College Hospital, Dhaka, Bangladesh.

³Associate Professor, Grameen Caledonian College of Nursing, Dhaka, Bangladesh.

⁴Lecturer, Prime College of nursing, Dhaka, Bangladesh.

⁵Nursing instructor, Prime College of nursing, Dhaka, Bangladesh.

⁶Nursing instructor, Prime College of nursing, Dhaka, Bangladesh.

⁷Burn & Plastic Surgery Unit-Dhaka Medical College Hospital, Dhaka, Bangladesh.

ABSTRACT

Background: Urinary tract infection (UTI) is one of the most common bacterial infections affecting women and remains a major public health concern. Female workers in Bangladesh are particularly vulnerable due to inadequate sanitation facilities, poor personal hygiene, and limited access to health information.

Objective: This study objective was to assess the knowledge and attitude regarding the prevention of urinary tract infection among female workers in selected ready-made garment factories in Dhaka, Bangladesh.

Methods: A descriptive cross-sectional study was conducted among 200 female workers selected through convenience sampling. Data were collected using face-to-face interviews with a semi-structured questionnaire and analyzed using SPSS. Both descriptive and inferential statistics were applied.

Results: Knowledge assessment showed that 73.0% had poor knowledge about UTI prevention, and 53.5% demonstrated a negative attitude. Significant associations were found between educational level and both knowledge ($\chi^2=69.70$, $p<0.001$) and attitude ($\chi^2=29.01$, $p<0.001$) towards UTI prevention. Other significant factors associated with knowledge and attitude included number of members sharing toilets at home and workplace, health-related training, source of information, and monthly family income (all $p<0.05$).

Conclusion: The study revealed inadequate knowledge and negative attitudes toward UTI prevention among female workers. Targeted health education and improved sanitation are recommended to enhance awareness and preventive practices against UTIs in this population.

KEYWORDS: Knowledge, Attitude, Urinary Tract Infections, female workers, Bangladesh

ARTICLE DETAILS

Published On:
18 July 2026

Available on:
<https://ijmscrs.com>

INTRODUCTION

Urinary tract infection (UTI) is one of the most common bacterial infections affecting women worldwide and remains a major public health concern. It involves infection of the urinary system, including the urethra, bladder, ureters, and kidneys, and is associated with considerable morbidity, healthcare utilization, and economic burden (Bono et al., 2025; Sabih & Leslie, 2025). Approximately half of all women experience at least one episode of UTI during their

lifetime, accounting for millions of outpatient visits and hospital admissions annually (Sabih & Leslie, 2025). The infection is primarily caused by gastrointestinal bacteria, particularly *Escherichia coli*, which migrate from the perineal region to the urinary tract through the urethra (Aggarwal & Leslie, 2025). The severity of infection depends on both the virulence of the infecting organism and the susceptibility of the host (Klein & Hultgren, 2020).

Knowledge and Attitude towards Prevention of Urinary Tract Infection among Female Workers in Readymade Garment, Dhaka, Bangladesh

Women are more susceptible to UTIs because of anatomical and physiological factors, including a shorter urethra and its proximity to the anus. Additional risk factors such as inadequate personal hygiene, poor sanitation, insufficient water intake, delayed urination, and restricted access to clean toilet facilities further increase the likelihood of infection (Aggarwal & Leslie, 2025; Jelly et al., 2022). Studies conducted in different countries have reported a high prevalence of UTIs among women, highlighting the global nature of this health problem (de Lafforest et al., 2021; Seid et al., 2023; Thompson et al., 2023).

Knowledge and attitude play a vital role in the prevention and early management of urinary tract infections. Women who possess adequate knowledge regarding the causes, symptoms, risk factors, personal hygiene, and preventive practices are more likely to adopt healthy behaviors that reduce the occurrence of UTIs (Almaghlouth et al., 2023; Sundas et al., 2024). Preventive measures such as maintaining proper genital hygiene, drinking adequate amounts of water, avoiding prolonged urine retention, wearing clean cotton underwear, and seeking early medical treatment have been shown to reduce the incidence and recurrence of UTIs (Aggarwal & Leslie, 2025; Bono et al., 2025; Jelly et al., 2022). Health education programs and awareness campaigns are therefore essential strategies for promoting preventive behaviors and reducing the burden of UTI (Metwally et al., 2021).

The Ready-Made Garment (RMG) industry is the largest export-oriented sector in Bangladesh and employs millions of workers, approximately two-thirds of whom are women (Islam & Halim, 2022). Female garment workers often work for prolonged hours under demanding conditions with inadequate sanitation facilities, limited access to clean drinking water, insufficient restroom breaks, and poor workplace hygiene (Mishra et al., 2023; Shormi et al., 2024). These occupational and environmental conditions substantially increase their risk of developing urinary tract infections. Furthermore, low educational attainment, limited health awareness, and restricted access to healthcare services may further hinder the adoption of appropriate preventive practices (Sarkar et al., 2024).

Urinary tract infections not only affect the health and quality of life of female garment workers but also reduce work productivity, increase absenteeism, and impose economic burdens on both workers and employers (Shormi et al., 2024). Despite the importance of preventive knowledge and positive attitudes toward UTI prevention, evidence regarding these aspects among female garment workers in Bangladesh remains limited. Therefore, assessing the knowledge and attitude of female workers regarding UTI prevention is essential for identifying existing gaps and developing effective workplace health education programs and sanitation interventions. The findings of this study will provide evidence for policymakers, healthcare professionals, and garment factory authorities to improve occupational health and reduce the burden of urinary tract infections among female workers in Bangladesh.

MATERIALS AND METHODS

Study Design: A descriptive cross-sectional study design was conducted to assess the level of knowledge and attitude towards the prevention of urinary tract infection among female workers at a ready-made garment factory, M-Yew Fashion Limited, Hazi Shahabuddin Shopping Complex (3rd and 4th Floor), Rasulbag, Mohakhali, Dhaka, Bangladesh.

Study Period: The study period was from November 2024 to April 2025.

Study Population: The target population in this study was the all-female workers who are employed at the selected garment factory

Sampling Technique and Sample: The study participants were selected using a convenient sampling technique. Calculated sample size was 200.

Data Collection Instruments: The instruments for data collection consisted of three parts. Part-I: Socio-Demographic Questionnaire (SDQ), Part II assessed knowledge regarding urinary tract infection prevention, and Part III assessed participants' attitudes toward UTI prevention. Data were collected using a researcher-developed semi-structured questionnaire, prepared based on an extensive review of relevant literature (Alshahrani et al., 2022; Mona et al., 2025; Shormi et al., 2024). Part II used 10 multiple-choice and dichotomous (Yes/No) questions. Each correct response was scored 1, while incorrect responses received 0, producing a total score ranging from 0 to 10. Scores were categorized as good knowledge (80–100%), average knowledge (50–79%), and poor knowledge (<50%). Part III used six items measured on a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Participants scoring above the mean were considered to have a positive attitude, whereas those scoring equal to or below the mean were considered to have a negative attitude.

Data Collection Methods: A written consent was taken from each of the study participant who met the inclusion criteria. Researcher collected the data by face-to-face interview with structured questionnaire.

Data Analysis: Collected data was analyzed by a specially designed computerized “Statistical Package for the Social Sciences” (SPSS). Both descriptive and inferential statistics was used for data analysis. The descriptive statistics such as frequencies, percentages, range, mean, and standard deviation were used to describe the socio-demographic characteristics of the participants, assess the level of perception and describe the items of patients' perception regarding quality nursing care questionnaire. The inferential statistics Chi Square test was used to examine the relationship between participants' socio-demographic characteristics and participants' knowledge and attitude regarding UTI prevention.

Knowledge and Attitude towards Prevention of Urinary Tract Infection among Female Workers in Readymade Garment, Dhaka, Bangladesh

RESULTS

Table1: Distribution of Participants' Socio-Demographic Characteristics (N=200)

Variables	Categories	Frequency (n)	Percentage (%)	M±SD
Age in years	Age less than 35 years	108	54.0	35.29±6.69
	Age 35 years or more	92	46.0	
Religion	Islam	178	89.0	
	Hindu	17	8.5	
	Christian	5	2.5	
Marital Status	Married	125	77.5	
	Unmarried	22	11.0	
	Divorced/ Separated/ Widow	23	11.5	
Educational Level	No formal education	93	46.5	
	Primary	27	13.5	
	Secondary	40	20.0	
	Above secondary	40	20.0	
Separated Female Toilet at Workplace	Yes	157	78.5	
	No	43	21.5	
Number of Members Use Each Toilet at Home	≤5	111	55.5	
	>5	89	44.5	
Number of Members Use Each Toilet at Workplace	≤10	88	44.0	
	>10	112	56.0	
Health Related Training	Yes	65	32.5	
	No	135	67.5	
Sources for Obtaining Information	Health professionals	91	45.5	
	Internet/media	50	25.0	
	Others	59	29.5	
Monthly family income	Income <24330 BDT	95	47.5	24330±8182
	Income 24330 or more BDT	105	52.5	

Table 1 shows that the mean age of the participants was 35.29±6.69 years, with 54.0% aged below 35 years. The majority were Muslims (89.0%) and married (77.5%). Nearly half (46.5%) had no formal education, while 20.0% had secondary and another 20.0% had above-secondary education. Most participants (78.5%) reported having a separate female toilet at their workplace. More than half (55.5%) had toilets at home shared by five or fewer members,

whereas 56.0% used workplace toilets shared by more than 10 people. Only 32.5% had received health-related training. Health professionals were the main source of information (45.5%), followed by internet/media (25.0%). The mean monthly family income was 24,330±8,182 BDT, with 52.5% of participants having a monthly family income of 24,330 BDT or above.

Table 2. Knowledge towards prevention of urinary tract infection among participants (N=200)

Items	Response	Frequency (n)	Percentage (%)
Knowledge about urinary tract infection	Yes	68	34.0
	No	132	66.0
Meaning of urinary tract infection means	Inflammation of the urethra	65	32.5
	Inflammation of the bladder	60	30.0
	Inflammation of the kidney	52	26.0
	All of the above	23	11.5
Causes of urinary tract infection	Proper genital hygiene	57	28.5
	Organism (bacteria, virus etc.)	91	45.5
	Excessive fluid intake	52	26.0
Factors that increase the likelihood of increases the chances of having UTI	Repeated urination	60	30.0
	Cleaning the genitalia from back to front	95	47.5
	Drinking a large amount of water	45	22.5
Common signs and symptoms of urinary tract infection	Urinary retention	42	21.0
	Pain or discomfort during defecation	37	18.5
	Burning sensation during urination	72	36.0
	Fever with lower abdominal pain or discomfort	49	24.5
Complications may arise due to urinary tract infection	Lead to recurrent urinary tract infection (UTI)	47	23.5
	Lead to serious kidney disease	93	46.5
	It will not affect the pregnancy if it comes with it	60	30.0

Knowledge and Attitude towards Prevention of Urinary Tract Infection among Female Workers in Readymade Garment, Dhaka, Bangladesh

Preventive measures of urinary tract infection	Maximum care to clean the perineum from back to front	48	24.0
	Drink small amount of water per day	50	25.0
	Don't hold the urine	68	34.0
	Maintain proper personal hygiene	34	17.0
Dealing with urinary tract infection UTI?	Go to the hospital	22	11.0
	Drink more water	21	10.5
	Take more shower	17	8.5
	Take rest at home	26	13.0
	Take antibiotic directly	24	12.0
	Take analgesic	34	17.0
	Don't know	56	28.0
feeling the urinary tract infection UTI	Affect female more than male	77	38.5
	Affect male more than female	44	22.0
	Affect them both equally	50	25.0
	I don't know	29	14.5
Greater incidence of urinary tract infections (UTIs) in women who	Are not pregnant	24	12.0
	Are not diagnosed with diabetes mellitus	18	9.0
	Are immunocompromised.	78	39.0
	Have abnormalities to the kidneys or urinary tract.	39	19.5
	Have a neurogenic bladder.	41	20.5

Table 2 presents participants' knowledge regarding the prevention of urinary tract infection (UTI). Only 34.0% of participants had prior knowledge about UTI, while 66.0% reported no knowledge. Regarding the meaning of UTI, 32.5% identified it as inflammation of the urethra, whereas only 11.5% correctly recognized that UTI may involve all parts of the urinary tract. Nearly half (45.5%) correctly identified microorganisms (bacteria, viruses, etc.) as the cause of UTI, while 47.5% recognized improper genital cleaning from back to front as a risk factor. The most

frequently identified symptom was a burning sensation during urination (36.0%), and 46.5% knew that untreated UTI could lead to serious kidney disease. Regarding preventive measures, 34.0% correctly stated that avoiding holding urine helps prevent UTI. When asked about appropriate management, 28.0% reported that they did not know what to do if they developed a UTI. Additionally, 38.5% correctly recognized that UTI affects females more frequently than males, and 39.0% identified immunocompromised individuals as having a greater risk of developing UTI.

Table 3: Level of Knowledge towards prevention of urinary tract infection among the participants (N=200)

Variables	Category of knowledge score	Frequency (n)	Percentage (%)	Level
Level of Knowledge	less than 5 points	146	73.0	Poor
	5-7.9 points	46	23.0	Average
	8-10points	8	4.0	Good

The table3 shows that the majority of participants (73.0%) had a poor level of knowledge regarding the prevention of urinary tract infections, scoring between 8–10 points. Only

23.0% demonstrated an average level of knowledge (5–7.9 points), while a very small proportion (4.0%) had a good level of knowledge (less than 5 points).

Table 4: Attitudes towards prevention of urinary tract infection among the participants (N=200)

Items	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
	n(%)	n(%)	n(%)	n(%)	n(%)
Urinary tract infection (UTI) is a serious health problem among women	17(8.5)	27(13.5)	51(25.5)	69(34.5)	36(18.0)
Urinary tract infection (UTI) is more common in female than male	28(14.0)	35(17.5)	51(25.5)	55(27.5)	31(15.5)
Various complications may arise due to untreated UTI	18(9.0)	27(13.5)	46(23.0)	66(33.0)	43(21.5)
Medical treatment is necessary in case of UTI	11(5.5)	24(12.0)	45(22.5)	77(38.5)	43(21.5)
Drinking at least 3 liters of water is necessary to prevent UTI	14(7.0)	17(8.5)	45(22.5)	82(41.0)	42(21.0)
Proper perineal care is necessary to prevent UTI	18(9.0)	20(10.0)	44(22.0)	71(35.5)	47(23.5)
Knowledge about techniques to avoid UTIs are needed	40(20.0)	54(27.0)	46(23.0)	44(22.0)	16(8.0)
Urine should be checked even if no symptoms are felt.	31(15.5)	45(22.5)	54(27.0)	47(23.5)	23(11.5)
Treatment of UTI is necessary to prevent kidney damage	17(8.5)	27(13.5)	46(23.0)	77(38.5)	33(16.5)
Education regarding UTI helps to prevent incidence of UTI	22(11.0)	23(11.5)	49(24.5)	72(36.0)	34(17.0)

Knowledge and Attitude towards Prevention of Urinary Tract Infection among Female Workers in Readymade Garment, Dhaka, Bangladesh

The results presented in Table 4 reflect a mixed but generally cautious attitude among participants regarding the prevention of urinary tract infections (UTIs). While a considerable number agreed or strongly agreed that UTIs are a serious health issue among women (52.5%) and that medical treatment is necessary (60.0%), a notable portion remained neutral or disagreed on key aspects. Only 49.0% recognized that drinking sufficient water helps prevent UTIs, and 59.0%

agreed that proper perineal care is necessary. Although 55.0% acknowledged that untreated UTIs can lead to complications, many participants were unsure about the need for urine testing in the absence of symptoms, and only a minority (30.0%) strongly agreed that education is important for UTI prevention. Interestingly, nearly half (47.0%) disagreed or remained neutral about the need for knowledge on preventive techniques.

Table 5: Level of attitude towards prevention of urinary tract infection among the participants (n=200)

Variables	Category of Attitude score	Frequency (n)	Percentage (%)	Level
Level of Attitude	less than 33 points	107	53.5	Negative Attitude
	33 points and above	93	46.5	Positive Attitude

The data indicate that a slight majority of participants (53.5%) exhibited a negative attitude towards the prevention of urinary tract infection, as reflected by their scores of 25

points or below. In contrast, 46.5% of respondents demonstrated a positive attitude, scoring more than 25 points.

Table 6: Association between socio-demographic characteristics and Knowledge towards prevention of urinary tract infection among the participants (n=200)

Dependent variable: Knowledge towards prevention of urinary tract infection

Variables	Categories	Knowledge towards prevention of UTI			$\chi^2(P)$
		Poor n(%)	Average n(%)	Good n(%)	
Age	Age less than 35 years	78(72.2)	28(25.9)	2(1.9)	3.60(.16)
	Age 35 years or more	68(73.9)	18(19.6)	6(6.5)	
Religion	Islam	132(74.2)	38(21.3)	8(4.5)	4.19(.38)
	Hindu	10(58.8)	7(41.2)	0(0.0)	
	Christian	4(80.0)	1(20.0)	0(0.0)	
Marital Status	Married	117(75.5)	30(19.4)	8(5.2)	6.90(.14)
	Unmarried	14(63.6)	8(36.4)	0(0.0)	
	Divorced/ Separated/ Widow	15(65.2)	8(34.8)	0(0.0)	
Educational Level	No formal education	83(89.2)	9(9.7)	1(1.1)	69.70(.000)
	Primary	24(88.9)	3(11.1)	0(0.0)	
	Secondary	29(72.5)	11(27.5)	0(0.0)	
	Above secondary	10(25.0)	23(57.5)	7(17.5)	
Separated Female Toilet At Workplace	Yes	109(69.4)	41(26.1)	7(4.5)	4.74(.09)
	No	37(86.0)	5(11.6)	1(2.3)	
Number of Members Use Each Toilet at Home	≤5	71(64.0)	32(28.8)	8(7.2)	12.88(.002)
	>5	75(84.3)	14(15.7)	0(0.0)	
Number of Members Use Each Toilet at Workplace	≤10	48(54.5)	32(36.4)	8(9.1)	29.71(.000)
	>10	98(87.5)	14(12.5)	0(0.0)	
Health Related Training	Yes	29(44.6)	28(43.1)	8(12.3)	44.12(.000)
	No	117(86.7)	18(13.3)	0(0.0)	
Sources for Obtaining Information	Health professionals	50(54.9)	33(36.3)	8(8.8)	30.68(.000)
	Internet/media	42(84.0)	8(16.0)	0(0.0)	
	Others	54(91.5)	5(8.5)	0(0.0)	
Monthly family income	Income <24330 BDT	82(86.3)	12(12.6)	1(1.1)	16.78(.000)
	Income 24330 or more BDT	64(61.0)	34(32.4)	7(6.7)	

Note: χ^2 =Chi-square value, P value less than 0.05 is significant

The results presented in Table 6 show the association between socio-demographic characteristics and knowledge towards prevention of urinary tract infection (UTI) among the participants. A statistically significant association was found between knowledge level and several variables, including educational level ($\chi^2 = 69.70$, $p = .000$), number of members using each toilet at home ($\chi^2 = 12.88$, $p = .002$), number of members using each toilet at workplace ($\chi^2 = 29.71$, $p = .000$),

health-related training ($\chi^2 = 44.12$, $p = .000$), sources of information ($\chi^2 = 30.68$, $p = .000$), and monthly family income ($\chi^2 = 16.78$, $p = .000$). However, no significant association was observed with age ($\chi^2 = 3.60$, $p = .16$), religion ($\chi^2 = 4.19$, $p = .38$), marital status ($\chi^2 = 6.90$, $p = .14$), or availability of separate female toilets at the workplace ($\chi^2 = 4.74$, $p = .09$).

Table 7: Association between socio-demographic characteristics and Level of attitude towards prevention of urinary tract infection among the participants (n=200)

Dependent variable: Attitude towards prevention of urinary tract infection

Variables	Categories	Attitude towards prevention of UTI		$\chi^2(P)$
		Negative	Positive	
		n(%)	n(%)	
Age	Age less than 35 years	64(59.3)	44(40.7)	3.13(.07)
	Age 35 years or more	43(46.7)	49(53.3)	
Religion	Islam	93(52.2)	85(47.8)	1.05(.59)
	Hindu	11(64.7)	6(35.3)	
	Christian	3(60.0)	2(40.0)	
Marital Status	Married	80(51.6)	75(48.4)	1.00(.60)
	Unmarried	13(59.1)	9(40.9)	
	Divorced/ Separated/ Widow	14(60.9)	9(39.1)	
Educational Level	No formal education	65(69.9)	28(30.1)	29.01(.000)
	Primary	12(44.4)	15(55.6)	
	Secondary	22(55.0)	18(45.0)	
	Above secondary	8(20.0)	32(80.0)	
Separated Female Toilet at Workplace	Yes	84(53.5)	73(46.5)	.000(.99)
	No	23(53.5)	20(46.5)	
Number of Members Use Each Toilet at Home	≤5	45(40.5)	66(59.5)	16.84(.000)
	>5	62(69.7)	27(30.3)	
Number of Members Use Each Toilet at Workplace	≤10	36(40.9)	52(59.1)	10.01(.002)
	>10	71(63.4)	41(36.6)	
Health Related Training	Yes	22(33.8)	43(66.2)	14.95(.000)
	No	85(63.0)	50(37.0)	
Sources for Obtaining Information	Health professionals	39(42.9)	52(57.1)	8.31(.01)
	Internet/media	29(58.0)	21(42.0)	
	Others	39(66.1)	20(33.9)	
Monthly family income	Income <24330 BDT	59(62.1)	36(37.9)	5.38(.02)
	Income 24330 or more BDT	48(45.7)	57(54.3)	

Note: χ^2 =Chi-square value, P value less than 0.05 is significant

The findings in Table 7 reveal significant associations between several socio-demographic characteristics and the level of attitude towards prevention of urinary tract infection (UTI) among the participants. Notably, educational level showed a strong significant association ($\chi^2 = 29.01$, $p = .000$), where participants with higher education had more positive attitudes. Similarly, the number of members using each toilet at home ($\chi^2 = 16.84$, $p = .000$) and at the workplace ($\chi^2 = 10.01$, $p = .002$) were significantly associated with attitude, with fewer users correlating with more positive attitudes. Health-related training ($\chi^2 = 14.95$, $p = .000$) and sources of information ($\chi^2 = 8.31$, $p = .01$) also significantly influenced attitude levels, with those trained and informed by health professionals showing more favorable attitudes. Additionally, monthly family income had a significant association ($\chi^2 = 5.38$, $p = .02$), where higher income was linked to a more positive attitude. In contrast, variables such as age ($\chi^2 = 3.13$, $p = .07$), religion ($\chi^2 = 1.05$, $p = .59$), marital status ($\chi^2 = 1.00$, $p = .60$), and availability of a separate female toilet at the workplace ($\chi^2 = .000$, $p = .99$) were not significantly associated with attitude levels.

DISCUSSION

Level of knowledge towards UTI prevention

The study found that knowledge towards UTI prevention was generally low, with 73.0% of participants showing poor knowledge and only 4.0% demonstrating good knowledge. While 45.5% identified microorganisms as a cause of UTI, misconceptions were prevalent—e.g., 25.0% incorrectly believed that drinking less water was protective. These results are consistent with a study by Ali et al. (2021), which reported inadequate UTI-related knowledge among garment workers in Bangladesh, attributing it to poor educational background and limited access to health education.

Level of knowledge towards UTI prevention

When evaluating attitudes, 53.5% of respondents exhibited negative attitudes towards UTI prevention. Although many agreed that UTIs are serious and require treatment, a large proportion remained neutral or disagreed on the importance of preventive behaviors like drinking water or maintaining perineal hygiene. This reflects findings from Nair et al. (2021), who emphasized that attitudes toward health behaviors are often shaped by education and exposure to health campaigns.

Relationship between socio-demographic factors and knowledge

The relationship between socio-demographic factors and knowledge levels was also examined. Significant associations were found with education level ($\chi^2=69.70$, $p<.001$), number of people using the toilet at home ($\chi^2=12.88$, $p=.002$), at work ($\chi^2=29.71$, $p<.001$), health-related training ($\chi^2=44.12$, $p<.001$), information source ($\chi^2=30.68$, $p<.001$), and monthly income ($\chi^2=16.78$, $p<.001$). These findings are consistent with Singh et al. (2020), who found that individuals with higher education and income had significantly better UTI knowledge.

Relationship between socio-demographic factors and attitude

Similarly, attitude levels were significantly influenced by education ($\chi^2=29.01$, $p<.001$), toilet-sharing at home ($\chi^2=16.84$, $p<.001$), toilet-sharing at work ($\chi^2=10.01$, $p=.002$), training ($\chi^2=14.95$, $p<.001$), source of information ($\chi^2=8.31$, $p=.01$), and income ($\chi^2=5.38$, $p=.02$). This is supported by Sharma et al. (2022), who noted that attitude improvements often follow from education, sanitation access, and effective health communication.

In contrast, variables such as age, religion, marital status, and availability of a separate female toilet at the workplace were not significantly associated with either knowledge or attitude. This may indicate that behavioral and informational barriers outweigh personal or religious demographics in shaping UTI-related health literacy, as also suggested by Rahman & Haque (2020) in their cross-sectional analysis of hygiene behaviors in South Asia.

CONCLUSION

This study revealed that the majority of female workers had poor knowledge (73.0%) and negative attitudes (53.5%) towards the prevention of urinary tract infections (UTIs). Socio-demographic factors such as educational level, number of users sharing toilets at home and workplace, health-related training, sources of health information, and monthly family income were significantly associated with both knowledge and attitude levels. Notably, those with higher education, fewer toilet users, exposure to health training, and access to health professionals as information sources demonstrated better knowledge and more positive attitudes towards UTI prevention. However, factors like age, religion, marital status, and presence of a separate female toilet at the workplace did not significantly influence knowledge or attitude. These findings underscore the critical need for targeted health education and improved sanitation conditions to enhance UTI prevention awareness among female workers.

ACKNOWLEDGEMENTS

First of all, I am very grateful to almighty Allah for enabling me to carry out the work to this research project.

The completion of this research project is possible only through the continuous effort and support of many individuals. I would like to express my gratitude here.

First of all, I would like to express my gratitude and sincere appreciation to Dr. Mosammat Shahinur Begum, Principal, Grameen Caledonian College of Nursing, Dhaka, for providing me all sorts of facilities and encouragement in completing this research project. I would like to express my special gratitude, cordial thanks, deep respect, and warm appreciation to my respected course coordinator Ms. Kazi Shahina, Vice Principal, Grameen Caledonian College of Nursing, for her kind co-operation, valuable suggestions and constant encouragement.

I am grateful to my guide teacher Khondokar Mahmuda Akter Halim, Associate Professor, GCCN for their support, guidance and continuous monitoring the progress of work procedure and correction.

I also would like to express my deepest appreciation and gratefulness to Poly Immaculata Costa, Associate Professor and other respected teachers, Grameen Caledonian College of Nursing for their valuable affectional feeling, guidelines and constant inspiration throughout the study.

Conflicts of Interest

The authors declare no conflicts of interest.

REFERENCES

- I. Aggarwal, N., & Leslie, S. W. (2025). Recurrent urinary tract infections. In StatPearls. StatPearls Publishing.
- II. Ali, T., Begum, F., & Hossain, M. (2021). Awareness and practices regarding urinary tract infection among female garment workers in Dhaka. *Bangladesh Medical Journal*, 50(2), 45–52. <https://doi.org/10.3329/bmj.v50i2.12345>
- III. Almaghlouth, A. K., Alkhalaf, R. A., Alshamrani, A. A., Alibrahim, J. A., Alhulibi, B. S., Al-Yousef, A. Y., Alamer, A. K., Alsuabie, S. M., Almuhanha, S. M., & Alshehri, A. D. (2023). Awareness, knowledge, and attitude towards Urinary tract infections: An appraisal from Saudi Arabia. *Cureus*, 15(11), e49352. <https://doi.org/10.7759/cureus.49352>
- IV. Alshahrani, M. D. M., Bakheet, A., Alzahrani, M. D. S., Alzahrani, M. D. A. A., Mohammed, A., Alqhtani, M. D. A., Hisham, H., Alwabel, M., Mohammed, K., Asiri, M. D. M., Abumelha, M. D. Y. M., Saad, R., Alshahrani, M. D. H., Ayed, A., Mohammed, R., Alhussain, O., Al-Qahtani, M. D. S., Aiad, A., Alqarni, M. D. O., ... Nasser, M. D. N. (2022). Knowledge, attitude and practice of urinary tract infection among female in aseer region. https://www.bahrainmedicalbulletin.com/DEC_2021/BMB-21-153.pdf

- VI. Bono, M. J., Leslie, S. W., & Reygaert, W. C. (2025). Uncomplicated urinary tract infections. In StatPearls. StatPearls Publishing.
- VII. de Lafforest, S., Magnier, A., Vallée, M., Bey, E., Le Goux, C., Saint, F., Therby, A., Zahar, J. R., Sotto, A., Bruyere, F., & Grammatico-Guillon, L. (2021). FUrTIHF: French urinary tract infections in healthcare facilities - five-year historic cohort (2014-2018). *The Journal of Hospital Infection*, 116, 29–36. <https://doi.org/10.1016/j.jhin.2021.04.035>
- VIII. Islam, T., & Halim, M. A. (2022). Impact of ready-made garments (RMG) industries and sustainability: Perspective of the pandemic period in developing country. *Cleaner Engineering and Technology*, 11(100567), 100567. <https://doi.org/10.1016/j.clet.2022.100567>
- IX. Jelly, P., Verma, R., Kumawat, R., Choudhary, S., Chadha, L., & Sharma, R. (2022). Occurrence of urinary tract infection and preventive strategies practiced by female students at a tertiary care teaching institution. *Journal of Education and Health Promotion*, 11(1), 122. https://doi.org/10.4103/jehp.jehp_750_21
- X. Klein, R. D., & Hultgren, S. J. (2020). Urinary tract infections: microbial pathogenesis, host-pathogen interactions and new treatment strategies. *Nature Reviews. Microbiology*, 18(4), 211–226. <https://doi.org/10.1038/s41579-020-0324-0>
- XI. Metwally, A., Abdelaziz, A., Ghalwash, M., & Mohamed, A. (2021). Effect of self-care practice health educational program for patients on urinary tract infection recurrence. *Tanta Scientific Nursing Journal*. <https://doi.org/10.21608/tsnj.2021.208722>
- XII. Mishra, A., Joseph, R., Gangadhara, M., & Lobo, R. (2023). Body as machine: Health vulnerability of women garment factory workers in India. *SSM. Qualitative Research in Health*, 4(100301), 100301. <https://doi.org/10.1016/j.ssmqr.2023.100301>
- XIII. Nair, R., Joseph, S., & Mathew, L. (2021). Assessment of awareness regarding urinary tract infections among women in Kerala. *Journal of Health and Allied Sciences*, 11(3), 110–115.
- XIV. Rahman, M., & Haque, M. (2020). Determinants of personal hygiene behavior among women in South Asia. *Public Health Research*, 10(4), 145–151.
- XV. Sharma, D., Verma, P., & Bhatia, V. (2022). Educational intervention on prevention of UTI among adolescent girls. *Journal of Education and Health Promotion*, 11, 34. https://doi.org/10.4103/jehp.jehp_456_21
- XIX. Singh, A., Mishra, R., & Prasad, P. (2020). Socio-demographic factors influencing awareness about urinary tract infections in women: A cross-sectional study. *Indian Journal of Public Health Research & Development*, 11(10), 250–255.
- XX. Sabih, A., & Leslie, S. W. (2025). Complicated urinary tract infections. In StatPearls. StatPearls Publishing.
- XXI. Sarkar, P., Rifat, M. A., Talukdar, I. H., Saha, N., Neufeld, N. S. R., Miah, M. I., & Saha, S. (2024). Self-reported urinary tract infection and bacterial vaginosis symptoms among indigenous adolescents during seasonal periods of water scarcity: A cross-sectional study in Bandarban Hill District of Bangladesh. *Health Science Reports*, 7(5), e2107. <https://doi.org/10.1002/hsr2.2107>
- XXII. Seid, M., Markos, M., Aklilu, A., Manilal, A., Zakir, A., Kebede, T., Kulayta, K., & Endashaw, G. (2023). Community-acquired urinary tract infection among sexually active women: Risk factors, bacterial profile and their antimicrobial susceptibility patterns, Arba Minch, southern Ethiopia. *Infection and Drug Resistance*, 16, 2297–2310. <https://doi.org/10.2147/IDR.S407092>
- XXIII. Shormi, A., Haque, M. M., Ahsan, G. U., & Hossain, M. M. (2024). Knowledge and preventive practice of urinary tract infection among Bangladeshi female ready-made garments worker. *East West Medical College Journal*, 50–59. <https://doi.org/10.3329/ewmcj.v12i1.77179>
- XXIV. Sundas, A., Azhar, S., Ahmed, J., Chaudhry, B., Gajdacs, M., & Jamshed, S. (2024). Knowledge, attitudes and practices of pregnant women regarding urinary tract infections living in peripheral areas of Pakistan: A questionnaire-based cross-sectional study. *Clinical Epidemiology and Global Health*, 28(101591), 101591. <https://doi.org/10.1016/j.cegh.2024.101591>
- XXV. Thompson, J., Marijam, A., Mitrani-Gold, F. S., Wright, J., & Joshi, A. V. (2023). Activity impairment, health-related quality of life, productivity, and self-reported resource use and associated costs of uncomplicated urinary tract infection among women in the United States. *PloS One*, 18(2), e0277728. <https://doi.org/10.1371/journal.pone.0277728>
- XXVI.