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A Pre-Experimental Study To Evaluate The Efficacy Of A Structured Education Program On The Prevention Of Urinary Tract Infections In Patients With Indwelling Catheters. Knowledge And Practice Of Staff Nurses Working At Civil Hospital Panipat, Haryana.

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Abstract

Urinary tract infections affect the kidneys and bladder. We don't have germs, yet introducing them can infect. Small catheters remove urine from the bladder. Begs capture tube urine. UTIs affect men and women as they age. However, UTIs are more common in women and may be regarded harmless in older women, but in men, they should be tested and followed up. This study used a quantitative research methodology and chose 60 civil hospital panipat staff nurses using nonprobability convenient (one group pre-test post-test) selection. Subjects completed a self-designed knowledge questionnaire and practice scale to assess the effectiveness of a structured education program on urinary tract infection prevention in indwelling catheter patients. Statisticians used descriptive and inferential statistics to interpret data. Before the test, 50 (83.3%) had intermediate knowledge, 10 (16.7%) had acceptable knowledge, and 0 (0% had inadequate knowledge). After the test, 60 (100%) staff nurses had adequate knowledge. In patients with indwelling catheters, the mean pre-test score for urinary tract infection prevention was 17.27%, whereas the post-test score increased to 26.87%. paired 't' test showed a significant improvement between pre-test and post-test knowledge with 't' value of 21.994 and practice with 't' value of 24.541 at p=0.05. Chi square test showed no significant association between pre-test knowledge and practice of civil hospital panipat staff nurses and selected socio-demographic variables. Kerl peearson co-relation coefficient showed no significant correlation between pre-test knowledge and practice (0.235 and 0.254) and post-test knowledge and practice (0.125 and 0.254). Study results showed that structured instruction on urinary tract infection prevention in indwelling catheter patients improves staff

nurses' knowledge and practice. Staff nurses must practise preventing urinary tract infections in catheterised patients.

Key Words: Effectiveness, Urinary tract infection, Structured teaching programme ,Staff nurse

Introduction

A urinary tract infection (UTI) is a bacterial illness that affects the urinary system, comprising the bladder and the kidneys.Typically, germs do not inhabit these areas. However, if bacteria are introduced, an infection can ensue. A urinary catheter is a slender tube inserted into the bladder for the purpose of removing urine. Urine flows through the tube and is collected in a bag.

The prevalence of urinary tract infection (UTI) increases in both women and men as they age. UTI appears to be more prevalent in women. When an elderly woman experiences a UTI, it is typically perceived as a benign and trivial ailment. In contrast, in men, it is recommended that UTIs be thoroughly evaluated and monitored.

Elderly women experiencing symptoms of urinary tract infection (UTI) are prevalent across many healthcare settings, including primary healthcare, nursing homes, hospitals, and among those residing in their own homes. As a district nurse working in basic healthcare, I frequently encounter

These individuals of the female gender. In my clinical experience, I have observed that the issues faced by elderly women are frequently considered insignificant by both general practitioners and district nurses. These elderly women can promptly schedule an appointment at the healthcare centre, particularly with a district nurse. If a patient tests positive for nitrite using a diagnostic stick, they are administered their therapy and subsequently discharged to go home. If patients experience a recurrent UTI, the operation will be repeated without any examination of the root causes. This may be due to a lack of recognition by carers regarding the severity of symptoms and the impact they have on elderly women, resulting in a lack of attention to their needs. Rarely is a comprehensive examination conducted to determine the reasons for UTI and the potential underlying factors that may be present. By enhancing carers' understanding of the origins and underlying factors of UTI, it may be feasible to proactively avoid UTI rather than solely relying on antibiotic treatment. Although urinary tract infections (UTIs) are prevalent, there is a lack of study on how they specifically impact elderly women. Previous studies on UTIs have primarily concentrated on younger women. This thesis aims to enhance understanding of the prevalence of UTI, the factors linked to UTI, and the impact of UTI on the health and well-being of elderly women. The ultimate goal is to improve the quality of care provided.

One of the most prevalent diagnostic definitions for symptomatic urinary tract infection (UTI) is having ≥105 colony-forming units (CFU)/ml. However, this criterion for substantial bloodstream infection has been gradually reduced and changed for various scenarios. It has been suggested that the presence of at least 103 colony-forming units per millilitre of urine indicates a large amount of bacteria in cases of acute, uncomplicated urinary tract infection. In certain situations, even a presence of at least 102 colony-forming units per millilitre may be considered important. Escherichia coli is a frequently encountered pathogen, with

Staphylococcus saprophyticus being another common one. Proteus mirabilis, Klebsiella pneumoniae, and Enterobacter are often observed pathogens, particularly in elderly women.

The predominant urinary symptoms associated with UTI include increased frequency of urine, a strong need to urinate, painful or burning sensation during urination, discomfort in the lower abdomen, and incomplete emptying of the bladder. Elderly individuals with urinary tract infections (UTIs) frequently exhibit a broader array of symptoms, including disorientation, gastrointestinal indications, and common urinary symptoms such as urine incontinence (UI).

These symptoms are commonly present both prior to and during the UTI. Older individuals, particularly those with dementia, have been found to have a higher likelihood of falling due to urinary tract infections (UTIs). Previous studies have identified nonspecific symptoms, such as fatigue and irritation, among both younger and older women.

More particularly, the focus is on the detection, diagnosis, and treatment of urinary tract infections (UTIs) in older women. Treating UTI can result in the emergence of antibiotic-resistant bacteria. In Sweden, STRAMA 42 has formulated guidelines for UTI therapy with the goal of enhancing treatment quality and minimising resistance. In Sweden, STRAMA 42 recommends antibiotic treatment for women who exhibit symptoms of urinary tract infection (UTI) and have a positive result on a nitrite stick test or urine culture. It is advisable to alternate between the top choice antibiotics, nitrofurantoin or pivmecillinam.

Cephalosporins or trimethoprim are the alternative antibiotics to consider. Fluoroquinolones, like ciprofloxacin, should only be used in cases of complicated UTI, recurrent UTIs, and when other treatments have failed due to the presence of unusual symptoms, potential multiple underlying causes, and frailty. The lack of knowledge about treatment further supports this recommendation. About forty percent of all nosocomial infections in hospitals originate from the urinary system. Patients can avoid urinary tract infections by staff nurses knowing how to prevent them in patients having indwelling catheters. The researchers were thus eager to start the project.

Objectives:

1. To assess the knowledge of staff nurse on prevention of urinary tract infection in patient on indwelling catheter
2. To assess the practice of staff nurse regarding prevention of urinary tract infection in patient on indwelling catheter.
3. To assess the effectiveness of structured teaching programme on prevention of urinary tract infection in patient on indwelling catheter.
4. To find out the correlation between knowledge score and practice score of staff nurse regarding prevention of urinary tract infection on indwelling catheter.

5. To find out the association between knowledge score and practice score of staff nurse regarding selected demographic variables.

Methodology

The approach to research is a crucial component of the design, guiding the research design. The current research study utilized a quantitative research approach. The chosen research design for the study was the Pre-experimental "one group pre-test post-test" design. The study took place at the civil hospital of Panipat, where the researcher selected 60 staff nurses. A non-probability convenient sampling technique was employed for this study. The samples for this study were staff nurses from the civil hospital in Panipat.

Inclusion criteria

- Staff nurses working in civil hospital Panipat.
- Staff nurses who are available at time of date collection.
- Staff nurses who are willing to participate in the study.
- Staff nurse who can communicate freely in English and Hindi.

Exclusion criteria

- Staff nurses who are not willing to participate in the study.
- Staff nurses who are absent or on leave at the time of data collection.
- Staff nurses who are undergone previously in a programme on prevention of urinary tract infection.

Description of the tools

Section A: - Demographic data

Section B: - Self structured knowledge questionnaire on prevention of urinary tract infection

Section C: - Observation checklist to assess the practice of staff nurses regarding prevention of urinary tract indwelling catheter infection. Six medical and nursing professionals were given organised education programs and self-structured knowledge questionnaires to test the tools.They were chosen for their experience, knowledge, and interests. Assessing content's suitability, objectivity, and relevance. Included and completed recommendation. This tool's reliability in measuring Paras Nursing Home Karnal staff nurses' knowledge and practise is tested using the test-retest method.Research showed that the knowledge questionnaire had 0.7 knowledge and 0.8 practice reliability. It implies the instrument accurately assessed staff nurses' UTI prevention awareness.

A request for clearance was received from Ved Nursing College to Civil Hospital, Panipat. The hospital's Chief Medical Officer gave written clearance for the study. After introducing myself, the study, and its goals, nursing personnel cooperated well. Subjects were chosen using inclusive and exclusive criteria. Civil hospital nurses in Panipat, Haryana, gave informed consent. One group had 15 staff nurses. Subject data sheet, self-structure knowledge questionnaire, and observational checklist were given 20-30 minutes to complete and instructions on how to react for the pre-test. They clarified their researcher queries. After the pre-test, staff

nurses received organised education and literature on urinary tract infection prevention. The data collection process ended after the 8th staff nurse post-test. Other (2,3,4) groups followed the same method. After scoring the pre-test and post-test the collected data was analysed by using both descriptive inferential statistics.

Results:

Table 4.1 distribution of sample According to socio Demographic Variables

(n=60)

S.NO	Socio demographic variables	Frequency	Percentage (%)
1.	**AGE (in years)**		
	a) 20-25	12	20
	b) 25-30	29	48
	c) 30-35	19	32
2.	**Gender**		
	a) Male	1	2
	b) Female	59	98
3.	**Present area of working**		
	a) I.C.U	1	2
	b) Ward	59	98
4.	**Professional qualification**		
	a) GNM	34	57
	b) Post basic b.sc	13	22
	c) B.sc	13	22
	d) M.sc	0	0
5.	**Professional experience**		
	a) 0-1 years	6	10
	b) 1-3 years	19	32
	c) 3-5 years	25	42
	d) Above 5 years		

Table I displays the number of staff nurses out of a total of 60.12 (20%) individuals were between the ages of 20 and 25, 29 (48%) were between the ages of 25 and 30, and 19 (32%) were between the ages of 30 and 35. The gender breakdown indicates that one (2%) of the personnel was male, while the remaining 59 (98%) were female. The current work area indicates that 1 (2%) of the personnel is in the intensive care unit, while the

remaining 59 (98%) are in the ward. The professional qualifications of 34 individuals (57%) were in GNM, 13 individuals (22%) were in post-basic BSc, and 13 individuals (22%) were in BSc nursing. No one was from the M.Sc. nursing program. 6 (10%) individuals had a professional experience of 0-1 year, 19 (32%) had 1-3 years of experience, and 25 (42%) had 3-5 years of experience.

Table -II: The distribution of mean pre-test and mean post-test knowledge scores on preventing urinary tract infections in patients with indwelling catheters is presented in terms of frequency and percentage (%).

Sr.no	Level of knowledge	Pretest frequency	Percentage (%)	Post-test frequency	Percentage (%)
1.	**Adequate knowledge**	10	16.7	60	100
2.	**Moderate Knowledge**	50	83.3	0	0
3.	**Inadequate knowledge**	0	0	0	0

Table – II: shows that out of 60 staff nurses who took the pre-test, 50 (83.3%) had a moderate level of knowledge, 10 (16.7%) had an adequate level of knowledge, and 0 (not at all) had an inadequate level of knowledge. On the post-test, 60 (100%) had adequate knowledge, and 0 (not at all) had a moderate or adequate level of knowledge on how to keep a patient with an indwelling catheter from getting a UTI at the <0.05 level. More information was known before the test than after it.

Section –C : (a) analysis of mean pre-test and mean post- test level of practise score on prevention of urinary tract infection in patient on indwelling catheter.

This section deal with analysis of the comparison of mean pre-test and mean post-test prevention of urinary tract infection in patient on indwelling catheter

SR.NO	Level of practice	Pre-test frequency	Percentage (%)	Post-test frequency	Percentage (%)
1.	Adequate practice	0	0	42	70
2.	Moderate Practice	11	18.3	18	30
3.	Inadequate practice	49	81.7	0	0

Table – III: Frequency and percentage distribution of mean pre-test and mean post- test level of practise score on prevention of urinary tract infection in patient on indwelling catheter

SR.NO	Level of practice	Pretest frequency	Percentage (%)	Posttest frequency	Percentage (%)
1.	Adequate practice	0	0	42	70
2.	Moderate Practice	11	18.3	18	30
3.	Inadequate practice	49	81.7	0	0

The pre-practise scores of 60 staff nurses are displayed in Table III. Of these, 0% had appropriate practise, 11.8 % had moderate practise, and 49.7% had inadequate. Regarding the prevention of urinary tract infection in patients using an indwelling catheter, 42(70%) had adequate practice, 18(30%) had moderate practice, and 0(0%) had inadequate practise at the 0.05 level in the post-prayer score. Compared to the pre-test practice score, the post-test practice score was greater. Thus, the alternative theory H2 was adopted.

Table – III: Level of Correlation Between Pre-test Knowledge and Pre-Practice

Sr.no	Variables	mean	SD	Co-relation values
1	Pre knowledge	17.27	3.324	0.235
2.	Preparative	17.12	4.625	

Table III: demonstrates that there is no significant correlation between pre-knowledge and pre-practice at the $p<0.05$ level, with the estimated Karl Pearson co-relation value of 0.2350 being less than the table value of 0.254. Thus, the alternative theory H3 is rejected.

Discussion

The aim of the study was to evaluate the effectiveness of a structured teaching program on the prevention of urinary tract infections (UTIs) in patients with indwelling catheters among the staff nurses of Civil Hospital Panipat. The study utilized a pre-experimental one group pre-test and post-test design, and the sample consisted of 60 staff nurses from Civil Hospital Panipat. The analysis and interpretation of the findings were presented in Chapter 4. The findings of the study were presented in this chapter according to the objectives.

The study assessed the knowledge level of staff nurses at Civil Hospital Panipat on the prevention of urinary tract infections (UTI) in patients with indwelling catheters. The pre-test showed that out of 60 staff nurses, 10 (16.7%) had adequate knowledge, while 50 (83.3%) had moderate knowledge. After the intervention, all 60 (100%) staff nurses demonstrated adequate knowledge. A similar study conducted in Turkey focused on pre and post knowledge levels of nurses regarding implantable port catheter care at a university hospital. The data were collected through a questionnaire distributed to 45 nurses employed in the internal medicine clinic and oncology department.

In the study, 42.2% of the nurses received additional training on implantable port catheters. The average knowledge score was 15.13 with a standard deviation of 4.78. There was a significant difference in scores between the nurses who received this training and those who did not. Most of the participating nurses were interested in receiving further training on this topic. Therefore, it is important to provide training programs and follow care guidelines to reduce complications related to implantable port catheter use.The second objective of the study was to assess the practise of staff nurse on prevention of UTI in patient on indwelling catheter

In this study, the researchers evaluated the practice score using a self-structured practice on the prevention of urinary tract infections (UTIs) in patients with indwelling catheters among staff nurses at Civil Hospital Panipat. The pre-test assessment revealed that 60 staff nurses had varying levels of practice, with none demonstrating an adequate level, 11 (18.3%) showing moderate practice, and 49 (81.7%) exhibiting inadequate practice. In the post-practice assessment, 42 (70%) staff nurses showed adequate practice, while 18 (30%) displayed moderate practice.

The study's third objective was to assess the effectiveness of a structured teaching program on UTI prevention in patients with indwelling catheters. The effectiveness of the program was measured using a t-test, with the maximum possible knowledge score being 30. The pre-test mean score was 17.27 with a standard deviation of 3.324, while the post-test mean score increased to 26.87 with a standard deviation of 2.119. In summary, the post-test knowledge score on UTI prevention demonstrated a significant improvement following the structured teaching program.

The maximum possible practice score on preventing urinary tract infections in patients with indwelling catheters was found to be 30. The pre-test mean score was 17.12 with a standard deviation of 4.625. However, the post-test mean score increased to 34.65 with a standard deviation of 3.969. In summary, the post-test knowledge score on the prevention of urinary tract infections in patients with indwelling catheters among staff nurses who underwent a structured teaching program increased. These findings indicate that the structured teaching program on preventing urinary tract infections in patients with indwelling catheters was effective.

The study aimed to determine the correlation between knowledge score and practice score of staff nurses regarding prevention of urinary tract infections in patients with indwelling catheters. The correlation was assessed using Karl Pearson correlation. The findings showed that there was no significant correlation between the pre-knowledge and pre-practice scores. The calculated Karl Pearson coefficient correlation value was 0.235, which is less than the table value of 0.254 at $p<0.05$ level of significance, indicating no significant correlation between post-knowledge and post-practice levels of staff nurses. The study, supported by Taniyan A. and Shaiju B. (2013), aimed to determine the effect of computer-assisted instructions on the prevention of urinary tract infections in patients with indwelling catheters. The findings revealed a significant positive relationship between post-test knowledge and post-test scores, suggesting that an increase in knowledge would lead to better practice among staff nurses regarding the prevention of urinary tract infections in patients with indwelling catheters.

The fifth study purpose was to determine the relationship between mean pre-test knowledge practice scales on urinary tract infection prevention in indwelling catheter patients and socio-demographic characteristics. This study examined the relationship between knowledge and socio-demographic characteristics using chi-square. The present investigation discovered no significant correlation between mean pre-test knowledge and age. Knowledge and staff nurse age are associated [x 2=0.783], table value 5.991 at $p<0.05$ level of significance. Gender did not affect mean pre-test knowledge. Association between staff nurses' knowledge and gender [x2=0.203], table value 3.841, $p<0.05$. Mean pre-test knowledge did not correlate with current

occupation. Association between staff nurses' expertise and current work area [x 2=0.203], table value 3.841, p<0.05. Mean pre-test knowledge did not correlate with professional qualification. Relationship between staff nurses' knowledge and professional qualifications [x 2=1.358], table value 5.991 at p<0.05 significant level. Mean pre-test knowledge did not correlate with professional experience. Staff nurses' knowledge and professional experience are associated [x 2=5.667], table value 7.815 at p<0.05 level of significance.

Conclusion:

The objective of this study was to assess the efficacy of an information education communication package in preventing urinary tract infections (UTIs) in patients receiving indwelling catheter care, specifically among the staff nurses at Civil Hospital Panipat. The average post-test percentage score for knowledge and practice in preventing UTI in patients with indwelling catheters was greater than the average pre-test percentage score. The study emphasises that the information education communication package for the prevention of urinary tract infections (UTIs) in patients with indwelling catheters was successful in enhancing the knowledge and practice level of staff nurses. This contributed to enhancing the outcome of the current study. Therefore, the researcher determined that instruction had a significant impact on enhancing the knowledge and skills of the staff nurses.

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