A Study to Evaluate the Effectiveness of a Video-Based Educational Intervention on Knowledge and Assessment of Risk Status Regarding Urinary Tract Infection Among Nursing Students

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Abstract*—Background: Urinary tract infection (UTI) is a common and preventable bacterial infection among young women. This study was conducted in the year 2026 to evaluate the effectiveness of a video-based educational intervention on UTI knowledge and risk assessment among nursing students at KMCH College of Nursing. Objectives: To assess UTI risk status and knowledge; evaluate the effectiveness of the intervention; find association between UTI risk status and pre-test knowledge scores; also find association between post-test scores and selected demographic variables. Methods: A quantitative one-group pre-test post-test design was used among 95 first-year B.Sc. Nursing students selected by nonprobability purposive sampling. Tools included a UTI Risk Assessment Questionnaire (20 items) and a Knowledge Questionnaire (30 pre-test/40 post-test items); reliability of tool verified by split-half method (r = 0.8 and r = 0.7). Descriptive and inferential statistics were used for analysis. Results: Pre-test revealed 76% moderate knowledge (Mean = 14.84 ± 4.49) with 59% at low UTI risk. Post-test showed 56% good knowledge (Mean = 24.54 ± 6.55), confirmed by paired t-test (t = 14.30, $p < 0.05$). Significant associations were found between pre-test knowledge and risk status related to lower abdominal pain ($\chi^2 = 16.20$, $p < 0.05$) and burning sensation ($\chi^2 = 12.30$, $p < 0.05$); no significant association was found between post-test scores and demographic variables. Conclusion: The video-based educational intervention effectively improved UTI knowledge, promoting awareness, early risk identification, and preventive health practices among first-year nursing students.

***Index Terms*—Urinary tract infection, nursing students, video-based educational intervention, knowledge & risk assessment.**

I. INTRODUCTION

"Education is not the learning of facts, but the training of the mind to think."
Albert Einstein

Background Of the Study:

Health is a state of complete physical, mental and social well-being, not just the absence of disease. Nurses play a key role in promoting health, preventing illness and giving quality care based on evidence. Urinary Tract Infection (UTI) is a common health problem worldwide. It occurs when bacteria enter and multiply in the urinary system, which includes the kidneys, ureters, bladder and urethra. Females are affected more often because of their anatomy and physiology. Most cases can be treated, but untreated UTIs may lead to repeated infections, kidney damage and sepsis. Awareness about prevention, early detection and proper management is therefore essential.

Kaya and Durgun (2025) carried out a randomized controlled study among 61 undergraduate nursing students to test video-based teaching on urinary system knowledge and urinary catheterization skills. The experimental group received video-assisted learning along with routine teaching, while the control group received routine teaching only. Knowledge improved significantly in the experimental group, and its catheterization skill scores were markedly higher than the control group ($p<0.001$). Video-based education was found effective for knowledge retention and clinical competence.

Shahzadi, Ashfaq, Nazir and Mukhtar (2025) did a descriptive study on knowledge and practice of UTI prevention among nursing students at the University of Lahore, Pakistan, using a structured questionnaire. Good knowledge was seen in 51.6% and poor knowledge in 46.85% of students, while 57.1% showed good practice and 42.1% poor practice. The study pointed to the need for targeted educational programmes.

Telagamsetty Varamanikanta (2025) conducted a pre-experimental study on a structured teaching programme on UTI among B.Sc. nursing students. Most students had inadequate knowledge in the pre-test. After the programme, post-test scores improved significantly ($p<0.001$), and most students reached adequate to good knowledge.

Yadav and Singh (2024) used a quasi-experimental pre-test and post-test design to evaluate a structured teaching programme on UTI prevention among adolescent girls in a selected college in Uttar Pradesh. Most had inadequate to moderately adequate knowledge before the programme. Post-test scores rose significantly ($p<0.05$), with better awareness of genital hygiene, adequate water intake and timely treatment of urinary symptoms.

Anjalatchi Muthukumaran (2023) carried out a pre-experimental study on a structured teaching programme on UTI prevention among first-year B.Sc. Nursing students. Most had inadequate knowledge in the pre-test, and the mean post-test score was considerably higher, with a significant difference ($p<0.05$). Students understood preventive measures, personal hygiene and early symptoms better.

Ahmed, Ismail and Soliman (2023) compared a digital mind map strategy with traditional lectures on nursing students' knowledge of UTI. The mind map group scored significantly higher in the post-test ($p<0.001$), with more than three-fourths reaching satisfactory knowledge, and showed better recall and learning engagement.

1.1 Need for The Study:

UTI is one of the most common bacterial infections in all age groups. It causes painful urination, frequent urination and lower abdominal discomfort, and if untreated it may lead to serious complications and higher healthcare burden. According to the World Health Organization (2024), nearly 150 million people develop UTIs each year, and about 50–60% of women have at least one UTI in their lifetime. In India, more than 30% of people experience a UTI at least once, and in Tamil Nadu a prevalence of 15–25% has been reported among women of reproductive age. Hospital-based studies in Coimbatore show UTI as one of the most frequent bacterial infections in children and adults, with Escherichia coli as the main organism. Nursing students are future healthcare professionals, so adequate knowledge of the causes, symptoms, risk factors and prevention of UTI is essential for them. Video-based learning improves understanding, retention and engagement. Hence, this study evaluates a video-based intervention on knowledge regarding UTI among nursing students.

This study is necessary to:

- Identify existing knowledge gaps.
- Improve knowledge through a structured intervention.
- Promote innovative teaching methods in nursing education.

1.2 Statement of the Problem:

"A study to evaluate the effectiveness of a video-based educational intervention on knowledge and assessment of risk status regarding urinary tract infection among nursing students."

1.3 Objectives of The Study:

1. To assess the risk status of urinary tract infection among nursing students.
2. To assess the knowledge regarding urinary tract infection among nursing students.
3. To evaluate the effectiveness of the video-based educational intervention on knowledge regarding urinary tract infection among nursing students.
4. To find out the association between the risk status of urinary tract infection and pretest knowledge scores among nursing students.
5. To find out the association between post-test knowledge scores and selected demographic variables among nursing students.

1.4 Operational Definitions

Evaluate: In this study, evaluate means assessing the effectiveness of the video-based educational intervention by comparing pretest and post test scores.

Video-based: In this study, a structured educational programme on UTI delivered through videos over three days.

Urinary Tract Infection: In this study, an infection affecting any part of the urinary system, including the kidneys, ureters, bladder or urethra.

1.5 Assumptions

- Nursing students may have some basic knowledge of UTI from their academic exposure.
- Video-based teaching is an effective and engaging method that improves understanding and knowledge retention.

1.6 Conceptual Framework:

This study is based on the General Systems Theory by Ludwig von Bertalanffy. A system has input, process, output and feedback that interact to reach a desired outcome. The theory suits this study because it explains how an educational intervention influences learning outcomes.

- Input: Demographic characteristics of nursing students, previous UTI information and baseline knowledge from the pre-test.
- Process (Throughput): The video-based educational intervention covering the urinary system, causes, risk factors, signs and symptoms, diagnosis, treatment, prevention, personal hygiene and lifestyle changes.
- Output: Post-test knowledge scores, which show the knowledge gained.
- Feedback: Comparison of pre-test and post-test scores to judge the effectiveness of the intervention and guide future teaching strategies.

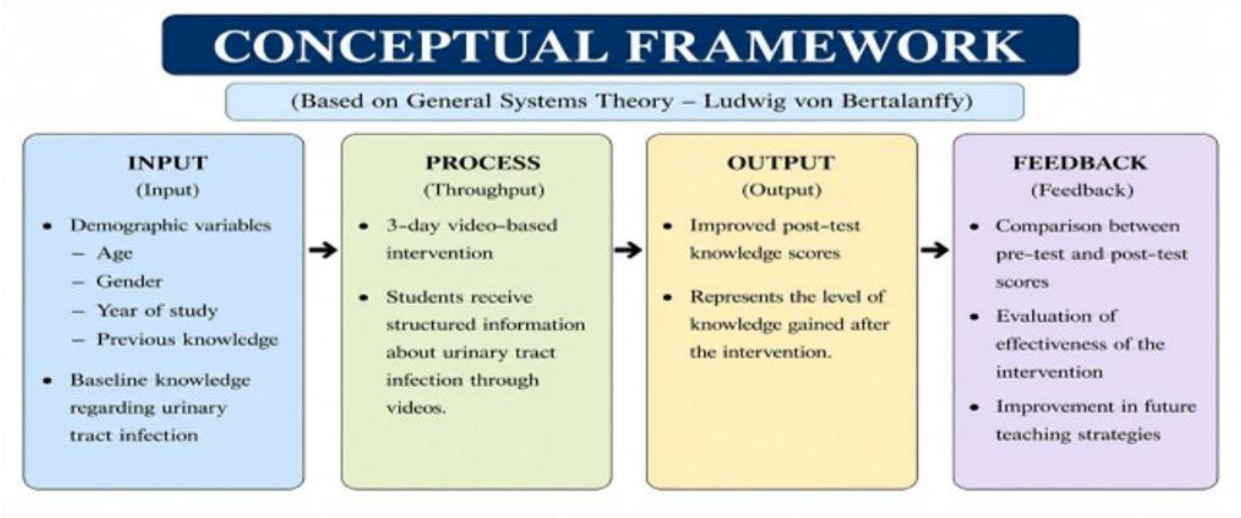


Fig 1.1 Schematic Representation of the Conceptual Framework

II.METHODOLOGY

The methodology describes how valid and reliable data were gathered for investigation them. This chapter covers the research approach, research design, population, setting, sample, sample size, sampling technique, the tool, data collection procedure and plan for data analysis.

2.1 Research Approach

A quantitative approach was used to evaluate the effectiveness of a video-based educational intervention on knowledge and assessment of risk status regarding urinary tract infection among nursing students.

2.2 Research Design

A one-group pre-test and post-test design was chosen for the study.

2.3 Population of The Study

The target population was B.Sc. Nursing students. The accessible population was B.Sc. Nursing students aged 17–20 years who studied at KMCH College of Nursing, Coimbatore.

2.4 Setting of The Study

The study was conducted at KMCH College of Nursing, Coimbatore.

2.5 Sample, Sample Size and Sampling Technique
The sample was 95 first-year B.Sc. Nursing students of KMCH College of Nursing, Coimbatore, selected by non-probability purposive sampling.

2.6 Criteria for Selection of Samples
Inclusion criteria: age 17–20 years; willing to participate and provide informed consent; having access to mobile/laptop.
Exclusion criteria: students with diagnosed chronic urinary conditions; students absent during intervention days.

2.7 Research Variables
Independent variable: video-based educational intervention on UTI. Dependent variable: knowledge regarding UTI among nursing students. Intervening variables: age, gender, year of study, previous knowledge about UTI and source of information.

2.8 Development of the Tool
The tool was developed from a review of books, journals and previous UTI studies, and nursing experts' guidance was taken to improve its quality. Part 1 – Demographic variables: name, age, course and student accommodation. Part 2 – Risk assessment questionnaire: 20 questions on hygiene, urinary habits, hydration and previous UTI history, scored a = 3, b = 2, c = 1, d = 0. Total score range 0–80: <16 low risk, 17–28 moderate risk, ≥29 high risk. Part 3 – Knowledge assessment: 30 questions in the pre-test (total 30 marks; 1 mark for each correct and 0 for each incorrect response): 0–10 poor, 11–20 moderate, 21–30 good. The post-test has 40 questions to assess knowledge retention (total 40 marks): 0–13 poor, 14–26 moderate, 27–40 good.

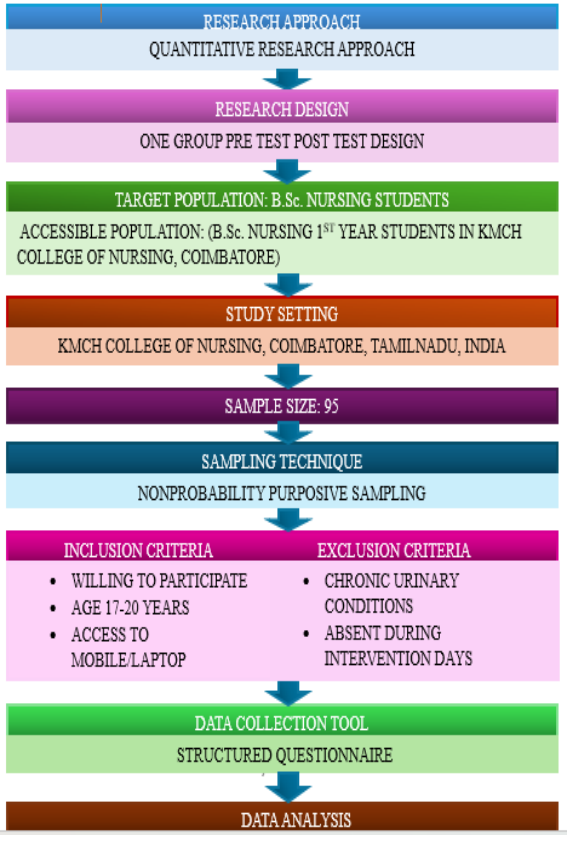
2.9 Validity and Reliability of The Tool
Validity: the tool was validated by experts in the field of nursing; their suggestions were considered, corrections were made and the tool was found valid. Reliability: checked by the split-half method. The risk assessment tool showed a strong positive correlation (r = 0.8) and the knowledge assessment tool a moderate positive correlation (r = 0.7), indicating that both tools are reliable.

2.10 Pilot Study
With permission from the Head of the Department, a pilot study was conducted at KMCH College of Nursing, Coimbatore, among 10 participants to assess their knowledge regarding UTI. It showed the feasibility of conducting the proposed research.

2.11 Data Collection Procedure
The study was conducted with the approval and permission of Professor Dr. S. Madhavi, Principal of the KMCH College of Nursing, and Professor N.B. Mahalakshmi, HOD of Nursing Foundation. Eligible students were selected by non-probability purposive sampling. The researcher explained the study, guided participants in completing the UTI tool and assured confidentiality. Informed consent was obtained, and the study was completed within one week.

2.12 Statistical Analysis
Descriptive statistics (percentage, mean, frequency, standard deviation) and inferential statistics (paired t test, chi-square test) were used through a statistical package to find the statistical significance of the data.

Figure 2.1.1 Schematic Representation of Methodology



III.DATA ANALYSIS AND INTERPRETATION

This chapter presents the analysis and interpretation of data collected to evaluate the effectiveness of a video-based educational intervention on knowledge and risk status regarding UTI among nursing students. Data were collected through a structured questionnaire from 95 first-year B.Sc. nursing students and are presented in six sections: demographic variables, UTI risk status, pretest and posttest knowledge, effectiveness of the intervention, association of risk status with pretest knowledge, and association of posttest knowledge with demographic variables.

Section I: Demographic Variables

Most students (49.5%) were 18 years old and (97.9%) were unmarried. More than half (58.9%) came from rural areas and (92.6%) stayed in the college hostel. Nuclear families (74.7%) and the upper middle class (77.9%) predominated; (55.8%) had studied in private schools and 88.4% in English medium. Almost all (97.9%) had a smartphone, 58.9% used the internet for 1–3 hours daily, and only 20% had previous UTI health education, mostly through school (84.2%).

Table 3:1:1 Frequency and percentage distribution of demographic variables (n=95)

S.No	Category	Frequency(F)	Percentage (%)
1	AGE		
	17 Years	12	12.6
	18 Years	47	49.5
	19 Years	26	27.4
	20 Years	10	10.5
2	MARITAL STATUS		
	Unmarried	93	97.9
	Married	2	2.1
3	PLACE OF PERMANTENT RESIDENCE		
	Rural	56	58.9
	Urban	25	26.3
	Semi – urban	14	14.7
4	CURRENT LIVING STATUS		
	College hostel	88	92.6
	Private hostel/ PG	4	4.2
	Staying with parents (Days scholar)	3	3.2
5	DURATION OF STAY IN CURRENT RESIDENCE		
	< 6 months	41	43.2
	6 months – 1 year	16	16.8
	1 year	38	40
6	TYPE FAMILY		
	Nuclear	71	74.7
	Joint	19	20
	Extended	1	1.1
	Single – parent	4	4.2
7	SOCIO ECONOMIC STATUS		
	Upper middle class	74	77.9
	Upper lower class	13	13.7
	Lower class	8	8.4
8	PARENTS EDUCATION LEVEL – FATHER		
	No formal education	4	4.2
	Primary school	7	7.4
	High school	27	28.4
	Higher secondary	34	35.8
	Graduate	18	18.9
	Postgraduate	5	5.3
	MOTHER		
	No formal education	4	4.2
	Primary school	8	8.4
	High school	19	20
	Higher secondary	32	33.7
	Graduate	23	24.2
	Postgraduate	9	9.5
9	MONTHLY FAMILY INCOME		
	<10,000	21	22.1
	10,001-20,000	21	22.1
	20,001-30,000	20	21.1
	30,001-40,000	20	21.1
	40,000	13	13.7

10	MEDIUM OF SCHOOL EDUCATION Tamil medium English medium	 11 84	 11.6 88.4
11	TYPE OF SCHOOLING Government school Government – aided school Private school	 23 19 53	 24.2 20 55.8
12	ACCESS TO SMARTPHONE Yes No	 93 2	 97.9 2.1
13	AVERAGE DAILY INTERNET USAGE < 1 hour 1 – 3 hours 3 hours	 32 56 7	 33.7 58.9 7.4
14	PREVIOUS EXPOSURE TO UTI HEALTH EDUCATION Yes No	 19 76	 20 80
	IF YES School education Orientation program Health camp	 16 1 2	 84.2 5.3 10.5

Section II: Level of UTI Risk Assessment

Among 95 students, 56 (58.9%) were low, 31 (32.6%) had moderate and 8 (8.4%) had high UTI risk. The mean risk score was 16.45 ± 6.49, showing that most students were at low risk (Figure 3a).

Section III: Pretest and Posttest Knowledge

In the pretest, 73 (76.8%) students had moderate, 12 (12.6%) poor and 10 (10.5%) good knowledge, with a mean score of 14.84 ± 4.49. After video-based intervention, 53 (55.8%) were good, 37 (38.9%) moderate and 5 (5.3%) poor knowledge, with a mean score of 24.54 ± 6.55 (Table3:2, Figure 1b).

Table 3:3:1Pretest and posttest knowledge scores on UTI (n=95)

Level of knowledge	Pretest f (%)	Posttest f (%)
Poor	12 (12.6)	5 (5.3)
Moderate	73 (76.8)	37 (38.9)
Good	10 (10.5)	53 (55.8)
Mean ± SD	14.84 ± 4.49	24.54 ± 6.55
Paired t value	14.30* (table value 1.98, df = 94)	

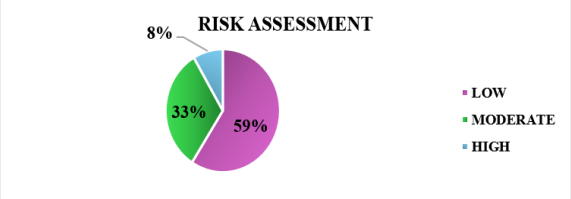


Figure 3:1 (a) Level of UTI risk assessment

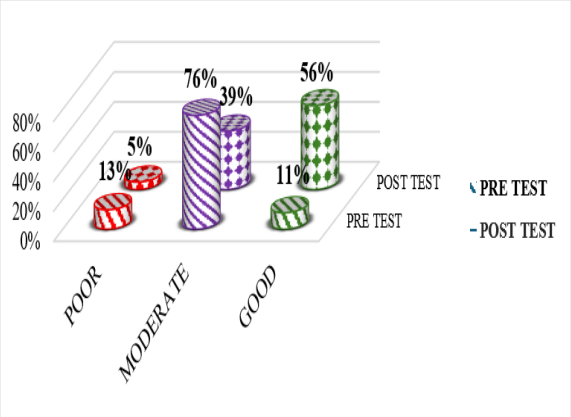


Figure 3:2 (b) Level of knowledge before and after the intervention

Section IV: Effectiveness of Video-Based Intervention

Good knowledge increased from 10.5% to 55.8%, while poor knowledge decreased from 12.6% to 5.3%. The mean score rose from 14.84 to 24.54. The calculated t value (14.30) was higher than the table value (1.98), showing a statistically significant improvement ($p < 0.05$). Hence, video-based education was effective in improving knowledge on UTI.

Section V: Risk Status and Pretest Knowledge

Pretest knowledge was significantly associated risk status related to lower abdominal pain ($\chi^2 = 16.20$, df = 6, $p < 0.05$) and burning urination ($\chi^2 = 12.30$, df = 6, $p < 0.05$). No significant association was found with the other risk variables, or between the laboratory

components (pus cells, albumin, urine color and urine reaction) and UTI risk status.

Section VI: Posttest Knowledge and Demographic Variables

The chi-square test showed no statistically significant association between posttest knowledge scores and any of the selected demographic variables.

IV. DISCUSSION

This chapter discusses the findings according to the study objectives. The study evaluated a video-based educational intervention on UTI knowledge and risk status among 95 nursing students at KMCH College of Nursing, using a one-group pre-test and post-test design, purposive sampling and a structured questionnaire.

Objective 1: To assess the risk status of urinary tract infection among nursing students

The demographic data of the 95 nursing students showed that half of the participants 49.5% were 18 years of age, followed by 19 years 27.4%, 17 years 12.6%, and 20 years 10.5%. Most of the participants 97.9% were unmarried. More than half 58.9% belonged to rural areas, while 26.3% were from urban areas and 14.7% from semi-urban areas. Most participants 92.6% were residing in the college hostel, whereas 4.2% stayed in private hostels/PG and 3.2% were day scholars. Regarding the duration of stay in the current residence, 43.2% had stayed for less than six months, 40% for one year, and 16.8% for six months to one year. The majority 74.7% belonged to nuclear families and 77.9% were from the upper middle socioeconomic class. With respect to parental education, the highest proportion of fathers 35.8%and mothers 33.7%had completed higher secondary education. The monthly family income was almost equally distributed, with 22.1% earning below ₹10,000, 22.1% earning ₹10,001–20,000, 21.1% earning ₹20,001–30,000, 21.1% earning ₹30,001–40,000, and 13.7% earning above ₹40,000. Most participants 88.4% had studied in English medium schools and 55.8% had completed their schooling in private schools. Almost all participants 97.9% had access to a smartphone, and the majority 58.9% used the internet for 1–3 hours daily. Only 20% had previous exposure to UTI health education, whereas 80% had no prior exposure. Among those who had previous exposure, the majority 84.2% received health education through school education, followed by health camps 10.5% and orientation programmes 5.3%.

The result of the study revealed risk assessment of UTI among nursing students. The findings showed that most of the students were at moderate risk. Out of 95 samples, 56 students (59%) had low risk, 31 students (33%) had moderate risk, and 8 students (8%) had high risk of UTI. The overall mean risk score was 16.45263 with a standard deviation of 6.486924. These results indicate that most nursing students are at moderate risk of developing UTI, suggesting the importance of improving awareness and encouraging healthy urinary habits helps to reduce the risk of UTI.

Among the 95 participants, the majority 60 (63.15%) used hostel/shared toilet facilities, while 10 (10.52%) reported mostly private toilet facilities and 3 (3.15%) used both types. Regarding genital hygiene practices, 35 (36.84%) participants cleaned the genital area from front to back, 22 (23.15%) used water without a specific direction, 14 (14.73%) cleaned from back to front, and only 2 (2.10%) used tissue paper alone. The majority 43 (45.26%) never used harsh soap or vaginal wash, whereas 15 (15.78%) used it rarely, 8 (8.42%) occasionally, and 7 (7.36%) daily. 53 (55.78%), wore loose cotton undergarments, while 12 (12.63%) wore tight cotton undergarments, 6 (6.31%) wore loose synthetic undergarments, and only 2 (2.10%) wore tight synthetic undergarments. 55 (60%) participants always cleaned themselves after using public toilets, while 9 (9.47%) did sometimes, 7 (7.36%) rarely, and 2 (2.10%) never did. 36 (37.89%) participants reported never experiencing burning urination, 19 (20%) experienced it rarely, 16 (16.84%) sometimes, and only 2 (2.10%) always experienced it. Normal urination frequency was reported by 55 (57.89%) participants, while 10 (10.5%) reported a slight increase, 7 (7.36%) reported more frequent urination than usual, and only 1 (1.05%) reported very frequent urination. No lower abdominal pain was reported by 44 (46.31%) participants, whereas 18 (18.94%) experienced mild pain, 7 (7.36%) moderate pain, and 4 (4.21%) severe pain. 48 (50.52%) participants reported no changes in urine smell or appearance, while 19 (20%) reported slight changes, 4 (4.21%) noticeable changes, and 2 (2.10%) cloudy or foul-smelling urine. 52 (54.7%), reported never

experiencing fever with urinary symptoms. Regarding urinary habits, 42 (44.21%) participants reported normal urine color, 18 (18.94%) reported sometimes darker urine, 12 (12.63%) occasionally darker urine, and only 1 (1.05%) frequently dark or red urine. 34 (35.78%) reported going immediately when the urge to urinate occurred, while 20 (21.05%) tried to urinate soon, 10 (10.52%) delayed urination, and 9 (9.47%) held urine for a long time. About 19 (41.05%) participants reported holding urine occasionally, 13 (13.68%) never held urine, 12 (12.6%) held urine on some days, and 9 (9.47%) almost daily. 28 (29.47%) participants reported skipping water intake on some days, 22 (23.1%) never skipped water intake, 17 (17.89%) skipped occasionally, and 6 (6.31%) skipped almost daily. Daily water consumption was reported as 1–2 liters by 37 (38.94%) participants, 2–3 liters by 18 (18.94%), less than 1 liter by 11 (11.57%), and more than 3 liters by 7 (7.36%). 64 (67.36%) reported pale yellow urine as their usual urine color, while 9 (9.47%) reported dark yellow urine and none reported brown or red urine. Regarding menstrual hygiene practices, 35 (36.84%) participants changed sanitary pads every 4–6 hours, 23 (24.21%) every 6–8 hours, 13 (13.68%) every 2–3 hours, and only 2 (2.10%) changed pads once daily. 56 (58.94%), reported no history of urinary tract infection, while 10 (10.52%) had experienced UTI once in their lifetime, 6 (6.31%) reported UTI 1–2 times per year, and only 1 (1.05%) reported more than three episodes per year. 58 (61.05%) participants reported never using antibiotics for UTI treatment, while 7 (7.36%) had used antibiotics once, 6 (6.31%) had used them earlier only, and 2 (2.10%) had used them more than once recently. Regarding bowel habits, 34 (35.7%) participants reported occasionally experiencing constipation, 31 (32.63%) never experienced constipation, 6 (6.31%) experienced constipation often, and 2 (2.10%) very often.

Hypothesis: There will be a significant risk status regarding urinary tract infection among nursing students. As the students showed different levels of risk, this hypothesis was accepted. The findings are similar to the study by Shaili Vyas et al., North India (2011), in which 35 of 177 nursing students (19.8%) were at risk of UTI based on reported symptoms.

Objective 2: To assess the knowledge regarding urinary tract infection among nursing students

In the pre-test, 73 students (76%) had moderate knowledge, 12 (13%) had poor knowledge and 10 (11%) had good knowledge (mean = 14.84, SD = 4.49). After the video-based intervention, 53 students (56%) had good knowledge, 37 (39%) moderate and 5 (5%) poor (mean = 24.54, SD = 6.55). This shows that the intervention was effective. Similar findings were seen in the study by Devi Nanjappan et al., Bengaluru (2023), among first-year B.Sc. nursing students, where 55% had inadequate knowledge in the pre-test and the mean score rose from 10.98 to 16.94 after the teaching programme.

Objective 3: To evaluate the effectiveness of a video-based educational intervention on knowledge regarding urinary tract infection among nursing students

The paired t-test showed a significant difference between pre-test and post-test scores (calculated t = 14.30, table value = 1.98), with a mean difference of 9.70. Hypothesis: There will be a significant difference between pre-test and post-test knowledge scores. This hypothesis was accepted. A similar finding was reported by Shweta Panwar et al., Uttarakhand, India (2018), among adolescent girls, with a mean difference of 6.52 and a paired t-value of 20.72.

Objective 4: To find out the association between risk status of urinary tract infection and pre-test knowledge scores among nursing students

A significant association was found between risk status and pre-test knowledge, with chi-square values of 16.20 risk status related to lower abdominal pain and 12.30 for burning sensation during urination. This suggests that pre-test knowledge influenced the risk status. Similarly, Natasha Kundu et al., Bangladesh (2025), among female university students, reported a significant association between knowledge and UTI status (χ^2 = 5.632, p = 0.017), with lower UTI prevalence in students with better knowledge.

Objective 5: To find out the association between post-test knowledge scores and selected demographic variables among nursing students

None of the 14 demographic variables showed a significant association with post-test knowledge scores, although age, parents' education and previous exposure to health education showed some level of association. This is similar to the study by

Telagamsetty Varamanikanta, Andhra Pradesh, India (2025), which also found no significant association, showing that the improvement was not influenced by demographic factors.

V. SUMMARY AND RECOMMENDATIONS

This chapter deals with the summary of the study, its findings, conclusion and implications for nursing administration, nursing practice, nursing education and nursing research.

Summary

The present study aimed to evaluate the effectiveness of a video-based educational intervention on knowledge and assessment of risk status regarding urinary tract infection among nursing students.

The objectives of the study were:

- To assess the risk status of urinary tract infection among nursing students.
- To assess the knowledge regarding urinary tract infection among nursing students.
- To evaluate the effectiveness of a video-based educational intervention on knowledge regarding urinary tract infection among nursing students.
- To find out the association between risk status of urinary tract infection and pre-test knowledge scores among nursing students.
- To find out the association between post-test knowledge scores and selected demographic variables among nursing students.

Major Findings

Among 95 nursing students, 56 (59%) had low UTI risk, 31 (32.6%) had moderate risk, and 8 (8.42%) had high risk. The mean risk score was 16.45 ± 6.49.

Before the intervention, 73 (76%) had moderate knowledge, 12 (13%) had poor knowledge, and 10 (11%) had good knowledge. The mean pretest score was 14.84 ± 4.49.

After the video-based intervention, 53 (56%) had good knowledge, 37 (39%) had moderate knowledge, and 5 (5%) had poor knowledge. The mean post-test score was 24.54 ± 6.55.

There was a significant improvement in knowledge, with the t-value of 14.30 greater than the table value of 1.98.

A significant association was found between pretest knowledge and UTI risk status related to lower abdominal pain ($\chi^2 = 16.20$) and burning sensation ($\chi^2 = 12.30$), at $p < 0.05$. No significant association was found between selected laboratory findings and UTI risk status, or between post-test knowledge and selected demographic variables.

Conclusion

The study concludes that nursing students had inadequate to moderate knowledge of UTI, with most having moderate risk. The findings highlight the need for structured education on the causes, prevention, and management of UTI among nursing students. Video-based educational intervention significantly improved the participants' knowledge, supporting video-based education as a useful teaching method to improve learning, understanding, and clinical practice.

Implications

Video-based educational interventions improve nursing students' knowledge of UTI. Technology-based teaching can enhance learning, improve understanding, and support evidence-based practice in educational and clinical settings.

Nursing Services

Improved knowledge can enhance nursing services. Nurses with adequate knowledge can identify UTI symptoms early, educate patients, and implement preventive measures, improving the quality of care and patient outcomes.

Nursing Education

Video-based interventions can improve students' understanding, retention, and engagement compared to traditional methods. Nurse educators can use them to simplify topics like UTI and make learning more interactive and clinically relevant.

Nursing Administration

Nursing administration can use video-based education to improve knowledge among students and staff. Regular training, in-service education, and CNE sessions can improve clinical competency, while technology resources and evidence-based practices can further improve patient care and infection prevention.

Nursing Research

The findings provide a basis for future research. Future studies can explore video-based and digital learning strategies with larger and diverse samples, and long-term studies can assess knowledge retention and its impact on clinical performance.

Recommendations

- Similar studies can be conducted with a larger sample size.
- Comparative studies between video-based and traditional teaching methods can be done.
- Long-term follow-up studies to assess knowledge retention.
- Studies can be extended to clinical practice outcomes.
- Use of other digital tools like mobile apps and simulations can be explored.

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Declaration

We hereby declare that the manuscript is our original work and has not been published elsewhere.

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