# KNOWLEDGE AND ATTITUDE TOWARDS PREVENTION AND CONTROL ON URINARY TRACT INFECTION AMONG FEMALE NURSING STUDENTS IN A TERTIARY INSTITUTION.

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**BENIN CITY**

**OCTOBER, 2025**

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**IN PARTIAL FULFILLMENT OF THE AWARD OF THE DEGREE OF BACHELOR OF NURSING SCIENCE FACULTY OF NURSING SCIENCES, UNIVERSITY OF BENIN, BENIN CITY.**

**OCTOBER, 2025**

## DECLARATION

This is to declare that this research project titled **" KNOWLEDGE AND ATTITUDE TOWARDS PREVENTION AND CONTROL ON URINARY TRACT INFECTION AMONG FEMALE NURSING STUDENTS IN A TERTIARY INSTITUTION."**, which was carried out by **UWUMAROGIE OSARETIN PRECIOUS.** Is solely the result of my work except where acknowledged as being derived from another person (s) or resources. With mat number **BMS1900074.**

**FACULTY /SCHOOL: NURSING SCIENCE, COLLEGE OF MEDICAL SCIENCES, UNIVERSITY OF BENIN, BENIN CITY.**

**Signature: ……**

**Date: ……**

## CERTIFICATION PAGE

This is to certify that this project was carried by **UWUMAROGIE OSARETIN PRECIOUS** with Mat number **BMS1900074.** Faculty of Nursing Science, under the supervision of **MRS. F. A. ESEBAME.**

**Signature:**_____ _____

**MRS. F. A. ESEBAME** **DATE**
Project Supervisor

**Signature:**_____ _____

**PROF (MRS.) C. E. OMOROGBE** **DATE**
Head of Department of
Medical surgical nursing

_____ _____

**External Examiner** **DATE**

## DEDICATION

This work is dedicated to GOD ALMIGHTY who is providing me with the strength to complete my academic journey.

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## ABSTRACT

There is a significant difference in the attitude towards UTI prevention and control between different year levels of nursing students. Urinary tract infections (UTIs) are among the most common bacterial infections in women, including female nursing students, who may be at increased risk due to lifestyle and academic stressors. Adequate knowledge and a positive attitude toward prevention and control are essential in reducing their incidence and complications. This study assessed the knowledge and attitude of female nursing students at the University of Benin, Benin City, regarding UTI prevention and control. A descriptive cross-sectional design was employed, and 260 female nursing students from 200 to 500 level were selected through convenience sampling. Data were collected using a structured, self-administered questionnaire. Of the distributed questionnaires, 256 were correctly completed, yielding a 96.5% response rate. Analysis was conducted using SPSS version 26.0, with results presented in frequencies, percentages, means, and charts. Findings revealed that 80% of respondents had good knowledge of UTI causes, prevention, and complications, with a grand mean knowledge score of 3.2. Most participants were aged 20–24 (55.9%), single (84.4%), and Christian (82.4%). The general attitude toward UTI prevention was positive, also with a grand mean score of 3.2. Many students agreed on the importance of UTI prevention and expressed a willingness to educate others. Despite the overall positive findings, minor knowledge gaps were observed, particularly regarding the preventive role of cranberry juice. The study recommends enhanced health education within nursing curricula to address these gaps. Additionally, regular hygiene campaigns and sensitization seminars could further promote preventive behavior among students.



***Keywords***: knowledge, attitude, prevention, control, urinary tract infection, female, nursing students.

## TABLE OF CONTENTS

## LIST OF TABLES

## LIST OF FIGURES

# CHAPTER ONE

# INTRODUCTION

## 1.1 BACKGROUND TO THE STUDY

Urinary tract infection (UTI) is an infection that occurs anywhere along the urinary tract, which include the kidney (pyelonephritis), urethra (urethritis), bladder (cystitis) and ureters. UTIs are among the most common types of infection. They are caused by bacteria in urine or bacteria from the skin or rectum which enter the urethra and affect the different part of the urinary tract, but over 90% of UTI cases are caused by Escherichia coli (E. coli), which normally live in the intestines. Fungi and viruses are also involved. All age groups have UTIs, but females most especially pregnant women are more likely than males to get one because of the short urethra, also among women, young adults, including female nursing students, are particularly vulnerable to UTIs due to lifestyle, hygiene practices, and in some cases, increased exposure in clinical settings. Despite its high prevalence, UTIs are often underreported or improperly managed, which can lead to complications such as recurrent infections, kidney damage, and antibiotic resistance. After respiratory infections, from childhood to old age, urinary tract infections (UTIs) are today the second most prevalent infection that primary affects women. It is also the second most common cause of consultations in medical practice and a complex clinical pathology with a high occurrence globally, as a result of decrease in the patient's defense mechanism.

Nursing students, as future healthcare providers are expected to possess adequate knowledge and adopt positive attitudes toward the prevention and control of common health issue, including UTIs. Their academic training provides them with opportunities to understand disease mechanisms, preventing strategies, and the importance of early diagnosis and treatment. However, gaps in knowledge or misconceptions may persist, potentially impacting their personal

health and the quality of care they provide in the future. According to World Health Organization (WHO), acute uncomplicated lower UTIs, primarily cystitis in women, remain one of the most prevalent indications for prescribing antibiotics. Studies have shown that approximately 50% to 60% of women will experience at least one UTIs in their lifetime. The frequency of UTIs in female during childhood is 10 to 20 times higher than in males. And throughout adult life, this incidence continues (Agrawal et al., 2024; Fitzpatrick et al., 2024; Gleicher et al., 2024).

According to Damião, R. et al., (2024) there are four possible routes which bacteria enter the urinary tract; the most common is the ascending route through the urethra. Most women get recurrent infections in a short period of time. Staphylococcus saprophyticus causes UTIs in 5-15% of younger women, while E. coli is the most reported causal bacterium, accounting for 75-90% of simple UTIs. In few instances other enterococcus and other gram-negative rods were also found. UTIs are caused by both gram-positive and gram-negative bacteria, the most common strategies to assist women prevent UTIs include wiping in the right direction, drinking more water, emptying the bladder, and refraining from using spermicidal jelly. In addition, UTIs can be categorized as primary or recurring, community-associated (CAUTI) or healthcare-associated (HAUTI), and uncomplicated or complicated (based on the infection's cause factors). Pyelonephritis, acute and chronic renal failure, cystitis, urine incontinence, several sepsis, and septic shock are among the consequences linked to untreated UTI.

Given the widespread nature of this infections, there is a pressing need for effective educational intervention targeted at both healthcare providers and the general population. Nursing students, as future frontline healthcare professionals, play a critical role in UTI prevention through patient education, hygiene promotion, and adherence to best practice in clinical setting (Arooj et al., 2025). Research indicates that educational programs tailored to nursing students can significantly

improve their ability to prevent and manage UTIs in both hospital and community settings. Studies have shown that while a substantial proportion of these student possess little knowledge about UTIs there is often a gap between the knowledge and the implementation of appropriate preventive practices for instance, research conducted in Enugu State University of Technology, where a cross-sectional study found that 95.4% of female medical students had adequate knowledge of UTIs. However, only 45.5% sought treatment from trained healthcare providers during previous UTI episodes, suggesting a gap between knowledge and appropriate health-seeking behavior. (Mangai et al., 2019). Additionally, research found that nursing students result to indiscriminately taking antibiotics anytime they felt ill or experienced problems with micturition. UTI problems can be avoided with early disease detection through appropriate diagnostic procedures and treatment. The occurrence of UTIs can also be decreased with the use of appropriate preventive measure, such as drinking more water, maintaining excellent hygiene during menstruation. This study aims to assess the knowledge and attitude towards prevention and control on urinary tract infection among female nursing student in the University of Benin, Benin City, identifying existing gaps and recommend strategies for improvement.

## 1.2 STATEMENT OF PROBLEM

Urinary tract infections (UTIs) are among the most common bacterial infections affecting women globally, with significant prevalence among young adult's females, including Nursing Students. Despite their medical background, female nursing students are not immune to UTIs, and their knowledge and attitude towards its prevention and control can significantly influence their health behaviors and outcomes, inadequate knowledge and poor attitudes may lead to increased susceptibility, delayed treatment, and complications such as recurrent infections or

resistance to antibiotics. In the global world, more than 404.61 UTI cases, 236,790 death and 520,200 disability adjusted life years (DALYs) were estimated in 2019. in particular, 2.4 times growth in deaths from 1990 to 2019 was observed, along with an increasing age standardized mortality rate (ASMR) from 2.77/100,000 to 3.13/100,000.

In Nigeria the significantly high, with studies reporting prevalence rate ranging from 11.03% to as high as 78% among specific populations, including female students (Adesiji al., 2020). High prevalence of Nursing students are particularly at risk due to factors like, infrequent urination due to long classes/shifts, stress and fatigue, inadequate fluid intake due to long study hours and inadequate hygiene facilities. However, if left untreated, it can progress to aggravate the clinical condition, as in the case of ascending infection, generating pyelonephritis (an infection of the kidneys), which can be acute or chronic, which can progress to urosepsis or generalization infection. It can also cause urethritis, kidney abscesses (formation of pus), loss of kidney function, and in the case of resistant bacteria, can even lead to death. (Hari et al., 2024; Raphael & Huang, 2024; Swart, Benrimoj, & Dineen-Griffin. 2024).

Adequate knowledge on UTIs among female nursing students are very vital because lack of knowledge will generate some issues such as nursing student struggling to accurately assess patients presenting with symptoms of a UTI, this could lead to misdiagnosis or delayed treatment. The inability to effectively educate patients about prevention strategies, risk factors, and the importance of seeking timely medical attention. Missing the opportunity to identify and intervene early in the course of the infection, potentially leading to complications, these complications could delay diagnosis and treatment if not easily recognized, thereby increasing the risk of adverse outcomes.

Some female nursing students have poor understanding of the impact of UTIs on quality of life, and the self-care measures that can help manage symptoms and prevent future infection and the available treatment options for UTIs including antibiotics and other medication. As they are prone to this infection themselves, seeing that UTIs have a negative impact on their academic performance as students by causing pain, burning and frequent urination, which can disrupt sleep, concentration and overall well-being. Coupled with emotional distress by causing discomfort, anxiety and embarrassment. UTIs also causes fever, fatigue, loss of appetite and chronic UTIs can damage the bladder lining. Giving their roles as future healthcare providers, Nursing Students are expected to possess a high level of knowledge and a proactive attitude towards infection prevention. However, existing studies suggest that even with healthcare disciplines, there may be knowledge gaps and misconceptions about UTI prevention, symptoms and proper hygiene practices. (Patel et al., 2020). These problems highlight the various reasons to access the knowledge and attitude of UTIs among nursing students for them to know and practice the prevention and control of the disease.

## 1.3 OBJECTIVES OF THE STUDY

The main objective of the study is to assess the knowledge and attitude towards prevention and control on urinary tract infection among female nursing student in university of Benin, Benin City.

However, the specific objectives of this study include to;

1. Access the knowledge of female nursing students, regarding the prevention, control and complications of urinary tract infections in University of Benin.

2. Evaluate the attitude towards prevention and control on urinary tract infection among female nursing students, in University of Benin, in Benin City.
3. Determine factors that influence the knowledge and attitude of among female nursing students towards the prevention and control of UTIs in University of Benin, Benin City.

## 1.4 RESEARCH QUESTIONS

1. What is the level of knowledge of female Nursing Student regarding the prevention, control and complications of urinary tract infections in University of Benin?
2. What is the attitude towards prevention and control on urinary tract infection among female nursing students, in University of Benin, in Benin City?
3. What factors influence the knowledge and attitude of female nursing students towards prevention and control of UTI in university of Benin, Benin City.

## 1.5 HYPOTHESIS

1. There is a significant difference in the level of knowledge about UTIs prevention and control between different year levels of nursing students.
2. There is a significant difference in the attitude towards UTI prevention and control between different year levels of nursing students.
3. There is a significant relationship between the level of knowledge and the attitude towards the prevention and control of urinary tract infection (UTIs) among female nursing students.

## 1.6 SIGNIFICANCE OF THE STUDY

Having adequate knowledge and attitude towards urinary tract infection prevention and control among female nursing student in University of Benin in Benin City. Nigeria holds profound significance. However, women are particularly at risk because of their anatomy and reproductive physiology. The knowledge of urinary tract infection is very crucial in preventing it occurrence and recurrence and are extremely dangerous if they are not treated or are not identified in a timely manner. This problem cannot be overstated due to the enormous impact it has on people's health, which can lead to fatalities in extreme cases; but, with the right care, the infection can be quickly recovered from. The information in this study will go a long way in creating awareness about UTI as well as the prevention measures thereby reducing the menace caused by this infection.

**Nursing Practice:** The study provides critical insights that can enhance nurses' role in health promotions, control, prevention and early disease prevention. By identifying gaps in knowledge about urinary tract infection, nurses who have adequate knowledge and possess positive attitude towards UTIs can educate others on the important of good hygiene, drinking of water frequently.

**Nursing Education:** The study's findings will inform the development of nursing curricula that emphasis the important of UTIs prevention and control. The study also provides evidenced-based information that nursing curricula that emphasize the importance of UTI prevention and control.

**Nursing Research:** This study addresses the gap in literature on the knowledge and attitude of nursing students towards UTIs prevention and control. The sampling strategy will provide a representative sample of female nursing student allowing for generalizability of the findings and this finding can be used to evaluate educational programs aimed at improving knowledge at attitude of female nursing student.

## 1.7 SCOPE OF THE STUDY

This study focuses on evaluating and investigating the knowledge and attitude of nursing educational institution about the prevention and control of urinary tract infection. This study was delimited to female nursing students in the Faculty of Nursing science, University of Benin, Edo State, Nigeria.

## 1.8 OPERATIONAL DEFINITION OF TERMS

**Urinary tract infection (UTIs):** A urinary tract infection is defined in this context as an infection affecting any part of the urinary tract, including the urethra, bladder, or kidneys.

**Knowledge of urinary tract infection (UTIs):** In this study, knowledge refers to the level of awareness, understanding, and accurate information that female nursing students in the University of Benin possess regarding the prevention and control of urinary tract infection (UTIs).

**High prevalence of UTIs:** In this study refers to the widespread of UTIs among females.

**Attitude of urinary tract infection (UTIs):** In this study, attitude refers to beliefs, feelings and disposition of female nursing students of the University of Benin towards the prevention and control of urinary tract infections.

**Prevention and Control:** In this study, prevention and control refer to the set of personal hygiene practices, health behaviors, and medical interventions known to reduce the risk of developing UTIs or manage existing infections.

**Female nursing students:** This refers to all registered female undergraduate students currently enrolled in the Bachelor of Nursing Science (B.N.Sc) program at the University of Benin, Benin City, Nigeria at the time of study.

**University of Benin:** This is a tertiary intuition located in Ovia Northeast Local Government Area of Benin City, Edo State. Founded in 1970. It serves as the geographical location where the research will be conducted, specifically focusing in the Faculty of Nursing Science.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.0 Introduction

This chapter focuses on the review of related literature under the headings, conceptual review, empirical review and theoretical review. This chapter intends to deepen the understanding of the study and close the perceived gaps. Necessary literature would be gotten from published and unpublished works, article, journal and textbooks in this study.

## 2.1 Conceptual Review

### 2.1.1 UTI as a Global Burden

Urinary tract infection (UTI) is a disease of public health importance affecting more than 150 million people worldwide each year, with significant morbidity and high medical cost (e.g. it has been estimated that the economic burden of recurrent UTIs in the United States is more than $5 billion each year). In developed and emerging nations. Urinary tract infection, a broad term used to describe bacterial infection of the urethra, bladder, and kidney is a problem frequently encountered by health care providers today, which reduces the quality of life of patient and increases the social burden on society, are the second most common type of infectious disease (after respiratory tract infections) in hospitals and communities (Danilo de Oliveira et al., 2021; Yang et al., 2022). UTI can cause epigenetic changes in the cell lining the urinary tract. These changes can alter how the cells respond to future infections, potentially increasing susceptibility. UTIs can be influenced by a variety of factors, including biological factors such as the female anatomy; women have shorter urethra than men, allowing bacteria easier access to the bladder. Age: urinary tract infection affects people of all ages, and their frequency rises with advancing

age in both genders (Unsal et al., 2019). According to Unsal et al. (2019), UTIs are most common in boys within the first three months after birth and in females after six months, after which they continue to rise steadily until late childhood and adolescence. In middle age, UTI incidence decreases, but in older adults, it increases once again (Akhtar et al., 2021). Because of the short urethra and the proximity of the urethra opening to the anus and vagina, which are thought to be bacterial reservoirs, women are more likely than men to experience lower UTIs. The persistence or recurrent UTI (rUTI) in older adults may be caused by age-related immune function changes (progressive T-cell dysregulation and general deterioration of mucosal immunity), urinary incontinence, impaired emptying with residual urine, urethral catheters, and instrumentation, obstructive uropathy from prostatic disease in older men, declining estrogens levels, diabetes, kidney stones. (Martischang et al., 2021; Dutta et al., 2022). Another factor includes lifestyle factors; sexual activity, intercourse can introduce bacteria into the urethra.

Fluid intake: not drinking enough fluid can concentrate urine and make it easier for bacteria to grow. Holding urine; regularly urination can weaken the bladder and increase infection risk. Medical condition is another factor, it include diabetes as high blood sugar level can increase the risk of UTIs. Urinary tract abnormalities: blockage or structural issue can interfere with urine flow and increase infection risk. Weakened immune system; conditions or medications that suppress the immune system can make people more susceptible to infections. UTIs are categorized as uncomplicated or complicated, or by site of infection. These infections may be symptomatic or asymptomatic.

### 2.1.2 Concept of knowledge on Urinary tract infection (UTIs)

Knowledge encompasses the understanding of UTI types and causes, risk factors, symptoms, preventive strategies among female nursing students, such knowledge is not only essential for

personal hygiene and protection but also forms the foundation for student education and health promotion during clinical practice. Studies have shown that individual with a higher level of knowledge are more likely to engage in appropriate preventive behaviors and seek early treatment, several definitions of knowledge and theories to explain it exists. Abdullah & Leung, 2021 defined knowledge as a theoretical or practical understanding of a subject. The school of philosophers known as empiricists sees knowledge as an “awareness or familiarity gained by experience (of a person, fact or thing)”. They (empiricists) believe that knowledge can only be acquired through experience (Armstrong, 2023). However, if knowledge can be gained only acquired through experience, then this would mean that we could only claim to know certain things that we have had experience in. within a university context, if the empiricist view of knowledge was adopted, then students could only claim to have acquired knowledge in certain subjects if and only if the subjects they studied contain practical elements. For instance, if a lecturer taught students theoretical aspects of urinary tract infection, and the students had no clinical experience of urinary tract infection, then according to the empiricist school of thought, the student had no right to state that they were knowledgeable in the area of urinary tract infection.

### 2.1.3 Types and Causes of Urinary Tract Infection

The different types of urinary tract infection depend on where the infection occurs. They include cystitis which is an infection of the bladder. It is the most common type of UTIs. Urethritis is another type of urinary tract infection, which is the infection of the urethra, the tube that carries urine from the bladder to the outside of the body. There is also Pyelonephritis, an infection of the kidneys. It is a more serious type of UTI.

Bacteria pathogen is one of the most common causes of UTIs, especially E. coli, detected in 75-95% cases which enter through the urethra. This can happen when bacteria from the digestive tract or skin get into the urethra. While the gram-positive organism staphylococcus saprophyticus, which is mainly connected to cystitis rather than pyelonephritis, is responsible for an additional 5% to 15% of cases. Other enteric gram-negative bacteria, such as klebsiella species, proteus. Other causes involved are, virus, Fungi like candida albicans.

### 2.1.4 Risk Factors and symptoms of Urinary Tract Infection

The following are factors that can increases the chances of developing urinary tract infection.

- Gender: Females are at higher risk because of their short urethra as well as the proximity of the presence of the urethra opening to the anus and vagina than men, which are considered reservoirs of bacteria and makes it easier for bacteria to reach the bladder.
- Age: UTIs is very common among children especially girls, at 6 months of age, which then holds a steady trend until late childhood and adolescence. UTIs occurrence declines in middle age but again rises in elderly persons (Akhtar et al., 2021).
- Pregnancy: Hormonal changes during pregnancy and the use of birth control pills can increase the risk of UTIs. Pregnant women are likely to acquire urinary tract infections due to alterations to the urinary tract infections due to alteration to the urinary system and immunologic changes. The ureter and renal calyces enlarge because of progesterone-related smooth muscle relaxation and ureteral compression from the gravid uterus, which are both physiological alterations of the urinary tract. (Habak and Griggs, 2023)
- Sexual activity: Sexual intercourse can introduce bacteria into the urethra.
- Menopause: Changes in hormone level after menopause can make the urinary tract more susceptible to infection. This occurs due to the drop in estrogen levels that thins the

vaginal epithelium and reduces glycogen levels which indirectly increases the colonization of pathogenic bacteria (Jung and Brubaker, 2019).

- Enlarge prostrate: An enlarge prostrate can make it difficult to empty the bladder completely, which can increase the risk of UTIs.
- Kidney stones: Kidney stones can cause obstruction in the urinary tract by blocking the flow of urine and increase the risk of infection
- Catheter: Urinary catheters, which are tubes inserted into the bladder to drain urine, can increase the risk of UTIs.
- Weakened immune system: People with weakened immune system, such as blockage or structural problems, diabetes mellitus may be more prone to UTIs.
- Poor hygiene and congenital abnormalities.

The symptoms of urinary tract infection can vary depending on the location of the infection; however, they include Dysuria (painful urination), urgency, hesitancy, polyuria, and incomplete voiding, this may all be associated with cystitis. Urinary incontinence, hematuria, and suprapubic or low back pain may also be present. Symptoms that indicate pyelonephritis include fever, costovertebral angle pain, nausea and vomiting. Hematuria may occur in any UTI but is more suggestive of nephrolithiasis when accompanied by flank pain. In the pediatric population during the first 8 to 12 weeks of life, UTI may be associated with bacteremia. Symptoms in infants up to 2 years old may include difficulty with feeding, nausea and vomiting, or failure to thrive. Children ages 2 to 5 may demonstrate fever and abdominal pain. Children under 5 are at risk for renal scarring. While children older than 5 may have the same symptomatology as adults. As many as 25% of young children without pyelonephritis have renal bacteriuria. As in other age groups, urine culture is the goal standard for diagnosis of UTI. For some women pelvic pain will

be present especially in the center of the pelvic and around the area of the pubic bone, strong smelling urine.

### 2.1.5 Control and Prevention of Urinary Tract Infection

Controlling Urinary Tract infection (UTIs) requires a multi-faceted approach that involves prevention, early detection and effective treatment.

**a) Prevention:**

i. Stay hydrated: proper hydration increases the frequency of urination, which helps flush bacteria out of the urinary tract.

ii. Personal hygiene: always wipe from front to back after using the toilet, especially after bowel movement, because this prevents bacteria in the anal region from spreading to the vaginal and urethra. According to a study by jelly et al. there were fewer UTIs when women use peri-wash more frequently after urinating and during their menstrual cycle (Jelly et al., 2022).

iii. Urinate regularly: don't hold in urine for long periods. Try to use the restroom every 3-4 hours or whenever you feel the need to go, as holding urine in for to long can allow bacteria multiply within the urinary tract, increasing the risk of UTIs.

iv. Avoid irritants: avoid using scented soaps, bubble bath, or douches, as these can irritate the urethra and increase the risk of UTIs.

v. Choose breathable underwear: use cotton underwear and avoid tight-fitting pants, because cotton underwear allows moisture to evaporate instead of creating a damp environment that can foster bacterial growth.

vi. Avoid consuming a lot of sugary food or drink: excess sugar can disrupt the body's normal PH balance, creating an environment in which bacteria thrive, potentially leading to UTIs.

vii. Cranberry juice can help prevent UTI

**b) Early Detection**

i. Recognize symptoms be aware of the symptoms of UTIs, such as burning during urination, frequent urination and abdominal pain.

ii. Seek medical attention: if you experience symptoms of UTIs, seek medical attention promptly.

iii. Urinalysis: a urinalysis can help diagnose UTIs by detecting the presence of bacteria and support the healing process.

**c) Effective Treatment**

Empirical antimicrobial treatment with broad-spectrum antibiotics is initiated experimentally prior to the availability of urine culture results considering factors such as patient characteristics (comorbidities allergies, concurrent medication, and compliance), regional practice patterns, the incidence of resistance in the local community, product availability and price (Alkhawaldeh et al., 2022; Ara et al., 2022). The National Institute for Health and Clinical Excellence recommends a course of oral antibiotics for a brief period of 7-10 days for acute UTIs, while 10-14 days for pyelonephritis. Studies shows that urine isolates are susceptible to Fosfomycin, nitrofurantoin, amoxiclav, and meropenem can be used to treat lower UTIs (Sharma et al., 2021 (Sharmin et al., 2022). pain relief medications such as ibuprofen or acetaminophen, can help alleviate symptoms such as burning during urination.

### 2.1.6 Complications and Diagnostic investigations of UTIs

Complications of urinary tract infections include.

- **a.** Local complications: Kidney damage, chronic pyelonephritis, kidney stone, bladder damage.
- **b.** Systemic complications: sepsis, bacteremia, endocarditis, meningitis.
- **c.** Pregnancy related complications: preterm labor, low birth weight, pregnancy induced hypertension.
- **d.** Other complications: prostatitis (inflammation of the prostate gland), epididymitis (inflammation of the epididymis), recurrent UTIs, urinary retention.

The diagnostic investigation is as follows.

1. **Urine Culture and Sensitivity:** A clean-catch midstream technique, which is neither intrusive nor painful, is the most typical way to obtain a urine sample for urine culture. The possible drawback of this method is that the sample can get contaminated with the commensal residing in the distal urethra, so collecting midstream urine is recommended (Sinawe and Casadesus, 2023). Urine sensitivity testing determines the effectiveness of different antibiotics against the bacteria causing the UTI.
2. **Urinalysis:** An easy to use, quick and cheap screening technique is urine analysis, which includes physical, chemical properties of the urine. E.g. use of urine test strips.
3. **Imaging Studies:** Imaging can help make a diagnosis of UTI in newborns and infants as it is crucial when clinical and laboratory results are ambiguous. The most frequently used technique, named ultrasonography, is a non-invasive, adaptable and affordable treatment that uses high frequency sound waves to acquire real time image of the area being

scanned and allows the detection urinary tract dilations and irregularities. CT scans can also be used.

4. Blood chemistry test: this can help identify any underlying medical conditions that may be contributing to the UTI.
5. Intravenous pyelogram (IVP): this test uses X-rays and a contrast agent to visualize the kidneys, ureters, and bladder.
6. Urodynamic testing: this is a series of test that evaluate the function of the bladder and urethra.
7. Cystoscopy: a procedure that uses a flexible tube with a camera and light on the end to visualize the inside of the bladder and urethra.

### 2.1.7 Factors influencing the knowledge and attitude of female nursing students towards the prevention and control of UTIs

These factors include,

**Demographic Factors**

1. Age: Older students may have more experience and exposure to UTIs prevention and control.
2. Level of study: Students in higher level of study (e.g. third or fourth year) may have more knowledge and better attitude towards UTI prevention and control.
3. Cultural background: Student from different cultural backgrounds may have varying levels of knowledge and attitude towards UTI.

**Educational Factors**

1. Curriculum content: The inclusion of UTI prevention and control in the nursing curriculum may influence students' knowledge and attitudes.

2. Teaching methods: The use of interactive and engaging teaching methods (e.g. case studies, stimulations) may enhance students' knowledge and attitudes.
3. Clinical experience: Students who had clinical experience in urology or obstetrics and gynecology may have more knowledge and better attitudes towards UTI prevention and control.

**Environmental Factors**

1. Access to resources: Students who have access to reliable resources (e.g. textbook, online resources) may have more knowledge and better attitudes towards UTI.
2. Role modeling: Students who observe positive role modelling by nursing instructors or practicing nurses may be more likely to adopt positive attitudes towards UTI prevention and control.
3. Hospital or clinical setting: Students who are exposed to a hospital or clinical setting where UTI prevention and control are prioritized may be more likely to adopt positive attitudes.

**Social Factors**

1. Peer influence: Student who are influenced by their peers may be more likely to have positive attitude toward UTI prevention and control.
2. Family and social support: Student who receive support from their family and social network may be more likely to adopt positive attitudes.
3. Cultural and social norms: Students who are influenced by cultural and societal norms that prioritize UTI prevention and control may be more likely to have positive attitude.

**Psychological Factors**

1. Motivation: Student who are motivated to learn about UTI may be more likely to adopt positive attitudes.
2. Self-efficacy: Student who believe in their ability to prevent and control UTIs may also be more likely to also adopt positive attitudes.
3. Anxiety and stress: Students who experience high levels of anxiety and stress may be less likely to express positive attitude towards UTI prevention and control.

## 2.2 Theoretical Framework

The theoretical framework of this review will focus on health belief model.

### Health Belief Model

Health Belief Model (HBM), developed by a social psychologists Irwin M. Rosenstock in 1950s. is a psychological model that provides a framework in explaining how people's belief and attitude influence their health behaviors. In this study, it was used to access the health seeking behaviors among female nursing students towards the prevention and control on urinary tract infection. The model proposes that people's behavior is influenced by their perceptions of:

1. Perceived Susceptibility: This refers to the person's belief that they are at risk of getting a particular disease or condition.

2. Perceived Severity: This refers to a person's belief about the seriousness of a disease or condition and the potential consequences.

3. Perceived Benefits: This refers to a person's belief about effectiveness of a particular health behavior in reducing the risk or impact of a disease or condition.

4. Perceived Barriers: This refers to a person's belief about the obstacles or challenges to performing a particular health behavior.

5. Cues to Action: These are factors that triggers a person's readiness to act, such as media campaign, advice from a doctor, or a friend's illness.

6. Self-Efficacy: This refers to a person's belief in their ability to successfully perform a particular health behavior.

### Application of Health Belief Model Theory to Nursing Students

Assessing knowledge and attitude: Use the HBM to assess student nurses' knowledge and attitudes towards UTIs prevention and control.

Identifying Perceptions and Beliefs: Determine student nurses' perceptions of susceptibility, severity, benefits, barriers and cues to action related to UTIs prevention and control.

Developing Education Intervention: Design educational programs that address student nurses' knowledge gaps and misconceptions, and that promote positive attitudes and behaviors towards UTI prevention and control.

Encouraging Behavior Change: Use the HBM to encourage student nurses to adopt healthy behaviors, such as proper hygiene and infection control practice, to prevent and control UTI.

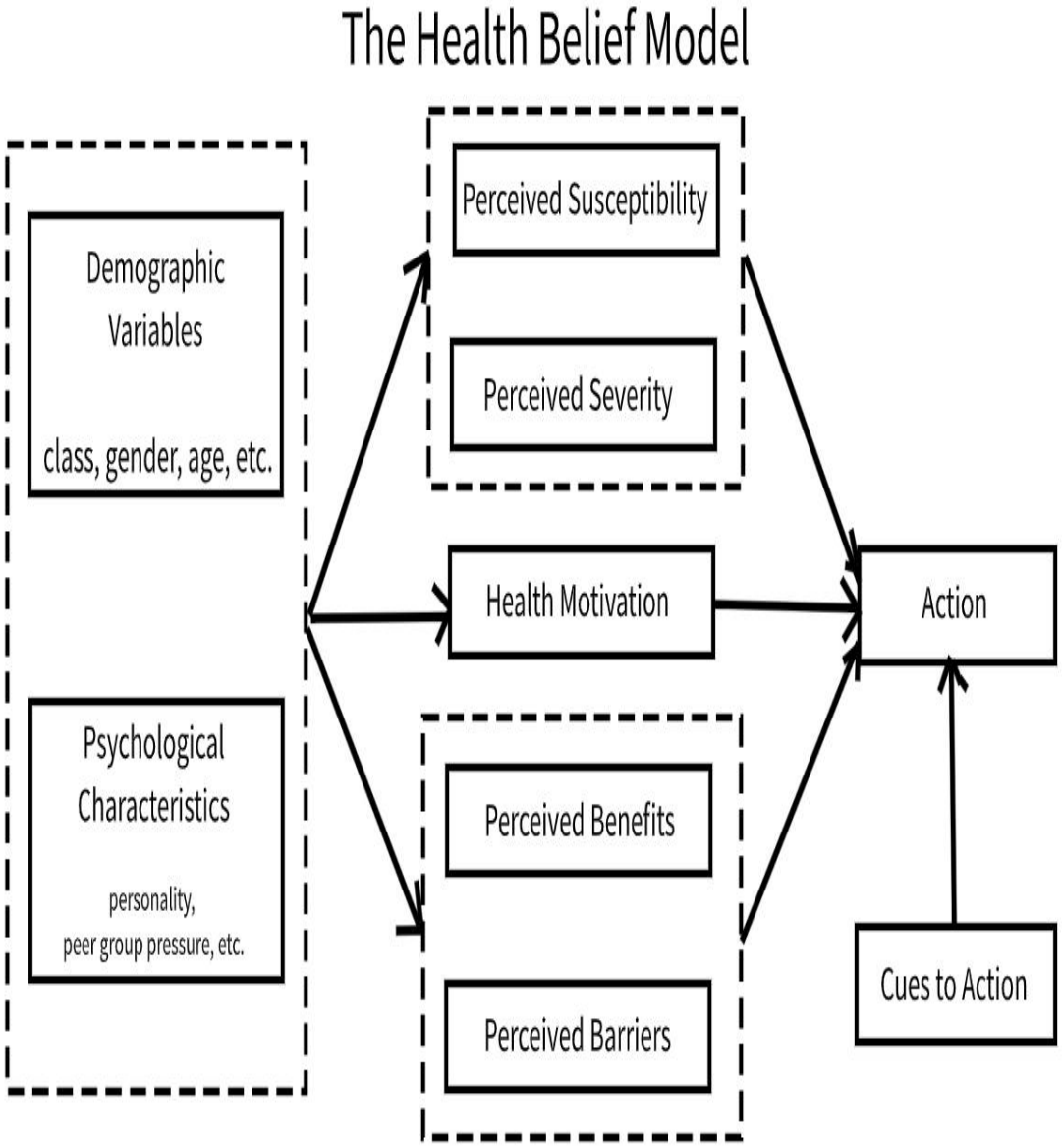


Figure 2.1 Diagrammatic illustration of Health Belief Model

Adapted from Health Belief Model by Irwin M. Rosenstock in 1950s

## 2.3 Empirical Review

### 2.3.1 Knowledge of female Nursing Student Regarding the Prevention and control measures for UTIs

Arooj et al. (2025) evaluated the level of knowledge among undergraduate nursing students regarding UTI prevention and identify potential gaps that may require targeted educational interventions. The study was a descriptive cross-sectional study, conducted among third year Bachelor of Science in Nursing (BSN) students at the university of Lahore. A structured pre-tested Likert-scale questionnaire was administered to assess knowledge. The study employed a convenience sampling technique, enrolling 65 participants. 21 (32.3%) were male, and 44 (67.7%) were female, with all aged between 20 and 25 years. Marital status showed that 61 (93.9) were single, and 4 (6.1%) were married. Knowledge assessment revealed that 5 (7.7%) had poor knowledge (<40%), 21 (32.3%) had fair knowledge (40-60%) and 39 (60.0%) exhibited good knowledge (>60%). Responses varied across different preventive measures, with 33.8% agreeing that emptying the bladder every four hours helps prevent UTIs, while 24.6% disagreed. Increased fluid intake was recognized as beneficial by 24.6%, whereas 13.8% disagreed. Washing the vaginal area from front to back was acknowledge as a preventive measure by 35.4%, while 24.6% disagreed.

Nalwadda & Were (2024) assessed the knowledge, attitude and practice towards prevention of urinary tract infection among female students. The study was a descriptive cross-sectional study using a random sampling method until 50 respondent was obtained, majority of the respondent were aged 21-23 years (50%) and 5(10%) were above 26year. (96%) were single and (4%) were married. (72%) gave the meaning of UTIs as the inflammation of both the urethra and the urinary bladder, and vagina. The majority (80%) strongly agreed that early diagnosis and treatment of

UTIs can reduce their complications and (4%) disagreed. (70%) strongly agreed that UTIs are common and (10%) disagreed. (70%) cleaned their perineum from front to back after a bowel movement whereas (30%) didn't. (64%) always emptied their bladder frequently while (36%) emptied their bladder sometimes meaning held urine for a long time. In this finding participants had adequate knowledge and reasonable attitude towards UTIs prevention with most participants maintaining good hygiene practice that greatly helped in reducing the risk of transmission of Urinary tract infections.

Jerkovic et al. (2023) investigated whether students who study within the biomedical field (i.e., nursing medicine) differ from those whose studies are not connected to the biomedical field in terms of their attitude and behaviors related urinary tract infection (UTIs). It was a cross-sectional survey conducted among 392 female students, of whom 243 attended a biomedical school and 149 (38.0%) attended a non-biomedical school. Only 22 (5.6%) of women felt that they could not recognize UTI. This study shows that young women are confident in recognizing UTIs, are open to alternative treatments, and would consider UTI management in a pharmacy setting. However, it reveals the gaps in their knowledge regarding antibiotic resistance risks, possible interactions, and efficacy of available preparations, as participants from group of biomedical students show greater knowledge and different behaviors. Their results indicate a need for greater improvement of health-care practitioners in discussing UTIs with women. This finding of the study largely supports Health Belief Model Theory, which posits that the attitude and behaviors of individuals are influenced by the available preparation.

### 2.3.2 Attitude of female Nursing Students Towards Practicing preventive measures for UTIs

Attitude refers to the predisposition or mindset with which individuals perceived and react to health-related issues. It includes beliefs, values, and feelings that influences behavior. A positive attitude towards UTI prevention and control encourages practice such as proper perineal hygiene, regular urination, increased fluid intake, and wearing breathable clothing. Conversely, a negative or indifferent attitude may result in negligence, poor hygiene practices, and delayed treatment-seeking behaviors.

Here are some attitudes that nursing students may exhibit towards urinary tract infections.

1. Empathy: Nursing students may feel compassionate towards patients experiencing UTIs, understanding the discomfort and pain associated with the infection.
2. Proactivity: Students may be motivated to take proactive measures to prevent UTIs, such as educating patient on proper hygiene and hydration.
3. Curiosity: Nursing students may be interested in learning more about UTIs, their causes, symptoms, and treatment options.
4. Responsibility: Students may feel a sense of responsibility to provide high-quality care to patient with UTIs, including administering medications and providing comfort measures.
5. Lack of understanding: Some nursing students may not fully comprehend the severity of UTIs or the importance of prompt treatment.
6. Discomfort: Student may feel uncomfortable discussing or addressing UTIs, particularly if they are not familiar with the topic.

7. Stereotyping: Some students may hold stereotypes about patients with UTIs, such as assuming they are older adults or have poor hygiene habits.
8. Lack of Improvement: Nursing students may not prioritize UTI prevention or treatment, considering it a minor issue compared to other health concerns.

**2.4 Summary of Review of Literature**

Different studies shows that many female students lacked knowledge about UTIs, including risk factors, symptoms, and prevention strategies, while some despite having knowledge about UTIs prevention and control, did not practice what they knew, citing lack of time, resources, or motivation. Urinary tract infection (UTI) is a prevalent health issue among women, with young females, including university students, being particularly at risk due to a combination of anatomical, behavioral, and hygiene-related factors. Among female nursing students, adequate knowledge and a positive attitude towards UTI prevention and control are essential not only for their personal health but also for their future roles as healthcare providers.

Some areas of Improvement include.

1. Education: Nursing students may benefit from additional education on UTIs, including their causes, symptoms and treatment options.

2. Clinical Experience: Providing nursing students with clinical experience caring for patient with UTIs can help them develop empathy and understanding.

3. Inter-professional Collaboration: Encouraging nursing students to work with other healthcare professionals, such as physicians and pharmacists, can help them develop a more comprehensive understanding of UTIs.

4. Patient-centered care: Emphasizing patient-centered care and encouraging nursing students to consider the individual needs and experience of patients with UTIs can help them develop a more empathetic and proactive approach to car

# CHAPTER THREE

# RESEARCH METHODOLOGY

## 3.0 Introduction

This chapter elaborates on the methods and procedures that was employed in this research. It details the methodological framework of the study as the baseline description in obtaining the research materials. (Koswara, 2022). The following was discussed under the headings: research design, research settings, population target, sample size, sampling technique, instrument, data collection, validity/reliability of the instrument, method of data collection, method of data analysis and ethical consideration.

## 3.1 Research Design

For this study, the researcher made use of a cross-sectional descriptive survey. The choice of this descriptive cross-sectional method is deemed most suitable because it is relatively quick and allows for the collection of data from a large sample, it also provides a snapshot of the current knowledge and attitude of female nursing students. The insight obtained from this design can be essential for informing the development of interventions and policies directed at the advancement in tertiary education of nurses.

## 3.2 Research Setting

The research setting encompasses the physical, social, and cultural environment in which data collection occurs within a study (Koswara, 2022). The study was carried out in the Faculty of Nursing Science, College of Medical Sciences, University of Benin, Benin City, Edo State. Geographically, the University of Benin main campus (Ugbowo) is located in the Ovia Northeast Local Government Area of Edo State in Benin City. University of Benin is a tertiary institution founded in 1970. It started as an institute of technology and was later accorded the status of fully fledged university by National University Commission (NUC) in July 1971. Presently, the total students' community is over 77,000 which is made up of both full time and part time students shared among various faculties. The university currently comprises of 12 faculties consisting of various departments. The specific location for this study is the Faculty of Nursing Science classroom/lecture halls.

### 3.3 Target Population

Target population refers to the entire group of individuals to which researchers are interested in generalizing conclusions. The target population for this study comprised of level 200 to 500 female nursing students from the Department of Nursing Science which is totally 545 female nursing students ( statistics from the students affairs department, University of Benin, 2025). The selection of this target population was based on their fulfillment of the criteria to participate as subjects in this research study.

**Table 3.1: Population of students in the Department of Nursing, April 2025.**

| Level | No of female students |
|---|---|
| 200 | 86 |
| 300 | 164 |
| 400 | 162 |

| | |
|---|---|
| 500 | 133 |
| **Total** | 545 |

**Inclusion Criteria**

- Female nursing students of the Faculty of Nursing Science, University of Benin.
- Students in levels 200 to 500.
- Those who gave informed consent to participate.
- Students who were available in the lecture halls during data collection.

**Exclusion Criteria**

- Male nursing students (since the study focused only on female students).
- Female nursing students in level 100 (not part of the defined study population).
- Students who did not consent to participate.
- Students who were absent or unavailable at the time of questionnaire distribution.

**3.4 Sample Size Determination**

Sample size is the number of subjects or participants found and which the study is generalized on. The formula that was used to determine the sample size is the Sample Size Formula for a Finite Population by **Krejcie and Morgan's Formula** (1970) A 95% confidence level was chosen for this study, signifying that the researcher aims to be 95% confident that the sample results accurately reflect the population. A margin of error of 5% (0.05) will be considered acceptable

$$n = N^* Z^2 p * (1-p) / (N-1). e^2 + Z^2 * p* (1-p)$$

Where:

n = Required Sample Size

N = Population size (545)

Z = The Z-score corresponding to the chosen confidence level (for 95%, Z is approximately 1.96)

p = The estimated proportion of the population (0.5) is used for maximum variability, resulting in maximum required sample size.

e = The margin of error (0.05)

$n = 545* 1.96^2*0.5 * (1-0.5) / (545-1)* 0.05^2 +1.96^2 * 0.5* (1-0.5)$

n = 545*3.84*0.5*0.5/544*0.0025 + 3.84*0.5*0.5

n = 523 /2.32

n = 225

10% attrition rate= 10% sample size

= (10/100) x380

=35

Total sample size= 225 + 35 = 260

The formula was used by Udo-Anyanwu et al., (2015) to determine sample size of their study. It was found appropriate for determining sample size in this study.

**3.5 Sampling Technique**

Convenience sampling also called availability sampling is a specific type of non-probability sampling method that relies on the data collection from population members who are conveniently available to participate in the study (Morgan, 2012). It involves the sample being drawn from the part of the population that is close to hand. Convenience sampling is a method that is extremely speedy, easy, readily available, and cost effective. Convenience sampling was adopted while carrying out the research study. The researcher used method because the students might not always be available at the same time, therefore the instrument was conveniently distributed to the available students.

### 3.6 Instrument for Data Collection

This refers to research tool and it is the means of collecting information for a study. The instrument that was used for this study is a self-structured questionnaire (appendix 1) which include yes/no, and multiple-choice question as well as a four-point rating scale. The questionnaire has four sections: A, B, C and D. Section A was based on the demographic characteristics of the respondents which contained 6 item questions, section B covered 10 items on the knowledge of female nursing students towards prevention and control on urinary tract infection with a four-point rating scale and was measured using an average mean of 2.5 as the standard to determine high level of knowledge (>2.5) and limited knowledge (<2.5). Section C covered questions on attitude of female nursing students towards prevention and control on urinary tract infection with a total of 10 items and was measured using an average mean of 2.5 as the standard to determine good attitude (>2.5) and poor attitude (<2.5). Section D covered questions on practice and experience of female nursing students on the prevention and control on urinary tract infection containing 5 items which involves a yes/no answer.

### 3.7 Validity of Instruments

Validity is the extent to which a measurement tool measures what it is supposed to measure (Saldanha et al., 2021). Expert judgement was used to assess he data collection instrument, and the supervisor determined the content validity and made the necessary modifications. By making sure that the items or questions included in a measurement instrument are pertinent and representational of the construct being tested, this study used content validity to determine whether the test is completely relative of what is seeks to measure. This made it easier to

guarantee that the right data was gathered and that any necessary adjustment were done before the study started. The content of this questionnaire was carefully scrutinized and validated by the expert statistician who will check to make sure the instrument is valid and adequate to give the relevant information. A Medical Surgical Nurse and my project supervisor who made the necessary correction and approval.

**3.8 Reliability of the Instruments**

Reliability is a key component of research quality, and it refers to stability and consistency of results across different conditions. A pilot study was carried out using split half method to test Undergraduates of Well-Spring University, Benin City, Edo State. The Cronbach alpha reliability technique was employed in this study. Cronbach's alpha value of 0.7 or above is deemed Satisfactory suggesting that the scale's items is reliably measured.

**3.9 Method of Data Collection**

Two hundred and sixty well-structured questionnaires was administered to students in the Faculty of Nursing, College of Medical Sciences, University of Benin, Benin City, Edo State. The questionnaire was distributed directly to the participants after consent was approved by them in the lecture hall and the procedure was explained to them. They had enough time to complete the questionnaires. What is required was provided explanations to. Confidentiality was guaranteed to all participants. The researcher stayed until every questionnaire was completed and turned in. Data collection was completed in two days.

**3.10 Method of Data Analysis**

The statistical techniques employed in the data analysis was descriptive statistics using mean, standard deviation, frequency and percentage distribution, while Chi-square analysis techniques was used to test the research hypotheses with the aid of Statistical Package for Social Science (SPSS) version 24.0 for windows. The level of significance was set at $p<0.05$.

### 3.11 Ethical Consideration

Ethical approval was obtained from the ethics and research committee of College of Medical Sciences, University of Benin. Due permission was obtained from the Head of Department, Medical surgical nursing in the Faculty of Nursing Science, University of Benin, to carry out the research. To uphold the concept of voluntary involvement, student did not encounter any compulsion to engage in the research. The researcher ensured utmost confidentiality, and the element of anonymity was employed to protect the identity of the students.

The study was conducted with the following ethical issues in mind:

**Informed Consent:** Participants was informed about the purpose, aim of the study, potential benefits and give their voluntary consent to participate.

**Privacy and Confidentiality:** Participant's personal information and data was kept confidential and protected from unauthorized access or dissemination.

**Non-maleficence:** This research study did not cause any physical or psychological harm to the participant.

**Ethical/non-falsification of data:** This study ensured that data collection and analysis methods are ethical. All data collected during the study was not adulterated but was true data from the findings and respondents.

**Regulation and guideline compliance:** This study complied with all applicable regulation and guidelines governing research, including those related to human subject's research.

**Plagiarism:** This study was tested and comply with the accepted plagiarism score of the institution.

# CHAPTER FOUR

## RESULT AND FINDINGS

This chapter deals with the representation of data collected regarding the knowledge and attitude towards prevention and control on urinary tract infection among female nursing student in university of Benin, Benin City. A total of 260 questionnaires were distributed to level 200 to 500 female nursing students from the Faculty of Nursing Science which is totally 545 female nursing students (statistics from the Student Affairs department, University of Benin, 2025), 256 were properly filled and valid for data analysis, giving a response rate of 96.5%.

**Table 4.1: Socio-demographic characteristics of respondents**

| Variable | Frequency (n = 256) | Percent (%) |
|---|---|---|
| **Age** | | |
| Less than 20 years | 31 | 12.1 |
| 20 – 24 years | 143 | 55.9 |
| 25 – 29 years | 58 | 22.7 |
| 30 – 39 years | 21 | 8.2 |
| Above 40 years | 3 | 1.2 |
| **Academic Level** | | |
| 200 Level | 66 | 25.8 |
| 300 Level | 61 | 23.8 |
| 400 Level | 64 | 25.0 |
| 500 Level | 65 | 25.4 |
| **Ethnicity** | | |
| Igbo | 28 | 10.9 |
| Hausa | 24 | 9.4 |
| Yoruba | 47 | 18.4 |
| Others (e.g. Edo, Urhobo, etc.) | 157 | 61.3 |
| **Marital Status** | | |
| Single | 216 | 84.4 |
| Married | 37 | 14.5 |
| Other (e.g. Divorced/Widowed) | 3 | 1.2 |
| **Religion** | | |
| Christianity | 211 | 82.4 |
| Islam | 39 | 15.2 |
| Others (e.g. Traditional) | 6 | 2.3 |

Table 4.1 outlines the socio-demographic characteristics of the 256 female nursing student respondents. The majority (55.9%) were between the ages of 20 and 24, followed by 22.7% aged

25–29. Respondents below 20 years made up 12.1%, those aged 30–39 were 8.2%, while only 1.2% were above 40 years. Academic levels were relatively evenly distributed, with 200 level students comprising 25.8%, 300 level 23.8%, 400 level 25.0%, and 500 level 25.4%. Ethnically, a majority of respondents (61.3%) belonged to "Others," including Edo, Urhobo, and similar groups. Yoruba accounted for 18.4%, Igbo 10.9%, and Hausa 9.4%. Most respondents were single (84.4%), with 14.5% married and 1.2% falling under other categories such as divorced or widowed. In terms of religion, Christianity was the dominant faith (82.4%), followed by Islam (15.2%), and other religions, including traditional beliefs, at 2.3%. Overall, the respondents were largely young, single, Christian women from diverse ethnic backgrounds, with a fairly even academic level distribution.

**Answering Research Questions**

**Research Question 1:** What is the level of knowledge of female Nursing Student regarding the prevention, control and complications of urinary tract infections in University of Benin?

**Table 4.2: Knowledge of female nursing students towards prevention and control of urinary tract infection**

| Items | Strongly Agree | Agree | Disagree | Strongly Disagree | Mean | Remark |
|---|---|---|---|---|---|---|
| I know what urinary tract infection is | 133(52) | 89(35) | 22(9) | 12(5) | 3.3 | Good |
| Bacteria is the most common cause of UTIs | 121(47) | 97(38) | 26(10) | 12(5) | 3.3 | Good |
| Holding urine for long periods can increase the risk of UTIs | 109(43) | 99(39) | 34(13) | 14(5) | 3.2 | Good |
| Cleaning the perineum from front to back helps in prevention of UTIs | 117(46) | 91(36) | 34(13) | 14(5) | 3.2 | Good |
| Dehydration can increase the risk of UTIs | 103(40) | 97(38) | 36(14) | 20(8) | 3.1 | Good |
| Cranberry juice can help prevent UTIs | 91(36) | 87(34) | 47(18) | 31(12) | 2.9 | Good |
| Avoiding fluids that irritate the bladder such as alcohol aids in UTI prevention | 97(38) | 103(40) | 36(14) | 20(8) | 3.1 | Good |
| Douching can increase the risk of UTIs | 89(35) | 101(39) | 44(17) | 22(9) | 3 | Good |
| Symptoms of UTIs include abdominal pain | 113(44) | 83(32) | 38(15) | 22(9) | 3.1 | Good |
| Antibiotics are the primary treatment for UTIs | 127(50) | 93(36) | 24(9) | 12(5) | 3.3 | Good |
| | | | **Grand Mean** | | **3.2** | **Good** |

**Mean Cut-off = 2.5**

Table 4.2 shows that the highest mean score (3.3) was recorded for the items "I know what urinary tract infection is," "Bacteria is the most common cause of UTIs," and "Antibiotics are the primary treatment for UTIs." This was followed by a mean of 3.2 for "Holding urine for long periods can increase the risk of UTIs" and "Cleaning the perineum from front to back helps in

prevention of UTIs." Items such as "Dehydration can increase the risk of UTIs," "Avoiding fluids that irritate the bladder such as alcohol aids in UTI prevention," and "Symptoms of UTIs include abdominal pain" each had a mean of 3.1. The item "Douching can increase the risk of UTIs" had a mean of 3.0, while "Cranberry juice can help prevent UTIs" had the lowest mean score of 2.9. The grand mean was 3.2 which is greater than the mean cut of 2.5, indicating good overall knowledge.

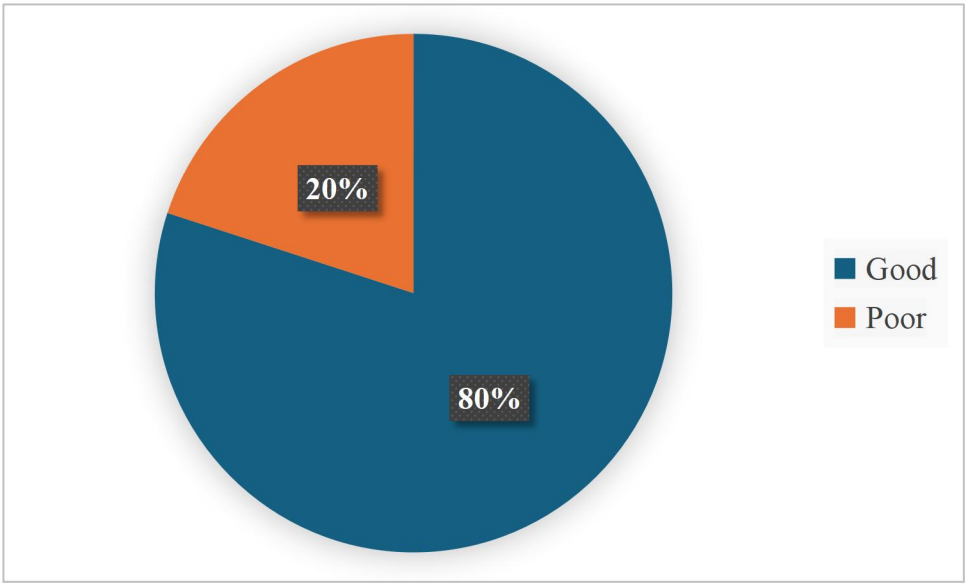


**Figure 4.1: Pie chart showing knowledge of female nursing students towards prevention and control of urinary tract infection**

Figure 4.1 shows that 204 respondents (80%) demonstrated good knowledge of urinary tract infection prevention and control, while 52 respondents (20%) had poor knowledge, with a mean value of 3.2.

**Research Question 2:** What is the attitude towards prevention and control on urinary tract infection among female nursing students, in University of Benin, in Benin City?

**Table 4.3: Attitude of female nursing students towards prevention and control of UTIs**

| ITEMS | Strongly Agree | Agree | Disagree | Strongly Disagree | Mean | Remark |
|---|---|---|---|---|---|---|
| I believe that UTIs are a serious health concern | 134(52) | 87(34) | 23(9) | 12(5) | 3.3 | Positive |
| I am comfortable discussing UTIs with healthcare professionals | 91(36) | 108(42) | 35(14) | 22(9) | 3 | Positive |
| I believe nursing students should be well-informed about UTIs prevention and control | 148(58) | 76(30) | 21(8) | 11(4) | 3.4 | Positive |
| I am willing to educate others about UTIs prevention | 119(46) | 85(33) | 33(13) | 19(7) | 3.2 | Positive |
| I am confident in my abilities to prevent UTIs | 97(38) | 106(41) | 29(11) | 24(9) | 3.1 | Positive |
| I believe preventing UTIs is important | 141(55) | 89(35) | 18(7) | 8(3) | 3.4 | Positive |
| I drink sufficient water to prevent UTIs | 88(34) | 104(41) | 40(16) | 24(9) | 3 | Positive |
| I regularly practice good hygiene to prevent UTIs | 123(48) | 96(38) | 25(10) | 12(5) | 3.3 | Positive |
| I believe that UTIs affect the quality of life | 130(51) | 90(35) | 21(8) | 15(6) | 3.3 | Positive |
| I would encourage others to seek medical attention if they experienced UTI symptoms | 139(54) | 86(34) | 20(8) | 11(4) | 3.4 | Positive |
| | | | | **Grand Mean** | **3.2** | **Positive** |

**Mean Cut-off = 2.5**

Table 4.3 shows that the highest mean score of 3.4 was recorded for the items "I believe nursing students should be well-informed about UTIs prevention and control," "I believe preventing UTIs is important," and "I would encourage others to seek medical attention if they experienced UTI symptoms." This was followed by a mean of 3.3 for "I believe that UTIs are a serious health concern," "I regularly practice good hygiene to prevent UTIs," and "I believe that UTIs affect the

quality of life." The item "I am willing to educate others about UTIs prevention" had a mean of 3.2, while "I am confident in my abilities to prevent UTIs" recorded a mean of 3.1. The lowest mean scores of 3.0 were found in "I am comfortable discussing UTIs with healthcare professionals" and "I drink sufficient water to prevent UTIs." The respondents show good attitude with the grand mean of 3.2 which is greater than the cut-off mean of 2.5.

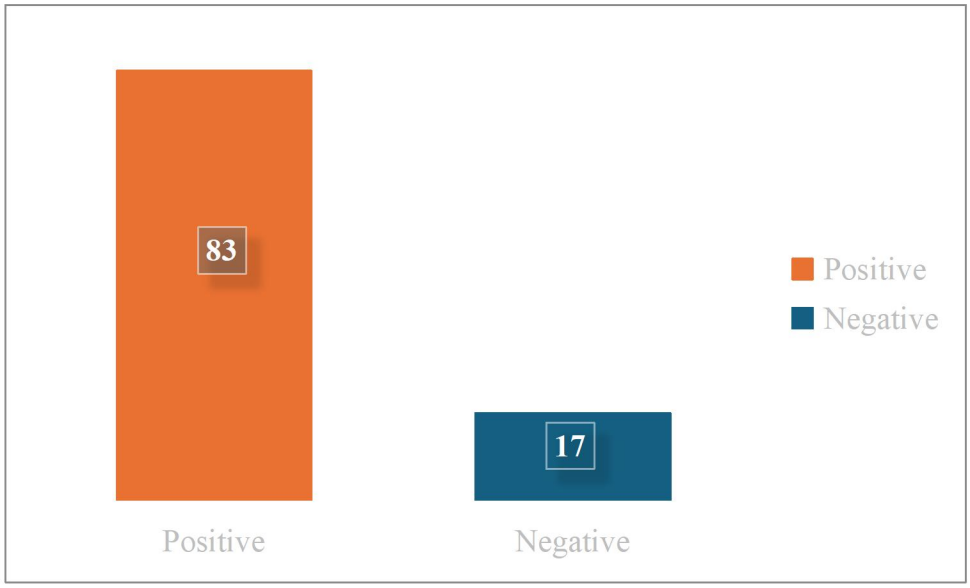


**Figure 4.2: Bar chart showing attitude of female nursing students towards prevention and control of utis**

Figure 4.2 shows that 213.7 respondents (83%) exhibited a positive attitude towards the prevention and control of urinary tract infections, while 42.3 respondents (17%) displayed a negative attitude.

**Research Question 3:** What factors influence the knowledge and attitude of female nursing students towards prevention and control of UTI in university of Benin, Benin City.

**Table 4.4: Practice and experience of female nursing students on the prevention and control of urinary tract infection**

| Question | YES | NO | Mean | Remark |
|---|---|---|---|---|
| Have you ever had a patient with UTI? | 179(70) | 77(30) | 1.7 | High |
| Have you ever provided care to a patient with UTIs? | 173(68) | 83(32) | 1.7 | High |
| Have you ever experienced UTIs? | 108(42) | 148(58) | 1.4 | Low |
| Will giving patient coffee and tea irritate the bladder? | 196(77) | 60(23) | 1.8 | High |
| Will encouraging patient to drink plenty amount of water per day help prevent UTIs? | 227(89) | 29(11) | 1.9 | High |
| | **Grand Mean** | | **1.7** | **High** |

**Mean Cut-off = 1.5**

Table 4.4 shows that the highest mean score of 1.9 was recorded for the item "Will encouraging patient to drink plenty amount of water per day help prevent UTIs?" followed by 1.8 for "Will giving patient coffee and tea irritate the bladder?" and 1.7 for both "Have you ever had a patient with UTI?" and "Have you ever provided care to a patient with UTIs?" The lowest mean score of 1.4 was recorded for "Have you ever experienced UTIs?" The grand mean was 1.7.

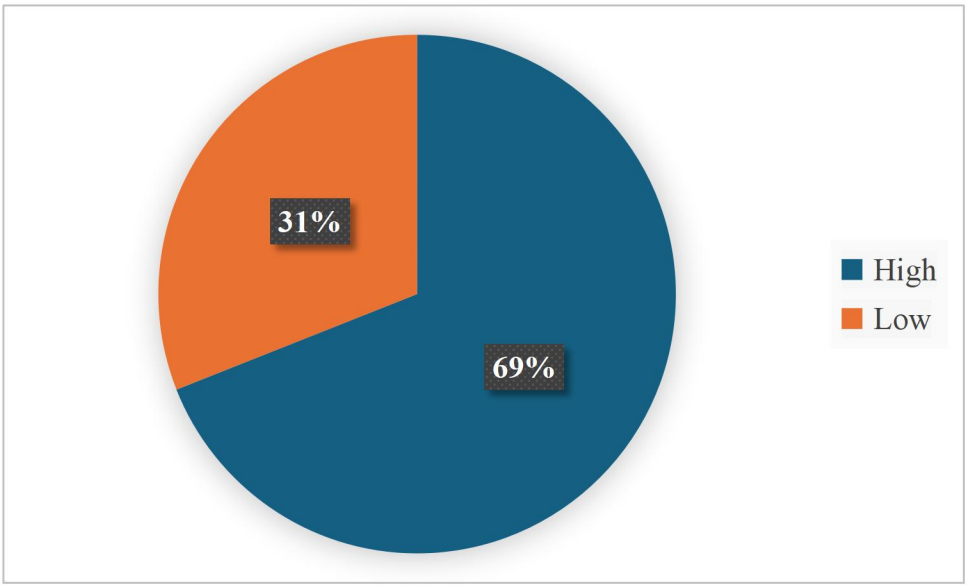


**Figure 4.3: Pie chart showing practice and experience of female nursing students on the prevention and control of urinary tract infection**

Figure 4.3 shows that 177 respondents (69%) demonstrated high practice and experience in the prevention and control of urinary tract infections, while 79 respondents (31%) had low practice and experience.

**Hypothesis Testing**

There is a significant relationship between in the level of knowledge about UTIs prevention and control and the attitude towards UTI prevention and control between different year levels of nursing students.

**Table 4.5: Relationship between the level of knowledge and the attitude towards the prevention and control of urinary tract infection (UTIs) among female nursing students**

| Attitude | Knowledge | | Test Statistics ($\chi^2$) | df | P value | Decision |
|---|---|---|---|---|---|---|
| | **Good** | **Poor** | | | | |
| **Positive** | 204(80.0) | 52(20.0) | 1.7626 | 1 | 0.05 | **Accepted** |
| **Negative** | 214(83.0) | 43(17.0) | | | | |

Table 4.5 shows that among respondents with a positive attitude, 204 (80.0%) had good knowledge while 52 (20.0%) had poor knowledge. Similarly, among those with a negative attitude, 214 (83.0%) had good knowledge and 43 (17.0%) had poor knowledge. The chi-square test statistic was 1.7626 with 1 degree of freedom and a p-value of 0.05, indicating that the relationship was statistically accepted.

# CHAPTER FIVE

# DISCUSSION AND FINDINGS

This chapter discusses the major findings of the research compared with the literature reviewed, the implication for nursing, summary, conclusion, Recommendations and Suggestions for further Studies.

## 5.1. Discussion of major Findings

The study assessed the knowledge and attitude towards prevention and control on urinary tract infection among female nursing student in university of Benin, Benin City. The socio-demographic characteristics of the respondents reveal important insights when compared to previous studies. The sample consisted of 256 female nursing students, with the majority (55.9%) falling within the 20-24 years age bracket, followed by 22.7% in the 25-29 years range. This age distribution somewhat aligns with Arooj et al.'s (2025) study, where all participants were between 20-25 years, and Nalwadda & Were's (2024) research, where 50% of respondents were aged 21-23 years. However, the current study captured a broader age range, including students above 30 years (9.4% combined), providing a more diverse age perspective. Academic level distribution showed a relatively balanced representation across all years, with 200 level (25.8%), 300 level (23.8%), 400 level (25.0%), and 500 level (25.4%). This even distribution differs from Arooj et al.'s (2025) study, which focused solely on third-year BSN students, and provides a more comprehensive view across different stages of nursing education. The ethnic composition demonstrated significant diversity, with the majority (61.3%) coming from various ethnic groups (including Edo, Urhobo, etc.), while Yoruba (18.4%), Igbo (10.9%), and Hausa (9.4%) made up the rest. This ethnic diversity was not specifically addressed in the previous studies, making this demographic insight unique to the current research. Regarding marital status, 84.4% of

respondents were single, 14.5% married, and 1.2% in other categories (divorced/widowed). This distribution shows some similarity to both Arooj et al.'s (2025) study, where 93.9% were single and 6.1% married, and Nalwadda & Were's (2024) research, where 96% were single and 4% married, though the current study shows a slightly higher proportion of married students. Religious affiliation indicated a predominance of Christianity (82.4%), followed by Islam (15.2%), and other religions (2.3%). This religious demographic was not specifically addressed in the previous studies, adding another layer of understanding to the characteristics of the study population. These demographic characteristics provide important context for interpreting the knowledge, attitudes, and practices regarding UTI prevention and control. The diverse representation across academic levels, age groups, ethnicities, and marital status suggests that the findings might be more generalizable than previous studies that had more homogeneous samples. This diversity might also explain some variations in knowledge levels and attitudes compared to previous research, as different demographic factors could influence awareness and understanding of UTI prevention and control measures.

**Knowledge of female nursing students, regarding the prevention, control and complications of urinary tract infections**

The findings regarding knowledge of female nursing students towards UTI prevention and control revealed that a substantial majority (80%) of the respondents demonstrated good knowledge, while 20% showed poor knowledge, with an overall mean value of 3.2. This level of knowledge is notably higher than that reported by Arooj et al. (2025), where only 60% of nursing students exhibited good knowledge. The findings also surpass those of Nalwadda & Were (2024), though their study had a smaller sample size of 50 respondents. Analysis of specific knowledge domains showed strong understanding of fundamental concepts, with 87% of respondents (52%

strongly agreeing and 35% agreeing) demonstrating knowledge of what UTIs are. Similarly, 85% acknowledged bacteria as the primary cause of UTIs (47% strongly agreeing, 38% agreeing). These findings align with Nalwadda & Were (2024), where 72% of respondents correctly identified UTI characteristics, though the current study shows a higher level of understanding. Regarding preventive measures, 82% of respondents recognized the importance of proper perineal cleaning (46% strongly agreeing, 36% agreeing), significantly higher than the 35.4% reported by Arooj et al. (2025) and surpassing the 70% noted in Nalwadda & Were's study. Understanding of risk factors was also strong, with 82% acknowledging the risks of holding urine (43% strongly agreeing, 39% agreeing), compared to only 33.8% in Arooj et al.'s study who recognized the importance of regular bladder emptying. Knowledge of treatment approaches was robust, with 86% of respondents (50% strongly agreeing, 36% agreeing) recognizing antibiotics as the primary treatment for UTIs. This aligns with Jerkovic et al.'s (2023) findings, although their study highlighted concerns about understanding antibiotic resistance among students. Prevention strategies such as avoiding bladder irritants and maintaining proper hydration were well understood, with 78% of respondents acknowledging these factors. The lowest mean score (2.9) was associated with knowledge about cranberry juice as a preventive measure, suggesting some uncertainty about alternative prevention methods. These findings demonstrate an overall improvement in nursing students' knowledge of UTI prevention and control compared to previous studies, though some areas still show room for enhancement. The higher levels of knowledge in the current study might reflect improvements in nursing education curricula or more effective teaching methodologies regarding UTI prevention and control.

**Attitude towards prevention and control on urinary tract infection among female nursing students**

The study findings revealed a predominantly positive attitude towards UTI prevention and control among female nursing students, with 83% of respondents demonstrating positive attitudes compared to 17% showing negative attitudes. This overall positive disposition aligns with but exceeds the findings of Nalwadda & Were (2024), where 80% of respondents strongly agreed about the importance of early diagnosis and treatment of UTIs. The analysis of specific attitudinal components showed strong positive attitudes across multiple dimensions. A significant majority (86%) of respondents recognized UTIs as a serious health concern, with 52% strongly agreeing and 34% agreeing. This awareness of UTI significance correlates with Nalwadda & Were's (2024) findings, where 70% strongly agreed that UTIs are common health issues, though the current study shows a higher level of concern. Regarding professional development and education, an overwhelming 88% of respondents (58% strongly agreeing, 30% agreeing) believed that nursing students should be well-informed about UTI prevention and control. This professional commitment was further evidenced by 79% (46% strongly agreeing, 33% agreeing) expressing willingness to educate others about UTI prevention. These findings align with Jerkovic et al.'s (2023) observation that biomedical students showed greater engagement with UTI-related knowledge and prevention strategies. Personal confidence and preventive practices also showed positive attitudes, with 79% of respondents (38% strongly agreeing, 41% agreeing) expressing confidence in their ability to prevent UTIs. This confidence level is notably higher than in Jerkovic et al.'s (2023) study, where only 94.4% of participants felt they could recognize UTIs. Regular practice of good hygiene was reported by 86% of respondents (48% strongly agreeing, 38% agreeing), surpassing the 70% reported by Nalwadda

& Were (2024) who practiced correct perineal cleaning. The highest mean scores (3.4) were observed in three areas: believing nursing students should be well-informed about UTIs, believing UTI prevention is important, and willingness to encourage others to seek medical attention for UTI symptoms. This suggests a strong professional commitment to UTI prevention and control. The lowest mean scores (3.0) were associated with comfort in discussing UTIs with healthcare professionals and personal hydration practices, though these still indicated positive attitudes. These findings demonstrate a more robust positive attitude towards UTI prevention and control compared to previous studies. The higher levels of positive attitudes in the current study might reflect improved awareness and educational emphasis on UTI prevention in nursing education. However, there remains room for improvement in areas such as personal preventive practices and professional communication comfort levels.

**Factors that influence the knowledge and attitude of among female nursing students towards the prevention and control of UTIs**

The findings regarding practice and experience of female nursing students in UTI prevention and control revealed that 69% of respondents demonstrated high practice and experience levels, while 31% showed low practice and experience, with an overall mean value of 1.7. This presents an interesting contrast to their knowledge and attitude scores, suggesting that practical experience may lag behind theoretical understanding. Clinical exposure to UTI cases was relatively common among respondents, with 70% reporting experience with UTI patients and 68% having provided direct care to patients with UTIs. These findings suggest substantial clinical exposure, though they differ from previous studies which focused more on personal preventive practices rather than clinical experience. The level of clinical exposure demonstrated in the current study provides important context for understanding the practical application of UTI

prevention knowledge. Personal experience with UTIs was reported by 42% of respondents, while 58% had never experienced a UTI themselves. This personal experience rate provides an interesting perspective when compared to Jerkovic et al.'s (2023) study, which focused on students' confidence in recognizing UTIs but did not specifically address personal experience with the condition. Regarding practical knowledge of preventive measures, 77% of respondents correctly identified that coffee and tea could irritate the bladder, demonstrating understanding of dietary factors in UTI prevention. This aligns with the current study's knowledge findings where 78% acknowledged the importance of avoiding bladder irritants. An even higher percentage (89%) recognized the importance of adequate water intake in UTI prevention, showing stronger practical understanding compared to Arooj et al.'s (2025) study, where only 24.6% recognized increased fluid intake as beneficial. These findings present a more complex picture than previous studies, particularly Nalwadda & Were (2024), which reported that 64% of participants always practiced regular bladder emptying. The current study's focus on both clinical experience and preventive knowledge provides a broader perspective on practical competence. While the overall practice level is high (mean = 1.7), the gap between those with high practice (69%) and those with high knowledge (80%) or positive attitudes (83%) suggests potential areas for improvement in translating knowledge and attitudes into practical application. This disparity between theoretical knowledge and practical experience highlights the importance of clinical exposure and hands-on training in nursing education, particularly regarding UTI prevention and control. The findings suggest that while students may have good theoretical understanding and positive attitudes, practical experience might require additional attention in nursing education programs.

### 5.2 Implication to nurses

The findings of this study have significant implications for nursing practice, particularly in the areas of education, clinical training, and patient care regarding urinary tract infection (UTI) prevention and control. First and foremost, the high level of knowledge demonstrated by the nursing students suggests that nursing education programs at the University of Benin are effectively equipping students with the foundational knowledge necessary to manage and prevent UTIs. This is critical, as nurses are often the first point of contact for patients presenting with UTI symptoms, and their ability to provide accurate information and appropriate interventions can significantly impact patient outcomes.

However, while the students exhibited good knowledge, there was a notable gap between theoretical knowledge and practical application. With 69% of students reporting high practice levels, it is clear that clinical exposure plays a vital role in translating knowledge into real-world application. This suggests that nursing education programs should place greater emphasis on ensuring that students not only understand UTI prevention measures but are also given ample opportunities for hands-on practice, particularly in clinical settings where they can manage UTI patients and observe preventive measures in action. Simulation exercises, role-playing, and other interactive training methods can bridge this gap, helping students better translate theoretical learning into practice.

The positive attitudes displayed by the majority of students, with 83% expressing a commitment to preventing UTIs and educating others, indicate a strong professional ethic and a willingness to promote health within the community. This commitment to patient education is essential in nursing practice, as nurses are often responsible for conveying important health messages to patients and the public. Nurses can use their knowledge of UTI prevention to educate patients on

lifestyle modifications, such as the importance of proper hygiene, adequate hydration, and the need to avoid irritants like coffee and tea, as well as the importance of seeking early medical attention for UTI symptoms.

Furthermore, the study highlights a critical area for improvement—comfort and confidence in discussing UTIs with patients. Although the students displayed overall positive attitudes, there was some discomfort in openly discussing UTI prevention and treatment with healthcare professionals. This indicates the need for further development of communication skills within nursing curricula, particularly in addressing sensitive health topics. Workshops on patient communication, especially regarding sexually transmitted infections (STIs) and other conditions that may carry stigma, could empower nurses to engage more effectively with patients and promote better health outcomes.

**5.3 Summary**

This study assessed the knowledge, attitude, and preventive practices regarding urinary tract infections (UTIs) among nursing students at the University of Benin. The findings revealed that a majority of the students possessed a high level of knowledge about the causes, symptoms, risk factors, and prevention of UTIs. Most respondents correctly identified poor hygiene, holding urine for extended periods, and lack of adequate water intake as major contributors to UTI development. This strong knowledge base was complemented by a generally positive attitude, with 83% of students expressing a willingness to educate others and actively participate in UTI prevention efforts. In terms of practice, a significant proportion of the students reported engaging in appropriate preventive behaviors, such as maintaining proper personal hygiene, staying hydrated, and avoiding irritants. However, the study also identified areas where practical application and communication could be improved. For instance, some students expressed

discomfort in discussing UTI-related issues with patients and healthcare professionals, highlighting a need for more training in communication skills and patient education.

### 5.4 Conclusion

The study concludes that female nursing students at the University of Benin possess a commendable level of knowledge and a generally positive attitude towards the prevention and control of urinary tract infections (UTIs). The majority demonstrated understanding of key UTI-related concepts, including causes, symptoms, risk factors, and appropriate preventive measures. Their attitudes reflect a strong sense of professional responsibility and willingness to educate others, indicating that nursing education is effectively instilling awareness of UTI prevention.

However, the study also highlights a gap between theoretical knowledge and practical application, particularly in personal practices and comfort in discussing UTIs with patients or professionals. While clinical exposure to UTI cases was relatively high, more emphasis is needed on strengthening students' confidence and competence in translating knowledge into consistent preventive practices. While the foundational knowledge and attitude of nursing students towards UTI prevention and control are strong, there is a clear need for improved experiential learning, communication skills training, and reinforcement of practical strategies within the nursing curriculum to ensure more effective UTI management and education in real-world clinical settings.

### 5.5 Limitations of study

Despite the valuable insights gained from this research, several limitations should be acknowledged. Firstly, the study was limited to female nursing students at the University of Benin, which may restrict the generalizability of the findings to other institutions or to male

nursing students. The homogeneity of the sample may not fully capture variations in knowledge and attitude that could exist across different academic environments or demographic groups.

Secondly, the study relied on self-reported data through structured questionnaires, which may have introduced social desirability bias. Respondents might have provided answers they perceived as acceptable or expected, rather than reflecting their actual knowledge or practices.

**5.6 Recommendations**

Based on the findings of this study, several recommendations are proposed to enhance the knowledge, attitude, and practical engagement of nursing students in the prevention and control of urinary tract infections (UTIs):

- Nursing education programs should integrate more comprehensive and practical modules on UTI prevention, control, and management. Emphasis should be placed not only on theoretical knowledge but also on case-based learning and simulation experiences to bridge the gap between knowledge and practice.
- Increased clinical exposure to UTI cases under supervised conditions should be encouraged. This will allow students to apply their theoretical knowledge in real-world settings, reinforcing both confidence and competence in UTI management.
- Nursing schools should conduct regular awareness sessions and workshops focused on UTI prevention strategies, including hygiene practices, hydration, and risk factor identification. These programs should be participatory and interactive to promote retention and engagement.
- Nursing students can be empowered as peer educators to share knowledge about UTIs within their academic community. This approach can help normalize discussions around personal hygiene and preventive practices while reinforcing professional responsibility.

- Periodic assessments of nursing students' knowledge, attitudes, and practices related to UTIs should be implemented to track progress, identify gaps, and inform continuous improvement in teaching strategies.
- Nursing educators should foster an environment where students feel comfortable discussing sensitive topics such as urinary health. This can be facilitated through small group discussions and anonymous Q&A sessions.
- Although this study focused solely on female nursing students, future research should include male counterparts to provide a more comprehensive understanding of gender-based differences in knowledge and attitudes towards UTIs.

By implementing these recommendations, nursing educators and institutions can play a pivotal role in equipping future healthcare professionals with the necessary skills, attitudes, and confidence to effectively prevent and manage urinary tract infections in clinical practice.

**5.7 Suggestion for Further study**

While this study has provided valuable insights into the knowledge, attitude, and practices of female nursing students regarding the prevention and management of urinary tract infections (UTIs), there remains room for broader exploration. Future studies are therefore encouraged to:

- To achieve a more comprehensive understanding of gender differences in knowledge, perception, and preventive practices regarding UTIs, it is important to include male nursing students in subsequent research.
- Future research should extend beyond a single institution to include nursing students from multiple universities or colleges. This would enhance the generalizability of the findings and reveal possible regional or institutional variations in awareness and attitudes.

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**APPENDIX 1**

**FACULTY OF NURSING SCIENCE COLLEGE OF MEDICAL SCIENCE**

**UNIVERSITY OF BENIN CITY, EDO STATE**

Dear Respondent,

I attend the above-named institution as a 500L student. I am carrying out a research study on the topic: **"KNOWLEDGE AND ATTITUDE TOWARDS PREVENTION AND CONTROL ON URINARY TRACT INFECTION AMONG FEMALE NURSING STUDENT IN THE UNIVERSITY OF BENIN, BENIN CITY".** kindly help me by providing your views where necessary. It will only require at least 5 minutes. This study is conducted only for academic purpose, and all information you provide will be treated in a strictly confidential manner. Withdrawing from the study at any point won't have any detrimental effects.

Thank you.

**SECTION A: SOCIAL-DEMOGRAPGIC DATA OF PARTICIPANT**

**INSTRUCTION:** Please tick (√) the right response that best suggests your answer:

Age: Less than 20 years [ ] 20-24 [ ] 25-29 [ ] 30-39 [ ] Above 40 years [ ]

Level: 200L [ ] 300L [ ] 400L [ ] 500 [ ]

Ethnicity: Igbo [ ] Hausa [ ] Yoruba [ ] Others (please specify) _____

Marital Status: Single [ ] Married [ ] Other [ ]

Religion: Christianity [ ] Islam [ ] Others (please specify) _____

**SECTION B: KNOWLEDGE OF FEMALE NURSING STUDENT TOWARDS PREVENTION AND CONTROL ON URINARY TRACT INFECTION**

The following statement will attempt to know your level of knowledge on urinary tract infection. Please indicate the extent of your agreement to the following items in the table below by ticking (√):

Key: Strongly Agree = SA; Agree = A; Disagree = D; Strongly Disagree = SD; Urinary tract infection = UTIs

| S/N | ITEMS | SA | A | D | SD |
|---|---|---|---|---|---|
| 1 | I know what urinary tract infection is | | | | |
| **2** | Bacteria is the most common cause of UTIs | | | | |
| 3 | Holding urine for long periods can increase the risk of UTIs | | | | |
| 4 | Cleaning the perineum from front to back helps in prevention of UTIs | | | | |
| 5 | Dehydration can increase the risk of UTIs | | | | |
| 6 | Cranberry juice can help prevent UTIs | | | | |
| 7 | Avoiding fluids that irritate the bladder such as alcohol aids in UTI prevention | | | | |
| 8 | Douching can increase the risk of UTIs | | | | |
| 9 | Symptoms of UTIs include abdominal pain | | | | |
| 10 | Antibiotics are the primary treatment for UTIs | | | | |

**SECTION C: ATTITUDE OF FEMALE NURSING STUDENT TOWARDS PREVENTION AND CONTROL ON URINARY TRACT INFECTION**

I am interested in your extent agreement with the following statement on urinary tract infection (UTIs). Please indicate your level of agreement using following items in the table below by ticking (√):

Key: Strongly Agree = SA; Agree = A; Disagree = D; Strongly Disagree = SD; Urinary tract infection = UTIs

| S/N | ITEMS | SA | A | D | SD |
|---|---|---|---|---|---|
| 1 | I believe that UTIs are a serious health concern | | | | |
| 2 | I am comfortable discussing UTIs with healthcare professionals | | | | |
| 3 | I believe nursing student should be well-informed about UTIs prevention and control | | | | |
| 4 | I am willing to educate others about UTIs prevention | | | | |
| 5 | I am confident in my abilities to prevent UTIs | | | | |
| 6 | I believe preventing UTIs is important | | | | |
| 7 | I drink sufficient water to prevent UTIs | | | | |
| 8 | I regularly practice good hygiene to prevent UTIs | | | | |
| 9 | I believe that UTI affect the quality of life | | | | |
| 10 | I would encourage others to seek medical attention if they experienced UTI symptoms | | | | |

**SECTION D: PRACTICE AND EXPERIENCE OF FEMALE NURSING STUDENT ON THE PREVENTION AND CONTROL OF URINARY TRACT INFECTION**

The following will attempt to know your level of practice and experience in a real clinical setting on UTIs patients. Please indicate your choice by ticking (√) either yes or no.

Have you ever had a patient with UTI? YES [ ] NO [ ]

Have you ever provided care to a patent with UTIs? YES [ ] NO [ ]

Have you ever experienced UTIs? YES [ ] NO [ ]

Will giving patient coffee and tea irritate the bladder? YES [ ] NO [ ]

Will encouraging patient drinking plenty amount of water per day prevent UTIs? YES [ ] NO [ ]

Thank You.

## APPENDIX II

**RELIABILITY OF INSTRUMENT ON KNOWLEDGE AND ATTITUDE TOWARDS PREVENTION AND CONTROL ON URINARY TRACT INFECTION AMONG FEMALE NURSING STUDENT IN UNIVERSITY OF BENIN, BENIN CITY.**

**Reliability Statistics**

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| 0.71 | 0.70 | 27 |

Item-Total Statistics

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|
| I know what urinary tract infection is | 53.4931 | 15.077 | -.047 | .701 |
| Bacteria is the most common cause of UTIs | 54.1111 | 15.302 | .204 | .210 |
| Holding urine for long periods can increase the risk of UTIs | 53.4167 | 15.126 | -.061 | .185 |
| Cleaning the perineum from front to back helps in prevention of UTIs | 87.3188 | 27.590 | -.123 | .099 |
| Dehydration can increase the risk of UTIs | 87.4813 | 26.138 | .053 | .092 |
| Cranberry juice can help prevent UTIs | 53.4931 | 15.077 | -.047 | .565 |
| Avoiding fluids that irritate the | 53.2986 | 14.141 | .055 | .196 |

| | | | | |
|---|---|---|---|---|
| bladder such as alcohol aids in UTI prevention | | | | |
| Douching can increase the risk of UTIs | 53.4167 | 15.126 | -.061 | .185 |
| Symptoms of UTIs include abdominal pain | 87.3188 | 27.590 | -.123 | .099 |
| Antibiotics are the primary treatment for UTIs | 87.4813 | 26.138 | .053 | .092 |
| | | | | |
| I believe that UTIs are a serious health concern | 87.2313 | 27.034 | -.044 | .078 |
| I am comfortable discussing UTIs with healthcare professionals | 87.3188 | 27.590 | -.123 | .099 |
| I believe nursing student should be well-informed about UTIs prevention and control | 87.3188 | 27.590 | -.123 | .099 |
| I am willing to educate others about UTIs prevention | 87.4813 | 26.138 | .053 | .092 |
| I am confident in my abilities to prevent UTIs | 53.4931 | 15.077 | -.047 | .165 |
| I believe preventing UTIs is important | 87.4500 | 25.582 | .125 | .071 |
| I drink sufficient water to prevent UTIs | 87.3188 | 27.590 | -.123 | .099 |
| I regularly practice good hygiene to prevent UTIs | 87.4813 | 26.138 | .053 | .092 |
| I believe that UTI affect the quality of life | 87.3188 | 27.590 | -.123 | .099 |
| I would encourage others to seek medical attention if they experienced UTI symptoms | 87.4813 | 26.138 | .053 | .092 |

| | | | | |
|---|---|---|---|---|
| Have you ever had a patient with UTI? YES [ ] NO [ ] | 87.3188 | 27.590 | -.123 | .099 |
| Have you ever provided care to a patent with UTIs? YES [ ] NO [ ] | 87.4813 | 26.138 | .053 | .092 |
| Have you ever experienced UTIs? YES [ ] NO [ ] | 86.3125 | 25.587 | .034 | .056 |
| Will giving patent coffee and tea irritate the bladder? YES [ ] NO [ ] | 87.6438 | 27.325 | -.076 | .081 |
| Will encouraging patient drinking plenty amount of water per day prevent UTIs? YES [ ] NO [ ] | 87.5938 | 26.658 | .058 | .077 |
| Have you ever had a patient with UTI? YES [ ] NO [ ] | 87.3188 | 27.590 | -.123 | .099 |
| Have you ever provided care to a patent with UTIs? YES [ ] NO [ ] | 87.4813 | 26.138 | .053 | .092 |
| Have you ever experienced UTIs? YES [ ] NO [ ] | 86.2813 | 26.719 | -.064 | .095 |

Comment: The reliability analysis using Cronbach's Alpha, yielding a result of 0.71, for the overall scale. Additionally, the Cronbach's Alpha of 0.52 when the items are standardized. These values suggest a good level of internal consistency among the items in this scale.

# *RESEARCH ETHICS COMMITTEE*

**COLLEGE OF MEDICAL SCIENCES**
**UNIVERSITY OF BENIN, BENIN CITY, NIGERIA.**

**Chairman:** Prof. F. A Imarhiagbe
MBChb, FMCP
Cert Clin Res and ethics (NIH), MD.
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P.M.B 1154, BENIN CITY
**Email:** researchethics.cms@gmail.com

**Our Ref: CMS/REC/01/VOL.2/844** **Date:** 5th September, 2025

**Re: KWOWLEDGE AND ATTITUDE TOWARDS PREVENTION AND CONTROL ON URINARY TRACT INFECTION AMONG FEMALE NURSING STUDENTS IN THE UNIVERSITY OF BENIN, BENIN CITY**

**Name of Principal Investigator:** **UWUMAROGIE OSARETIN PRECIOUS**
Department Of Nursing Science,
School of Basic Medical Science
College of Medical Sciences,
University of Benin

**REC Approval No: CMS/REC/2025/844**

This is to inform you that the research described in the submitted proposal, the Informed Consent Forms and other participant information materials have been reviewed and approved by the College Research Ethics Committee, University of Benin.

This approval dates from **5th September, 2025 to** 4th September, 2026**.** In multi-year research, Endeavour to submit your annual report to the REC early in order to obtain renewal of your approval and avoid disruption of your research.

The National Code of Health Research Ethics requires you to comply with all institutional guidelines, rules and regulations and with the tenets of the code including ensuring that all adverse events are reported promptly to the REC. No, changes are permitted in the research without prior approval by REC except in circumstances outlined in the code. REC reserves the right to conduct compliance visit to your research site without prior notice. Thank you.

**PROF. F.A IMARHIAGBE**
**Chairman, REC**