



**Faculty Of Medicine and Health Sciences**

**THE PREVALENCE AND PREVENTIVE MEASURES OF URINARY TRACT  
INFECTION PRACTISED AMONG UNIMAS NURSING STUDENTS**

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**PRACTICAL ASPECTS OF PRODUCING A PROJECT REPORT**  
*The prevalence and preventive measures of urinary tract infection practised among UNIMAS nursing students*

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## ABSTRACT

**Background:** Urinary tract infection (UTI) is a common bacterial infection, affecting millions of individuals worldwide (Zeng et al., 2022). To manage UTI symptoms, pharmacological approaches such as antibiotics and pain relievers. However, some individuals may face challenges in accessing proper treatment due to various factors like financial constraints or limited knowledge about the importance of early UTI management. Besides pharmacological approaches, there are effective non-pharmacological measures to prevent UTI. The importance of preventive measures for UTI is just as significant as its management, as recurrent episodes may occur in individuals with a history of the disease. Therefore, the current study aims to investigate the prevalence of UTI and the practice of its preventive measures among the female UNIMAS nursing students.

**Methodology:** A cross-sectional study was carried out among female UNIMAS nursing students by using an online questionnaire through Google form link. Simple random sampling method was utilized and a total of 130 students had participated in this research. Chi-Square test was used to examine for any association between the prevalence of UTI and the preventive measures adapted by UNIMAS nursing students.

**Results:** This study reveals the prevalence of UTI among UNIMAS nursing students, with 60 participants (46.15%) reporting experiencing at least two UTI symptoms in the past. Despite the high number in prevalence of UTI, most of the students applied the right preventive measures to avoid UTI even though none of the preventive measures were significantly associated with the prevalence of UTI among UNIMAS nursing students. The outcomes portray the awareness among the participants of the importance of correct preventive measures besides the intention of wanting to maintain hygiene and good health to prevent UTI.

**Conclusion:** There were quite a number of students who reported to have experienced at least two symptoms of UTI previously. On the other hand, majority of the students adapted the right measures in preventing UTI into daily life, even though none of the preventive measures has any association with the prevalence of UTI among the students. Good behaviour of avoiding the occurrence of UTI has to be maintained among UNIMAS nursing students, with the aid of sufficient resources such as hygiene products as well as the support and validation from family and friends throughout the application of the preventive measures of UTI in daily routine.

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## **LIST OF ABBREVIATIONS AND SYMBOLS**

UNIMAS	Universiti Malaysia Sarawak
UTI	Urinary Tract Infection
SPSS	Statistical Package for the Social Sciences
KR-20	Kuder-Richardson formula
PII	Personally identifiable information
QR	Quick Response

# CHAPTER 1

## Introduction

### 1.1 Background of the study

Urinary tract infection (UTI) is one of the most common types of bacterial infection, affecting 404.6 million individuals worldwide in 2019 (Zeng et al., 2022). Urinary tract infection happens when there is a presence of microbial entity such as gram-negative bacteria, gram-positive bacteria, and fungi infecting any section of the urinary tract (urethra, bladder, ureter, and kidney) (Das, 2020). The effect that the infection has on one's health may range from simple cases like cystitis to severe complications such as urosepsis. Even though UTI is known to have high prevalence and may induce serious complications, the aetiology is still incomplete as it is considered to be multifactorial. UTI can be characterized by symptoms such as white foul-smelling discharge, mild fever, increased frequency in urination, burning sensation during voiding, pelvic pain, and constant urge to urinate. These symptoms are extremely uncomfortable and may disrupt one's functionality in daily life.

To overcome such symptoms, physician would usually prescribed antibiotic such as cephalexin. Cephalexin works by impairing the process of maintaining the bacterial cell wall, leading to bacterial cell wall autolysis (Herman & Hashmi, 2022). Besides cephalexin, physician would also prescribe some pain reliever such as analgesics or nonsteroidal anti-inflammatory drugs (NSAIDs) to manage the pelvic pain and the burning sensation experienced during urinating. Unfortunately to some recurrent UTI cases, the sick will think that having to deal with another UTI episode is a hassle and some people may not have the access to proper pharmacological management due to

many factors such as financial problem, transportation or simply knowledge deficit on the importance of treating UTI at its early stages.

There are several measures besides pharmacological management that were known to be effective in preventing UTI. For example, younger children were taught to pee before bed or to urinate immediately when the bladder is full as bacteria may build up in the bladder besides affecting the strength of the muscles which are responsible to control the flow of the urine out from the bladder into the urethra. During menstruation, women were advised to change sanitary pads at least every four hours because of similar reason, which is bacterial build up. It is clear that every simple measure corresponds to the main purpose and that is to avoid UTI from occurring although it would not result in the exact similar effectiveness. Therefore, it is essential to address the common risk factors that lead to UTI first before getting deeper into the effectiveness of existing preventive measures and pharmacological management.

## **1.2 Problem statement**

Urinary tract infection (UTI) is a well-known problem among female and most of them will acquire recurrent UTI within a year. Women have higher risk of acquiring UTI compared to men, with the ratio of 50:1 in the younger population (Das, 2020). This is due to the anatomical difference in men and women as female urethra is known to be shorter in length compared to male urethra, so it is easier for microbial body to travel up and infect the other vital parts such as bladder and even kidney. A study conducted in Hospital Pulau Pinang, Malaysia mentioned that the prevalence of UTI in women (60.7%) was higher than in men (39.3%) (Akhtar et al., 2021), which validates gender as a critical risk factor when it comes to acquiring UTI.



Besides, job scope is a factor that needs to be looked into when it comes to UTI. According to a study by Wan et al. (2016), nurses are known to have relatively higher level of stress and psychological strain compared to other professions in the general population. This can be illustrated by the findings in the same article that shows 68% of the female nurses from the study had experienced at least one symptom of UTI before. The nurses are vulnerable to such infection due to factors rooted from the outstanding number of tasks. Heavy workload results in abnormal toileting behaviour such as brushing off the feeling of wanting to void and limited bathroom breaks due to time constraint (Wan et al., 2016). Not only that, the cleanliness of washrooms in certain healthcare facilities is not well maintained and the washrooms are poorly sanitized. It is essential to examine the prevalence of UTI in group of people that are involved in healthcare sector as well.

Despite of high numbers of UTI cases specifically among the nurses, UTI is actually preventable if the correct hygiene habits and treatments are practised. However, some of the nurses are not aware of the danger that comes with UTI and the significance of the preventive measures that are available. Preventive measures of UTI are as equally critical as the management because this disease may reoccur to those who have experienced it before. Some of the common preventive steps practised especially by women are cleaning the genital area using commercial products and water, wiping perineal area from front to back, using undergarments made of fully cotton, drinking adequate amount of water daily, and drinking cranberry juice which is a remedy that able to protect from UTI by increasing the acidity of urine, thus creating an unfavourable condition for bacteria such as *Escherichia coli* (*E. coli*) to survive in. When the healthcare providers such as nurses and nursing students experience UTI, work performance would be affected as the symptoms of UTI are known to be extremely uncomfortable. In addition, busy working hours may lead to complications such as noncompliance to any prescribed antibiotic during the course of treatment

for UTI. Therefore, the current study aims to investigate the prevalence of UTI and the practice of its preventive measures among the female UNIMAS nursing students.

### **1.3 Research questions**

- 1.3.1 What is the prevalence of urinary tract infection among UNIMAS nursing students?
- 1.3.2 What are the preventive measures of urinary tract infection practised by UNIMAS nursing students?
- 1.3.3 What is the association between the prevalence and preventive measures of urinary tract infection practised by UNIMAS nursing students?

### **1.4 Research aim**

To investigate the prevalence and the preventive measures of urinary tract infection practised among UNIMAS nursing students.

### **1.5 Research objectives**

- 1.5.1 To determine the prevalence of urinary tract infection among UNIMAS nursing students.
- 1.5.2 To assess the preventive measures of urinary tract infection practised by UNIMAS nursing students.
- 1.5.3 To examine the association between the prevalence and preventive measures of urinary tract infection practised by UNIMAS nursing students.

## **1.6 Significance of study**

This study will be conducted to look into the prevalence of UTI among UNIMAS nursing students because nursing students are known to be the primary care providers (Vyas et al., 2015) and they are expected to have the knowledge on UTI as they play an important role in educating the patients by recommending the right preventive practices for UTI especially in a conservative country like Malaysia where such problem is considered to be sensitive and highly confidential. It is essential to look into the statistics of UTI occurrence among these students, before exploring the effectiveness of different preventive practices by associating it to the number of UTI cases that will be reported throughout the data collection procedure. By associating and analysing the results later on, improvements can be done on the common preventive measures, with proper rationale supported by other research papers together with valid evidence.

## **1.7 Definition of operational terms**

**1.7.1 Prevalence:** According to Tenny and Hoffman (2017), prevalence is “proportion of the population with a condition at a specific point in time.” In this study, prevalence will be used to describe how common the occurrence of urinary tract infection is among UNIMAS nursing students, that will be assessed via Section B: Symptoms of urinary tract infection and experiences by Jelly, Verma, Kumawat, Choudhary, Chadha, and Sharma (2022).

**1.7.2 Urinary tract infection:** Urinary tract infection can be defined as a general term for the infections/invasion of microbial body that affects any part of the urinary tract (Tan & Chlebicki, 2016).

**1.7.3 Preventive measures:** Preventive can be conceptually defined as deflecting the onset of an illness (Starfield et al., 2008). Next, preventive can be operationally defined as avoiding the emergence of urinary tract infection. Therefore, it is used together with measures as this study will be highlighting the steps taken by UNIMAS nursing students to avoid urinary tract infection from taking place. This will be assessed by using Section C: Preventive strategies practised by the female students (Jelly et al., 2022).

## **1.8 Summary**

This chapter highlights the definition of UTI and the symptoms besides demonstrating the percentage of UTI cases in vulnerable groups such as women and nursing students that will be further discussed in this study. The research questions, aim and objectives were described and the operational terms that will be used throughout the study such as prevalence, preventive measures, and urinary tract infection (UTI) were defined and will be further construed through the literature review in the next chapter.

## **CHAPTER 2**

### **Literature review**

#### **2.1 Introduction**

In this section, literature research will be conducted, involving multiple research papers of similar topic, variables, and samples. The search engine that was used in selecting the papers was Google Scholar, with the use of keywords such as occurrence of UTI, preventive measures, and nursing college students. The filter used for the search was 'sort by date' to see the latest papers published within the range of five to ten years and the selected papers were written in English language. The prevalence of urinary tract infection (UTI) and the preventive measures has been well researched in different countries and time frame. Even though some studies were focused on the knowledge and attitude in avoiding or overcoming UTI in a population such as a study by Rahman, Ahmad and Jabal (2022), there were also a number of findings that were highlighting the association of the statistics of UTI occurrence and the effectiveness of the preventive practices.

#### **2.2 Literature Review**

##### **2.2.1 Prevalence of urinary tract infection (UTI)**

A research by Jelly et al. (2022) was carried out among female students from medical and nursing programme in a teaching institution in India, aiming to determine the occurrence of UTI and the practices applied by the students to avoid them. According to the findings, ten percent of the participants consisted of 97 medical and 241 nursing students, experienced the symptoms of UTI before. Another study conducted in India by Vyas et al. (2015) shows that among 177 nursing students who participated, 19% of the students had history of UTI. The percentage was slightly

lower compared to another study done by Sevil et al. (2013) in Turkey, with the percentage of 13% among 137 female students who were recruited for the study.

Besides India and Turkey, a study conducted in Kedah, Malaysia by Parasuraman et al. (2016) shows that 10% of the respondents with majority from the 18-25 years age group experienced UTI before. Not only that, Parasuraman et al. (2016) emphasizes that older age groups tend to have higher risk of acquiring UTI due to decrement in health quality which may affect one's susceptibility to infections that are caused by bacteria, fungi, and protozoa. The occurrence of UTI in this study was reported to be higher in women than men. On the other hand, in a research based in China by Wan et al. (2016), the frequency of UTI incidence was investigated in a group of female nurses and the results stated that 68% of the female nurses experienced at least one symptom of urinary tract infection throughout their practice. This highlights the higher prevalence of UTI in nursing career as nurses were most likely to practise unhealthy toileting behaviour due to the hectic circumstances during working time.

### **2.2.2 Preventive measures of urinary tract infection (UTI)**

There are many preventive steps to stop UTI and it varies according to cultures, locality, and even socioeconomic status of a person. From the article by Parasuraman et al. (2016), defecation posture has an impact on the risk of getting UTI as majority prefers using western type of toilet which has more contact area compared to India type of toilet with minimal bodily contact with the surrounding surfaces. This statement can be proven from the result of the study that shows 80% of the UTI cases used the western type of toilet at home and in sharing rooms (Parasuraman et al., 2016).

Another hygiene habit that is known to be effective in avoiding UTI occurrence is the use of cotton underwear. Fabric such as cotton is known to be a good absorbent and gentle to skin, therefore it is an ideal material for any sort of innerwear. Vyas et al. (2015) emphasizes that synthetic fabrics such as nylon and polyester are unable to absorb sweat especially in the area with the least exposure and extreme humidity such as genital area. As the environment becomes more humid due to the unsuitable fabric choice, the risk to acquire UTI will increase as bacteria thrives in environment as such. From the same research, 68.57% of the participants who preferred synthetic underwear for daily use had UTI previously. However, Sevil et al. (2013) mentioned that there were more UTI cases reported in the group of student who used cotton type of underwear compared to those who used satin type of innerwear. Vyas et al. (2015) stated that synthetic materials absorb less perspiration compared to cotton, leading to persistently humid perineum. The humidity may induce the likelihood of UTI.

Women are known to be prone to UTI compared to men and one of the main behavioural risk factors would be the frequency of sanitary pads replacement. Through the study by Jelly et al. (2022), most of the students changed their sanitary pads for every three to four hours on a daily basis with the percentage of 71.3%. Same goes to the result of a research by Sevil et al. (2013) that illustrates 54.1% of the participants were implementing the same action during menstruation. Das et al. (2015) analysed similar preventive measure among women who were recruited during visits to the clinic and found that 37.7% of the women changed sanitary pads more than 3 times per day which is quite low compared to the outcomes by Jelly et al. (2022). Both of the studies were conducted in India among two groups with different age range in two different years.

Next, the technique in cleaning the perineal area is important to be looked into as well because there are many people who does not know the rationale for incorporating the right direction in

washing and wiping their private area. Looking at the research by Mahmoud et al. (2019) involving nursing students, it stated that more than half of the respondents were implementing the wrong direction in wiping their perineal area after using the washroom. This finding is similar to the results from Vyas et.al (2022) and Jelly et al. (2022) where majority of the respondents were practising the wrong techniques too. In contrast, Sevil et al. (2013) found that 67.8% of the female students who were involved practised the correct technique in cleaning the genital area. The correct technique may help in reducing the risk of having UTI significantly because it prevents the spread of bacteria particularly over the urethra and eventually through the urinary system.

### **2.2.3 Association of prevalence and preventive measures of urinary tract infection (UTI)**

Based on the research by Das et al. (2015), poor menstrual hygiene practices resulted in the increment of urogenital diseases. This finding is aligned with the statistics by Vyas et al. (2022) that shows 80% of the respondents who had history of UTI were not prioritising menstrual hygiene routine as less sanitary pads were used during menstruation with heavy discharge compared to the studies by Jelly et al. (2022) and Sevil et al. (2013) where majority of the participants changed sanitary pads frequently especially during heavy flow of discharge.

Besides, drinking adequate amount of water is known to be a preventive measure that leans more towards behavioural changes and does not require any pharmacological involvement in avoiding UTI. This strategy is essential to prevent complications such as urinary stasis and recurrent cystitis (McCollum et al., 2020). As proven in the research by Mahmoud et al. (2019) conducted in Egypt, most of the nursing students involved who had UTI before did not drink enough water. This findings can be supported with another result from the study by Jelly et al. (2022) in India that shows 64.7% of the nursing students who acquired UTI previously drank less amount of water a