



# **“A STUDY TO ASSESS THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON KNOWLEDGE REGARDING URINARY TRACT INFECTION AND ITS PREVENTIVE MEASURES AMONG COLLEGE STUDENTS OF SELECTED COLLEGES OF MEHSANA DISTRICT, GUJARAT”.**

## **UNDER THE GUIDANCE OF**

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## **ABSTRACT**

**Introduction:** Urinary tract infection (UTI) is one of the most common bacterial infections affecting individuals worldwide, particularly females. Lack of awareness regarding personal hygiene, adequate fluid intake, and preventive practices increases the risk of UTI among young adults and college students. Educational interventions play an important role in improving knowledge and promoting preventive health behaviors among students. **Statement of the Study:** “A Study to Assess the Effectiveness of Structured Teaching Programme on Knowledge Regarding Urinary Tract Infection and its Preventive Measures among college students of selected colleges of Mehsana district, Gujarat”. The present study was conducted to assess the effectiveness of a structured teaching programme on knowledge regarding urinary tract infection and its preventive measures among college students of selected colleges of

Mehsana district, Gujarat. **Objectives:** The objectives of the study were: to assess the knowledge regarding preventive measures of urinary tract infection among selected college students; to assess the effectiveness of the structured teaching programme on knowledge regarding urinary tract infection and its preventive measures; and to find out the association between pre-test knowledge scores and selected demographic variables. **Research Approach and Design:** A quantitative evaluative research approach was adopted for the study. The research design used was a pre-experimental one-group pre-test post-test design. The study was conducted at Shri Sarvajanik Commerce College, Mehsana, Gujarat. **Participants:** A total of 60 female college students aged 17–22 years were selected using a non-probability purposive sampling technique. Data were collected using a structured knowledge questionnaire consisting of demographic variables and questions related to urinary tract infection and its preventive measures. **Tools:** The reliability of the tool was established by the test-retest method, and the reliability coefficient was found to be  $r = 0.82$ , indicating good reliability. The structured teaching programme was administered using lectures, PowerPoint presentation, pamphlets, flashcards, and interactive discussion methods. The duration of the teaching session was 60 minutes. A post-test was conducted after seven days using the same questionnaire to evaluate the effectiveness of the intervention. **Result:** The findings of the study revealed that before the intervention, 53.33% of participants had poor knowledge and 46.67% had average knowledge regarding urinary tract infection and its preventive measures, whereas none of the participants had good knowledge. After the structured teaching programme, there was a remarkable improvement in knowledge levels, with 50% of participants having average knowledge and 30% achieving good knowledge scores. The mean pre-test knowledge score was 8.47 with a standard deviation of 2.35, whereas the mean post-test knowledge score increased to 18.77 with a standard deviation of 2.80. The calculated paired 't' value was 26.50, which was statistically significant at  $p < 0.05$  level, indicating that the structured teaching programme was highly effective in improving the knowledge of college students regarding urinary tract infection and its preventive measures. Hence, the null hypothesis ( $H_0$ ) was accepted and the research hypothesis ( $H_1$ ) was rejected. **Conclusion:** The study concluded that the structured teaching programme was highly effective in improving knowledge regarding urinary tract infection and its preventive measures among college students. **Keywords:** The findings emphasized the importance of educational interventions in promoting awareness and preventive practices related to urinary tract infections among young adults.

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## CHAPTER I INTRODUCTION

Urinary tract infections (UTIs) are recognized as one of the most common bacterial infections managed in the community, second only to respiratory tract infections in many settings. They impose a heavy toll on patients and health systems alike, with large numbers of cases and substantial financial costs reported worldwide. Estimates suggest tens to hundreds of millions of infections each year globally, translating into multibillion-dollar economic losses related to direct treatment as well as the indirect consequences of missed school or work and reduced productivity. Across age groups, UTIs can occur in both sexes, yet a consistent and prominent pattern emerges: women experience UTIs more frequently than men, a disparity that is explained largely by anatomic and physiologic factors that make ascending infection more likely in females.<sup>1</sup>

A urinary tract infection is a very common type of infection in your urinary system. It can involve any part of your urinary system. Bacteria especially *E. coli* are the most common cause of UTIs. Symptoms include needing to pee often, pain while peeing and pain in your side or lower back. Antibiotics can treat most UTIs. A urinary tract infection (UTI) is an infection of your urinary system. This type of infection can involve your:

Urethra (urethritis). Kidneys (pyelonephritis). Bladder (cystitis).

Urine (pee) is a byproduct of your blood-filtering system, which your kidneys perform. Your kidneys create pee when they remove waste products and excess water from your blood. Pee usually moves through your urinary system without any contamination. However, bacteria can get into your urinary system, which can cause UTIs.

The urinary tract makes and stores pee. It includes:

Kidneys. Kidneys are small, bean-shaped organs on the back of your body, above your hips. Most people have two kidneys. They filter water and waste products from your blood, which becomes pee. Common wastes include urea and creatinine.

UTIs are very common, especially in females. About half of females will have a UTI at some point during their lives. Males can also get UTIs, as well as children, though they only affect 1% to 2% of children. Healthcare providers treat 8 million to 10 million people each year for UTIs.

A UTI causes inflammation in the lining of your urinary tract. The inflammation may cause the following problems:

Pain in your flank, abdomen, pelvic area or lower back. Pressure in the lower part of your pelvis.

Cloudy, foul-smelling pee. Urinary incontinence.

Frequent urination.

Urge incontinence.

Pain when you pee (dysuria). Blood in your pee (hematuria).

Other UTI-associated symptoms may include:

Pain in your penis.

Feeling extremely tired (fatigue). Fever.

Chills.

Nausea and vomiting. Mental changes or confusion

Microorganisms, usually bacteria cause urinary tract infections. They typically enter through your urethra and may infect your bladder. The infection can also travel up from your bladder through your ureters and eventually infect your kidneys.

E. coli cause more than 90% of bladder infections. E. coli typically exist in your lower intestines (large intestine).

Anyone can get a urinary tract infection, but more likely to get a UTI if you don't have a penis. This is because your urethra is shorter and closer to your anus, where

E. coli bacteria are common. bacteria and other microorganisms whenever you touch a surface. You can accidentally introduce bacteria to your urethra when you go to the bathroom or during sexual acts, including masturbation or fingering.<sup>2</sup>

Diagnosis include Analyzing a urine sample, Growing urinary tract bacteria in a lab, Creating images of the urinary tract, Using a scope to see inside the bladder.

Treatment includes Antibiotics often are the first treatment for an active urinary tract infection. Antibiotics used to treat simple UTIs include:

Trimethoprim and sulfamethoxazole (Bactrim, Bactrim DS). Fosfomycin.

Nitrofurantoin (Macrochantin, Macrobid, Furadantin). Cephalexin.

Ceftriaxone.

Fluoroquinolones aren't used for most simple UTIs. This group of antibiotics includes ciprofloxacin (Cipro), levofloxacin and others. Their risks tend to outweigh the benefits for simple UTIs. But for complicated UTIs or kidney infections, a fluoroquinolone medicine might be used if there are no other treatment options.

Often, UTI symptoms begin to clear up within a few days of starting treatment. But it may take some time for inflammation to go down and symptoms to get better. Depending on the infection and the specific medicine, you may need to keep taking antibiotics for a week or more. Take all the medicine as instructed.

Preventing repeat infections through After being treated for a urinary tract infection, it's important to think about ways to prevent an infection from happening again. These steps may help lower your risk of future UTIs. Drink plenty of fluids, especially water. Drinking water helps dilute the urine. That leads you to urinate more often. Urinating flushes bacteria away before an infection can start. Aim for 1.5 liters, or around 50 ounces, or more of fluids each day, unless your healthcare team tells you to take in a different amount based on other medical conditions. Try topical vaginal estrogen therapy. For women who are in perimenopause or menopause, using a product in the vagina that contains estrogen can help reduce the risk of a repeat UTI. Vaginal estrogen therapy is only appropriate if there are no medical reasons why you shouldn't use estrogen therapy. Manage constipation. Eat more fruits, vegetables, beans, whole-grain bread and other fiber-rich foods. Regular physical activity also helps improve the movement of stool through the colon.

Researchers keep studying cranberry juice and other cranberry products to learn whether they might help prevent UTIs. For now, results are unclear. There's little harm in drinking

cranberry juice if you feel it helps you prevent UTIs, but watch the calories and sugar in some products. For most people, drinking cranberry juice is safe. Some people report an upset stomach or diarrhea. Don't drink cranberry juice if you're taking blood-thinning medicine, such as warfarin (Jantovin).

Avoid feminine products that might irritate the skin. Deodorant sprays, douches and powders in the genital area can irritate the urethra. Change your birth control method. Diaphragms, condoms that are not lubricated and condoms treated with spermicide can add to bacterial growth.<sup>3</sup>

In routine practice, uncomplicated UTIs dominate outpatient care volumes and are typically managed empirically. However, both uncomplicated and complicated infections can escalate when diagnosis or treatment is delayed, culminating in renal involvement or even sepsis in vulnerable patients. Importantly, although antibiotics remain the cornerstone of therapy, their widespread use particularly in settings of empirical prescribing has contributed to evolving resistance among common uropathogens, complicating case management and increasing the likelihood of recurrence. The intersection of high incidence, empirical treatment patterns, and the steady march of antimicrobial resistance has intensified the need for robust, up-to-date synthesis, prudent stewardship, and practical prevention strategies.<sup>4</sup> Epidemiologic data consistently reinforce the scope of the problem in both community and healthcare settings. In some national contexts, UTIs account for millions of outpatient visits and large numbers of emergency department encounters and hospitalizations, reflecting both the incidence of new infections and the recurrent nature of disease in a sizeable subset of patients. Burden estimates attribute billions of dollars annually to care delivery and productivity losses. Moreover, psychological effects such as anxiety and stress are frequently reported by patients navigating acute symptoms or repeated episodes, indicating that the true burden extends beyond somatic outcomes to quality-of-life impairments.<sup>5</sup>

Patterns of seasonality further illustrate the complexity of population-level dynamics. Analyses of admissions have described peaks during warmer months with nadirs in winter, with the seasonal amplitude more pronounced among younger individuals and typically greater in women than men. Such observations, while not necessarily causal, align with broader themes in infectious disease epidemiology, where behavioral and environmental factors can modulate exposure risk, healthcare seeking, and diagnostic patterns over the course of a year.<sup>6</sup>

Combination non-antibiotic approaches have gained interest for reducing recurrence without contributing to resistance or perturbing the microbiome. Evidence has examined cranberry preparations, D-mannose leveraging competitive inhibition of mannose-binding adhesins selected probiotics, and urinary alkalinizing agents such as potassium magnesium citrate. Reports suggest that using agents with complementary mechanisms may yield improved clinical outcomes for patients with recurrent or bothersome lower tract symptoms, while allowing clinicians to reserve antibiotics for clear bacterial indications. The overarching goal is to lower antibiotic exposure, mitigate adverse effects, and potentially interrupt the cycle of dysbiosis that predisposes to repeated episodes.<sup>7</sup>

Education remains fundamental for both caregivers and patients. Interventions aimed at improving knowledge among infant caregivers and adolescents have demonstrated substantial post-education gains in understanding prevention strategies and the value of early evaluation. In practical terms, such gains can translate into earlier presentation for testing, better adherence to hydration and hygiene behaviors, and more informed participation in shared decision-making around empiric therapy and follow-up. As part of systems-based practice, nursing and allied health professionals play a pivotal role in delivering this education and reinforcing prevention messages across care settings.<sup>8</sup>

Because most community-acquired UTIs are treated empirically before culture results are available, local susceptibility data are indispensable. Regional microbiology laboratories provide the actionable context clinicians need to select initial agents with acceptable coverage while minimizing unnecessary broad-spectrum exposure. Periodic monitoring is especially important where

published data are sparse, ensuring that empirical choices are recalibrated as resistance patterns evolve. On a broader scale, consensus guidance emphasizes a patient-centered, evidence-based approach that bridges generalist and specialist care, aligning diagnostic parsimony with timely therapy and targeted prevention.<sup>9</sup> Stewardship themes intersect with the lived experience of patients who cycle through recurrent symptoms and repeated antibiotic courses. Repeated antibiotic exposure can disrupt urogenital and gut microbiota and, over time, select for resistant strains that are more difficult to eradicate. Recommendations that rely on continuous or post-intercourse prophylaxis must be balanced against resistance risks and the availability of non-antibiotic alternatives. In parallel, device stewardship particularly around indications and duration of catheter use offers one of the most direct levers for reducing complicated infections and downstream consequences such as bacteremia and sepsis.<sup>10</sup>

In adult women within the reproductive age range, anatomical and behavioral factors sustain a higher baseline risk of UTIs relative to men. Comorbidities such as diabetes, along with modifiable factors like delayed micturition, can further elevate risk. Counseling that integrates these considerations hydration, timed voiding, avoidance of irritants, and attention to post-coital habits aligns with a prevention-first posture that can reduce symptomatic episodes and reliance on empiric antibiotics. For men, while UTIs are less common, presentations frequently intersect with structural or functional abnormalities or prostatitis, contexts that often shift evaluation and management toward complicated pathways.<sup>11</sup>

In hospitals and long-term care facilities, UTIs are consistently among the most common healthcare-associated infections. CAUTIs, in particular, dominate preventable infection metrics and are tightly linked to instrumentation of the urinary tract. Given clear data that daily risk of bacteriuria accumulates with catheter dwell time, prevention programs that standardize sterile technique, review catheter necessity, and expedite device removal are central to lowering incidence, shortening hospital stays, and curbing costs attributed to avoidable infection events.<sup>12</sup>

UTIs are ubiquitous across the life course, with a disproportionate burden in females and distinct high-risk contexts in healthcare environments. *Escherichia coli* remains

the prototypical pathogen, armed with adhesins that enable robust binding to the urothelium and intracellular persistence that seeds recurrence. At the same time, rising antimicrobial resistance and the human costs of recurrent symptoms, disrupted microbiota, and repeated antibiotic exposure demand a rebalancing of strategies toward prevention, judicious diagnostics, and thoughtful use of antibiotics. Health systems must pair local

susceptibility surveillance with patient-centered guidance that prioritizes non-antibiotic measures when appropriate and reserves antibiotics for clear bacterial indications, thereby curbing resistance selection pressure while addressing patient needs promptly and effectively.<sup>13</sup>

## NEED OF THE STUDY

The 2021 Global Burden of Disease (GBD) study included age-standardised incidence rate (ASIR), age-standardised prevalence rate (ASPR), age-standardised death rate (ASDR), and age-standardised disability-adjusted life years rate (ASDAR). Estimated annual percentage change (EAPC) was used to depict temporal trends, whereas Pearson correlation analysis was used to explore its correlation with the human development index (HDI), the SDI, and ASRs. An autoregressive integrated moving average model forecasted the future UTI burden trends.

From 1990 to 2021, the number of UTI cases increased by 66.45%, reaching 4.49 billion cases, with an ASIR of 5,531.88 per 100,000 population. The greatest incidence of UTIs is seen in women and older adult men. Tropical Latin America and low–middle SDI regions exhibited the highest ASIR, ASPR, ASDR, and ASDAR, while East Asia showed the lowest. ASDR and ASDAR decreased with higher SDI levels. ASR and HDI are weakly positively correlated with ASDR and ASDAR. Incidence, prevalence, and disability-adjusted life-years (DALYs) ASRs are projected to increase until 2050.

Interpretation: Global burden of UTIs is rising and influenced by geographical location, age, gender, and economic development. It is crucial for guiding medical practices and informing relevant policies.<sup>14</sup>

Urine infections are one of the most common bacterial infections seen in Indian outpatient departments, especially among women, older adults, and diabetics. In India, UTIs are especially common among:

Women: Over 50% of women experience at least one UTI in their lifetime. The shorter urethra in women makes it easier for bacteria to reach the bladder.

Pregnant women: Hormonal changes and pressure on the bladder increase UTI risk. Elderly people: Weakened immune systems and conditions like incontinence or enlarged prostate contribute to higher rates.

Diabetics: High blood sugar can affect the immune system and promote bacterial growth in the urine.

Children: UTIs in kids may indicate structural issues in the urinary tract and should never be ignored.<sup>15</sup>

A retrospective study (October 2022 to October 2024) was conducted in the microbiology department, analyzing urine sample records using biochemical techniques and antimicrobial susceptibility testing guided by the Clinical and Laboratory Standards Institute. Data analysis was performed using SPSS Statistics version 23 (IBM Corp., 2015). Among 1,027 samples, 13.43% yielded positive cultures. Most infections occurred in females (64.49%), particularly those aged 51-70 (56%). Gram-negative bacteria (89.13%), predominantly *Escherichia coli* and *Klebsiella pneumoniae*, were more common than Gram-positive bacteria (9.42%). Effective antibiotics included fosfomycin (85.97%), gentamicin (90%), and nitrofurantoin (77.6%).<sup>16</sup>

At the global scale, antimicrobial resistance linked to UTIs has emerged as a quantifiable and costly public health challenge. Estimates of deaths associated with bacterial resistance in urinary infections, alongside substantial societal costs, demonstrate the growing contribution of resistant uropathogens to severe outcomes. While incidence varies by region, demographic structure, and healthcare access, trends indicate that aging populations and resistance pressures are driving increases in absolute case counts. These developments amplify the importance of surveillance that is stratified by sex, age, and socio-demographic context, enabling tailored policy

responses across regions with different economic profiles and health system capacities.<sup>17</sup>

Clinically, UTIs are commonly classified by anatomical site and complexity. Lower tract infections cystitis and urethritis contrast with upper tract involvement pyelonephritis and ureteral infection in both presentation and potential for complications. Distinguishing uncomplicated from complicated infection is likewise pivotal, with the latter encompassing scenarios shaped by structural or functional abnormalities, comorbid conditions, or the presence of foreign bodies such as urinary catheters or stents. In hospital settings, catheter-associated UTIs (CAUTIs) account for a large share of nosocomial infections; risk tracks closely with the duration of catheterization, and daily hazards for bacteriuria are well documented. These features underscore two core messages of classification: an anatomic spectrum that maps to severity and a complexity dimension that often predicts resource needs and outcomes.<sup>18</sup>

The age–sex distribution of UTIs reveals persistent gradients. Across childhood, adolescence, and adulthood, females experience higher rates than males, with adolescence marking a particularly consequential phase for first presentations and recurrences. Contributing factors include a shorter urethra and the proximity of the urethral opening to bacterial reservoirs in the vagina and anus, anatomical features that facilitate ascending infection. Hormonal changes during adolescence can also alter vaginal microflora and increase colonization near the urethra, while behaviors such as sexual debut further modulate risk. The outcome is a well-described epidemiology in which large proportions of women experience at least one UTI in their lifetime, and a substantial minority encounter recurrent episodes.<sup>19</sup>

### STATEMENT OF THE PROBLEM

“A Study to Assess the Effectiveness of Structured Teaching Programme on Knowledge Regarding Urinary Tract Infection and its Preventive Measures among college students of selected colleges of Mehsana District, Gujarat”

## OBJECTIVES OF THE STUDY

- To assess the knowledge regarding preventive measures of urinary tract infection among selected college students of Mehsana district, Gujarat.
- To assess the effectiveness of structured teaching programme on knowledge regarding preventive measures of urinary tract infection among selected college students of Mehsana district, Gujarat.
- To find out the association of pre-test knowledge score with their selected demographic variables.

## OPERATIONAL DEFINITION

### Effectiveness

**According to Oxford Dictionary:** The degree to which something is successful in producing a desired result.

**According to the Study:** Effectiveness refers to the extent to which the structured teaching programme has brought about a significant improvement in the knowledge of college students regarding urinary tract infection as measured by a structured knowledge questionnaire.

### Structured Teaching Programme

**According to Oxford Dictionary:** A planned series of educational activities or lessons designed to teach a particular subject or skill.

**According to the Study:** Structured Teaching Programme refers to a systematically organized teaching plan prepared by the investigator to provide information on urinary tract infection among selected college students through lecture and discussion methods.

### Knowledge

**According to Oxford Dictionary:** Facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject.

**According to the Study:** Knowledge refers to the understanding or awareness of college students regarding urinary tract infection, which is assessed through a structured knowledge questionnaire prepared by the investigator.

## Urinary Tract Infection (UTI)

**According to Oxford Dictionary:** An infection in any part of the urinary system, including the kidneys, bladder, or urethra.

**According to the Study:** Urinary Tract Infection refers to microbial infection affecting the urinary system, particularly the bladder and urethra, among college students, which can be prevented through proper personal hygiene and health practices.

## College Students

**According to Oxford Dictionary:** Individuals enrolled in an institution of higher education.

**According to the Study:** College Students refer to individuals studying in selected colleges of Mehsana district, Gujarat, who are included as participants in this study.

## SCOPE OF THE STUDY

- The study focuses on assessing the knowledge of college students regarding urinary tract infection (UTI).
- It evaluates the effectiveness of a structured teaching programme in improving the knowledge of participants.
- The study is limited to selected college students of Mehsana district, Gujarat.
- It is concerned only with knowledge aspects, not with behavioral or clinical outcomes.
- The structured teaching programme is based on evidence-based information related to UTI.
- Data collection will be done using a structured knowledge questionnaire prepared by the investigator.
- The findings of the study may help in planning future educational interventions to prevent UTIs among young adults.
- The study may provide a baseline for further research on urinary tract infection awareness in other populations.
- It aims to promote health education and health practices among college students.

## HYPOTHESIS

**H<sub>0</sub>:** There is no significant association between demographic variables and the knowledge score regarding urinary tract infection among selected college students of Mehsana district, Gujarat.

**H<sub>1</sub>:** There is a significant association between demographic variables and the knowledge score regarding urinary tract infection among selected college students of Mehsana district, Gujarat.

## ASSUMPTION

- The college students of Mehsana district, Gujarat, may have limited knowledge regarding urinary tract infection (UTI).
- The structured teaching programme will help to improve the knowledge of college students regarding UTI.
- The participants will respond honestly and sincerely to the questionnaire.
- The tools used in the study will be adequate to measure the knowledge level of students regarding UTI.
- Environmental conditions during data collection will be conducive for effective participation.

## LIMITATIONS

- The study is limited to selected college students of Mehsana district, Gujarat; hence, the findings cannot be generalized to all students.
- The study assesses only the knowledge regarding UTI and does not include attitudes or practices.
- The study is limited to the time period allotted for data collection.
- The sample size is restricted, which may affect the generalization of the findings.
- The study depends on self-reported responses, which may be subject to response bias.

## ETHICAL CONSIDERATION

- Permission will be obtained from the concerned college authorities before conducting the study.
- Informed consent will be taken from each participant after explaining the purpose and nature of the study.
- Confidentiality and anonymity of the participants will be maintained throughout the study.
- The participants will have the right to withdraw from the study at any time without any penalty.
- The data collected will be used solely for research purposes.
- The structured teaching programme will not cause any harm or discomfort to the participants.

## CONCEPTUAL FRAMEWORK

Every scientific study requires a well-defined conceptual framework that acts as a foundation for organizing research components. It provides direction, enhances clarity, and allows for generalization and application of findings. In nursing research, conceptual frameworks offer a structured approach to guide educational practice, clinical decision-making, and inquiry into practical problems.

The present study aims to assess the effectiveness of a Structured Teaching Programme on Knowledge regarding Urinary Tract Infection and its preventive measures among college students of selected colleges of Mehsana district, Gujarat. This study adopts Ludwig von Bertalanffy's General System Theory (GST) as the conceptual framework, which views any system as a set of interrelated parts interacting with each other and with the environment to achieve specific goals.

According to GST, a system has five essential components input, process, output, feedback, and environment. Any change in one part leads to changes in all other parts. This dynamic and cyclical model aligns well with intervention-based studies like the present one.

### 1. Input:

Input refers to the process by which the system receives energy and information from the environment. These inputs include learners' background, level of knowledge, and interest.

In this study, input refers to the college students participating in the study, along with their demographic characteristics such as age, gender, educational background, and prior knowledge regarding urinary tract infection. These factors can influence their initial level of understanding and readiness to learn.

### 2. Process:

Process refers to the transformation mechanism through which inputs are modified into outputs via interaction with the environment.

In this study, the process involves the development and implementation of a Structured Teaching Programme on urinary tract infection. The process includes:

- Conducting a pre-test to assess baseline knowledge,
- Delivering the structured teaching programme through interactive teaching methods such as lecture, discussion, and Pamphlet and flashcards.
- Administering a post-test to evaluate changes in knowledge.

### 3. Output:

Output is the result or product that emerges after the processing of inputs.

In the present study, output refers to the improvement in knowledge scores of college students regarding urinary tract infection after the structured teaching programme. The output thus represents the effectiveness of the educational intervention.

### 4. Feedback:

Feedback is the information received by the system from its output, which helps evaluate performance and guide future modifications.

In this study, feedback is reflected in the post-test knowledge scores of students. If post-test scores are significantly higher than pre-test scores, it indicates that the structured teaching programme was effective. Conversely, if improvement is minimal, it suggests that modifications are needed in the content, teaching methods, or duration of the programme.

## 5. Environment:

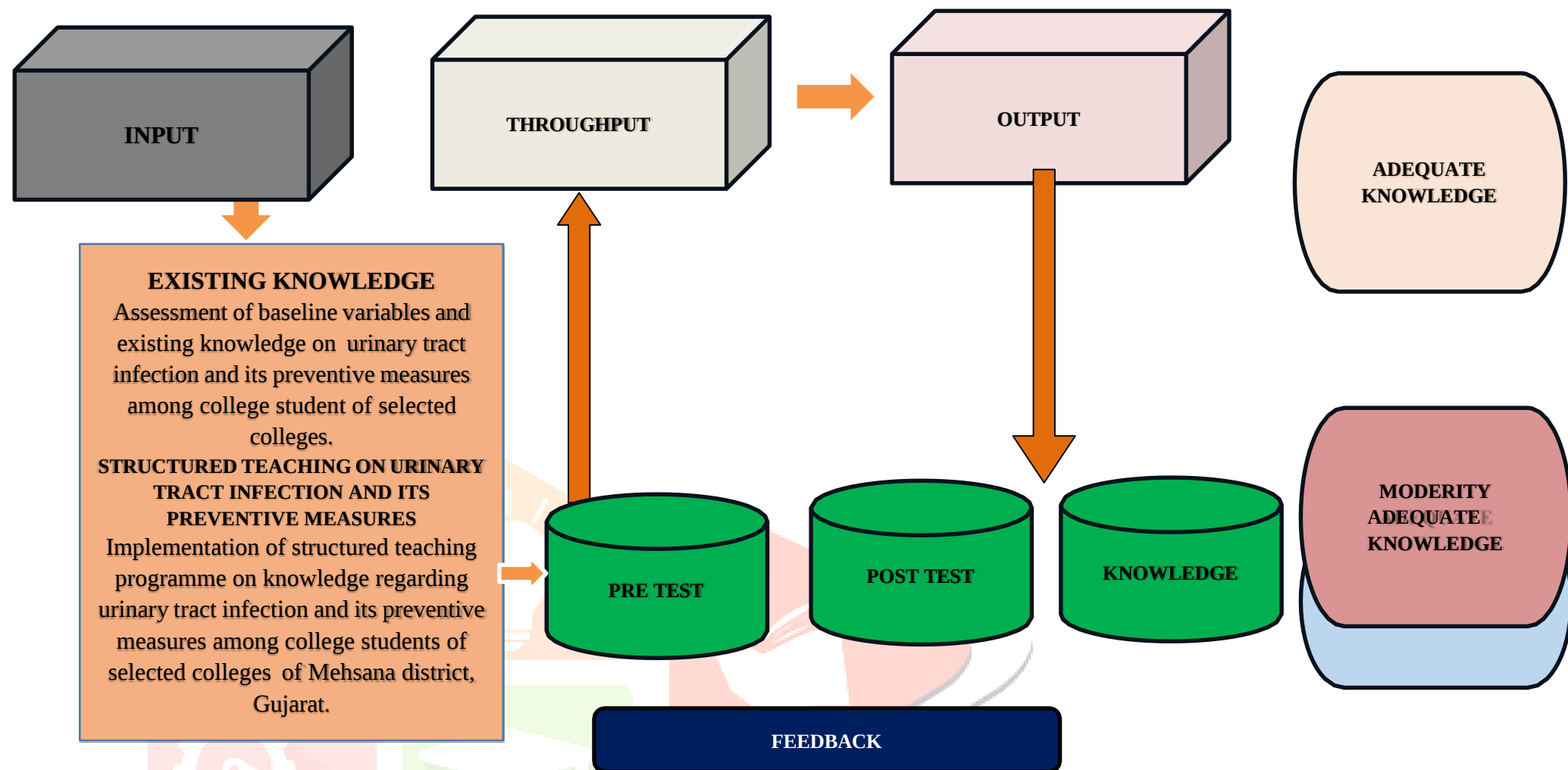
Environment includes external factors and settings that can influence the functioning of the system.

In this study, the environment comprises the college setting, learning atmosphere, available resources, and institutional support in Mehsana district, Gujarat. These contextual elements may affect participation, motivation, and the overall learning outcomes of the students.

By applying the General System Theory, this study demonstrates how inputs (students and their characteristics) are transformed through a process (structured teaching programme) to produce an output (improved knowledge), with feedback guiding future improvement, all within a specific educational environment.



# AL FRAMEWORK BASED ON GENERAL SYSTEM THEORY(MODIFIED) LUDWING VONBERTALANEFFYS MODEL



# CHAPTER 2



## Review of literature

## CHAPTER II REVIEW OF LITERATURE

“The Review of literature is defined as broad, comprehensive in depth, systemic and critical review of scholarly publications, unpublished scholarly print material, audiovisual material and personnel communication (Suresh Sharma, 2005)”.

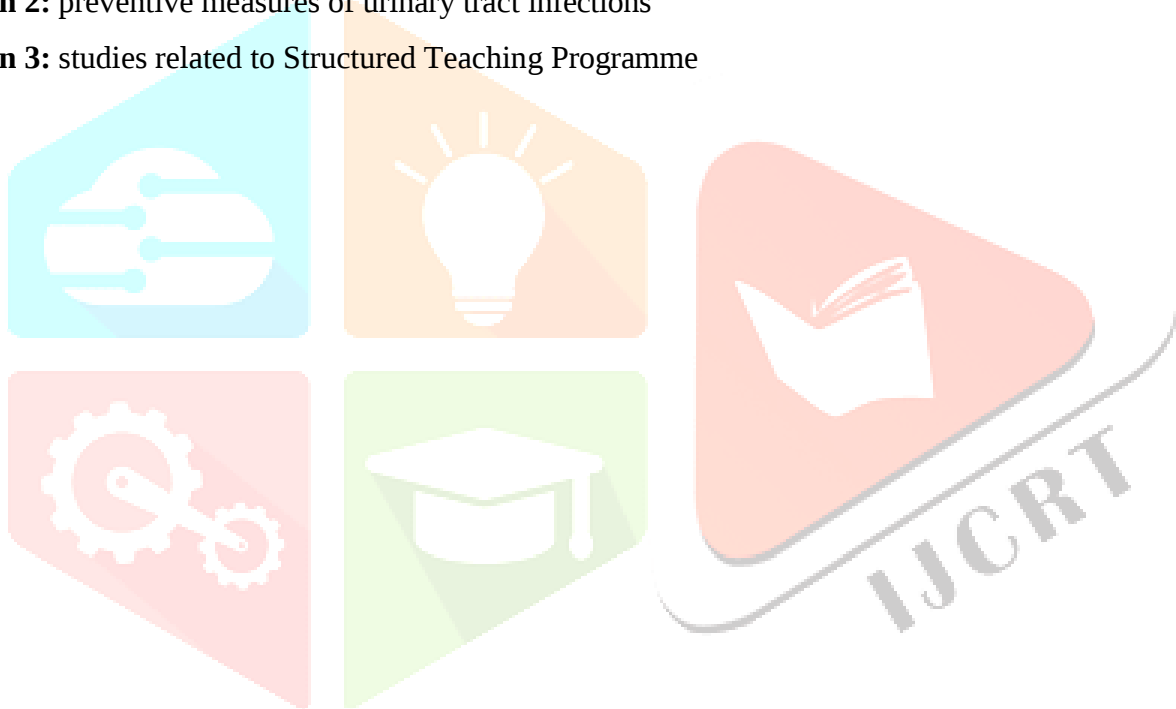
“Review of literature is important to an investigator in order to know what has been established and as there critical summaries of what is known about a particular topic (Polite and Hungler 1999)”.

The Review of literature is presented under following headings:

**Section 1:** studies related to Urinary tract infection

**Section 2:** preventive measures of urinary tract infections

**Section 3:** studies related to Structured Teaching Programme



## Section 1: studies related to Urinary tract infection

**Giuseppe Mancuso et al. (2023)** Conducted a study on Urinary Tract Infections: The Current Scenario and Future Prospects. Urinary tract infections (UTIs) are among the most common bacterial infections worldwide, occurring in both community and healthcare settings. Although the clinical symptoms of UTIs are heterogeneous and range from uncomplicated (uUTIs) to complicated (cUTIs), most UTIs are usually treated empirically. Bacteria are the main causative agents of these infections, although more rarely, other microorganisms, such as fungi and some viruses, have been reported to be responsible for UTIs. Uropathogenic *Escherichia coli* (UPEC) is the most common causative agent for both uUTIs and cUTIs, followed by other pathogenic microorganisms, such as *Klebsiella pneumoniae*, *Proteus mirabilis*, *Enterococcus faecalis*, and *Staphylococcus* spp. In addition, the incidence of UTIs caused by multidrug resistance (MDR) is increasing, resulting in a significant increase in the spread of antibiotic resistance and the economic burden of these infections. Here, we discuss the various factors associated with UTIs, including the mechanisms of pathogenicity related to the bacteria that cause UTIs and the emergence of increasing resistance in UTI Pathology.<sup>20</sup>

**Michael J. et al. (2025)** Conducted a study on Uncomplicated Urinary Tract Infections. Uncomplicated urinary tract infections (UTIs) are among the most common bacterial infections encountered in clinical practice. They primarily affect the lower urinary tract, including the bladder and associated structures. Unlike complicated UTIs, uncomplicated cases occur in otherwise healthy individuals without structural abnormalities in the urinary tract or significant comorbidities. Although some cases may resolve spontaneously, many patients seek therapy to relieve symptoms and prevent potential complications. Symptoms include urinary frequency, urgency, dysuria, and suprapubic discomfort.<sup>21</sup> **Bhaskar K Somani (2025)** conducted a study on Advancements in urinary tract infections: understanding, prevention, diagnosis, and treatment. Urinary tract infections (UTI) remain one of the most common bacterial infections worldwide, affecting hundreds of millions of people each year and contributing substantially to antimicrobial consumption. The rapid rise of antimicrobial resistance (AMR) among uropathogens threatens to undermine standard therapies, making timely, evidence-based innovations in diagnosis, treatment, and stewardship more critical

than ever. The landscape of UTI is being reshaped at an unprecedented pace by converging innovations in precision diagnostics, real-time antimicrobial surveillance, and clinical implementation. In this special issue, thirteen articles highlight how clinicians might translate these advances into tangible improvements in patients suffering from simple and complex UTIs, from uncomplicated cystitis to septic shock. Taken together, the papers signal a decisive pivot away from the binary question of “urine culture positive or negative” toward a more nuanced approach that integrates rapid pathogen detection, local resistance ecology, stewardship interventions, and patient-reported outcomes.<sup>22</sup>

**María José González (2024)** conducted a study on Urinary tract infection: is it time for a new approach considering a gender perspective and new microbial advances. Urinary tract infections (UTIs) are among the most common bacterial infections in humans, particularly affecting women, with significant clinical and socioeconomic impacts. Despite advances in medical research, the diagnostic criteria for UTI have remained practically unchanged since Kass’s seminal work, emphasizing the need for a reevaluation in light of new scientific insights. Recent studies have highlighted the importance of the urobiome, a previously underappreciated community of microorganisms within the urinary tract (UT), and its role in maintaining urogenital health. The gut-bladder axis has emerged as a critical pathway in understanding UTI as a dysbiosis, where imbalances in the microbial community and its relation with the host contribute to infection susceptibility. This review explores the evolving definitions and diagnostic challenges of UTI, particularly in women, and examines the implications of recent discoveries on the urobiome and the gut-bladder axis. Additionally, we discuss the potential of novel therapeutic strategies to restore microbial balance, offering a promising avenue for the therapeutic management of UTIs.<sup>23</sup>

**Sonali D Advani et al. (2025)** conducted a study on State-of-the-Art Review: Recurrent Uncomplicated Urinary Tract Infections in Women. Over 50% of adult women experience at least 1 urinary tract infection (UTI) in their lifetime, and almost one-quarter of them will experience a recurrent UTI (rUTI). Recurrent UTI is defined as  $\geq 2$  UTIs in a 6-month period or  $\geq 3$  UTIs in 12 months (at least 1 of these episodes should be culture-proven to confirm infectious etiology). In this narrative review, we discuss the epidemiology,

pathogenesis, diagnosis, and treatment considerations for recurrent uncomplicated cystitis in the adult female population. We provide a focused overview of the comprehensive management of these patients, with input from infectious disease physicians, urogynecologists, and urologists with expertise in rUTI, highlighting updated recommendations by the Infectious Diseases Society of America, American Urologic Association, Canadian Urologic Association, and American Urogynecologic Society. Finally, given the variety of prevention strategies, different treatment goals, and the need for “preference sensitive” decisions, we highlight the need for shared decision-making with patients.<sup>24</sup> **Tomas Bermudez et al. (2025)** conducted a study on Novel technologies for the diagnosis of urinary tract infections. Urinary tract infections (UTIs) impose a substantial burden on patient quality of life and urine testing accounts for the majority of workload in many clinical microbiology laboratories. Traditional UTI diagnosis relies on symptoms, urinalysis, and culture which are interpreted based on historical guidelines. This approach, while foundational, presents limitations, particularly in complex cases. Low-level bacteriuria and the presence of fastidious organisms are often overlooked or entirely missed in standard urine culture, stressing the need for novel diagnostic methods and technologies. This mini-review summarizes the existing state of UTI diagnostics in 2024 and covers current and upcoming technologies including rapid molecular-based pathogen identification, next-generation sequencing, and advanced antimicrobial susceptibility testing. However, these methods represent unique challenges, and as they are implemented, they will require the field to adapt to new concepts to avoid misdiagnosis and overtreatment.<sup>25</sup>

**Bradley K Ackerson et al. (2025)** Conducted a study on Risk Factors for Recurrent Urinary Tract Infections Among Women in a Large Integrated Health Care Organization in the United States Open Access. Between 1 January 2016 and 31 December 2020, index uncomplicated UTIs (uUTIs) from office, emergency department, hospital, and virtual care settings were identified from the electronic health records of women at Kaiser Permanente Southern California. We defined rUTI as  $\geq 3$  UTIs within 365 days or  $\geq 2$  UTIs within 180 days. We determined the proportion of women with cystitis index uUTI who had rUTI, and we examined factors associated with rUTIs using modified multivariable Poisson regression. The high risk of rUTI among women with cystitis is concerning,

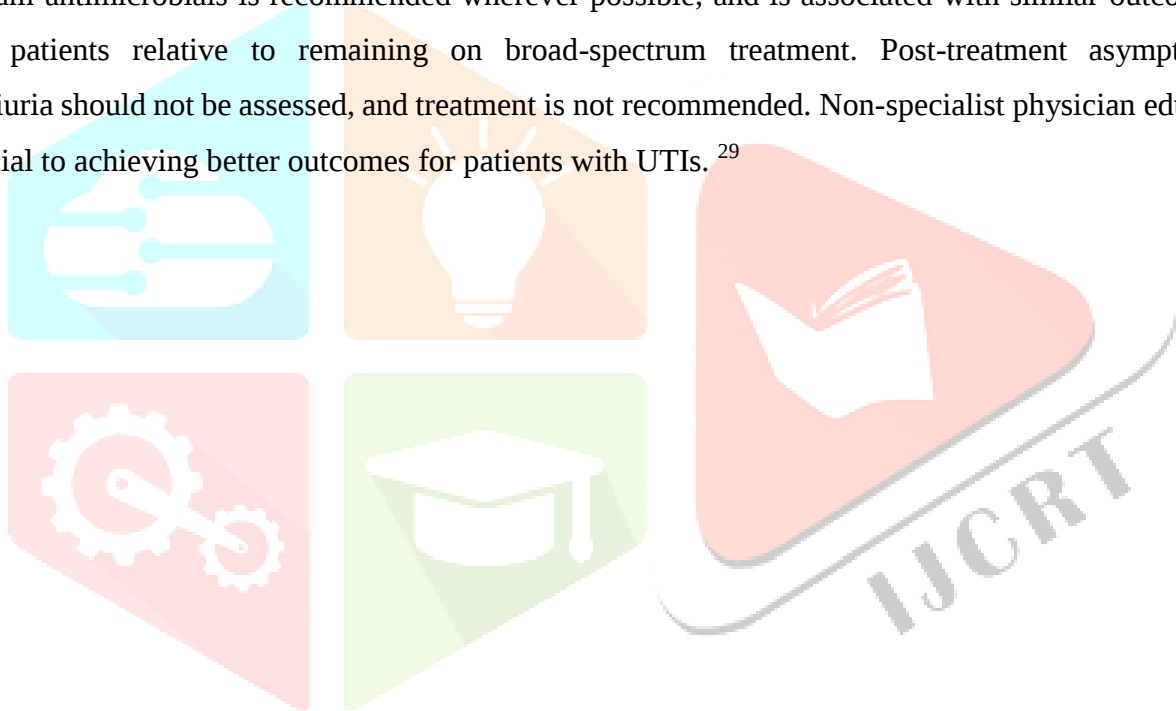
especially given previous reports of increasing UTI incidence. Current assessment of the epidemiology of rUTI may guide the development of preventive interventions against UTI.<sup>26</sup>

**Lenore Ackerman et al. (2025)** conducted a study on Updates to Recurrent Uncomplicated Urinary Tract Infections in Women: AUA/CUA/SUFU Guideline. Perceptions of recurrent UTI (rUTI) have evolved due to additional insights into rUTI pathophysiology, an appreciation for the adverse effects of repetitive antimicrobials (“collateral damage”), rising rates of bacterial antimicrobial resistance, and better reporting of the natural history of localized cystitis and rUTI. This document seeks to guide the evaluation and management of patients with rUTIs to prevent inappropriate antibiotic use, decrease the risk of antibiotic resistance, reduce adverse effects of antibiotics, provide guidance on strategies for rUTI prevention, and improve outcomes and quality of life for women with rUTIs.<sup>27</sup>

**Janni Søvsvø Hjelmager et al. (2025)** conducted a study on What is chronic urinary tract infection? A systematic review. Systematically searched Medline and Embase for studies covering all aspects of human UTI. For comparison, current urological and infectious disease guidelines were also reviewed. The electronic search yielded a total of 2175 articles, of which 154 were eventually included for data extraction. Of these, six studies presented a definition of chronic UTI within the text. The definitions were highly incongruent among studies and often identical to the current definition of ‘recurrent’ UTI. Chronic UTI is an undefined term, whichh has nevertheless been increasingly used in the past 15 years. Chronic UTI does not represent a distinct clinical or microbiological condition that justifies its use as medical diagnosis.<sup>28</sup>

**Kalpana Gupta et al. (2025)** conducted a study on Urinary tract infection in adults: gaps in current guidelines – opinions from an international multidisciplinary panel and relevance to clinical practice. Urinary tract infections (UTIs) are one of the most common infections encountered in clinical practice, many challenges remain with respect to classification and management. The purpose of this report is to discuss key issues in the management of UTIs and identify gaps in current knowledge and guidelines, as well as future research needs. A multidisciplinary panel of 13 experts from 6 European countries and the United States met on April 27, 2024. They discussed predefined key clinical

questions, including classification of UTIs, current management guidelines, management of UTIs in men, antimicrobial switching, and post-treatment asymptomatic bacteriuria. The panel agreed that differentiation between complicated and uncomplicated UTIs is crucial to antimicrobial selection and can impact outcomes. In particular, definitions of complicated UTIs (cUTIs) vary widely between guidelines and in the literature. Patients with cUTIs are not a homogeneous group and differences in risk factors and prognosis should be considered. However, a balance must be sought between appropriate antimicrobial treatment and complexity of guidelines, which can hinder their implementation, especially in primary care. Guidelines published by the European Urology Association and the Infectious Diseases Society of America differ in their antimicrobial treatment recommendations for cUTIs, which is important at a time of increasing antimicrobial resistance. In men with UTIs, it has been established that a longer duration of antimicrobial therapy is needed in cases where fever is present. De-escalation from broad- to narrow-spectrum antimicrobials is recommended wherever possible, and is associated with similar outcomes in many patients relative to remaining on broad-spectrum treatment. Post-treatment asymptomatic bacteriuria should not be assessed, and treatment is not recommended. Non-specialist physician education is crucial to achieving better outcomes for patients with UTIs.<sup>29</sup>



## Section 2: preventive measures of urinary tract infections

**Shawn Dason (2011)** Conducted a study on Guidelines for the diagnosis and management of recurrent urinary tract infection in women. Recurrent uncomplicated urinary tract infection (UTI) is a common presentation to urologists and family doctors. Survey data suggest that 1 in 3 women will have had a diagnosed and treated UTI by age 24 and more than half will be affected in their lifetime. In a 6-month study of college-aged women, 27% of these UTIs were found to recur once and 3% a second time.<sup>30</sup>

**Zachary Nelson et al. (2024)** conducted a study on Guidelines for the Prevention, Diagnosis, and Management of Urinary Tract Infections in Pediatrics and Adults. This consensus statement and systematic review applied an approach previously established by the WikiGuidelines Group to construct collaborative clinical guidelines. In May 2023, new and existing members were solicited for questions on urinary tract infection prevention, diagnosis, and management. For each topic, literature searches were conducted up until early 2024 in any language. Evidence was reported according to the WikiGuidelines charter: clear recommendations were established only when reproducible, prospective, controlled studies provided hypothesis-confirming evidence. In the absence of such data, clinical reviews were developed discussing the available literature and associated risks and benefits of various approaches. A total of 54 members representing 12 countries reviewed 914 articles and submitted information relevant to 5 sections: prophylaxis and prevention (7 questions), diagnosis and diagnostic stewardship (7 questions), empirical treatment (3 questions), definitive treatment and antimicrobial stewardship (10 questions), and special populations and genitourinary syndromes (10 questions). Of 37 unique questions, a clear recommendation could be provided for 6 questions. In 3 of the remaining questions, a clear recommendation could only be provided for certain aspects of the question. Clinical reviews were generated for the remaining questions and aspects of questions not meeting criteria for a clear recommendation. In this consensus statement that applied the WikiGuidelines method for clinical guideline development, the majority of topics relating to prevention, diagnosis, and treatment of urinary tract infections lack high-quality prospective data and clear recommendations could not be made.

Randomized clinical trials are underway to address some of these gaps; however further research is of utmost importance to inform true evidence-based, rather than eminence-based practice.<sup>31</sup>

**Barbara W. Trautner et al. (2025)** conducted a study on Clinical Practice Guideline by Infectious Diseases Society of America (IDSA): 2025 Guideline on Management and Treatment of Complicated Urinary Tract Infections: Executive Summary. IDSA UTI guidelines focused on uncomplicated cystitis and pyelonephritis in women, omitting complicated UTI (cUTI) and UTI in men.<sup>7</sup> Since the publication of those guidelines, many randomized, controlled trials assessing new antimicrobials for cUTI in both women and men have been published. Women have a lifetime risk of 53% of experiencing UTI. While UTI is uncommon in men prior to age 50, their lifetime risk is a nontrivial 14%.<sup>8</sup> Risk of experiencing a UTI increases with age in both sexes. Given the aging US population, UTI in men is a salient issue, as is UTI in women. Fortunately, a reasonable evidence base now exists to support guidelines for treatment of cUTI in men and women. Gram-negative urinary organisms collected from outpatients across all regions of the United States now have antimicrobial resistance rates above the thresholds recommended for using antibiotics as empiric treatment of UTI in the 2010 guidelines.<sup>7</sup> In the face of these concerning high rates of resistance, the evidence needed to guide empiric choice of antibiotics for treating UTIs needs to be reevaluated.<sup>32</sup>

**Payal K. Patel MD et al. (2023)** Conducted a study on Strategies to prevent catheter-associated urinary tract infections in Acute-care hospitals: 2022 Update. The intent of this document is to highlight practical recommendations in a concise format designed to assist physicians, nurses, and infection Preventionists at acute-care hospitals in implementing and prioritizing their catheter-associated urinary tract infection (CAUTI) prevention Efforts. This document updates the Strategies to Prevent Catheter-Associated Urinary Tract Infections in Acute-Care Hospitals published in 2014. It is the product of a collaborative effort led by SHEA, the Infectious Diseases Society of America (IDSA), the Association for Professionals in Infection Control and Epidemiology (APIC), the American Hospital Association (AHA), and The Joint Commission.<sup>33</sup>

**Janni Søvstø Hjeltnager et al. (2025)** conducted a study on What is chronic urinary tract infection? A systematic review. The electronic search yielded a total

of 2175 articles, of which 154 were eventually included for data extraction. Of these, six studies presented a definition of chronic UTI within the text. The definitions were highly incongruent among studies and often identical to the current definition of 'recurrent' UTI. Chronic UTI is an undefined term, which has nevertheless been increasingly used in the past 15 years. Chronic UTI does not represent a distinct clinical or microbiological condition that justifies its use as medical diagnosis.<sup>34</sup>

**NHSN (2025)** conducted a study on Urinary Tract Infection (Catheter-Associated Urinary Tract Infection [CAUTI] and Non-Catheter-Associated Urinary Tract Infection [UTI]) Events. Urinary tract infections (UTIs) are the fifth most common type of healthcare-associated infection, with an Estimated 62,700 UTIs in acute care hospitals in 2015. UTIs additionally account for more than 9.5% of Infections reported by acute care hospitals. Virtually, all healthcare-associated UTIs are caused by Instrumentation of the urinary tract. Approximately 12%-16% of adult hospital inpatients will have an indwelling urinary catheter (IUC) at some Time during their hospitalization, and each day the indwelling urinary catheter remains, a patient has a 3%-7% increased risk of acquiring a catheter-associated urinary tract infection (CAUTI).<sup>35</sup>

**Eirwen Sides et al. (2025)** conducted a study on Preventing and managing urinary tract infections: Exploring interventions and strategies implemented by NHS commissioning organisations in English primary care, 2017–2022. An online questionnaire was sent to CCG primary care chief nurses and medicines optimisation leads August–September 2022. Qualitative data was mapped to the Theoretical Domains Framework. Participant response rate was 14.1% (56/397), with representation from 29.2% (31/106) CCGs and across a range of roles. Education and training were the most reported intervention types, Most interventions targeted general practice staff and patients, followed by care home staff, and residents and their families.

The most reported success measures included reduction in antibiotic prescribing (54.5%, 97/178 interventions); positive stakeholder feedback (42.1%, 75/178); and increased adherence to diagnostic guidelines (32.6%, 58/178). 48.8% (20/41) stated their UTI activities had not been formally evaluated; availability and accuracy of information; public and staff beliefs; systems and processes; and staff roles and responsibilities.<sup>36</sup>

### Section 3: studies related to Structured Teaching Programme

**Savita Singh, Rohitash Kumar, S. K.Singh (2021):** Conducted a quantitative study on Effectiveness of structured teaching programme regarding reproductive health on knowledge among adolescent girls in selected school of rural area. The data were analyzed by using descriptive and inferential statistics. The result revealed that after the intervention the mean and standard deviation of the post-test knowledge was  $18.41 \pm 3.40$  being compared to mean and standard deviation of pre-test knowledge  $14.06 \pm 2.46$ . The enhancement of knowledge score is the mean difference 4.35. It indicates that there was a significant improvement in the level of knowledge of participants. The calculated t-value (7.39) on analysis of the data was found to be significant at p value 0.05. The knowledge scores of the adolescent girls in pre-test and post-test under the category's poor, average and good. In pre-test there was 7.5% of the respondents had poor level of knowledge, followed by 92.5% had average level of knowledge and none of them had good knowledge and the post test result indicated that 80% of the respondents had achieved average knowledge and 20 % of the population had gained good knowledge.<sup>37</sup>

**Mr. Virupakshappn Savadi (2020) :** Conducted a descriptive study on Effectiveness of Structured Teaching Programme on Knowledge Regarding Phototherapy for Neonatal Jaundice Among Selected Nursing Students at KAHER Institute of Nursing Sciences, Belagavi Karnataka. Over 130 million babies are born every year. The first 28 days of life of the neonatal period are the most crucial times for a child's survival.

At global rate of 19 death per 1000 live births, 2.6 million neonates died in first month of life approximately, 7000 newborn death occurred every day, 1 million death occurred in first day and 1 million died in next six days.<sup>10</sup> The burden of severe neonatal jaundice in entire WHO region: The American region has the highest incidence of severe neonatal jaundice per 10000 live births at 667.8 followed by Southeast Asian, Eastern Mediterranean, Western pacific America and European region at 251.3 (132.0 to 473.2), 165.7(114.6 to 238.9), 9.4(0.1 to 755.9), 4.4(1.8 to 10.5) and 3.7 (1.7 to 8.0) respectively. Only 2 studies provided an estimate of jaundice related death in infant with significant jaundice occurrence in UK (2.8%) and India (30.8%).<sup>11</sup> WHO reveals the source of incidence of jaundice is 50 to 60000 neonates and reported that 2% has total

serum bilirubin level over 20mg/dl. The total bilirubin in normal range is 0.3 to 1mg/dl. 0.15% had a level over 25mg/dl and 0.01% had a level over 30 mg /dl. Thus we expect 50,000 neonatal jaundice, in that 6000 and 400 newborns are with bilirubin level of greater than 20mg/dl and 30mg/dl respectively.<sup>38</sup>

**M. Roja Rani, S. Hema Latha, M. Bhagya Lakshmi (2020):** Conducted a descriptive study on Effectiveness of Structured Teaching programmer on study skill among B.Sc. nursing, SVIMS Tirupati, A.P. Data obtained was tabulated and analyzed in terms of objectives of the study using descriptive and inferential statistics. At pretest 64 (79.9%) had inadequate study skills: 23 (25.8%) had moderate study skills and 2 (2.2%) had adequate study skills. After STP 68 (76.4%) had adequate and 21(23.6%) had moderate study skills. There was significant gain in study skills and had statistically significant association with their geographical background and educational level at  $P>0.05$  level of significance.<sup>39</sup>

**Pratiksha Patrick (2019):** Conducted a pre experimental study on knowledge of mother under 5 years children as a regarding of PEM. Most of the mothers of under five year children, 3 (10%) belonged to the age group of less than 20 year, out of 30, 19 (63.3%) were between 21-25 year, out of 30, 4 (13.3%) were

between 26-30 year, 4 (13.3%) were between 31-35 year. Out of 30 mothers of under five year children, 11 (36.6%) had illiterate 13(43.3%) had education up to high school, 5 (16.6%) education up to Higher Secondary and 1(3.3%) were graduated.

Most of mothers under five year children occupation had, 6 (20%) labour, 23 (76.6%) house wife, 1 (3.3%) home business. no one had any professional job. Monthly family income, 1 (3.3%) less than Rs.1000, 5 (16.6%) had earning between Rs.1000-3000, 14 (46.6%) had Rs. 4000-5000, and 10 (33.3%) had above Rs.5000. Family had belonged to joint family, 15 (50%) and 15 (50%) nuclear family. Number of under five year children's in home, 18 (60%) had 1 children, 9 (30%) had 2 children's. 2 (6.6%) had 3 children's and 3 (3.3%) had more than 3. In the post test knowledge of mothers of under five year children, 25 (75%) had very good knowledge, 5 (25%) had good knowledge and no one had poor and average knowledge.<sup>40</sup>

**Pooja Baghari, Suman Lata, Rashmi P John and Dr. Urmila (2019):**

Conducted a quisi-experimental study on prevention of sexually transmitted

infections on knowledge among women. The result revealed that pre test experimental group, majority of 40(44.4%) women had poor knowledge, followed by 37(41.2%) had average knowledge and least 13(14.4%) had good knowledge. In post test experimental group, majority of 49(54.4%) women had good knowledge, followed by 37(41.2%) had average knowledge and least 04(4.4%) had poor knowledge. The mean pre test score of women was 12.04 and the mean post test score was 18.29. The deviation of pre test score was 5.700 and the post test score was 4.791.<sup>41</sup>

**Anuradha Rathore and SapamDebika Devi (2019)** Conducted a pre experimental study on the effectiveness of structured teaching programme on knowledge and practice of pantograph among staff nurses working maternity unit. results of the study revealed that majority 32 (80%) of staff nurse have adequate knowledge, 8 (20%) of staff nurses had average knowledge regarding pantograph and majority 75(75.0%) of staff nurse have moderate level of practice, 25(25.0%) of staff nurses had high level of practice regarding pantograph.<sup>42</sup>

**Jagruti Patel (2019):** Conducted a pre-experimental study on effectiveness of structures teaching programme on knowledge common behavioral problems of school children among primary school teachers working in selected school of valsaddistrict. In the Presence study the result revealed that There is a significant association between knowledge of primary school teachers and selected demographic variable such as Age in years ( $\chi^2 = 10.83, P < 0.01$ ), Qualification of the Teacher ( $\chi^2 = 25.99, P < 0.05$ ) and not significant association of Knowledge scores with other demographic variables. In this study pre-test, majority 43 (71%) teachers had average in the post-test 42 (70%) teachers had good knowledge. The pre test mean of 3.3 and in post-test mean 28.3 with t value at df59 3.46 which was highly significant at  $p < 0.001$ . This study reveals that the post test mean was higher than pre test mean score which showed the effectiveness of Structured Teaching Programme.<sup>43</sup>

**Ms. Sherin Nithya.S & Ms. RumaShanthini (2017)** Conducted a pre-experimental study on Assess The Impact Of Structured Teaching Programme On Knowledge Regarding Home Management On Prevention Of Dengue Among Women At Moorthikuppam Before administration of structured teaching programme, majority of the sample 22 (73,3%) had inadequate knowledge, and 8 (26.7%) had moderately adequate knowledge. After the administration of

structured teaching programme, majority of the sample 21 (70%) had adequate knowledge, 9 (30%) of them had moderately adequate knowledge. The results implied that the structured teaching programme was effective in improving the level of knowledge regarding home management on prevention of dengue among women as the obtained 't' value was 8.152 that was statistically significant at  $p < 0.00$  level.<sup>44</sup>



# CHAPTER 3



## RESEARCH METHODOLOGY

## CHAPTER III METHODOLOGY

### 3.1 INTRODUCTION OF METHODOLOGY:

According to Creswell, the methodology section of a research study provides a detailed plan for how the investigation will be conducted. It outlines the research design, population and sampling techniques, data collection instruments, procedures, and methods of data analysis. Creswell emphasizes that a well-structured methodology ensures the study is systematic, replicable, and aligned with the research questions and objectives. This section is essential in establishing the credibility and validity of the research process.

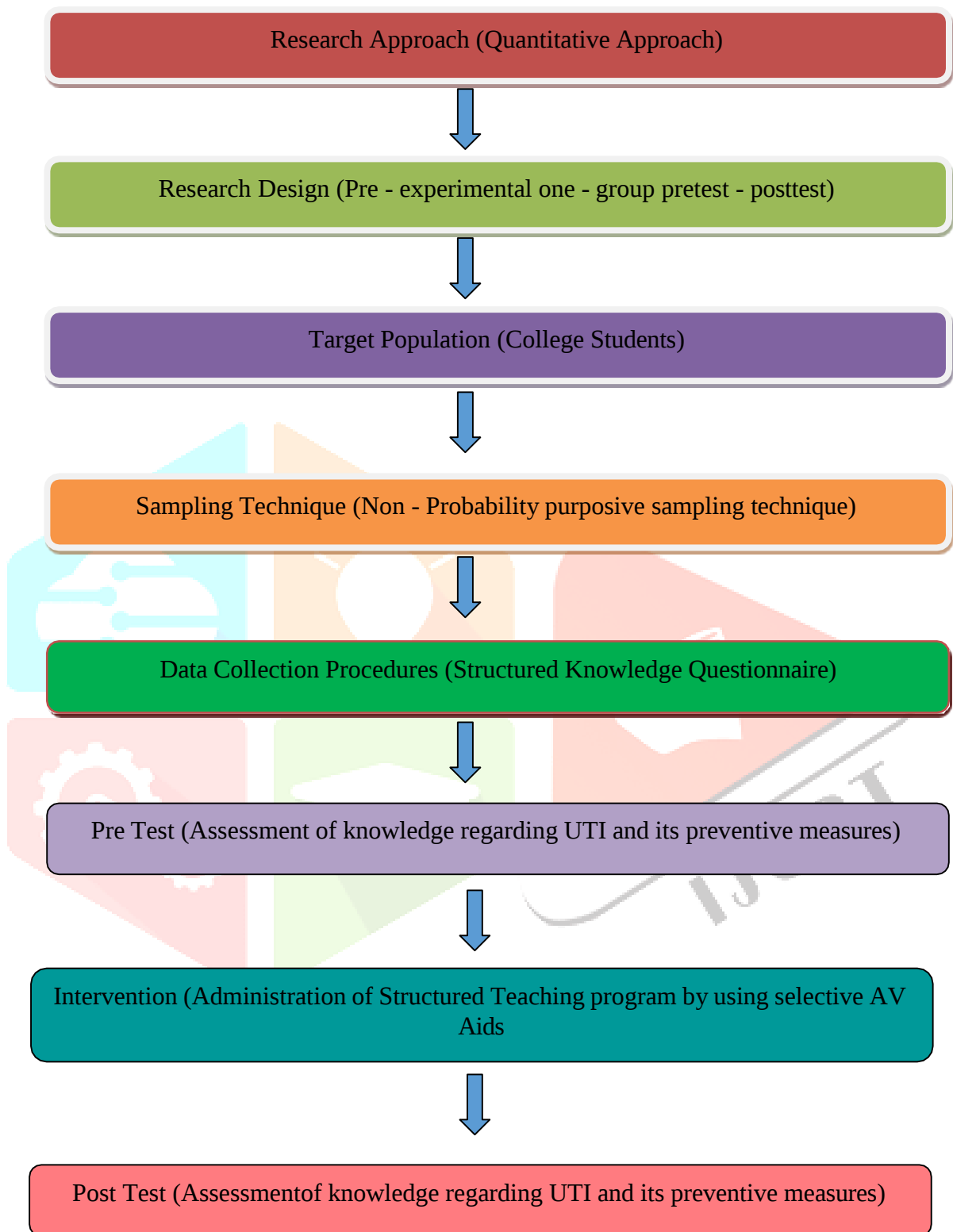
### 3.2 Research Approach:

According to Creswell, "A research approach is a plan and the procedure for research that spans the steps from broad assumptions to detailed methods of data collection, analysis, and interpretation."

As defined by Polit and Beck, "Quantitative research is a means for testing objective theories by examining the relationship among variables measured with instruments and analyzed using statistical procedures." This structured and objective method supports the study's aim of drawing evidence-based conclusions.

For the present study, a **quantitative evaluative research approach** was adopted, as the main objective was to assess the effectiveness of a structured teaching programme on improving knowledge regarding **urinary tract infection and its preventive measures among college students of selected colleges of Mehsana district, Gujarat**. A quantitative evaluative approach is appropriate for this study because it allows the researcher to measure changes in knowledge levels before and after the intervention using numerical data.<sup>45</sup>

## EMATIC PRESENTATION OF RESEARCH METHODOLOGY



### 3.3 Research Design:

A research design is the overall plan or blueprint for conducting a research study, guiding the procedures for data collection, measurement, and analysis. It provides a

For the present study, a pre-experimental one-group pretest–posttest research design was adopted, as the primary aim was to assess the effectiveness of a structured teaching programme on improving knowledge regarding urinary tract infection and its preventive measures among college students of selected colleges of Mehsana district, Gujarat. This design is suitable for evaluating an educational intervention by comparing knowledge levels within the same group before and after the structured teaching programme.<sup>46</sup>

Pre-experimental designs are particularly useful in educational and community-based health research where random assignment and control groups are not feasible. They allow researchers to observe changes in outcomes following an intervention, although some threats to internal validity may exist due to the absence of a comparison group.<sup>47</sup>

### 3.4 VARIABLES:

#### **INDEPENDENT VARIABLE**

Structured Teaching Programme on Urinary Tract Infection and its Preventive Measures.

#### **DEPENDENT VARIABLE**

Knowledge Regarding Urinary Tract Infection and its Preventive Measure among College Students of Selected Colleges of Mehsana district, Gujarat. **DEMOGRAPHIC VARIABLE:**

It Included; Age, Gender, Residence, Religion, Course of study, Educational year, Types of Family, Habit of Holding Urine for Long Duration, Frequency of Fluid intake per day and Source of Information About UTI.

### 3.5 Application in the Present Study:

In this study, the investigator measured the baseline knowledge of college students regarding UTI preventive measures (Pre-test:  $O_1$ ), administered the structured teaching programme (Intervention: X), and subsequently reassessed their knowledge (Post-test:  $O_2$ ). This design enabled the researcher to determine

whether the structured teaching programme led to an improvement in knowledge regarding urinary tract infection.

In which, we are going to explain about Study Group (G). Such as;

G1: O1 → X → O2

G1 : Single Group (no control group) O1 : Pre Test

X : Intervention (Structured Teaching Programme) O2 : Post Test

### 3.6 SETTING OF STUDY:

The present study will be conducted at Shri Sarvajani Commerce College, Mehsana, Gujarat, an urban higher education institution located in Mehsana District. The college caters to students from varied socio-economic backgrounds and offers undergraduate programmes in commerce and related fields. The institution has well-structured academic facilities, adequate classroom space, and regular student engagement activities, including health-related awareness programmes.<sup>48</sup>

This setting is appropriate for assessing knowledge regarding urinary tract infection and its preventive measures among college students, as the college administration supports educational interventions and allows the implementation of health-based teaching programmes. Conducting the structured teaching programme within this academic environment provides suitable conditions for effectively administering the pre-experimental one-group pretest–posttest research design. Evidence from previous studies indicates that educational interventions conducted in college settings significantly enhance students' awareness and adoption of preventive health practices.<sup>49</sup>

### 3.7 POPULATION:

The study population comprised college students enrolled at Shri Sarvajani Commerce College, Mehsana, Gujarat, who were attending regular academic sessions during the period of data collection. These participants were students aged 17–22 years, representing the typical late adolescent and early adult age group commonly found in undergraduate college settings. This population is appropriate for assessing the effectiveness of a structured teaching programme on

knowledge regarding urinary tract infection (UTI), as young adults—particularly college students—are known to have varying levels of awareness about personal hygiene, urinary health, and infection prevention.<sup>50</sup>

Existing literature indicates that UTI-related knowledge among adolescents and young adults is often inadequate, highlighting the need for targeted educational interventions. Studies conducted in college and university settings in India have similarly assessed students' awareness and preventive practices related to UTIs, supporting the relevance of selecting actively attending college students as the study population.<sup>51</sup>

### **3.8 TARGET POPULATION:**

In this present study the target population involves College Students that are particularly selected by the Criteria of selected colleges of Mehsana district, Gujarat.

### **3.9 SAMPLE SIZE:**

A total sample size of 60 college students was selected for this pre-experimental single-group study. This number is considered adequate for detecting a meaningful improvement in knowledge following an educational intervention, consistent with college-based health education studies conducted among young adults in India. All 60 participants were selected from Shri Sarvajanik Commerce College, Mehsana, and met the inclusion and exclusion criteria established for the study.

As this investigation used a single-group pre-test post-test design, all participants received the structured teaching programme on preventive measures of urinary tract infection (UTI). Baseline data such as demographic details and pre-test knowledge scores—were collected before the intervention, followed by a post-test assessment to evaluate the effectiveness of the structured teaching programme. The sampling strategy reflects practical real-world educational settings, where an intact group of students is included without random allocation, a commonly accepted approach in pre-experimental educational research. Ethical approval was obtained from the institutional review committee, and informed consent was secured from all participants prior to data collection.

### 3.10 SAMPLING TECHNIQUE:

In this study, a non-probability purposive sampling technique was used to select participants who met the predefined inclusion criteria and provided informed consent. This technique involves the deliberate selection of individuals based on specific characteristics relevant to the study objectives—in this case, college students enrolled at Shri Sarvajanik Commerce College, Mehsana, Gujarat, who were available during data collection and willing to participate in both pre-test and post-test assessments. Participants were required to be regularly attending academic classes, able to comprehend the structured teaching programme, and willing to undergo the educational intervention on urinary tract infection (UTI) and its preventive measures.<sup>52</sup>

Purposive sampling is particularly suitable for educational and public health research where the aim is to gather focused and relevant data from a population directly aligned with the study focus. Previous Indian studies assessing students' knowledge and preventive behaviours related to UTIs have also utilized purposive sampling, demonstrating its appropriateness for selecting targeted groups of young adults in academic settings.<sup>53</sup>

### 3.11 CRITERIA FOR SAMPLE SELECTION:

#### A. Inclusion Criteria:

- College students enrolled at Shri Sarvajanik Commerce College, Mehsana, Gujarat.
- Students aged 17–22 years (late adolescents and young adults).
- Students who are present on the day of data collection.
- Students who can read and understand English or Gujarati, enabling comprehension of the structured teaching programme.
- Students who are willing to participate in the study.
- Students who provide written informed consent.

#### B. Exclusion Criteria:

- Students who are absent on the day of data collection.
- Students who have already attended a similar health education programme on UTI preventive measures within the last 6 months.
- Students who are medically unwell or unable to participate in the pre-test or post-test assessments.

- Students who decline to give consent for participation.
- Students with a diagnosed chronic urinary condition or ongoing UTI treatment (to avoid bias in knowledge level).
- Male Students are not going to participate in this study.

### 3.12 DATA COLLECTION TOOL:

Selection & Development of the Research Tool Based on research problem, review of literature, need for the study, suggestion by guide & expert in the fields of Community Health nursing. Structured knowledge questionnaire was considered to be the most appropriate instrument to elicit the response from the subjects. Based on Research problem the blue print of the tool was prepared. The following steps were used to prepare the research tool.

### 3.13 DESCRIPTION OF THE TOOL:

The structured knowledge questionnaire consists of;

Part 1: Section-A: Age, Gender, Educational Year, Course of study, Residence, Religion, Types of Family, Source of Information About UTI, Habit of Holding Urine for Long Duration and Frequency of Fluid intake per Day.

Part 2: Section-B: Questionnaire on Knowledge Regarding UTI and its preventive Measures.

### 3.14 SCORING:

A structured knowledge questionnaire was developed by the investigator reviewing the literature and Consulting subject experts. It consisted of 25 Multiple choice questions covering:

- General knowledge about urinary tract infection (definition, causes, symptoms)
- Risk factors contributing to UTI among college students
- Preventive measures related to personal hygiene and genital hygiene
- Hydration practices and urinary habits that prevent UTI

- Lifestyle measures, clothing habits, and sexual health practices associated with UTI prevention
- Complications of untreated UTI and the importance of early medical consultation

score range

|         |           |
|---------|-----------|
| 0 – 8   | Poor      |
| 9 – 16  | Good      |
| 17 – 25 | Excellent |

### 3.15 VALIDITY & RELIABILITY OF THE TOOL:

To establish content validity, the investigator submitted the draft structured knowledge questionnaire on urinary tract infection (UTI) to a panel of five experts from the fields of community health nursing, urology, and public health. These domain experts systematically reviewed each item for relevance, clarity, accuracy, and representativeness of the constructs related to urinary tract infection, its causes, symptoms, risk factors, and preventive practices. Following standard validation procedures, each expert rated the items and provided recommendations for refinement. Their feedback guided modifications to ensure that the final questionnaire comprehensively covered all essential content areas required to assess the knowledge of college students regarding UTI.<sup>54</sup> Reliability of the structured knowledge questionnaire was assessed using the test–retest method. The same instrument was administered to the same group of participants on two different occasions under similar conditions. The correlation coefficient between the two sets of scores was found to be  $r = 0.82$ , indicating good reliability. According to classical test theory, test–retest reliability reflects the stability and consistency of an instrument over time, and correlation values of 0.80 or higher are considered strong for tools used in educational and public health research. This confirms that the questionnaire is precise, stable, and suitable for use in the main study.<sup>55</sup>

Intervention: STRUCTURED TEACHING PROGRAMME ON Urinary Tract Infection (UTI)

- The intervention consisted of a structured teaching programme focused on improving knowledge regarding urinary tract infection (UTI) among selected college students.
- The teaching was delivered using Blackboard, Pamphlet, PowerPoint slides, and interactive explanations, ensuring clarity and engagement.
- Duration: 60 minutes
- The session covered essential topics, including:
  - Introduction of urinary tract infection
  - Definition of the urinary tract infection
  - Incidence rates of urinary tract infection
  - Causes of urinary tract infection
  - Predisposing factors of urinary tract infection
  - Signs and symptoms of urinary tract infection
  - Complications of urinary tract infection
  - Preventive measures (hydration, hygiene practices, urination habits, clothing choices, menstrual hygiene) of urinary tract infection
  - Treatment of urinary tract infection
- Education was provided in a group format, with 10–12 participants per session to ensure effective interaction and understanding.

### 3.16 PILOT STUDY:

According to Polit and Hungler, a pilot study is a small-sample, quantitative investigation conducted as a prelude to a larger study, serving as a trial run to assess feasibility, refine procedures, and test the reliability of research instruments.<sup>56</sup>

In the present study, a pilot study was conducted at, after obtaining permission from the concerned college authorities.

### 3.17 Data Collection Procedure:

Data were collected from college students enrolled at Shri Sarvajani Commerce College, Mehsana, Gujarat, who fulfilled the inclusion criteria and provided informed consent. After obtaining permission from the college authorities and approval from the institutional ethics committee, participants were enrolled using a non-probability purposive sampling technique. Baseline information was

gathered using a structured knowledge questionnaire, which included demographic variables and a pre-test assessment of knowledge regarding urinary tract infection (UTI).

Following the pre-test, all 60 participants received a Structured Teaching Programme delivered through lectures, Group discussions, Pamphlet, Flashcards, and visual aids. After a fixed interval of 7 days, a post-test using the same questionnaire was administered to assess changes in knowledge levels. The investigator ensured uniformity by personally administering the tool, clarifying doubts, maintaining confidentiality, and ensuring that all participants completed both pre-test and post-test assessments under comparable conditions.

The pre-test enabled the investigator to determine the existing level of knowledge among college students regarding UTI causes, symptoms, risk factors, and preventive measures.

Immediately after the pre-test, the structured teaching programme was implemented for the entire group. After seven days, the post-test was re-administered to evaluate the effectiveness of the educational intervention in improving students' knowledge related to urinary tract infection.

### **3.18 Ethical Considerations:**

Prior to the commencement of the study, ethical clearance was obtained from the Institutional Ethics Committee. Formal permission to conduct the study was also secured from the authorities of Shri Sarvajani Commerce College, Mehsana, Gujarat. All participants were clearly informed about the purpose, objectives, procedures, potential benefits, and minimal risks associated with the study. Written informed consent was obtained from each participant. For those below 18 years of age, consent was obtained from parents/guardians along with participant assent. Participation was entirely voluntary, and students were informed of their right to withdraw from the study at any time without any academic consequences.

Confidentiality and anonymity were maintained throughout the study by assigning unique identification codes to each questionnaire and ensuring that no personal identifiers such as name, roll number, or contact details were collected. All data were stored securely and accessed only by the researcher. The

information obtained was used solely for research purposes, and the findings were presented in aggregate form without revealing the identity of any participant. Students were assured that their privacy would be respected and protected at every stage of the research process.

### **3.19 Data Analysis Plan :**

The collected data were entered, coded, and analyzed using Statistical Package for the Social Sciences (SPSS) software. Both descriptive and inferential statistics were applied to interpret the findings. Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to summarize the demographic variables and baseline characteristics of the college students.

To assess the effectiveness of the structured teaching programme on urinary tract infection (UTI), inferential statistics were employed.

Since the study adopted a single-group pre-test post-test design, a paired t-test was used to compare the mean pre-test and post-test knowledge scores. This statistical test helped determine whether the structured teaching programme produced a significant improvement in students' knowledge regarding UTI prevention.

### **3.20 Descriptive Statistics:**

Descriptive statistics were used to organize and summarize the collected data in a clear and meaningful way. Demographic variables such as Age, Gender, Educational Year, Types of Family, Course of study, Residence, Religion, Source of Information About UTI, Frequency of Fluid intake per Day, Habit of Holding Urine for Long Duration, regarding urinary tract infection (UTI) and its preventive measures were analyzed using frequency and percentage to describe the distribution of categorical variables. For continuous variables, including the pre-test and post-test knowledge scores, measures of central tendency and dispersion mean and standard deviation were calculated to represent the average level of knowledge and the variability among participants. These descriptive measures provided a comprehensive overview of the study population and served as a foundation for further inferential analysis.

### 3.21 Inferential Statistics:

Inferential statistics were applied to evaluate the effectiveness of the structured teaching programme on knowledge regarding urinary tract infection (UTI) and its preventive measures among college students. To determine the improvement in knowledge within the same group, a paired t-test was used to compare the mean pre-test and post-test knowledge scores of the participants. This statistical test was appropriate because the study followed a single-group pre-test post-test design, where the same participants were assessed before and after the educational intervention. When assumptions of normality were not met, an equivalent non-parametric test such as the Wilcoxon signed-rank test was considered. A p-value of  $< 0.05$  was taken as the level of statistical significance, indicating that any observed difference in knowledge scores was unlikely to have occurred by chance. These analyses helped determine whether the structured teaching programme resulted in a statistically significant improvement in participants' knowledge regarding UTI.

### 3.22 Paired t-test :

A paired t-test was used to compare the mean knowledge scores of the same group of students before and after the structured teaching programme. The test examined:

- Mean difference between post-test and pre-test scores, and
- Whether the improvement in scores was statistically significant.

The paired t-test was appropriate because the same participants were measured twice (pre-test and post-test), and the outcome variable (knowledge score) was continuous. A p-value of  $< 0.05$  was set as the significance level, indicating that any observed improvement in knowledge was statistically meaningful and not due to random variation. Thus, the paired t-test provided strong statistical evidence on whether the structured teaching programme enhanced the knowledge of college students regarding urinary tract infection (UTI) and its preventive measures.

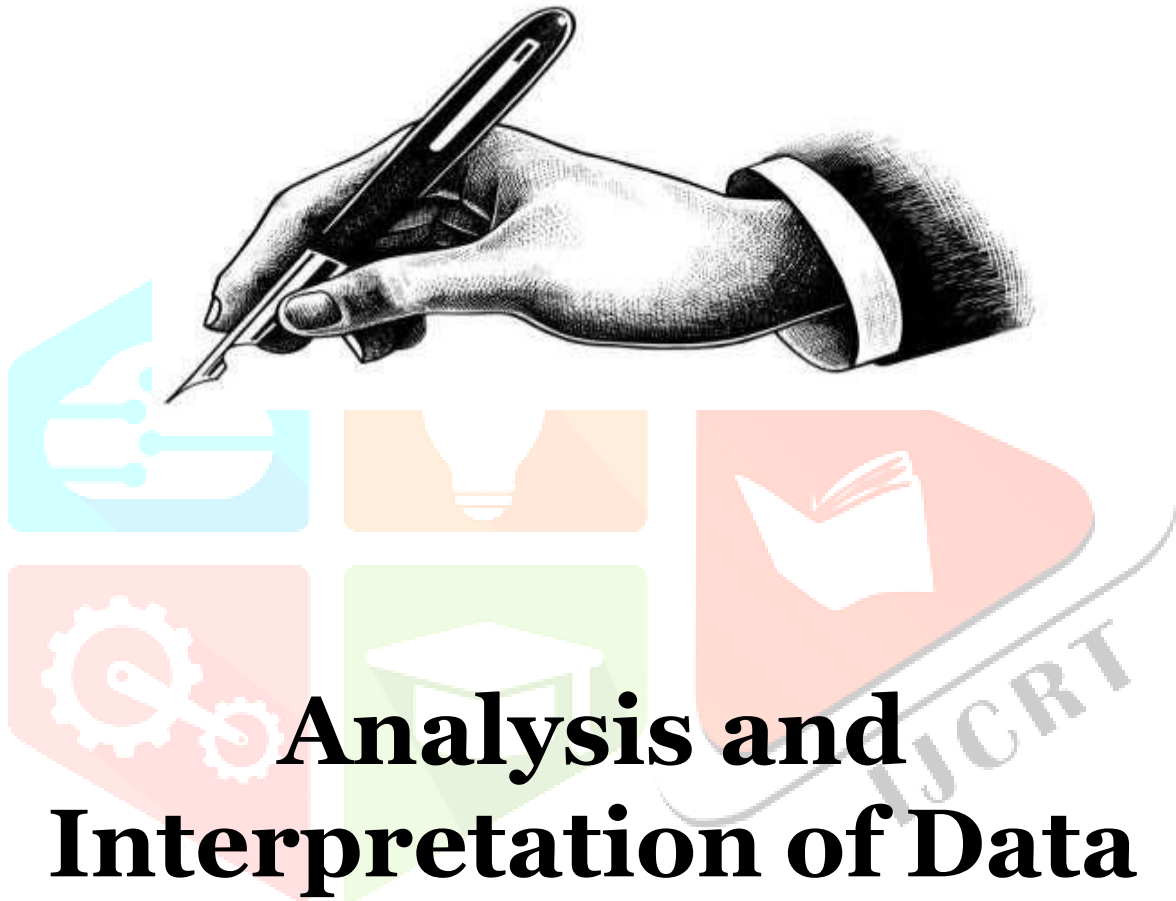
### 3.23 Chi-Square Test:

A Chi-square test of association was applied to examine the relationship between the participants' levels of knowledge regarding preventive measures of Urinary Tract Infection (UTI) and its preventive measures and their selected demographic variables such as Age, Gender, Educational Year, Types of Family, Course of study, Residence, Religion, Source of Information About UTI, Frequency of Fluid intake per Day, Habit of Holding Urine for Long Duration, on UTI and its preventive measures. This non-parametric test was appropriate because both the demographic variables and the categorized knowledge scores (poor, average, good) were measured on a categorical scale. A p-value of  $< 0.05$  was considered statistically significant. The Chi-square analysis helped determine whether specific demographic characteristics were associated with the participants' baseline knowledge or their improvement in knowledge following the structured teaching programme on UTI and its preventive measures.

### 3.24 SUMMARY:

The chapter has dealt with description of methodology and different steps which were undertaken for gathering and organization data for the investigation. It include Introduction of research methodology, Schematic presentation of research methodology, Research approach, Research design, Variables, setting of the study, population, sample size and sampling technique, sampling criteria inclusion criteria exclusion criteria, Data collection tool, scoring, validity, reliability, pilot study, Demographic variables, Data collection procedure, Data analysis plan, Descriptive statistics, Inferential statistics, Paired t- test and Chi - square test.

# CHAPTER 4



## CHAPTER 4

### ANALYSIS AND INTERPRETATION

Analysis as a process of organizing and synthesizing data in such a way that research question can be answered and hypothesis tested. Analysis and interpretation of data are based on objectives and hypothesis of the study.

**(Polit and Hungler 1999)** Data Analysis Examines

Data to discover relevant information and support conclusions, and interpretation draws broader meaning from the analyzed facts.

**(Bela 2005,Alem 2020)**

This chapter Focus on analysis and interpretation of data collected to assess the effectiveness of the structured teaching programme on knowledge regarding Urinary Tract Infection (UTI) and its preventive measures among college students of selected colleges of Mehsana district, Gujarat.<sup>57</sup>

The data collected were organized, tabulated, analyzed, and interpreted using descriptive and inferential statistics in accordance with the objectives of the study.

The data were collected using a structured knowledge questionnaire and were systematically organized, tabulated, and analyzed based on the objectives of the study. Both descriptive and inferential statistical methods were used for analysis. Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to describe demographic variables and knowledge scores, while inferential statistics such as paired *t*-test and chi-square test were used to determine the effectiveness of the structured teaching programme and to find the association between knowledge scores and selected demographic variables.<sup>58</sup>

Research findings from previous studies indicate that structured teaching programmes significantly improve knowledge levels, as evidenced by higher post-test scores compared to pre-test scores with statistically significant differences ( $p < 0.05$ ).<sup>59</sup>

Thus, the analysis in this chapter is presented in a systematic manner using tables and figures for clear understanding and interpretation of the effectiveness of the structured teaching programme.<sup>60</sup>

The analysis and interpretation was based on questionnaire.

### **Section I: Description of demographic variables of Students with Urinary Tract Infection.**

### **Section II: Assessment of Knowledge Regarding Preventive Measures of Urinary Tract Infection.**

Objective 1: To assess the Knowledge regarding Preventive measures of Urinary Tract Infection among selected college students of Mehsana District, Gujarat.

### **Section III: Effectiveness of Structured Teaching Programme.**

Objective 2: To assess the Effectiveness of structured teaching programme on Knowledge regarding Preventive Measures of Urinary tract infection among selected college students of Mehsana District, Gujarat.

### **Section IV: Association Between Pre-Test and Post-Test Knowledge Score and Selected Demographic Variables.**

Objective 3: To Find Out the Association of Pre test Knowledge Score with their Selected Demographic Variables.

### **Section V: Testing Of Hypothesis**

**H0:** There is no Significant association between demographic variables and the Knowledge Score regarding Urinary tract Infection and its preventive measures among selected college students of Mehsana District, Gujarat.

**H1:** There is Significant association between demographic variables and the Knowledge Score regarding Urinary tract infection and its preventive measures among selected college students of Mehsana District, Gujarat.

## SECTION – I: DEALS WITH THE ANALYSIS AND INTERPRETATION OF THE DEMOGRAPHIC VARIABLES OF PREVENTIVE MEASURES AND UTI.

### Section I: Description of Demographic Variables of Students with Urinary Tract Infection

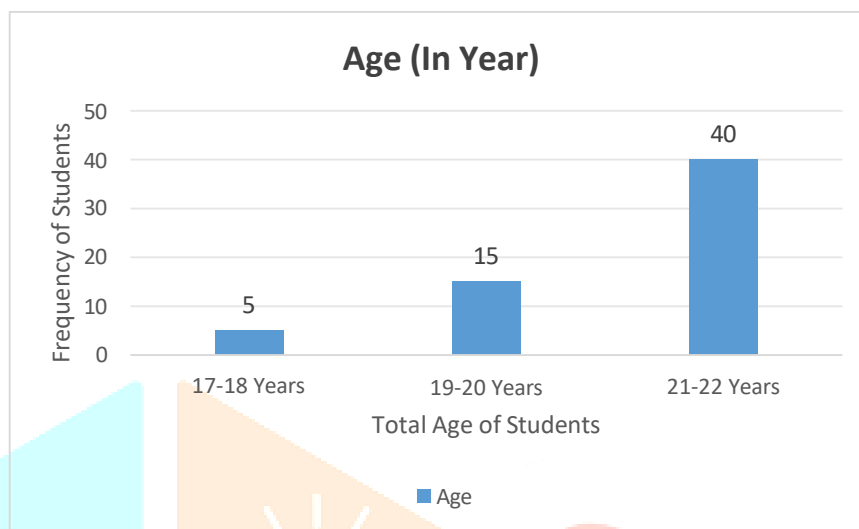
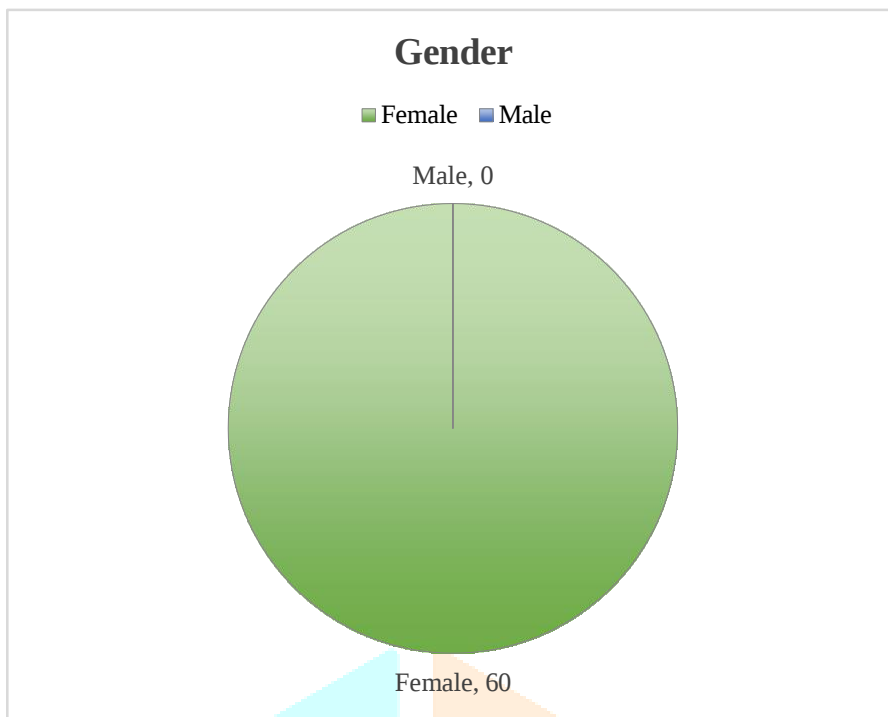


Figure 1.1: Bar diagram distribution of Students with UTI according to their Age.

**Table No 2.1:** Frequency and Percentage Distribution of Sample by their Demographic according to their Age.

| Age (In Year) | Frequency | Percentage (%) |
|---------------|-----------|----------------|
| 17-18 Year    | 5         | 8%             |
| 19-20 Year    | 15        | 25%            |
| 21-22 Year    | 40        | 67%            |

In the Present Study data revealed that sample between age group of 17-18 Year were 5 with percentage 8% and in the age group of 19-20 Year were 15 with percentage 25%. Whereas in the age group of 21-22 Year were 40 with highest percentage 67%.

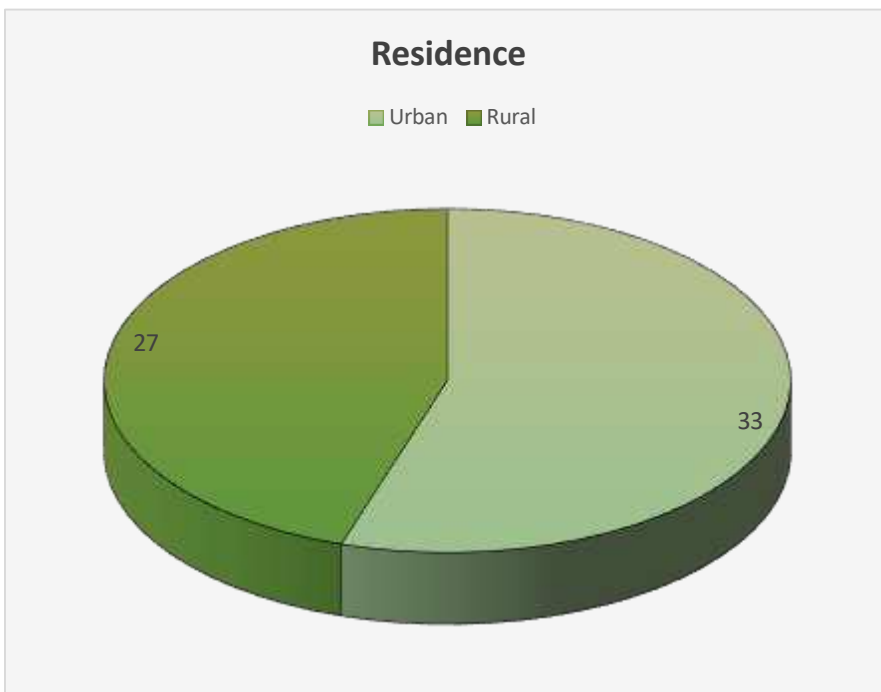


**4.1.2: Pie diagram showing Frequency distribution of Students with UTI according to their Gender.**

**Table No 2.2:** Frequency and Percentage Distribution of Sample by their Demographic according to their Gender.

| Gender | Frequency | Percentage |
|--------|-----------|------------|
| Female | 60        | 100%       |
| Male   | 0         | 0          |

In the Present Study Data Revealed that Maximum Students Belongs to Female Gender with the Frequency of 60 and highest Percentage 100% as Compared to Male Gender. Because in this Study the Male Candidate are in Exclusion Criteria.



**Fig. No.4.1.3: Pie diagram showing percentage wise distribution of Students with UTI according to their Residence.**

**Table No 2.3: Frequency and Percentage Distribution of Sample by their Demographic according to their Religion.**

| Residence | Frequency | Percentage (%) |
|-----------|-----------|----------------|
| Urban     | 33        | 55%            |
| Rural     | 27        | 45%            |

In the Present Study data revealed that Sample of Residential area mentioned. In Urban Residential area Frequency were 33 with highest percentage 55%. Whereas in Rural Residential area Frequency were 27 with lowest percentage 45%.

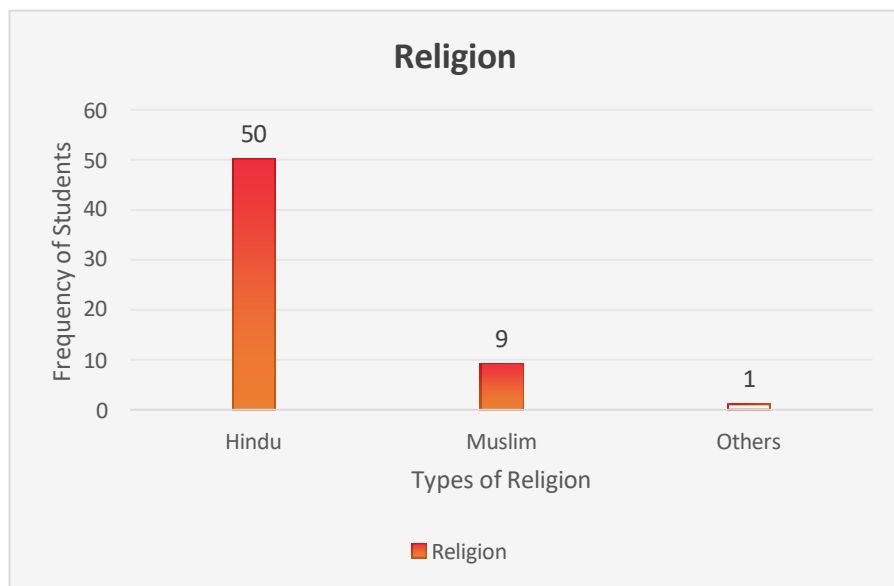
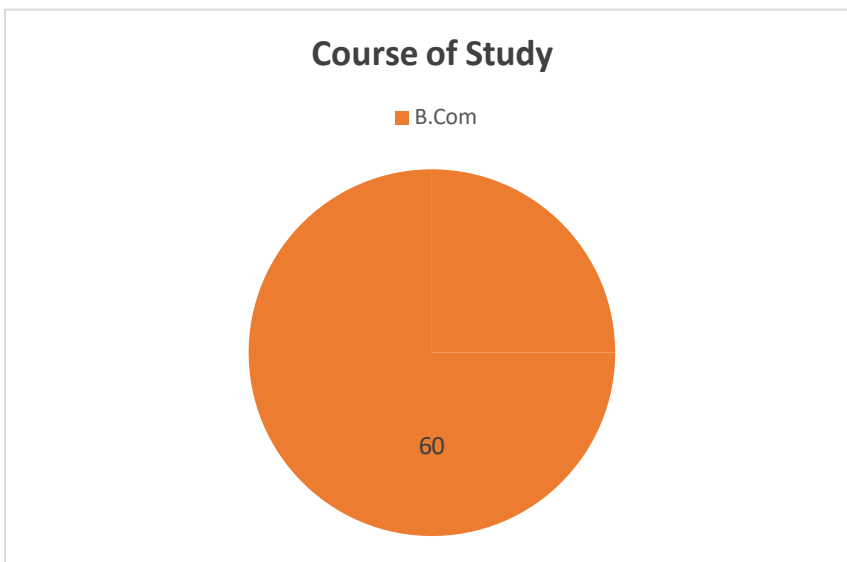


Fig. No.4.1.4: Bar diagram showing percentage wise distribution of Students with UTI according to their Religion.

**Table No 2.4:** Frequency and Percentage Distribution of Sample by their Demographic according to their Religion.

| Religion | Frequency | Percentage (%) |
|----------|-----------|----------------|
| Hindu    | 50        | 83%            |
| Muslim   | 09        | 15%            |
| Other    | 01        | 1.66%          |

In the Present Study data revealed that Sample of Hindu religion is more than Muslim and Others Religions. That Proved Maximum Frequency is Seen in Hindu Religion as 50 with the Highest percentage 83%. And in Muslim Religion Frequency were 09 with percentage of 15%. Whereas in Other Religion Frequency were 01 with the lowest percentage 1.66%

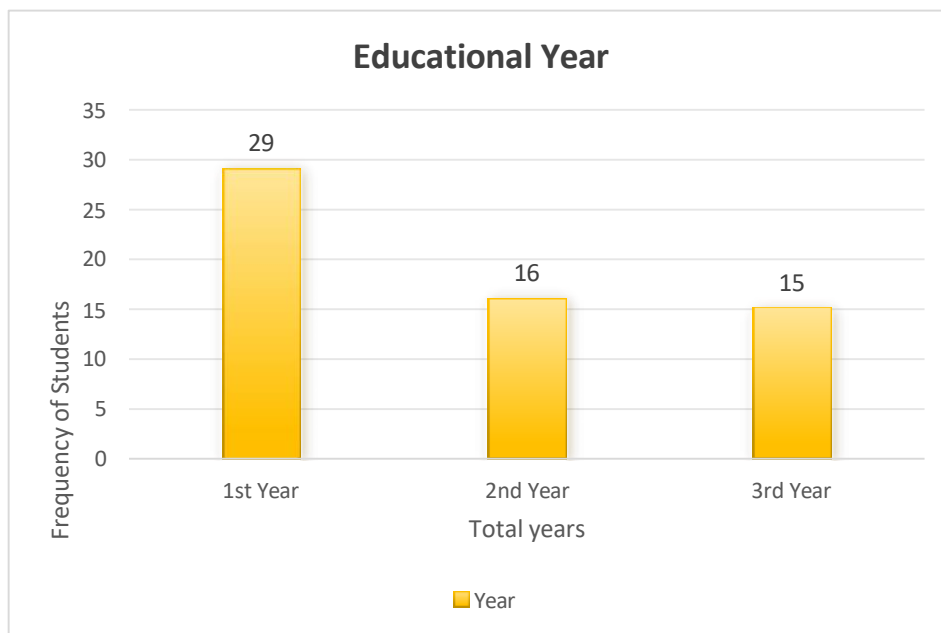


**Fig. No.4.1.5: Bar diagram showing percentage wise distribution of Students with UTI according to their Course of Study.**

**Table No 2.5: Frequency and Percentage Distribution of Sample by their Demographic according to their Course of study.**

| Course of Study | Frequency | Percentage (%) |
|-----------------|-----------|----------------|
| B.Com           | 60        | 100%           |

In the Present Study data revealed that Sample of Course of Study belongs to B. Com Group of Students because they have Frequency were 60 with highest Percentage 100%. Whereas in Arts Group of Students don't have any Frequency and percentage.

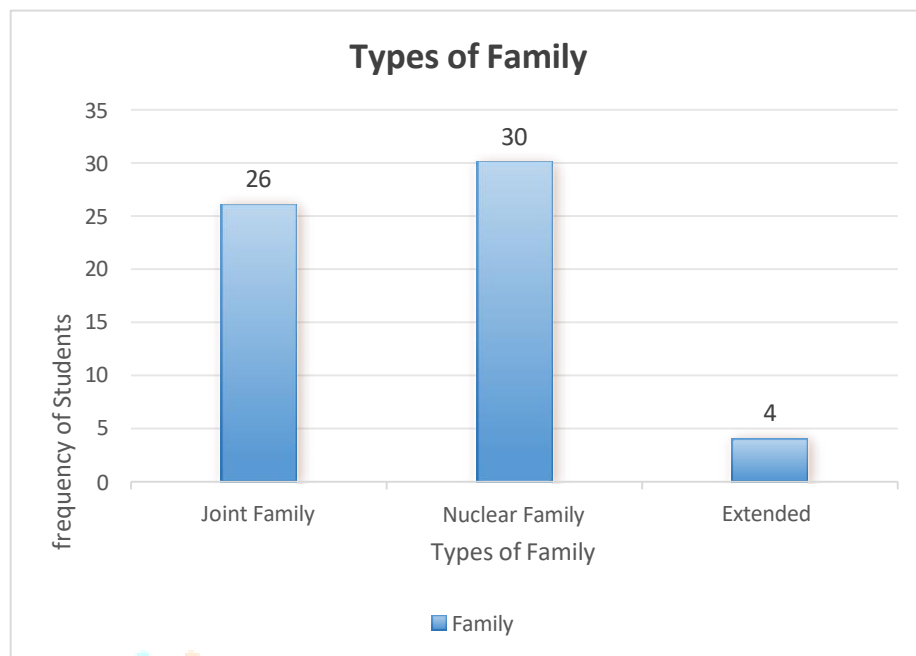


**Fig.No.4.1.6: Bar diagram showing percentage wise distribution of Students with UTI according to their Educational Year.**

**Table No 2.6:** Frequency and Percentage Distribution of Sample by their Demographic according to their Educational year.

| Educational Year     | Frequency | Percentage |
|----------------------|-----------|------------|
| 1 <sup>st</sup> Year | 29        | 48.33%     |
| 2 <sup>nd</sup> Year | 16        | 26.66%     |
| 3 <sup>rd</sup> Year | 15        | 25%        |

In the Present Study data revealed that in 1<sup>st</sup> Year of Students having Frequency is 29 with percentage 48.33% and in 2<sup>nd</sup> Year of Students having Frequency is 16 with percentage 26.66. Whereas in 3<sup>rd</sup> Year of Students having Frequency is 15 with percentage 25%.

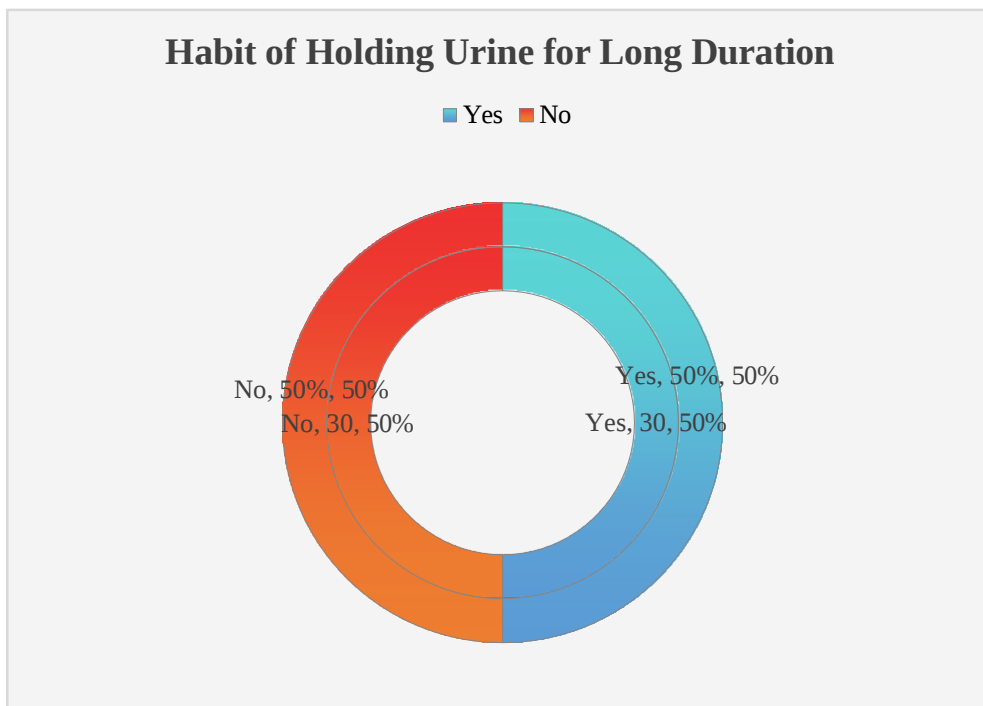


**Fig.No.4.1.7: Bar diagram showing percentage wise distribution of Students with UTI according to their Types of Family.**

**Table No 2.7:** Frequency and Percentage Distribution of Sample by their Demographic according to their Types of family.

| Types of Family | Frequency | Percentage (%) |
|-----------------|-----------|----------------|
| Joint Family    | 26        | 43.33%         |
| Nuclear Family  | 30        | 50%            |
| Extended        | 4         | 6.66%          |

In the Present Study data revealed that Sample from Nuclear family is maximum Frequency present with 30 and percentage is 50% and in Joint family is having Frequency of 26 with percentage is 43.33%. Whereas in Extended family, Frequency were 4 with percentage is 6.66%.

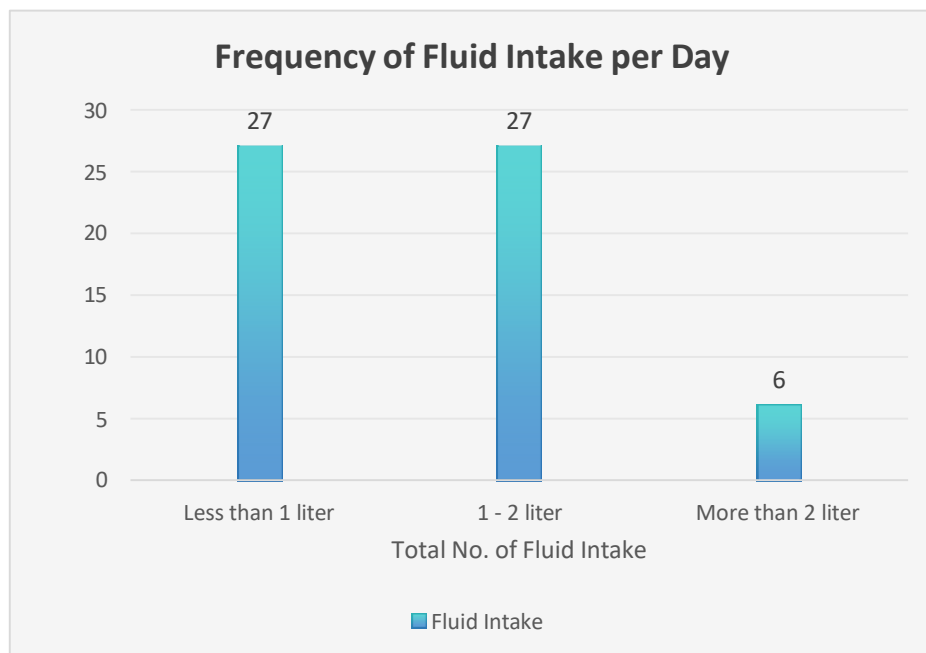


**Fig.No.4.1.8: Pie diagram showing percentage wise distribution of Students with UTI according to their Habit of Holding Urine for Long Duration.**

**Table No 2.8:** Frequency and Percentage Distribution of Sample by their Demographic according to their Habit of holding urine for long duration

| Habit of Holding Urine for Long Duration | frequency | Percentage (%) |
|------------------------------------------|-----------|----------------|
| Yes                                      | 30        | 50%            |
| No                                       | 30        | 50%            |

In the Present Study data revealed that Sample of Yes category having Frequency of 30 with percentage is 50% and No category having Frequency of 30 with percentage is 50%.

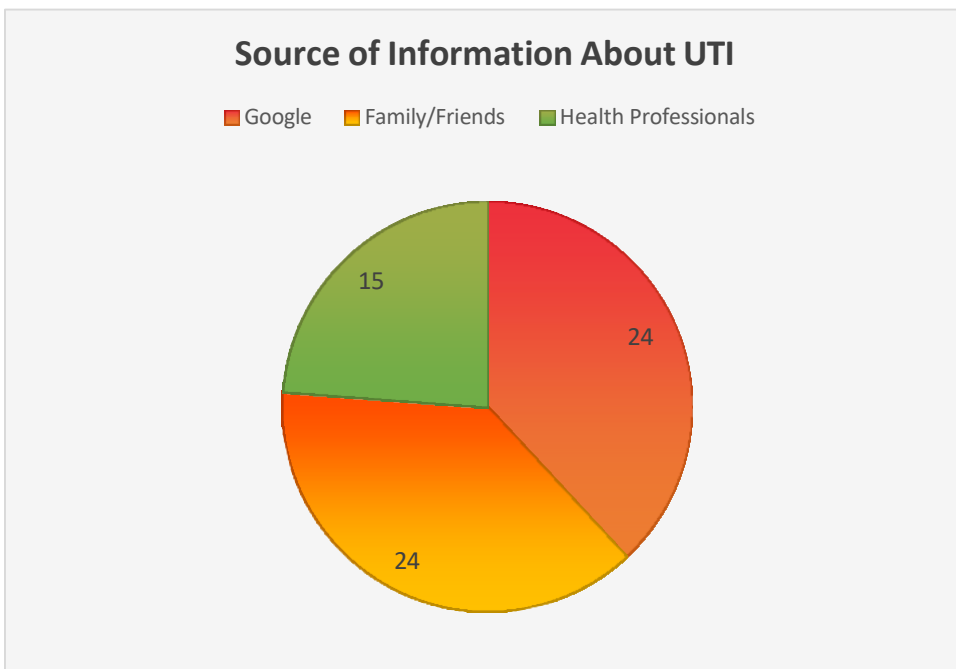


**Fig.No.4.1.9: Bar diagram Showing percentage wise distribution of Students with UTI according to their Frequency of Fluid Intake per Day.**

**Table No 2.9: Frequency and Percentage Distribution of Sample by their Demographic according to their frequency of fluid intake per day**

| Frequency of Fluid Intake per day | Frequency | Percentage (%) |
|-----------------------------------|-----------|----------------|
| Less than 1 liters                | 27        | 45%            |
| 1-2 liters                        | 27        | 45%            |
| More than 2 liters                | 6         | 10%            |

In the Present Study data revealed that Sample of Less than 1 Liters have Frequency were 27 with percentage is 45% and in Sample of 1-2 liters have Frequency were 27 with percentage is 45%. Whereas in Sample of More than 2 liters have Frequency were 6 with percentage is 10%.



**Fig.No.4.1.10: Bar diagram Showing percentage wise distribution of Students with UTI according to their Source of Information About UTI.**

**Table No 2.10:** Frequency and Percentage Distribution of Sample by their Demographic according to their Source of information about UTI.

| Source of Information About UTI | Frequency | Percentage (%) |
|---------------------------------|-----------|----------------|
| Google                          | 24        | 40%            |
| Family/Friends                  | 21        | 35%            |
| Health Professionals            | 15        | 25%            |

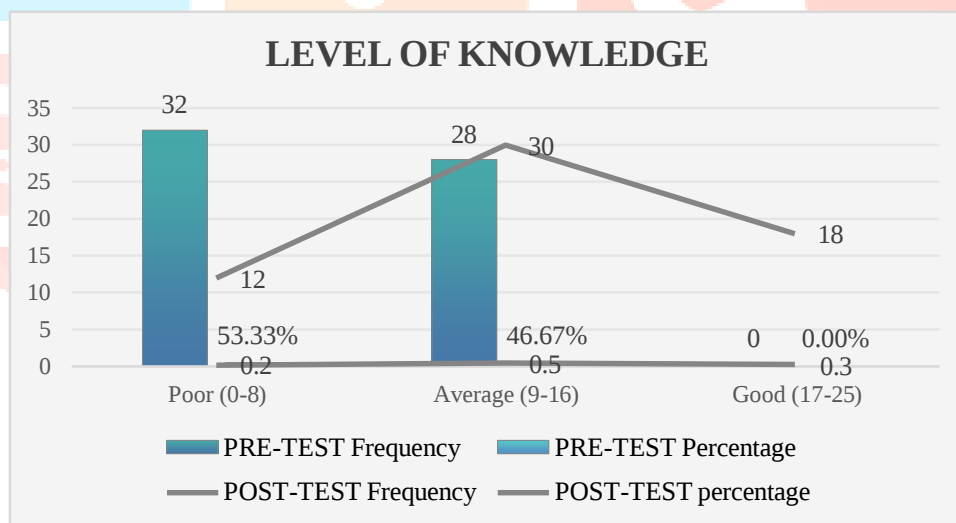
In the Present Study revealed data Sample of Source of Information About UTI is mentioned below. In Google category Frequency were 24 with percentage is 40%. And in Family/Friends category Frequency were 21 with percentage is 35%. Whereas in Health Professionals category Frequency were 25 with percentage is 41.66%.

## SECTION – II: DEALS WITH THE ANALYSIS AND INTERPRETATION OF DATA REGARDING KNOWLEDGE AMONG STUDENTS.

In the below table mentions that there level of Knowledge in the pre-test and post-test. In the pre-test, the participants have Poor Knowledge were, 32 (53.33%), whereas participants that have Average Knowledge were, 28 (46.67%). Hence, there is no any single participants were in Good Category. However, in the post-test, there was a remarkable improvement in knowledge levels, with participants remaining in the Poor Category were, 12 (20%). and in the Average Category were, 30 (50%) participants. Whereas a some of 18 (30%) achieved good knowledge scores.

**Table 2.11:** deals with the analysis and interpretation of data regarding knowledge among students.

| LEVEL OF KNOWLEDGE | PRE – TEST |            | POST - TEST |            |
|--------------------|------------|------------|-------------|------------|
|                    | Frequency  | Percentage | Frequency   | Percentage |
| Poor (0-8)         | 32         | 53.33%     | 12          | 20%        |
| Average (9-16)     | 28         | 46.67%     | 30          | 50%        |
| Good (17-25)       | 0          | 0%         | 18          | 30%        |



and interpretation of data regarding knowledge among students

### SECTION – III: DEALS WITH THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON UTI AMONG COLLEGE STUDENTS.

**Table 2.12:** Deals with the effectiveness of structured teaching programme on UTI among college students.

| Variables | Mean  | Mean Difference | Standard Deviation | 't' value |
|-----------|-------|-----------------|--------------------|-----------|
| Pre-test  | 8.47  | 10.30           | 2.35               | 26.50     |
| Post-test | 18.77 |                 | 2.80               |           |

The above table shows the comparison of pre-test and post-test knowledge scores of the participants. The mean score in the pre-test was 8.47 with a standard deviation of 2.35, which increased to a mean score of 18.77 with a standard deviation of 2.80 in the post-test. The mean difference between pre-test and post-test scores was 10.30, indicating a substantial improvement in knowledge following the intervention.

The calculated 't' value of 26.50 is significantly high, suggesting that the difference between pre-test and post-test scores is statistically significant. Hence, it can be concluded that the intervention was highly effective in improving the knowledge of the participants.

## SECTION – IV: DEALS WITH ASSOCIATION OF THE KNOWLEDGE OF UTI AMONG STUDENTS WITH THEIR SELECTED DEMOGRAPHIC VARIABLES.

**Table 2.13:** Frequency, percentage, and X2 distribution of level of knowledge among students regarding UTI with their selected demographic variables. (n= 60)

| Demographic Variable  | df | Calculated $\chi^2$ Value | Table $\chi^2$ Value | Level of Significance |
|-----------------------|----|---------------------------|----------------------|-----------------------|
| Age                   | 4  | 2.10                      | 9.49                 | Not Significant       |
| Gender                | 2  | 0.85                      | 5.99                 | Not Significant       |
| Residence             | 2  | 1.12                      | 5.99                 | Not Significant       |
| Religion              | 4  | 0.95                      | 9.49                 | Not Significant       |
| Course of study       | 2  | 0.76                      | 5.99                 | Not Significant       |
| Educational year      | 4  | 1.45                      | 9.49                 | Not Significant       |
| Type of family        | 4  | 0.88                      | 9.49                 | Not Significant       |
| Holding urine Habit   | 2  | 1.20                      | 5.99                 | Not Significant       |
| Fluid Intake          | 4  | 2.35                      | 9.49                 | Not Significant       |
| Source of information | 4  | 1.70                      | 9.49                 | Not Significant       |

The above table shows the association between selected demographic variables and the post-test level of knowledge among participants. It was observed that the majority of participants had good knowledge scores, with very few in the moderate category and none in the poor category.

The Chi-square test was applied to determine the association between demographic variables such as age, gender, residence, religion, course of study, educational year, type of family, habit of holding urine, fluid intake, and source of information with knowledge level. The calculated p-values for all variables were greater than 0.05, indicating that there was no statistically significant association between demographic variables and post-test knowledge levels. Hence, it can be concluded that the improvement in knowledge was independent of demographic characteristics.

# CHAPTER 5



## DISCUSSION, SUMMARY AND CONCLUSION

## CHAPTER 5

### DISCUSSION, SUMMARY, AND CONCLUSION

The study was conducted using a quantitative research approach with a quasi experimental design involving one group of college students. The samples were selected using a non-probability sampling technique from selected colleges of Mehsana district, Gujarat. Data was collected using a structured questionnaire to assess the knowledge level of participants. A structured teaching programme on Urinary Tract Infection (UTI) and its preventive measures was administered to the participants, and its effectiveness was evaluated through pre-test and post-test knowledge scores.

#### DISCUSSION

This chapter attempts to discuss the findings of the study as per the objectives. The findings are discussed under the following headings:

Section I: Description of demographic variables of students

Section II: Assessment of pre-test knowledge regarding UTI and its preventive measures

Section III: Evaluation of effectiveness of structured teaching programme Section IV: Association between knowledge scores and demographic variables Section V: Testing of hypotheses

##### **Section I: Description of Demographic Variables of Students**

The analysis of demographic variables revealed that the majority of students belonged to the age group of 21–22 years, indicating that most participants were in the later stage of adolescence or early adulthood. All participants in the study were female, as male students were excluded based on the study criteria.

With regard to residence, more than half of the students belonged to urban areas, while the remaining participants were from rural areas, showing a relatively balanced distribution. In terms of religion, the majority of participants belonged to the Hindu religion, with minimal representation from other religions, indicating homogeneity in religious background.

The course of study distribution was equal among all groups, showing uniform participation. Most students were in the first year of their education, followed by second- and third-year students. Regarding family type, the majority of participants belonged to nuclear families, followed by joint families, with very few from extended families.

In relation to lifestyle habits, half of the students reported having the habit of holding urine for a long duration, which is a known risk factor for UTI. Regarding fluid intake, many students reported consuming less than the recommended amount of fluids per day, while some consumed 1–2 liters, and very few consumed more than that. The primary sources of information about UTI among students were the internet (Google), family/friends, and health personnel, indicating a mixed pattern of information sources.

## **Section II: Assessment of Pre-test Knowledge Regarding UTI**

Objective 1: To assess the knowledge regarding preventive measures of urinary tract infection among selected college students.

The findings of the present study revealed that in the pre-test, the majority of participants (53.33%) had poor knowledge regarding UTI and its preventive measures, while 46.67% had average knowledge and none had good knowledge. These findings indicate that baseline knowledge among college students regarding UTI prevention was inadequate. This lack of awareness may increase the risk of infection and complications. The results highlight the need for proper health education among students regarding personal hygiene, adequate fluid intake, and early identification of symptoms.

After the structured teaching programme, a significant improvement was observed. In the post-test, (20%) of the participants remained in the poor knowledge category, Majority had average knowledge (50%) and a some have (30%) achieved good knowledge. This remarkable improvement clearly indicates the effectiveness of the structured teaching programme in enhancing knowledge among students.

### Section III: Evaluation of Effectiveness of Structured Teaching Programme

Objective 2: To assess the effectiveness of structured teaching programme on knowledge regarding Preventive Measures of UTI among selected college students of Mehsana District, Gujarat.

The results of the study show that the structured teaching programme was highly effective in improving knowledge among college students. The mean knowledge score increased from 8.47 in the pre-test to 18.77 in the post-test, with a mean difference of 10.30.

The calculated 't' value (26.50) was significantly high, indicating that the difference between pre-test and post-test scores was statistically significant at  $p < 0.05$  level. This improvement may be attributed to the well-organized teaching programme, which included information on causes, symptoms, risk factors, and preventive measures of UTI. The use of simple language and interactive methods helped students to understand the topic effectively.

These findings are consistent with previous studies, which also show that structured teaching programmes are effective in improving knowledge and awareness among students.

### Section IV: Association Between Knowledge Scores and Demographic Variables

Objective 3: To find out the association of knowledge scores with selected demographic variables. The study findings revealed that there was no statistically significant association between post-test knowledge scores and selected demographic variables such as age, gender, residence, religion, course of study, educational year, type of family, habit of holding urine, fluid intake, and source of information.

All calculated chi-square values were less than the respective table values at the 0.05 level of significance.

This indicates that the improvement in knowledge was independent of demographic characteristics, and the structured teaching programme was equally effective across all groups.

### Section V: Testing of Hypotheses

H0: There is no significant association between demographic variables and knowledge scores.

H1: There is a significant association between demographic variables and knowledge scores.

The findings of the study showed that there was no significant association between demographic variables and knowledge scores, as all calculated chi-square values were less than the table values at  $p < 0.05$  level.

Therefore, the null hypothesis (H0) is accepted and the research hypothesis (H1) is rejected.

## SUMMARY

The present study was conducted to assess the effectiveness of a structured teaching programme on knowledge regarding urinary tract infection and its preventive measures among 60 college students in selected colleges of Mehsana district, Gujarat. The findings revealed that the majority of students were in the age group of 21–22 years and all participants were female. Most students belonged to urban areas and followed the Hindu religion. Equal distribution was observed in course of study, and most students were in the first year. The majority belonged to nuclear families. Half of the students had the habit of holding urine, and many had inadequate fluid intake. In the pre-test, the majority (53.33%) had poor knowledge and none had good knowledge. After the structured teaching programme, a significant improvement was observed, with 50% achieving average knowledge.

The mean knowledge score increased significantly from 8.47 to 18.77, with a statistically significant 't' value of 26.50 ( $p < 0.05$ ), indicating the effectiveness of the intervention.

No significant association was found between knowledge scores and demographic variables.

## CONCLUSION

The study concluded that the structured teaching programme was highly effective in improving the knowledge of college students regarding urinary tract infection and its preventive measures.

The significant improvement in post-test knowledge scores indicates that educational interventions play a crucial role in enhancing awareness and promoting preventive health behaviors. The absence of association with

demographic variables suggests that the programme was effective across all groups.

Overall, structured teaching programmes are valuable tools in improving knowledge and preventing urinary tract infections among college students.

## **IMPLICATIONS**

### **Nursing Service**

- Nurses can provide structured teaching programmes to students to improve knowledge about UTI prevention.
- Promote personal hygiene and adequate fluid intake among students.
- Educate students about early signs and prevention of UTI.
- Nursing Education
- Include UTI prevention and health education in nursing curriculum.
- Train nursing students to conduct awareness programmes in colleges.
- Encourage health promotion activities among young adults.
- Nursing Administration
- Organize health education programmes in colleges and communities.
- Encourage collaboration between healthcare professionals and educational institutions.

### **Nursing Education**

- Include UTI prevention and health education in nursing curriculum.
- Train nursing students to conduct awareness programmes in colleges.
- Encourage health promotion activities among young adults.

### **Nursing Administration**

- Organize health education programmes in colleges and communities.
- Encourage collaboration between healthcare professionals and educational institutions.

### **Nursing Research**

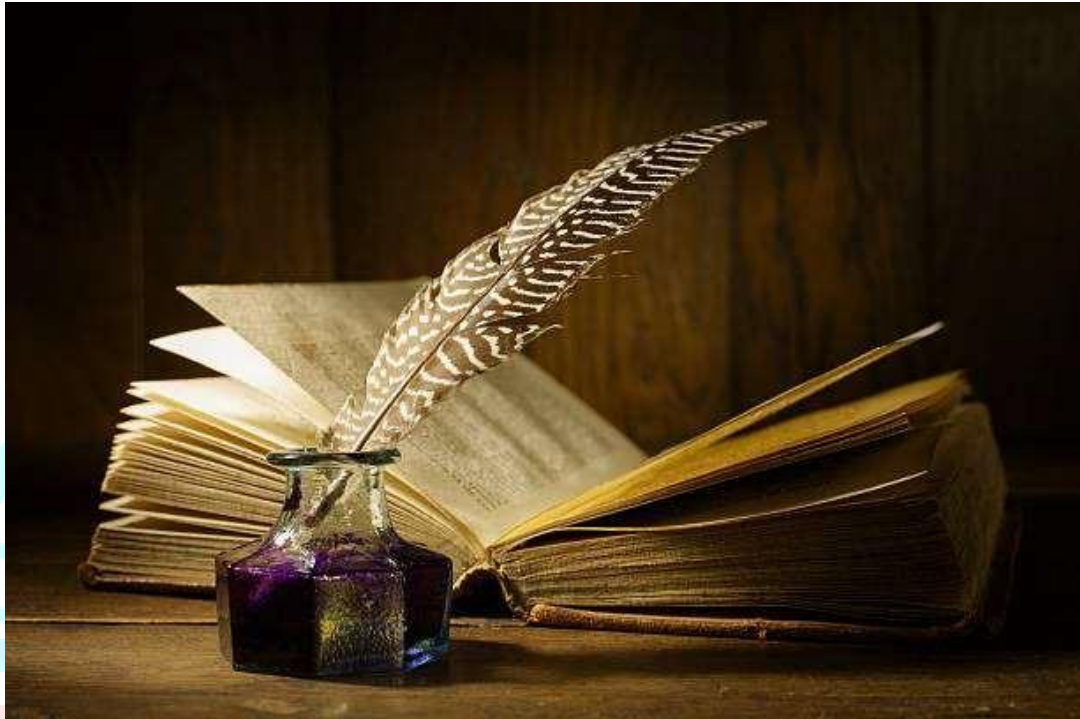
- Conduct further studies on prevention of UTI among different populations.
- Evaluate long-term effectiveness of educational interventions.
- Study behavioral factors influencing UTI occurrence.

## RECOMMENDATIONS

- Conduct similar studies on larger samples.
- Include male students for comparative analysis.
- Provide regular health education programmes in colleges.
- Encourage students to adopt healthy lifestyle practices.
- Conduct follow-up studies to assess long-term retention of knowledge.



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# ANNEXURE



## ANNEXURE - 1

## LETTER TO GRANTED PERMISSION TO MAIN STUDY

**MEHSANA DISTRICT BANK COLLEGE OF NURSING**  
 Managed by : Lions Club of Mehsana Charitable Trust  
 2nd Floor, LIONS GENERAL HOSPITAL, Jail Road, Mehsana-384 002 (North Gujarat)  
 Ph: (02762) 251130, 241969 Fax : (02762) 240410 Mo. : +91 93289 00164, +91 99097 89600  
 Email: lionsconmehsana@gmail.com • Website: www.lionshospitalmehsana.com

Ref. No. MDBCON/B.Sc./Research/208/2026 Date: 13/02/2026

**Letter seeking permission from various Institute/hospital/area to conduct the study**

To,  
 The principal,  
 Municipal Arts & Urban Bank Science College,  
 Mehsana, Gujarat

Sub.: Letter for seeking permission to conduct the study.

Dear Sir/madam,

This is to introduce our B.Sc. Nursing student of this college. They are conducting study and submit to the Hemchandracharya North Gujarat University, Patan, as a partial fulfillment for the award of B.Sc. Nursing degree. The proposed topic for his study is

Topic: "A study to assess the effectiveness of structured teaching programme on knowledge regarding urinary tract infection and its preventive measures among college students of selected colleges of Mehsana District, Gujarat."

Name of Student: Ms. Patan Paeendah, Ms. Patel Foram, Ms. Parmar Aarti, Ms. Makwana Komal  
 Mehsana District Bank College of Nursing,  
 Contact Number: +917990616604

Name of Guide: Ms. Arti Jadav  
 Assistant Professor  
 Mehsana District Bank College of Nursing,  
 Lions General Hospital, Mehsana  
 Contact Number: +918401295847

They are in the need of your esteemed help and co-operation in order to conduct the study. May I therefore, request you to kindly extend necessary facilities to them to work on the proposed study. The student in this regard, will furnish further information personally if required.

Thanking you,  
 Yours faithfully,

  
 Principal  
 MEHSANA DISTRICT BANK COLLEGE OF NURSING  
 LIONS GENERAL HOSPITAL  
 JAIL ROAD, MEHSANA-384002

  
 13-2-26



## MEHSANA DISTRICT BANK COLLEGE OF NURSING

Managed by : Lions Club of Mehsana Charitable Trust

2nd Floor, LIONS GENERAL HOSPITAL, Jail Road, Mehsana-384 002 (North Gujarat)

Ph: (02762) 251130, 241969 Fax : (02762) 240410 Mo. : +91 93289 00164, +91 99097 89600

Email: lionsconmehsana@gmail.com • Website: www.lionshospitalmehsana.com

Ref. No. MDBCON/B.Sc./Research/226/2026

Date: 23/02/2026

### Letter seeking permission from various Institute/hospital/area to conduct the study

To,

The principal,

Shri Sarvajani College  
Mehsana, Gujarat

Sub.: Letter for seeking permission to conduct the main study.

Dear Sir/madam,

This is to introduce our B.Sc. Nursing student of this college. They are conducting study and submit to the Hemchandracharya North Gujarat University, Patan, as a partial fulfillment for the award of B.Sc. Nursing degree. The proposed topic for his study is

**Topic: "A Study to Assess the Effectiveness of Structured teaching Programme on Knowledge Regarding Urinary Tract Infection and its Preventive Measures among selected college of Mehsana District, Gujarat."**

**Name of Student:** Ms. Patan Paeendah, Ms. Patel Foram, Ms. Parmar Aarti, Ms. Makwana Komal  
Mehsana District Bank College of Nursing,  
Contact Number: +917990616604

**Name of Guide:** Ms. Arti Jadav  
Assistant Professor,  
Mehsana District Bank College of Nursing,  
Lions General Hospital, Mehsana  
Contact Number: +918401295847

They are in the need of your esteemed help and co-operation in order to conduct the study. May I therefore, request you to kindly extend necessary facilities to them to work on the proposed study. The student in this regard, will furnish further information personally if required.

Thanking you,

Yours faithfully,

PRINCIPAL  
MEHSANA DISTRICT BANK COLLEGE OF NURSING  
LIONS GENERAL HOSPITAL  
JAIL ROAD, MEHSANA-384002

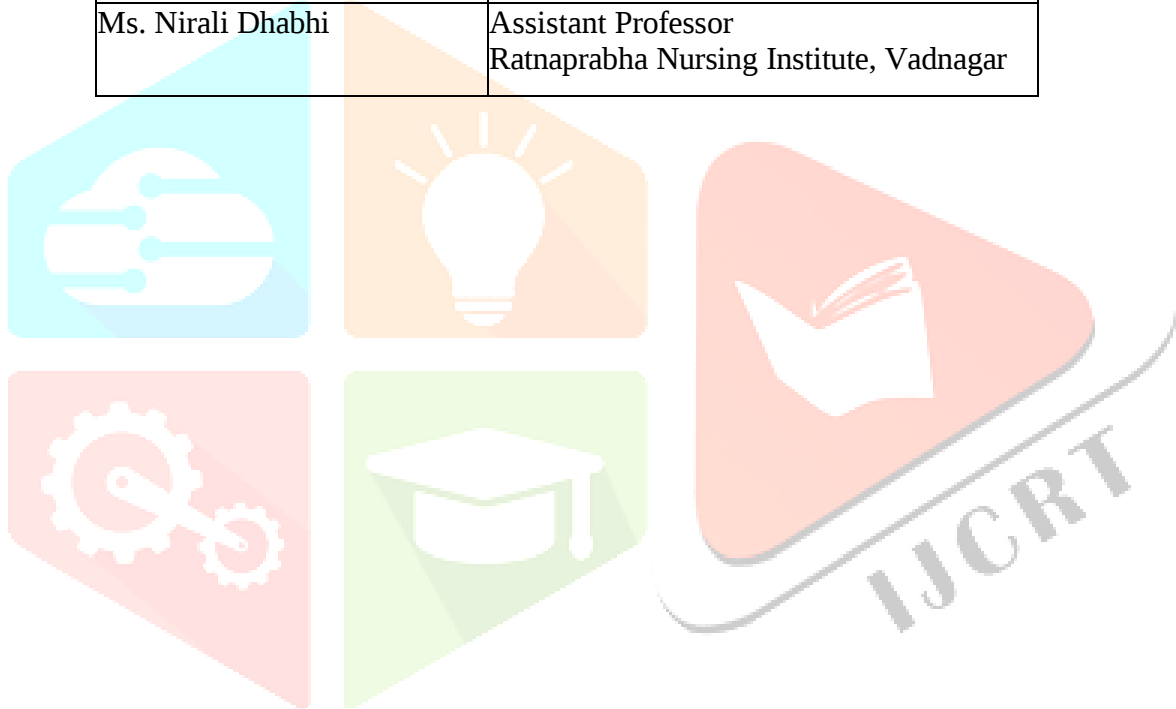


I/c. Principal  
Shri Sarvajani Commerce College  
(English Medium)  
Mehsana

## ANNEXURE - 2

## LIST OF EXPERT FOR ESTABLISH CURRENT VALIDITY OF THE TOOL

| Name of Expert            | Designation                                                                  |
|---------------------------|------------------------------------------------------------------------------|
| Ms. Arti Jadav            | Assistant Professor<br>Mehsana District Bank College of<br>Nursing, Mehsana  |
| Ms. Sejal Patel           | Associated Professor<br>Mehsana District Bank College of<br>Nursing, Mehsana |
| Mr. Sachinkumar Chaudhary | Assistant Professor<br>Ambaji Nursing College, Ganeshpura                    |
| Mr. Nikunj Patel          | Assistant Professor Ganpat University,<br>Kherva                             |
| Ms. Nirali Dhabhi         | Assistant Professor<br>Ratnaprabha Nursing Institute, Vadnagar               |



**ANNEXURE - 3 CONTENT VALIDITY CERTIFICATE****CONTENT VALIDATION CERTIFICATE**

This is to certify that we have validated the Research tool developed by Group No.10 students of 8<sup>th</sup> Semester B.Sc. Nursing at Mehsana District Bank College of Nursing, Mehsana for the research study entitled:

**“A Study to Assess the Effectiveness of Structured teaching Programme on Knowledge Regarding Urinary Tract Infection and its Preventive Measures among selected college of Mehsana District, Gujarat.”**

The Research tool was reviewed for its adequacy, relevance. Clarity, accuracy, simplicity, and content coverage. Based on my expert evaluation, we find the tool to be appropriate for the conduct of the study and recommend it for further use with necessary modification, if any.

PLACE: Mehsana District Bank college of Nursing

DATE: 31/01/2026

Signature of the Expert: A A Jadau

Name & Designation: Ms. Arti A Jadau Assistant Professor

Institution/College: Mehsana District Bank college of Nursing



## CONFIDENTIAL VALIDATION CERTIFICATE

This is a copy of

a web validated Research tool developed

by Graduate students of Semester B.Sc. Nursing at Mehsana  
District Bank College of Nursing, Mehsana for the research study  
conducted:

Student's name: Me. Ci en or instructor's name: Me. Ci en  
Programme on Knowledge Regarding the Effectiveness of Infection  
and its Prevention Measures among students of Me. Ci en  
• Me. Ci en, Me. Ci en.

The Research tool, for its adequacy, relevance, reliability,  
accuracy, simplicity, and commitment to the cause. Based on my exper-  
imentation, find that the tool is appropriate for the conduct of the  
study and it is recommended for the necessary modification  
for any.

PLACE: Mehsana

Date: 09/11/2025

Signature of the Expert: Me. Ci en

Designation: Associate Prof.

Institution: District Bank College of

Nursing.



CONT NT VALIDATION CERTIFICATE

Thfi o cer ifythat we hav validated the Res arch tool d veloped by Group o.10 s ud n of 8<sup>1</sup> Semester B.Sc.Nursing at Mehsana DistrictBank Coll g of urslng, Mehsana for the research study titled:

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Pr ramm "Knowledge Infection  
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strict, Gujarat."

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a ura , impli ity, and content co era e. B d on my e pert  
luation w find th tool to be appropriat for the ondu t of th  
tud and r ommend it for further use with n sary modification,  
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## CONTENT VALIDATION CERTIFICATE

This is to certify that we have validated the Research tool developed by Group No.10 students of 8<sup>th</sup> Semester B.Sc. Nursing at Mehsana District Bank College of Nursing, Mehsana for the research study entitled:

**“A Study to Assess the Effectiveness of Structured teaching Programme on Knowledge Regarding Urinary Tract Infection and its Preventive Measures among selected college of Mehsana District, Gujarat.”**

The Research tool was reviewed for its adequacy, relevance. Clarity, accuracy, simplicity, and content coverage. Based on my expert evaluation, we find the tool to be appropriate for the conduct of the study and recommend it for further use with necessary modification, if any.

PLACE: Ganpat University, Mehsana.

DATE: 05/02/2026

Signature of the Expert: \_\_\_\_\_

Name & Designation: Mr. Nikunj Patel

Institution/College: Kumud & Bhupesh Institute of Nursing,  
ganpat university.



## CONTENT VALIDATION CERTIFICATE

This is to certify that we have validated the Research tool developed by Group No.10 students of 8<sup>th</sup> Semester B.Sc. Nursing at Mehsana District Bank College of Nursing, Mehsana for the research study entitled:

**“A Study to Assess the Effectiveness of Structured teaching Programme on Knowledge Regarding Urinary Tract Infection and its Preventive Measures among selected college of Mehsana District, Gujarat.”**

The Research tool was reviewed for its adequacy, relevance. Clarity, accuracy, simplicity, and content coverage. Based on my expert evaluation, we find the tool to be appropriate for the conduct of the study and recommend it for further use with necessary modification, if any.

PLACE: Vadnagar

DATE: 10/12/2025

Signature of the Expert: [Signature]

Name & Designation: Nimish Dhebi Assistant Professor

Institution/College: Bhambhakheda Nursing Institute, Vadnagar



## ANNEXURE – 4

## CERTIFICATE FOR ENGLISH LANGUAGE EDITOR

|                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br><b>SHRI<br/>VARDHAMAN<br/>VIDYALAYA</b><br>(English & Hindi Medium)<br>Estd: 1-7-1989   MEHSANA   GUJARAT<br>Nr. Arvind Baug, Mehsana-384001, Gujarat. Ph. 256578 / 94291 66578 E-mail: svvidhyalay@yahoo.in, www.svkmvidyasankul.org | <small>Managed by</small><br><b>Shri Sarvajanik Kelavani Mandal</b><br>G.S.S. & H.S.E.B. Affiliated Gujarat Govt. Recognized<br>School Reg. No. 01-124-0062<br>Index No. S.S.C. 63.0437 H.S.C. 13.0128<br>CISE No. 24040408121 (Science, Arts & Commerce) |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

DATE: 09/02/2026

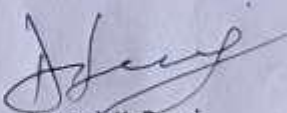
**CERTIFICATE FOR ENGLISH EDITING FOR RESEARCH STUDY**

TO WHOM SO EVER IT MAY CONCERN

This is to certify that I have gone through and edited the dissertation done by the students of Research Group No. 10, students of 8<sup>th</sup> Semester B.Sc. Nursing from Mehsana District Bank College of Nursing at Mehsana District, Gujarat. I hereby declare that everything has been done according to my satisfaction and to the best of my knowledge.

PLACE: Mehsana



  
**Deepak K. Desai**  
Principal  
Shri Vardhaman Vidyalaya  
Mehsana. (Gujarat)

## ANNEXURE – 5

## CERTIFICATE FOR GUJARATI LANGUAGE EDITOR

|                                                                                                                                        |                                                                                                       |                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                       | <b>SHRI<br/>VARDHAMAN<br/>VIDYALAYA</b><br>(English & Hindi Medium)<br>Estd: 1-7-1989 MEHSANA GUJARAT | <small>Managed by</small><br><b>Shri Sarvajani Kelavani Mandal</b><br><small>G.S.S. &amp; H.S.E.B. Affiliated Gujarat Govt. Recognized<br/>School Reg. No. 01-124-0062<br/>Index No. S.S.C. 63.0437 H.S.C. 13.0128<br/>DSE No. 2404040812 (Science, Arts &amp; Commerce)</small> |
| <small>Nr. Arvind Baug, Mehsana-384001, Gujarat. Ph. 256578 / 94291 66578 E-mail: svvidhyalay@yahoo.in, www.svvidhyasankul.org</small> |                                                                                                       |                                                                                                                                                                                                                                                                                  |

DATE: 09/02/2026

**CERTIFICATE FOR GUJARATI TRANSLATION AND EDITING**

TO WHOM SO EVER IT MAY CONCERN

This is to certify that I have gone through and edited the dissertation by the students of Research Group No. 10, the students of 8<sup>th</sup> Semester B.Sc. Nursing from Mehsana District Bank College of Nursing at Mehsana District, Gujarat. The students have submitted the dissertation as a part of English to Gujarati to reproduce the same version with equivalent terminology in the Gujarati language to the possible extent.

I wish all the students grand success in Research endeavor.

**PLACE:** Mehsana



  
**Deepak K. Desai**  
Principal  
Shri Vardhaman Vidyalyaya  
Mehsana. (Gujarat)

**ANNEXURE - 6****PERMISSION LETTER SEEKING EXPERT OPINION FOR CONTENT  
VALIDITY OF TOOL****From,****Group No: 10****8<sup>th</sup> SEM B.Sc (N) Students****Mehsana district bank College of nursing To,**

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**Forwarded Through, Miss Aarti Jadav,**

M.Sc Nursing (Community Health Nursing) Assistant Professor

Mehsana district Bank College of nursing

**Subject:** Requisition for content validity for research tool.**Respected Madam/Sir,**

We, the Group No.10 students of 8<sup>th</sup> Semester B.Sc. Nursing at Mehiana District Bank College of Nursing, humbly request your good self to kindly validate our Research Tool developed for the study entitled: **“A Study to Assess the Effectiveness of Structured Teaching Programme on Knowledge regarding Urinary Tract Infection and its Preventive measures among College Students of Selected College’s of Mehiana District, Gujarat.”** For which we have prepared a tools for its content validity. The tool has been prepared as part of our academic research work and your expert guidance and valuable suggestions will help us in improving the content clarity and relevance of the tool. Your validation will greatly contribute to enhancing the scientific accuracy and quality of our study. We shall be highly obliged if you kindly affirm your acceptance and provide your valuable suggestion and approval for the same.

Thanking you in anticipation Thanking you.

Date:

Place:

Yours Faithfully

## ANNEXURE - 7

## CONTENT VALIDATION CERTIFICATE

This is to certify that we have validated the Research tool developed by Group No.10 students of 8<sup>th</sup> Semester B.Sc. Nursing at Mehsana District Bank College of Nursing, Mehsana for the research study entitled:

**“A Study to Assess the Effectiveness of Structured teaching Programme on Knowledge Regarding Urinary Tract Infection and its Preventive Measures among selected college of Mehsana district, Gujarat.”**

The Research tool was reviewed for its adequacy, relevance. Clarity, accuracy, simplicity, and content coverage. Based on my expert evaluation, we find the tool to be appropriate for the conduct of the study and recommend it for further use with necessary modification, if any.

**PLACE:** \_\_\_\_\_

**DATE:** \_\_\_\_\_

**Signature of the Expert:** \_\_\_\_\_

**Name & Designation:** \_\_\_\_\_

**Institution/College:** \_\_\_\_\_

## ANNEXURE – 8

## INFORMED CONSENT FORM

**Title of the Study:**

A Study to Assess the Effectiveness of Structured Teaching Programme on Knowledge Regarding Urinary Tract Infection and its preventive measures among College Students of Selected Colleges of Mehsana District, Gujarat

**Introduction:**

You are invited to participate in this research study. Before you decide, it is important for you to understand why the research is being conducted and what it involves. Please read the following information carefully.

**Purpose of the Study:**

The purpose of this study is to assess the effectiveness of a structured teaching programme on knowledge regarding urinary tract infection and its preventive measures among college students.

**Procedure:**

If you agree to participate, you will be asked to:

- Fill out a questionnaire related to knowledge of urinary tract infection
- Attend a structured teaching session
- Participate in a post-test after the teaching programme

Time required: Approximately 30– 40 minutes.

**Voluntary Participation:**

Your participation is completely voluntary. You are free to withdraw at any time without giving any reason.

**Confidentiality:**

All information collected from you will be kept strictly confidential. Your name will not appear in any report or publication.

**Risk/Discomfort:**

There is no physical risk involved in this study. The study is purely educational.

**Benefits:**

You may gain knowledge regarding urinary tract infection and its prevention. The study findings may help in planning health education programmes for students.

**Consent Statement:**

I have read the above information and understood the purpose of the study. I voluntarily agree to participate in this research.

Participant Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Researcher Name: \_\_\_\_\_

Signature: \_\_\_\_\_

## ANNEXURE - 9

## સંમતિપત્ર

## અભ્યાસનું શીર્ષક:

મહેસાણા જિલ્લાના પસંદ કરાયેલા કોલેજોના વિદ્યાર્થીઓમાં મૂત્ર માર્ગના ચેપ અને તે નિવારક પગલાં અંગે જ્ઞાન પર રચિત શિક્ષણ કાર્યક્રમની અસરકારકતા અંકવા માટેનો અભ્યાસ

## પરિચય:

તમને આ સંશોધન અભ્યાસમાં ભાગ લેવા આમંત્રિત કરવામાં આવે છે. ભાગ લેતા પહેલાં અભ્યાસનો હેતુ અને પ્રક્રિયા સમજવી જરૂરી છે. કૃપાકરીને નીચેની માહિતી ધ્યાનથી વાંચો.

## અભ્યાસનો હેતુ:

આ અભ્યાસનો હેતુ કોલેજના વિદ્યાર્થીઓમાં મૂત્ર માર્ગના ચેપ અંગે જ્ઞાન પર રચિત શિક્ષણ કાર્યક્રમની અસરકારકતા અંકવાનો છે.

## પ્રક્રિયા:

જો તમે ભાગ લેવા સંમત છો તો તમને:

- મૂત્ર માર્ગના ચેપ સંબંધિત જ્ઞાન અંગે પ્રશ્નાવલી ભરવી પડશે
  - રચિત શિક્ષણ કાર્યક્રમમાં હાજરી આપવી પડશે
  - શિક્ષણ કાર્યક્રમ પછી ફરી પરીક્ષણ આપવું પડશે
- આ માટે અંદાજે 30- 40 મિનિટનો સમય લાગશે.

## સ્વૈચ્છિક ભાગીદારી:

આ અભ્યાસમાં તમારો ભાગ સંપૂર્ણપણે સ્વૈચ્છિક છે. તમે કોઈપણ સમયે કોઈ કારણ આપ્યા વગર ભાગ છોડીને જઈ શકો છો.

## ગોપનીયતા:

તમારી પાસેથી મેળવેલી તમામ માહિતી સંપૂર્ણપણે ગોપનીય રાખવામાં આવશે. તમારો નામ કોઈ રિપોર્ટ કે પ્રકાશનમાં દર્શાવવામાં આવશે નહીં.

## જોખમ/અસુવિધા:

આ અભ્યાસમાં કોઈ શારીરિક જોખમ નથી. આ સંપૂર્ણપણે સૈદ્ધાંતિક અભ્યાસ છે.

## લાભ:

તમને મૂત્ર માર્ગના ચેપ અને તેની રોકથામ અંગે વધુ જ્ઞાન મળશે. અભ્યાસના પરિણામો વિદ્યાર્થીઓ માટે આરોગ્ય શિક્ષણ કાર્યક્રમ બનાવવા ઉપયોગી બની શકે છે.

## સંમતિ નિવેદન

મેં ઉપર આપેલી માહિતી વાંચી છે અને અભ્યાસનો હેતુ સમજ્યો છે. હું સ્વૈચ્છિક રીતે આ સંશોધનમાં ભાગ લેવા સંમત છું.

ભાગ લેનારનું નામ: \_\_\_\_\_

સહી: \_\_\_\_\_

તારીખ: \_\_\_\_\_

સંશોધકનું નામ: \_\_\_\_\_

સહી: \_\_\_\_\_

## **ANNEXURE - 10 LESSON PLAN**

**NAME OF COURSE :** 8<sup>TH</sup> SEMESTER B.SC. NURSING

**NAME OF SUBJECT:** COMMUNITY HEALTH NURSING

**NAME OF RESEARCHERS:** Paeendah R Pathan

Foram A Patel Aarti R Parmar Komal J Makwana

### **IDENTIFICATION DATA**

Name of Subject : Community Health Nursing

Name of Topic : Urinary Tract Infection and it's Preventive Measures Class : Selected college students of  
Mehsana district, Gujarat

Venue : Classroom

Duration : 60 Minutes

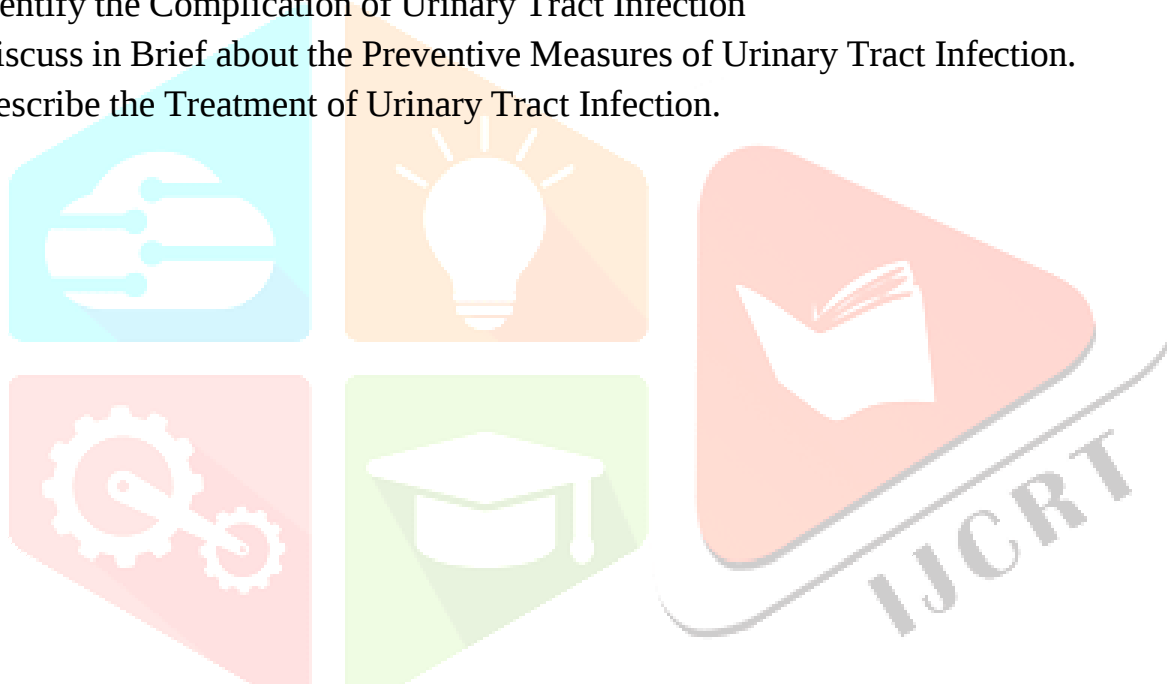
Previous Knowledge Level : Students may have some Knowledge Regarding UTI and it's Preventive Measures

Teaching Method : Lecture Cum – Discussion

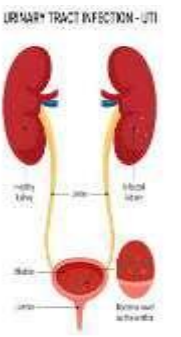
Method of teaching : Pamphlet , Blackboard & Flashcards

## **OBJECTIVES**

- General Objectives:
  - After this Presentation Students will be able to acquire knowledge in depth about Urinary Tract Infection.
- Specific Objectives:
  - 1) To Introduce the Urinary Tract Infection.
  - 2) To Define about the Urinary Tract Infection.
  - 3) To Simplify about Incidence Rates of Urinary Tract Infection.
  - 4) To List Out the causes of Urinary Tract Infection.
  - 5) To Enumerate the Predisposing factors of Urinary Tract Infection.
  - 6) To Enlist the Sign & Symptoms of Urinary Tract Infection.
  - 7) To Identify the Complication of Urinary Tract Infection
  - 8) To Discuss in Brief about the Preventive Measures of Urinary Tract Infection.
  - 9) To Describe the Treatment of Urinary Tract Infection.



| SR No | Time   | Specific Objective                                     | Content                                                                                                                                                                                                                                      | Teaching Learning Activity | A.V Aids                                                                                                      | Evaluation                  |
|-------|--------|--------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------------------------------------------------------------------------------------------------------|-----------------------------|
| 1.    | 5 Min  | To Introduce The Urinary Tract infection               | <p><u>INTRODUCTION</u></p> <p>UTI is a term that is applied to a variety of clinical conditions ranging from cystitis to severe infection of the kidney with resultant sepsis. Commonly, UTI Stand for Urinary tract Infection.</p>          | Lecture Cum Discussion     | <p>Flashcard Pamphlet</p>  | What is UTI Stand For?      |
| 2.    | 10 Min | To Define about Definition of Urinary tract Infection. | <p><u>DEFINITION</u></p> <p>A UTI is an Infection that affects any parts of urinary tract, Including the Kidney, Ureter, Bladder and Urethra.</p> <p>Bacteria that enter the urethra are usually flushed out through urination. However,</p> | Lecture Cum Discussion     | Flashcard Pamphlet                                                                                            | What is the Meaning of UTI? |

|    |       |                                                               |                                                                                                                             |                        |                                                                                     |                                      |
|----|-------|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|------------------------|-------------------------------------------------------------------------------------|--------------------------------------|
|    |       |                                                               | When bacteria aren't expelled out of the urethra, they may grow within the urinary tract. This causes an infection.         |                        |  |                                      |
| 3. | 2 Min | To Simplify About Incidence Rates of Urinary tract Infection. | <u>Incidence</u><br>Its commonly seen in all age groups people. But Females are more prone to get UTI as compared to Males. | Lecture Cum Discussion | Pamphlet BLACK BOARD                                                                | What are the Incidence Rates of UTI? |
| 4. | 5 Min | To List Out the Causes of Urinary tract Infection.            | <u>Causes</u><br>The most common cause of UTI is E – Coli Bacteria<br>Others ;<br>Klebsiella<br>Pseudomonas aeruginosa      | Lecture Cum Discussion | Flashcard                                                                           | What are the Causes of UTI?          |

|    |       |                                                                      |                                                                                                                                                                                                                                                                          |                        |                                                                                                                       |                                             |
|----|-------|----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
|    |       |                                                                      | <p>Staphylococcus saprophyticus</p> <p>Streptococcus agalacticae</p> <p>Structural deformity</p> <p>Abnormal function of the urinary tract</p> <p>Birth defect.</p> <p>Kidney stone</p> <p>Hormonal changes</p> <p>Diabetic</p> <p>Weak Immunity</p> <p>Poor Hygiene</p> |                        |                                    |                                             |
| 5. | 7 Min | To Enumerate The Pre – Disposing Factors of Urinary tract Infection. | <p><u>Pre disposing factors</u></p> <p>Tight – fitting clothes</p> <p>Wiping from Back to Front after a bowel movement</p> <p>Poor toilet habit</p> <p>Poor Hygiene</p> <p>Eating excess spicy foods</p> <p>Holding urine for more hours</p>                             | Lecture Cum Discussion | <p>Pamphlet</p> <p>Flashcard</p>  | Which are the Pre disposing factors of UTI? |

|    |       |                                                           |                                                                                                                                                                                                                                                                                                                          |                        |                                                                                                      |                                      |
|----|-------|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------------------------------------------------------------------------------------------|--------------------------------------|
| 6. | 7 Min | To Enlist the Sign & Symptoms of Urinary tract Infection. | <u>Sign &amp; Symptoms</u><br>Pyrexia<br>Poor Appetite<br>Vomiting<br>Diarrhea<br>Irritability<br>Blood in Urine<br>Cloudy Urine<br>Burning Sensation<br>Painful Urination<br>Frequent Urination<br>Dry Skin<br>Blurred Vision<br>Joint Pain<br>Abdominal Pain<br>Foul Smell in Urine<br>Irritability<br>Pelvic Pressure | Lecture Cum Discussion | Flashcard<br><br> | What are the Sign & Symptoms of UTI? |
|----|-------|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------------------------------------------------------------------------------------------|--------------------------------------|

|    |       |                                                          |                                                                                                                                                                                                    |                        |                                                                                                  |                                     |
|----|-------|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------------------------------------------------------------------------------------|-------------------------------------|
| 7. | 5 Min | To Identify The Complication Of Urinary Tract Infection. | <u>Complication</u><br>Recurrent Infection<br>Permanent Kidney Damage<br>Sepsis<br>Pyelonephritis<br>Chronic Kidney Diseases<br>Abscess Formation<br>Renal Papillary Necrosis<br>Prostatic Abscess | Lecture Cum Discussion | Flashcard<br> | What are the Complication n of UTI? |
|----|-------|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------------------------------------------------------------------------------------|-------------------------------------|

|    |        |                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                        |                                                                                                              |                                           |
|----|--------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| 8. | 10 Min | To Discuss in Brief about the Preventive Measures of Urinary tract Infection. | <u>Preventive Measures</u><br>Drinking Plenty of water<br>Maximum Drink 6 to 8 Glass of water everyday<br>Clean Sanitary Pads<br>Best way to Clean Genital area is Front to Back<br>Regular Urination is the Best Habit to Flush Bacteria<br>Urinate Soon after Intercourse<br>Soft Drinks Should be Avoided<br>Also avoided Public Restrooms , If they are not properly Clean.<br>Treat vaginal infection<br>Avoid using Spermicide containing product | Lecture Cum Discussion | Pamphlet<br>Flashcard<br> | Which are the Preventive Measures of UTI? |
|----|--------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------------------------------------------------------------------------------------------------|-------------------------------------------|

|  |  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  |  |  |
|--|--|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|
|  |  |  | <p>Go to the Toilet as soon as you feel the urge to urinate, rather than holding on</p> <p>Avoid Constipation</p> <p>Cranberry juice is often Promoted to prevent or treat UTI</p> <p>Keep the Genital area Clean</p> <p>Maintain Your Diet Pattern</p> <p>Clean Panties</p> <p>Avoid Fast Food and Constipating diet</p> <p>Limit Caffeine intake</p> <p>Avoid Irritating Products</p> <p>Take Showers instead of bath</p> <p>Avoid wearing Skin Tight Clothes</p> <p>Get Antibiotics</p> <p>Meet Your Doctors</p> |  |  |  |
|--|--|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|

|    |       |                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                 |                        |           |                               |
|----|-------|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-----------|-------------------------------|
| 9. | 9 Min | To Describe The Treatment of Urinary Tract Infection. | <p><u>Treatment</u></p> <p>Low dose of Antibiotic Prophylaxis is Prescribe by the Physicians.</p> <p>Prophylactic Therapy also required. Such as ,</p> <p>Nitrofurantoin Dose : 50 mg daily</p> <p>Trimethoprim Dose : 100 mg daily</p> <p>Ciprofloxacin Dose : 250 mg daily</p> <p>Drink as much as water to reduce the risk of UTI. Drink Cranberry Juice.</p> <p>Recurrent UTI may also require the Doctor Consultation.</p> | Lecture Cum Discussion | Flashcard | What is the Treatment of UTI? |
|----|-------|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-----------|-------------------------------|



## ANNEXURE 11

### પાઠ આયોજન

કોસસન નામ : ૮મ સેમેસ્ટર બી.એસસી. નર્સિંગ

રૂ઼િષયન નામ : કોમ્ય નટી હેલ્થ નર્સિંગ

શોધકર્ાસઓના નામ: પાયુંદાહ આર. પઠાણ  
ફોરમ એ. પટેલ  
આરર્ી આર. પરમાર કોમલ જે. મકિણા

ઓળખ માર્હર્ી

રૂ઼િષયન નામ : કોમ્ય નટી હેલ્થ નર્સિંગ

રૂ઼િષયનો ટોર્પક : યૂર્નરી ટેક્ટ ઇન્ફેક્શન (UTI) અને રૂેના નિર્રિક પગલાુું

િગસ : મહેસાણા જલ્વાની પસુંદ કરેલી કોલેજના રૂિધાથીઓ સ્થળ: િગસખુંડ  
સમયગાળો: ૬૦મિનટ

પૂિસ જ્ઞાન સ્ત્ર : રૂિધાથીઓને UTI રૂિઅને રૂેના નિર્રિક પગલાુું શે થોડું જ્ઞાન હોઈ શકે છે



શિક્ષણ પદ્ધતિ : વ્યાખ્યાન સહ ચર્ચા (Lecture Cum–Discussion)

શિક્ષણના સાધનો : પેમ્ફલેટ, વ્હેકબોડસ અને ફ્લેશકાર્ડસ

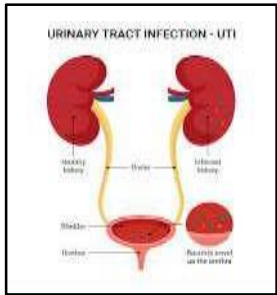
### ઉદ્દેશ્યો

સામાન્ય ઉદ્દેશ્યો (General Objectives)

- આ પ્રેઝન્ટેશન પછી રૂઢિધાથીઓ યૂરનરી ટેક્સ્ટ ઇન્ફેક્શન (UTI) રૂઢિ ઊંડાણપૂર્વિકસકનું જ્ઞાન પ્રાપ્ત કરી શકશે

રૂઢિર્શિષ્ટ ઉદ્દેશ્યો (Specific Objectives)

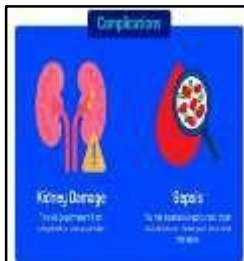
- યૂરનરી ટેક્સ્ટ ઇન્ફેક્શનનો પરિચય આપી
- યૂરનરી ટેક્સ્ટ ઇન્ફેક્શનની વ્યાખ્યા સમજાવિં
- યૂરનરી ટેક્સ્ટ ઇન્ફેક્શનના આિર્સન દર (Incidence Rate) સરળ રીરૂ સમજાવિં
- યૂરનરી ટેક્સ્ટ ઇન્ફેક્શનના કારણોની યાદી આપી
- યૂરનરી ટેક્સ્ટ ઇન્ફેક્શનના પૂર્વિકસિરૂ (Predisposing) ઘટકો ગણાવિં
- યૂરનરી ટેક્સ્ટ ઇન્ફેક્શનના લક્ષણો અને રૂઢિઓની યાદી આપી
- યૂરનરી ટેક્સ્ટ ઇન્ફેક્શનની જટલરૂઓ ઓળખી
- યૂરનરી ટેક્સ્ટ ઇન્ફેક્શનના નિરિક ઉપાયો અંગે સૂક્ષ્મ યચાસ કરી
- યૂરનરી ટેક્સ્ટ ઇન્ફેક્શનના સારિંર રૂઢિશે િણસન કરિં

| ક્રમ સંખ્યા | સમય      | વિવિધ ઉદ્દેશ્ય                                | વિષયવસ્તુ                                                                                                                                                                                                                                                                                   | વિક્ષણ-અભ્યાસ પ્રિવિ       | ધો-વિજ્ઞયુઅલ સાધનો                                                                                           | મૂલયાંકન                |
|-------------|----------|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|--------------------------------------------------------------------------------------------------------------|-------------------------|
| 1.          | 5 મિનિટ  | યૂરિનરી ટેસ્ટ કટ ઇન્ફેક્શનનો પરિચય આપો        | <b>પરિચય</b><br>UTI યિો શબ્દ છે જે રિરિધિ લવલનકલ સ્થિરો માટે િપરાય છે, જેમાડું સસ્ટાઇટસથી લઇને કડનીના ગુંભીર ચેપ અને રેના પરિણામે થર્ી સેસસસ .સ ધીની સ્થિરોનો સમાિેશ થાય છે સામાન્ય રીરે UTI નો પૂણસઅક્ષ યૂરિનરી ટેસ્ટ ઇન્ફેક્શન (Urinary Tract Infection) થાય છે                           | વ્યાખ્યાન સાથે ચયાસ પદ્ધર્ | ફલેશકાર્ડસસ પેમ્ફલેટ<br>  | UTI નો પૂણસઅક્ષ શ ં છે? |
| 2.          | 10 મિનિટ | યૂરિનરી ટેસ્ટ કટ ઇન્ફેક્શનની વ્યાખ્યા સમજાિિી | વ્યાખ્યા<br>UTI એ યિો ચેપ છે જે મૂત્ર માગસના ,કોઇપણ ભાગને અસર કરી શકે છે જેમાડું કડની, યૂરેટર, મૂત્રાશય (બ્લેડર) અને યૂરથ્રે ાનો સમાિેશ થાય છે સામાન્ય રીરે યૂરથ્રે ામાડું પ્રિશેલા બેક્ટેરિયા મૂત્ર રિસજસન દરમિયાન બહાર નીકળી જાય છે. પરંર જ્યારે બેક્ટેરિયા યૂરથ્રે ામાડુંથી બહાર નીકળર્ા | વ્યાખ્યાન સાથે ચયાસ પદ્ધર્ | ફલેશકાર્ડસસ પેમ્ફલેટ<br> | UTI નો અક્ષશ છે?        |

|    |         |                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                     |                            |                                                                                                          |                         |
|----|---------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|----------------------------------------------------------------------------------------------------------|-------------------------|
|    |         |                                                                          | નથી, ત્યારે રૂએ મૂત્ર માગસમાડું િધિ લાગે છે. આથી ચેપ થાય છે.                                                                                                                                                                                                                                                                                                                                        |                            |                                                                                                          |                         |
| 3. | 2 મર્નટ | યૂરેનરી ટેક્સ્ટ ઇન્ફેક્શનના િસર્સન દર (Incidence) Rate) સરળ રીરે સમજાિિો | િસર્સન<br>આ મર્મિ િય જૂથના લોકોમાડું સામાન્ય રીરે જોિા મળે છે. પરંરુ પ રુષોની ર લનામાડું સ્ત્રીઓને UTI િધિની શક્યર્ા િધ હોય છે                                                                                                                                                                                                                                                                      | વ્યાખ્યાન સાથે ચયાસ પદ્ધર્ | બ્લેકબોક્સ પેમ્ફલેટ                                                                                      | UTI ના િધિના દર શ ં છે? |
| 4. | 5 મર્નટ | યૂરેનરી ટેક્સ્ટ ઇન્ફેક્શનના કારણોની યાદી આપિ                             | <b>કારણો</b><br>UTI ન ં સૌથી સામાન્ય કારણ E-Coli બેક્ટેરિયા છે<br><br>અન્ય કારણો<br>લેક્સિયેલા (Klebsiella) સસ ડોમોનાસ એય સર્જનોસા (Pseudomonas aeruginosa) સ્ટેફલોકોકસ સેપ્રોફાઇટિકસ (Staphylococcus saprophyticus) સ્ટ્રેપ્ટોકોકસ અગાલેક્ટે (Streptococcus agalactiae) મૂત્ર માગસની રચનાત્મક ર્ફર્ (Structural deformity) મૂત્ર માગસના કાયસમાડું અસામાન્યર્ા (Abnormal function of urinary tract) | વ્યાખ્યાન સાથે ચયાસ પદ્ધર્ | ફ્લેશકાર્ડસસ<br><br> | UTI ના કારણો શ ં છે?    |

|    |             |                                                                                         |                                                                                                                                                                                                                   |                               |                                                                                                             |                                     |
|----|-------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------|
|    |             |                                                                                         | જન્મજાર ખામી (Birth defect)<br>કંડની સ્ટોન<br>હોમોનલ ફેરફાર ડાયાબીટીસ<br>નબળી રોગપ્રરકારક શાર્તિ અપૂણસ<br>સ્થિતિ (Poor hygiene)                                                                                   |                               |                                                                                                             |                                     |
| 5. | 7<br>ર્મન્ટ | યૂરનરી ટેર કટ<br>ઇન્ફેક્શનના<br>પૂર્ણિસિર્ી<br>(Predisposing)<br>ઘટકો<br>ગણાંાિિ<br>ડું | પૂર્ણિસિર્ી ઘટકો:<br>બહ ટાઇટ/ચ સ્ત્ર કપડાડું પહેરિા •<br>શૌચરિયા પછી પાછળથી આગળ •<br>સ્વસ્થ સાફ કરિ ડું<br>ખરાબ શૌચની આદરો •<br>અપૂણસ સ્થિતિ •<br>િધ મસાલેદાર ખોરાક લેિો •<br>લાડુંબા સમય સ ધી મૂત્ર રોકી રાખિો • | વ્યાખ્યાન સાથે<br>ચયાસ પદ્ધર્ | ફ્લેશકાર્ડસ પેમ્ફલેટ<br> | UTI થિાના<br>જોખમી ઘટકો કયા<br>છે?  |
| 6. | 7<br>ર્મન્ટ | યૂરનરી ટેર કટ<br>ઇન્ફેક્શનના<br>લક્ષણો અને<br>ચિહ્નોની યાદી<br>આપિો                     | વચ્છો અને લક્ષણો: ર્ાિ (Pyrexia)<br>ભૂખમાડું ઘટાડો<br>ઉલ્ટી<br>ડાયરિયા<br>ચીડયાપણ (Irritability)<br>મૂત્રમાડું લોહી આિિ ડું                                                                                       | વ્યાખ્યાન સાથે<br>ચયાસ પદ્ધર્ | ફ્લેશકાર્ડસ                                                                                                 | UTI ના ચિહ્નો અને<br>લક્ષણો શું છે? |

|    |            |                                              |                                                                                                                                                                                                                                                                                                                       |                               |                                                                                     |                            |
|----|------------|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-------------------------------------------------------------------------------------|----------------------------|
|    |            |                                              | <p>ધૂંધળું મૂત્ર (Cloudy urine)<br/> મૂત્ર કરતી વખતે દાઝ / બળરા દ<br/> ખાંસ સાથે મૂત્ર રસિજસન<br/> નારંગીય મૂત્ર થી સફાઈ<br/> ધૂંધળી નજર<br/> સાંધાનો દખાળો પેટમાડું દ<br/> ખાંસ મૂત્રમાડું દગિંધ<br/> ચીડ્યાપણું<br/> પેલ્વિક રિસર્ગમાડું દખાણ /<br/> ભારપણું</p>                                                    |                               |  |                            |
| 7. | 5<br>મર્નટ | યૂરનરી ટેર<br>ઇન્ફેક્શનની<br>જટિલતાઓ<br>ઓળખી | <p>જટિલતાઓ<br/> નારંગીય થરો ચેપ (Recurrent infection)<br/> કિડની કાયમી ન કસાન સેસસ<br/> પાયેલોનેફ્રાઇટિસ (Pyelonephritis)<br/> દીર્ઘકાલીન કિડની રોગ (Chronic kidney disease)<br/> એબ્સેસ બનિ (Abscess formation)<br/> રેનલ પેપિલરી નેક્રોસિસ (Renal papillary necrosis)<br/> પ્રોસ્ટેટ એબ્સેસ (Prostatic abscess)</p> | વ્યાખ્યાન સાથે<br>ચયાસ પદ્ધતિ | ફ્લેશકાર્ડસસ                                                                        | UTI ની<br>જટિલતાઓ શું છે ? |



|   |             |                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                               |                                                                                                                |                                |
|---|-------------|------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|----------------------------------------------------------------------------------------------------------------|--------------------------------|
| 8 | 10<br>મર્નટ | યૂરનરી ટેર કટ<br>ઇન્ફેક્શનના<br>નિરિક<br>ઉપાયો અંગે સુંક્ષ્મ<br>યયાસ<br>.કરિ | નિરિક ઉપાયો<br>પૂરરુડું પાણી પીં ડું<br>દરરોજ ઓછામાડું ઓછા દ થી ટ ગ્વાસ<br>પાણી પીં ડું<br>સૂચિ સેનેટરી પેડસ િાપરિ<br>ગ માડુંગ રિસિારને આગળથી પાછળ<br>રફ સાફ કરિ ડું<br>નયમર્ મૂત્ર રિસિજસન કરિ<br><br>બેક્ટેરિયા બહાર કાઢિાની સારી આદર<br>સહિાસ પછી રર મૂત્ર કરિ ડું<br>સોફ્ટ ડુંક્સથી દૂર રહેિ ડું<br>,જાહેર શૌયાલયનો ઉપયોગ ટાળિો ખાસ<br>કરીને જો રેઓ સૂચિ ન હોય યોર્ન ચેપ<br>હોય રો સારિાર કરાિિિ<br>સ્પર્મસસાઇડ ધરાિરિા ઉત્પાદનોનો<br>ઉપયોગ ટાળિો<br>મૂત્ર કરિાની ઇચ્છા થાય ત્યારે રર જ<br>શૌયાલય જિ ડું, મૂત્ર રોકી ન રાખિો<br>કબજયાર ટાળિો<br><br>િેનબેરી જય સ UTI રોકિા અથિા<br>સારિારમાડું મદદરૂપ માનિામાડું<br>ચિાે છે | વ્યાખ્યાન સાથે<br>યયાસ પદ્ધર્ | ફલેશકાર્ડસ પેમ્ફલેટ<br><br> | UTI થી બચિાના<br>ઉપાયો કયા છે? |
|---|-------------|------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|----------------------------------------------------------------------------------------------------------------|--------------------------------|

|    |             |                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                    |                               |              |                          |
|----|-------------|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|--------------|--------------------------|
|    |             |                                                          | <p>ગ માડુંગ ર્સિાર સ્િછ રાખિો સુંરે<br/>ર્વર આહાર રાખિો</p> <p>સ્િછ અુંદરના કપડાડું (પેન્ટી) પહેરિા</p> <p>ફાસ્ટ ફૂડ અને કબજયાર કરારિો હાર<br/>ટાળિોેફીનનું સેિન મયાસર્દર રાખિું</p> <p>યામડીને ચીડા પાડર્ા ઉત્પાદનોનો<br/>ઉપયોગ ટાળિો</p> <p>સ્નાન કરર્ાડું શારિર વેિું િધ</p> <p>સારુડું બહ ટાઇટ કપડાડું પહેરિાનું</p> <p>ટાળિું</p> <p>જરૂર હોય રો એર્ન્ટબાયોર્ટક સારિાર<br/>વેિી</p> <p>ડોક્ટરને મળીને UTI ની પાર્સ કરારિી</p> |                               |              |                          |
| 9. | 9<br>ર્મન્ટ | યૂર્નરી ટેર કટ<br>ઇન્ફેક્શનની<br>સારિારનું<br>િણસન કરિું | <p>સારિાર</p> <p>ડોક્ટર દ્વારા ઓછી માત્રામાડું એર્ન્ટબાયોર્ટક<br/>પ્રોફેક્સસ<br/>આપિામાડું ચિાે છે</p>                                                                                                                                                                                                                                                                                                                             | વ્યાખ્યાન સાથે<br>ચયાસ પધ્દર્ | ફ્લેશકાર્ડસસ | UTI નો સારિાર શું<br>છે? |

|  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                      |  |                                                                                     |  |
|--|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------|--|
|  |  | <p>પ્રોફલેક્ટક થેરાપી પણ જરૂરી બની શકે છે, જેમ કે</p> <p>નાઇટ્રોફ્યુરન્ટોઇન<br/>(Nitrofurantoin)<br/>માત્રા : ૫૦ મે.ગ્રા. દરરોજ</p> <p>ટ્રાઇમેથોપ્રિમ (Trimethoprim)<br/>માત્રા : ૧૦૦ મે.ગ્રા. દરરોજ</p> <p>સિપ્રોફ્લોક્સાસિન<br/>(Ciprofloxacin)<br/>માત્રા : ૨૫૦ મે.ગ્રા. દરરોજ</p> <p>UTI નો જોખમ ઘટાડા માટે િધમાડું<br/>િધ પાણી પીંડું િેનબેરી જ્ય સ<br/>પીંડું<br/>િંારંિંાર થરો UTI હોય રો<br/>ડોક્ટરની સલાહ લેિી જરૂરી છે</p> |  |  |  |
|--|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------|--|

**ANNEXURE - 12****Section-A: Demographic Data :****1. Age (in years)**

- A. 17–18 years
- B. 19–20 years
- C. 21-22 years

**2. Gender**

- A. Male
- B. Female

**3. Residence**

- A. Urban
- B. Rural

**4. Religion**

- A. Hindu
- B. Muslim
- C. Other

**5. Course of Study**

- A. B. Com
- B. Arts

**6. Educational Year**

- A. 1st Year
- B. 2nd Year
- C. 3rd Year

**7. Types of Family**

- A. Joint family
- B. Nuclear family
- C. Extended

**8. Habit of Holding Urine for Long Duration**

- A. Yes
- B. No

**9. Frequency of Fluid Intake per Day**

- A. Less than 1 Liters



B. 1 - 2 Liters

C. More than 2 Liters

#### 10. Source of Information About UTI

A. Google

B. Family/Friends

C. Health Professionals



**Section-B: Questionnaire on Knowledge Regarding UTI and its Preventive Measures****1. What is the full form of UTI?**

- A. Urinary Treatment Infection
- B. Urinary Tract Infection
- C. Uterine Tract Infection
- D. Urine Tube Infection Right Answer: B

**2. What is the definition of UTI?**

- A. Infection of the kidney only
- B. Infection of the Urinary System by microorganism
- C. Inflammation of the bladder without infection
- D. Presence of protein in urine Right Answer: B

**3. Which population is at highest risk of UTI?**

- A. Children
- B. Elderly Patients
- C. Pregnant Women
- D. All of the Above Right Answer: D

**4. Which microorganism most commonly causes UTI?**

- A. Streptococcus
- B. E. coli
- C. Salmonella
- D. Staphylococcus Right Answer: B

**5. Which is the Familiar symptom of UTI?**

- A. Cloudy Urine
- B. Burning during urination
- C. Hematuria (Blood in urine)
- D. Frequent Urination Right Answer: B

**6. Which is NOT a symptom of UTI?**

- A. Pain during Urination
- B. Hamaturia (Blood in urine)
- C. Cloudy Urine

D. Lack of Urination Right Answer: D

**7. Which of the following is a well established predisposing factor for UTI?**

- A. Limit caffeine intake
- B. Drinking Plenty of water
- C. Maintain your diet pattern

D. Avoid Constipation Right Answer: B

**8. Which one is the Major Predisposing factor for UTI in females is?**

- A. Long Urethra
- B. Short Urethra
- C. Narrow Urethra

D. None of the Above Right Answer: B

**9. Which of the following is NOT a complication of UTI?**

- A. Recurrent Infection
- B. Interstitial Cystitis
- C. Kidney Damage

D. Sepsis

Right Answer: B

**10. What is the appropriate daily water consumption for an average adult?**

- A. 1-3 glasses/day
- B. 3-6 glasses/day
- C. 6-8 glasses/day

D. More than 8 glasses/day Right Answer: C

**11. Which antibiotic is commonly used for uncomplicated UTI?**

- A. Paracetamol
- B. Nitrofurantoin
- C. Aspirin
- D. Metronidazole

Right Answer: B

**12. Which Fluid help to reduce UTI risk?**

- A. Alcohol
- B. Coffee
- C. Herbal Tea

D. Cranberry juice Right Answer: D

**13. Which investigation is the gold standard for diagnosing UTI?**

- A. Urine Routine examination
- B. Urine culture and sensitivity
- C. Blood culture

D. Ultasonography Right Answer: B

**14. Which Liquid pattern should be avoided?**

- A. Unsweetened cranberry juice
- B. Electrolyte drink
- C. Caffeinated Beverages

D. Probiotic Yogurt drink Right Answer: C

**15. Which of the following Symptoms should be avoided?**

- A. Urinate Frequently
- B. Cloudy urine
- C. Holding urine

D. Burning sensation during urination Right Answer: C

**16. Which of the following is Require for Recurrent UTI?**

- A. Home Remedies
- B. Doctor Consultation
- C. Preventative Antibiotics

D. Lifestyle Changes Right Answer: B

**17. Which Food pattern Increases UTI risk?**

- A. Milk & Milk Products
- B. Plant - based Protein & Fiber diet

C. Excess Spicy foods

D. High sodium foods Right Answer: C

**18. Which of the following is Excluded From the Complication of a UTI?**

A. Pyelonephritis

B. Nephrotic Syndrome

C. Abscess formation

D. Chronic Kidney Diseases Right Answer: B

**19. What health complication can result from holding urine for long periods?**

A. Urinary tract infection

B. Bladder Rupture

C. Urinary Retention

D. Pelvic Floor Muscle Right Answer: A

**20. Which habit helps flush the bacteria?**

A. Regular urination

B. Frequent urination

C. Holding urine

D. Urge Urination Right Answer: A

**21. What indicates the Foul Smell in urine?**

A. Bacterial Vaginosis

B. Maple syrup urine diseases

C. Urinary tract infection

D. Liver cirrhosis Right Answer: C

**22. Which is the Best Way to Clean Genital area?**

A. Using Lukewarm water

B. Wear Cotton Underwear

C. Front to Back

D. Back to Front Right Answer: C

**23. What is the Main purpose of Low- dose of Antibiotic Prophylaxis in UTI?**

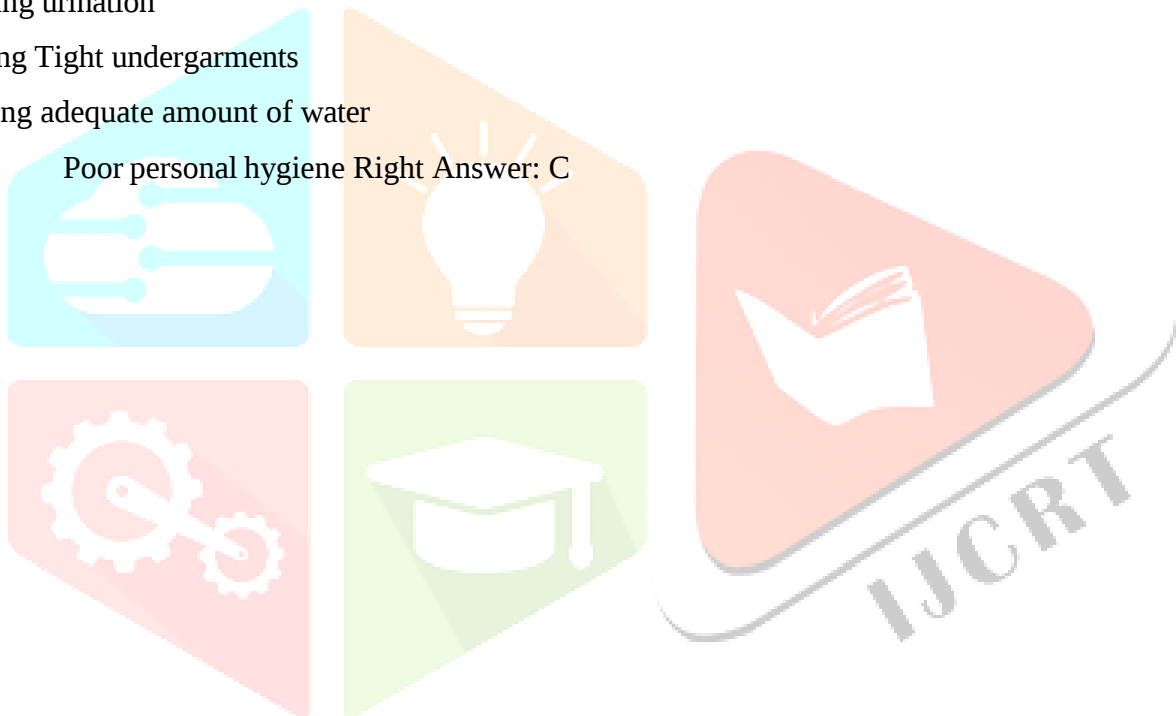
- A. To Relive Pain Immediately
- B. To prevent Recurrent infection
- C. To increases urine concentrations
- D. To stop urination Right Answer: B

**24. Which of the following practices helps in preventing UTI?**

- A. Drinking Less water
- B. Cleaning the genital area from Back to Front
- C. Drinking plenty of water & urinating regularly
- D. Delaying urination for long hours Right Answer: C

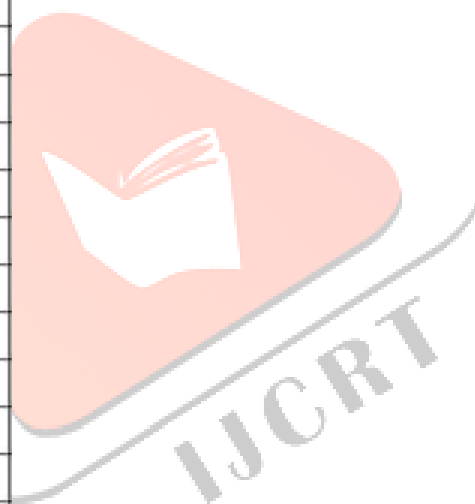
**25. Which lifestyle habit prevents UTI?**

- A. Delaying urination
- B. Wearing Tight undergarments
- C. Drinking adequate amount of water
- D. Poor personal hygiene Right Answer: C



**ANNEXURE - 13****CHECHLIST ENCLOSE LIST ON QUESTIONNAIRE ON KNOWLEDGE  
REGARDING UTI AND ITS PREVENTIVE MEASURES**

| Questions | Answer |
|-----------|--------|
| 1         | B      |
| 2         | B      |
| 3         | D      |
| 4         | B      |
| 5         | B      |
| 6         | D      |
| 7         | B      |
| 8         | B      |
| 9         | B      |
| 10        | C      |
| 11        | B      |
| 12        | D      |
| 13        | B      |
| 14        | C      |
| 15        | C      |
| 16        | B      |
| 17        | C      |
| 18        | B      |
| 19        | A      |
| 20        | A      |
| 21        | C      |
| 22        | C      |
| 23        | B      |
| 24        | C      |
| 25        | C      |



## ANNEXURE - 14

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7. નીચેમાંથી કયું UTI માટેનું જોખમી કારણ નથી?

15. નીચેમાંથી કઈ આદત ટાળવી જોઈએ?

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## ANNEXURE - 15

RESEARCH GROUP NO. 10

**TOPIC :**  
**URINARY TRACT INFECTION & IT'S PREVENTIVE MEASURES**

Researchers Names :  
Pathan Paendah  
Patel Foram  
Parmar Aarti  
Makwana Komal



### Introduction

UTI is a term that is applied to a variety of Clinical conditions ranging from cystitis to Severe infection of the kidney with Resultant sepsis.

Commonly UTI Stand for Urinary Tract Infection.



### Definition

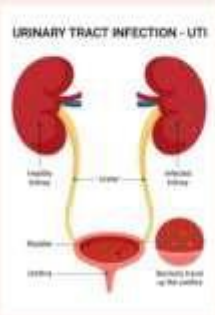
A UTI is an infection that Affects any parts of urinary tract, including the kidney, Ureter, Bladder and Urethra.

Bacteria that enter the urethra are usually flushed out through urination. However, when bacteria aren't expelled out of the urethra, they may grow within the urinary tract. This causes an infection.



### Incidence

Its Commonly seen in all age groups people. But Females are more prone to get UTI as compared to Males.



### Pre - Disposing Factors

1. Tight - Fitting clothes
2. Wiping from Back to Front after a bowel movement
3. Poor Toilet Habit.
4. Eating Excess spicy foods.
5. Holding Urine for more hours.



### PREVENTIVE MEASURES

Drinking plenty of water.  
Clean Sanitary Pads.  
Treat Vaginal Infection.  
Avoid using Spermicide containing product.

Go to toilet as soon as you feel the urge to urinate, rather than holding on.  
Avoid Constipation.  
Cranberry juice is often promoted or prevented to treat UTI.  
Keep the Genital area Clean.  
Limit Caffeine intake.  
Get Antibiotics.

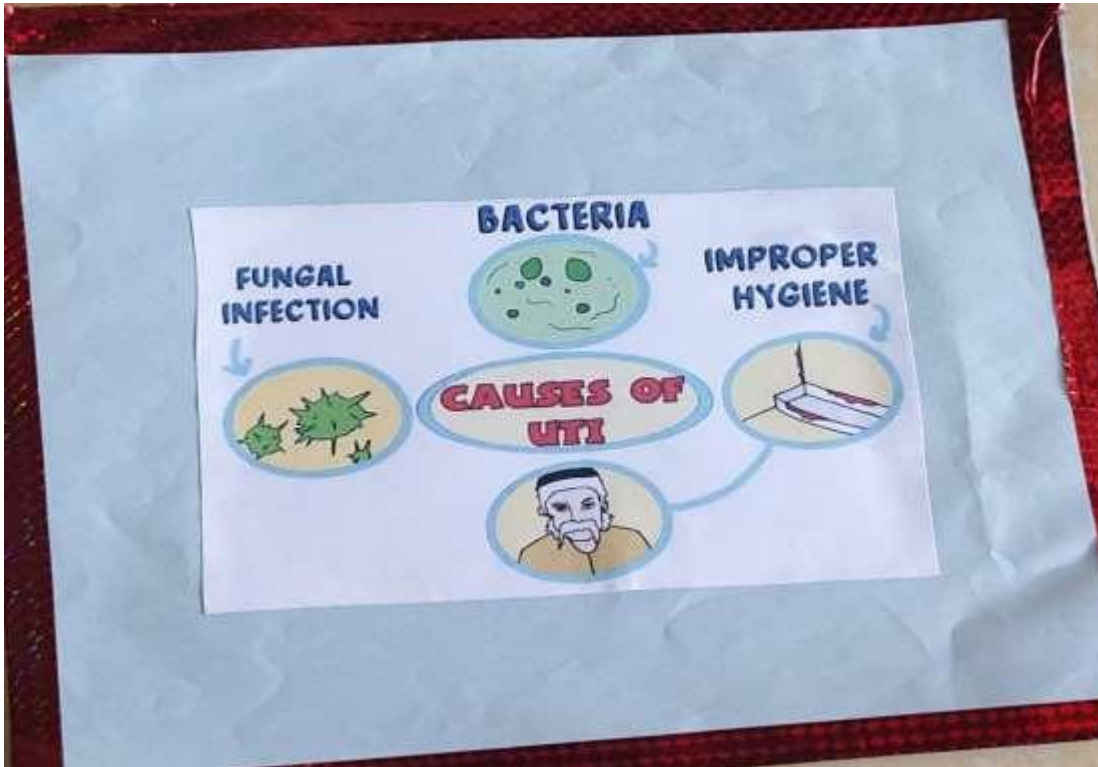
#### UTI PREVENTION TIPS

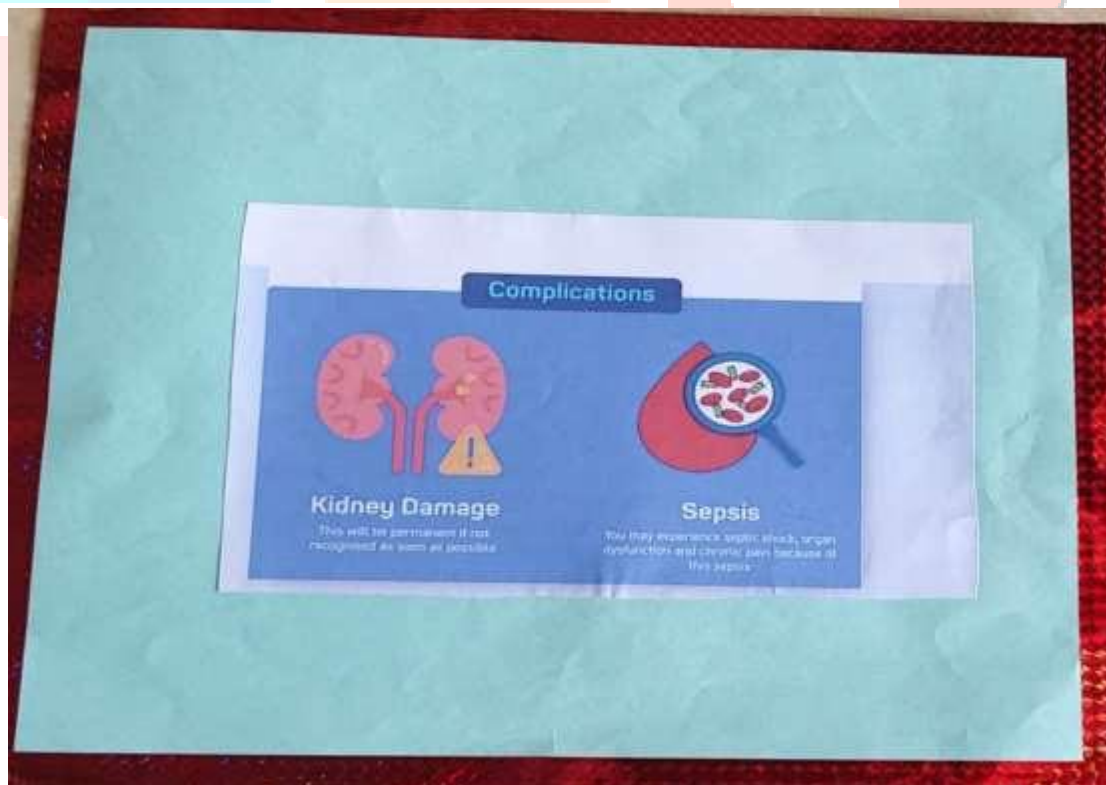
- Especially for Women -

- ✓ Drink plenty of water
- ✓ Wipe from front to back
- ✓ Urinate after sex
- ✓ Avoid holding urine
- ✓ Wear breathable underwear
- ✓ Limit irritating feminine products











## ANNEXURE - 16

### PRE TEST



### INTERVENTION



### POST TEST



## ANNEXURE - 17

## MASTER DATA SHEET OF DEMOGRAPHIC DATA OF SAMPLE

| SR NO | DEMOGRAPHIC VARIABLES      | CODE NO. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|-------|----------------------------|----------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|
| 1     | Age (in year)              |          |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
|       | ( a ) 17 - 18              |          | ✓ | ✓ | ✓ | ✓ |   |   |   |   |   |    |    |    |    |    |    | ✓  |    |    |    |    |
|       | ( b ) 19 - 20              |          |   |   |   |   | ✓ |   |   |   | ✓ | ✓  | ✓  |    |    |    |    |    | ✓  | ✓  | ✓  | ✓  |
|       | ( c ) 21 - 22              |          |   |   |   |   |   | ✓ | ✓ | ✓ |   |    |    | ✓  | ✓  | ✓  | ✓  |    |    |    |    |    |
| 2     | Gender                     |          |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
|       | ( a ) male                 |          |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
|       | ( b ) female               |          | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |
| 3     | Residence                  |          |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
|       | ( a ) urban                |          | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓  | ✓  |    | ✓  |    |    | ✓  |    |    | ✓  | ✓  |
|       | ( b ) rural                |          |   |   |   |   |   |   |   |   |   |    |    | ✓  |    | ✓  | ✓  |    | ✓  | ✓  |    |    |
| 4     | Religion                   |          |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
|       | ( a ) hindu                |          | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |    | ✓  | ✓  | ✓  | ✓  |
|       | ( b ) muslim               |          |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    | ✓  |    |    |    |    |
|       | ( c ) others               |          |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
| 5     | Course of Study            |          |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
|       | ( a ) B.com                |          | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |
|       | ( b ) Arts                 |          |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
| 6     | Educational year           |          |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
|       | ( a ) 1 <sup>st</sup> year |          | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓  | ✓  |    |    |    | ✓  | ✓  | ✓  | ✓  |    |    |
|       | ( b ) 2 <sup>nd</sup> year |          |   |   |   |   |   |   |   |   |   |    |    | ✓  | ✓  | ✓  |    |    |    |    | ✓  | ✓  |
|       | ( c ) 3 <sup>rd</sup> year |          |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |

## MASTER DATA SHEET OF DEMOGRAPHIC DATA OF SAMPLE

| SR NO | DEMOGRAPHIC VARIABLES                    | COD E NO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|-------|------------------------------------------|----------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|
| 7     | Types of Family                          |          |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
|       | ( a ) Joint family                       |          | ✓ | ✓ | ✓ | ✓ |   |   |   |   |   | ✓  |    | ✓  |    | ✓  | ✓  |    |    | ✓  |    |    |
|       | ( b ) Nuclear family                     |          |   |   |   |   |   | ✓ | ✓ | ✓ | ✓ |    |    |    | ✓  |    |    | ✓  | ✓  |    | ✓  | ✓  |
|       | ( c ) Extended                           |          |   |   |   |   | ✓ |   |   |   |   |    | ✓  |    |    |    |    |    |    |    |    |    |
| 8     | Habit of holding urine for long duration |          |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
|       | ( a ) Yes                                |          |   |   |   | ✓ |   | ✓ | ✓ | ✓ | ✓ | ✓  | ✓  | ✓  | ✓  |    |    |    |    |    |    |    |
|       | ( b ) No                                 |          | ✓ | ✓ | ✓ |   | ✓ |   |   |   |   |    |    |    |    | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |
| 9     | Frequency of fluid intake per day        |          |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
|       | ( a ) Less than 1 Liters                 |          | ✓ |   | ✓ | ✓ |   |   | ✓ |   |   | ✓  | ✓  | ✓  | ✓  | ✓  |    | ✓  |    |    | ✓  |    |
|       | ( b ) 1-2 Liters                         |          |   | ✓ |   |   | ✓ |   |   | ✓ | ✓ |    |    |    |    |    |    |    | ✓  | ✓  |    | ✓  |
|       | ( c ) More than 2 Liters                 |          |   |   |   |   |   | ✓ |   |   |   |    |    |    |    |    | ✓  |    |    |    |    |    |
| 10    | Sources of information about UTI         |          |   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |
|       | ( a ) Goggle                             |          |   |   |   | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |    |    |    | ✓  | ✓  |    |    |    | ✓  |    |    |
|       | ( b ) Family/Friends                     |          |   | ✓ | ✓ |   |   |   |   |   |   | ✓  | ✓  |    |    |    |    | ✓  | ✓  |    | ✓  | ✓  |
|       | ( c ) Health Professionals               |          | ✓ |   |   |   |   |   |   |   |   |    |    | ✓  |    |    | ✓  |    |    |    |    |    |

### MASTER DATA SHEET OF DEMOGRAPHIC DATA OF SAMPLE

| SR NO | DEMOGRAPHIC VARIABLES      | CODE NO. | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
|-------|----------------------------|----------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1     | Age (in year)              |          |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|       | ( a ) 17 - 18              |          |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | ✓  |    |
|       | ( b ) 19 - 20              |          |    |    |    | ✓  | ✓  | ✓  |    | ✓  | ✓  |    | ✓  |    |    |    | ✓  |    |    |    |    |    |
|       | ( c ) 21 - 22              |          | ✓  | ✓  | ✓  |    |    |    | ✓  |    |    | ✓  |    | ✓  | ✓  | ✓  |    | ✓  | ✓  | ✓  |    | ✓  |
| 2     | Gender                     |          |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|       | ( a ) male                 |          |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|       | ( b ) female               |          | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |
| 3     | Residence                  |          |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|       | ( a ) urban                |          | ✓  |    | ✓  |    | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |    |    |    | ✓  |    |    | ✓  | ✓  | ✓  | ✓  |
|       | ( b ) rural                |          |    | ✓  |    | ✓  |    |    |    |    |    |    | ✓  | ✓  | ✓  |    | ✓  | ✓  |    |    |    |    |
| 4     | Religion                   |          |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|       | ( a ) hindu                |          | ✓  |    | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |    | ✓  |
|       | ( b ) muslim               |          |    | ✓  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | ✓  |    |
|       | ( c ) others               |          |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 5     | Course of Study            |          |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|       | ( a ) B.com                |          | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |
|       | ( b ) Arts                 |          |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 6     | Educational Year           |          |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|       | ( a ) 1 <sup>st</sup> year |          |    |    |    |    |    | ✓  | ✓  | ✓  | ✓  |    |    |    |    |    | ✓  | ✓  | ✓  |    |    |    |
|       | ( b ) 2 <sup>nd</sup> year |          | ✓  | ✓  | ✓  | ✓  | ✓  |    |    |    |    | ✓  | ✓  | ✓  | ✓  | ✓  |    |    |    | ✓  | ✓  | ✓  |
|       | ( c ) 3 <sup>rd</sup> year |          |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |

### MASTER DATA SHEET OF DEMOGRAPHIC DATA OF SAMPLE

| SR NO | DEMOGRAPHIC VARIABLES                    | CODE NO | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
|-------|------------------------------------------|---------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 7     | Types of Family                          |         |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|       | ( a ) Joint family                       |         | ✓  |    |    | ✓  | ✓  | ✓  |    |    | ✓  |    |    |    |    | ✓  |    |    |    | ✓  | ✓  | ✓  |
|       | ( b ) Nuclear family                     |         |    | ✓  | ✓  |    |    |    | ✓  | ✓  |    | ✓  | ✓  | ✓  |    |    | ✓  |    | ✓  |    |    |    |
|       | ( c ) Extended                           |         |    |    |    |    |    |    |    |    |    |    |    |    | ✓  |    |    | ✓  |    |    |    |    |
| 8     | Habit of holding urine for long duration |         |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|       | ( a ) Yes                                |         |    |    |    | ✓  | ✓  | ✓  | ✓  |    |    | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |    | ✓  |    |
|       | ( b ) No                                 |         | ✓  | ✓  | ✓  |    |    |    |    | ✓  | ✓  |    |    |    |    |    |    |    |    | ✓  |    | ✓  |
| 9     | Frequency of fluid intake per day        |         |    |    |    |    |    |    |    | ✓  | ✓  |    |    |    |    |    |    |    |    |    |    |    |
|       | ( a ) Less than 1 Liters                 |         |    |    |    | ✓  |    |    |    |    | ✓  | ✓  |    | ✓  |    | ✓  | ✓  | ✓  |    |    | ✓  |    |
|       | ( b ) 1-2 Liters                         |         | ✓  | ✓  | ✓  |    | ✓  |    |    | ✓  |    |    | ✓  |    | ✓  |    |    |    | ✓  |    |    | ✓  |
|       | ( c ) More than 2 Liters                 |         |    |    |    |    |    | ✓  | ✓  |    |    |    |    |    |    |    |    |    |    | ✓  |    |    |
| 10    | Sources of information about UTI         |         |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|       | ( a ) Goggle                             |         |    |    |    | ✓  | ✓  | ✓  |    | ✓  |    |    | ✓  |    | ✓  |    |    | ✓  | ✓  |    |    | ✓  |
|       | ( b ) Family/Friends                     |         | ✓  |    | ✓  |    |    |    |    |    | ✓  | ✓  |    | ✓  |    | ✓  | ✓  |    |    | ✓  | ✓  |    |
|       | ( c ) Health Professionals               |         |    | ✓  |    |    |    |    | ✓  |    |    |    |    |    |    |    |    |    |    |    |    |    |

## MASTER DATA SHEET OF DEMOGRAPHIC DATA OF SAMPLE

| SR NO | DEMOGRAPHIC VARIABLES    | CODE NO. | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
|-------|--------------------------|----------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1     | Age (in year)            |          |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|       | (a) 17 - 18              |          |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|       | (b) 19 - 20              |          |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|       | (c) 21 - 22              |          | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |
| 2     | Gender                   |          |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|       | (a) male                 |          |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|       | (b) female               |          | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |
| 3     | Residence                |          |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|       | (a) urban                |          | ✓  | ✓  |    |    |    | ✓  |    | ✓  | ✓  | ✓  |    |    | ✓  | ✓  | ✓  |    | ✓  | ✓  | ✓  |    |
|       | (b) rural                |          |    |    | ✓  | ✓  | ✓  |    | ✓  |    |    |    | ✓  | ✓  |    |    |    | ✓  |    |    |    | ✓  |
| 4     | Religion                 |          |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|       | (a) hindu                |          | ✓  | ✓  | ✓  | ✓  |    |    | ✓  |    |    | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |
|       | (b) muslim               |          |    |    |    |    | ✓  |    |    | ✓  | ✓  |    |    |    |    |    |    |    |    |    |    |    |
|       | (c) others               |          |    |    |    |    |    | ✓  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 5     | Course of Study          |          |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|       | (a) B.com                |          | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |
|       | (b) Arts                 |          |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 6     | Educational Year         |          |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|       | (a) 1 <sup>st</sup> year |          |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|       | (b) 2 <sup>nd</sup> year |          |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|       | (c) 3 <sup>rd</sup> year |          | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |

### MASTER DATA SHEET OF DEMOGRAPHIC DATA OF SAMPLE

| SR NO | DEMOGRAPHIC VARIABLES                    | COD E NO | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
|-------|------------------------------------------|----------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 7     | Types of Family                          |          |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|       | ( a ) Joint family                       |          | ✓  |    | ✓  |    |    |    | ✓  | ✓  | ✓  |    |    | ✓  |    |    | ✓  |    | ✓  |    |    | ✓  |
|       | ( b ) Nuclear family                     |          |    | ✓  |    | ✓  | ✓  | ✓  |    |    |    | ✓  | ✓  |    | ✓  | ✓  |    | ✓  |    | ✓  | ✓  |    |
|       | ( c ) Extended                           |          |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 8     | Habit of holding urine for long duration |          |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|       | ( a ) Yes                                |          |    |    |    | ✓  | ✓  |    |    |    |    |    | ✓  |    | ✓  |    |    |    |    |    |    |    |
|       | ( b ) No                                 |          | ✓  | ✓  | ✓  |    |    | ✓  | ✓  | ✓  | ✓  | ✓  |    | ✓  |    | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |
| 9     | Frequency of fluid intake per day        |          |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|       | ( a ) Less than 1 Liters                 |          |    | ✓  |    | ✓  | ✓  |    |    |    | ✓  |    |    | ✓  |    |    |    |    |    |    |    | ✓  |
|       | ( b ) 1-2 Liters                         |          | ✓  |    | ✓  |    |    |    | ✓  | ✓  |    | ✓  | ✓  |    | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  | ✓  |    |
|       | ( c ) More than 2 Liters                 |          |    |    |    |    |    | ✓  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 10    | Sources of information about UTI         |          |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|       | ( a ) Goggle                             |          | ✓  |    | ✓  |    | ✓  |    |    |    |    | ✓  |    |    |    |    | ✓  |    |    | ✓  |    | ✓  |
|       | ( b ) Family/Friends                     |          |    |    |    |    |    |    |    |    |    |    |    | ✓  | ✓  |    | ✓  |    |    |    |    |    |
|       | ( c ) Health Professionals               |          |    | ✓  |    | ✓  |    | ✓  | ✓  | ✓  | ✓  |    | ✓  |    |    | ✓  |    |    | ✓  |    | ✓  |    |

## MASTER DATA SHEET KNOWLEDGE SCORES OF SAMPLE ( PRE TEST )

| SR NO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | TOTAL |
|-------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| 1     | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1  | 0  | 0  | 0  | 1  | 0  | 1  | 1  | 0  | 1  | 0  | 0  | 0  | 1  | 0  |    | 10    |
| 2     | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 5     |
| 3     | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 1  | 1  | 0  | 1  | 0  | 1  | 0  | 0  | 8     |
| 4     | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 4     |
| 5     | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 6     |
| 6     | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 7     |
| 7     | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 1  | 1  | 0  | 1  | 0  | 0  | 0  | 1  | 8     |
| 8     | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 0  | 0  | 1  | 0  | 1  | 0  | 0  | 1  | 8     |
| 9     | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 1  | 1  | 6     |
| 10    | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0  | 1  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 1  | 0  | 0  | 7     |
| 11    | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 1  | 6     |
| 12    | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0  | 1  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 1  | 0  | 7     |
| 13    | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 7     |
| 14    | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 1  | 1  | 1  | 8     |
| 15    | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 5     |
| 16    | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1  | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 0  | 1  | 0  | 0  | 0  | 1  | 1  | 1  | 11    |
| 17    | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 0  | 5     |
| 18    | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 1  | 0  | 0  | 0  | 0  | 0  | 1  | 7     |
| 19    | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 1  | 1  | 0  | 0  | 0  | 1  | 1  | 1  | 11    |
| 20    | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0  | 0  | 1  | 0  | 0  | 1  | 1  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 1  | 1  | 7     |

## MASTER DATA SHEET KNOWLEDGE SCORES OF SAMPLE (PRE TEST)

| SR NO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | TOTAL |
|-------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| 21    | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 0  | 7     |
| 22    | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 0  | 0  | 12    |
| 23    | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 1  | 0  | 1  | 1  | 9     |
| 24    | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1  | 0  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 1  | 0  | 0  | 1  | 0  | 1  | 0  | 8     |
| 25    | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0  | 1  | 0  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 0  | 0  | 1  | 0  | 1  | 1  | 10    |
| 26    | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 0  | 1  | 0  | 1  | 0  | 1  | 1  | 1  | 1  | 12    |
| 27    | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0  | 0  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 0  | 1  | 0  | 1  | 0  | 0  | 1  | 11    |
| 28    | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0  | 1  | 0  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 0  | 1  | 0  | 1  | 0  | 0  | 8     |
| 29    | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1  | 0  | 0  | 1  | 0  | 0  | 0  | 1  | 1  | 0  | 1  | 0  | 1  | 0  | 0  | 1  | 11    |
| 30    | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1  | 0  | 1  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 7     |
| 31    | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 7     |
| 32    | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 9     |
| 33    | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0  | 1  | 0  | 0  | 0  | 1  | 0  | 1  | 0  | 0  | 1  | 0  | 1  | 0  | 0  | 1  | 9     |
| 34    | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1  | 0  | 1  | 0  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 0  | 1  | 1  | 10    |
| 35    | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 0  | 10    |
| 36    | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 0  | 1  | 0  | 1  | 1  | 9     |
| 37    | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 0  | 1  | 11    |
| 38    | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0  | 1  | 0  | 1  | 0  | 0  | 1  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 10    |
| 39    | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 8     |
| 40    | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 0  | 1  | 0  | 1  | 9     |

## MASTER DATA SHEET KNOWLEDGE SCORES OF SAMPLE ( PRE TEST )

| SR NO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | TOTAL |
|-------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| 41    | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1  | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 1  | 0  | 1  | 0  | 1  | 1  | 0  | 1  | 15    |
| 42    | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 10    |
| 43    | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0  | 0  | 1  | 0  | 1  | 0  | 0  | 0  | 1  | 0  | 1  | 0  | 0  | 1  | 0  | 1  | 9     |
| 44    | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 1  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 11    |
| 45    | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0  | 1  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 7     |
| 46    | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 0  | 1  | 0  | 8     |
| 47    | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 0  | 1  | 0  | 0  | 10    |
| 48    | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 8     |
| 49    | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 10    |
| 50    | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0  | 1  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 0  | 1  | 0  | 0  | 8     |
| 51    | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 8     |
| 52    | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0  | 1  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 1  | 1  | 10    |
| 53    | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0  | 1  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 5     |
| 54    | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 1  | 0  | 0  | 0  | 0  | 1  | 0  | 9     |
| 55    | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1  | 0  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 8     |
| 56    | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0  | 1  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 1  | 1  | 10    |
| 57    | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0  | 1  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 1  | 0  | 0  | 0  | 0  | 10    |
| 58    | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 1  | 1  | 0  | 1  | 1  | 9     |
| 59    | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 0  |    | 1  | 0  | 0  | 0  | 6     |
| 60    | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 7     |

## MASTER DATA SHEET KNOWLEDGE SCORES OF SAMPLE ( POST TEST )

| SR NO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | TOTAL |
|-------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| 1     | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 20    |
| 2     | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 8     |
| 3     | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0  | 1  | 0  | 1  | 0  | 1  | 1  | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 1  | 1  | 15    |
| 4     | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1  | 0  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 16    |
| 5     | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1  | 0  | 1  | 0  | 1  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 8     |
| 6     | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 8     |
| 7     | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1  | 1  | 0  | 1  | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 15    |
| 8     | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0  | 0  | 1  | 0  | 1  | 0  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 0  | 1  | 0  | 14    |
| 9     | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 1  | 0  | 7     |
| 10    | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0  | 1  | 1  | 0  | 0  | 0  | 1  | 1  | 0  | 0  | 1  | 1  | 0  | 1  | 0  | 0  | 13    |
| 11    | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0  | 1  | 1  | 0  | 0  | 1  | 1  | 0  | 0  | 1  | 1  | 0  | 0  | 0  | 0  | 0  | 12    |
| 12    | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1  | 1  | 0  | 1  | 1  | 0  | 1  | 1  | 1  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 14    |
| 13    | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1  | 1  | 0  | 1  | 1  | 0  | 1  | 1  | 0  | 1  | 1  | 0  | 1  | 0  | 0  | 0  | 15    |
| 14    | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0  | 1  | 1  | 0  | 1  | 1  | 0  | 1  | 1  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 13    |
| 15    | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 0  | 1  | 0  | 1  | 21    |
| 16    | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 22    |
| 17    | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1  | 0  | 0  | 1  | 1  | 1  | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 1  | 14    |
| 18    | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1  | 0  | 1  | 1  | 0  | 1  | 1  | 1  | 0  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 17    |
| 19    | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 15    |
| 20    | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1  | 1  | 1  | 0  | 1  | 0  | 1  | 1  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 16    |

### MASTER DATA SHEET KNOWLEDGE SCORES OF SAMPLE ( POST TEST )

| SR NO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | TOTAL |
|-------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|
| 21    | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1  | 1  | 0  | 0  | 1  | 0  | 1  | 1  | 1  | 0  | 0  | 0  | 1  | 1  | 1  | 0  | 15    |
| 22    | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0  | 0  | 0  | 1  | 0  | 1  | 1  | 0  | 0  | 1  | 1  | 0  | 0  | 1  | 1  | 0  | 13    |
| 23    | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 0  | 1  | 0  | 1  | 7     |
| 24    | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 10    |
| 25    | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1  | 0  | 0  | 0  | 1  | 1  | 1  | 0  | 0  | 1  | 0  | 1  | 0  | 0  | 1  | 0  | 12    |
| 26    | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1  | 1  | 1  | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 1  | 0  | 0  | 0  | 1  | 1  | 13    |
| 27    | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0  | 1  | 0  | 1  | 0  | 0  | 1  | 1  | 0  | 0  | 1  | 1  | 0  | 1  | 1  | 1  | 14    |
| 28    | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 23    |
| 29    | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1  | 0  | 0  | 1  | 1  | 0  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 1  | 1  | 15    |
| 30    | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 0  | 0  | 1  | 1  | 1  | 20    |
| 31    | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1  | 1  | 1  | 0  | 0  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 0  | 0  | 1  | 16    |
| 32    | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 19    |
| 33    | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0  | 1  | 1  | 1  | 1  | 0  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 14    |
| 34    | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1  | 1  | 0  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 20    |
| 35    | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1  | 0  | 0  | 1  | 0  | 1  | 1  | 0  | 0  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 16    |
| 36    | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1  | 1  | 1  | 1  | 1  | 0  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 19    |
| 37    | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0  | 0  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 0  | 0  | 1  | 0  | 0  | 16    |
| 38    | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 20    |
| 39    | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 1  | 0  | 0  | 0  | 0  | 0  | 0  | 0  | 1  | 7     |
| 40    | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 23    |

## MASTER DATA SHEET KNOWLEDGE SCORES OF SAMPLE ( POST TEST )

| SR NO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 |
|-------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|
| 41    | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1  | 1  | 1  | 0  | 1  | 1  | 0  | 0  | 1  | 1  | 0  | 0  |
| 42    | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0  | 0  | 0  | 1  | 1  | 1  | 0  | 0  | 1  | 1  | 1  | 0  |
| 43    | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0  | 1  | 0  | 0  | 1  | 1  | 0  | 0  | 1  | 0  | 1  | 0  |
| 44    | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1  | 1  | 0  | 0  | 1  | 1  | 1  | 1  | 1  | 0  | 0  | 1  |
| 45    | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1  | 1  | 1  | 0  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| 46    | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0  | 1  | 1  | 1  | 0  | 0  | 0  | 1  | 1  | 0  | 0  | 1  |
| 47    | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  |
| 48    | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 0  | 1  |
| 49    | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1  | 0  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| 50    | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| 51    | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0  | 0  | 1  | 0  | 0  | 0  | 1  | 0  | 0  | 1  | 0  | 1  |
| 52    | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 0  | 0  | 0  | 0  | 1  | 0  | 0  | 1  |
| 53    | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1  | 0  | 0  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 0  | 0  |
| 54    | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1  | 1  | 1  | 0  | 0  | 1  | 1  | 1  | 1  | 1  | 0  | 1  |
| 55    | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 0  | 1  | 1  |
| 56    | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0  | 0  | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 1  | 1  | 0  |
| 57    | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| 58    | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1  | 1  | 0  | 0  | 1  | 1  | 1  | 1  | 0  | 0  | 1  | 1  |
| 59    | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1  | 1  | 0  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |
| 60    | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  |