# Effectiveness of SIM on Knowledge & Practice among Nurses Regarding Prevention of UTI in Patients with Indwelling Catheter

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**Abstract:** *A study to assess the effectiveness of self instructional module on knowledge and practice among staff nurses regarding prevention of urinary tract infection in patients with indwelling catheter in selected hospitals. Imogene king's goal attainment theory was used as the conceptual frame work. Non –probability purposive sampling technique was used to select 30 samples . A structured questionnaire was used to assess the knowledge and an observational check list was used to assess the practice of staff nurses regarding prevention of urinary tract infection in patients with indwelling catheter. The findings revealed that the that SIM was effective in improving the knowledge and practices of nurses regarding prevention of urinary tract infection in patients with indwelling catheter as the p value <0.0001. There is a positive correlation between knowledge and practice score of staff nurses regarding prevention of urinary tract infection in patients with indwelling catheter as p value is< 0.05.*

**Keywords:** SIM: Self instructional module, Knowledge, practice, UTI: Urinary tract infection, indwelling catheter

## 1. Introduction

Urinary tract infections (UTIs) are a major public health problem in terms of morbidity and financial cost, and incur the highest total health care cost among urological diseases, exceeding that of chronic renal failure even when renal dialysis and renal transplantation are included. Urinary tract infection represents one of the most common diseases encountered in medical practice today with an estimated 150 million UTIs per annum worldwide. Although urinary tract infections occur in both men and women, clinical studies suggest that the overall prevalence of UTI is higher in women. Uncomplicated urinary tract infections in healthy women have an incidence of 50/1000/year. An estimated 50% of women experience at least one episode of UTI at some point in their lifetime and between 20% and 40% of women have recurrent episodes. Approximately 20% of all UTIs occur in men. Most episodes of UTI are caused by Escherichia coli (up to 85%) and Staphylococcus saprophyticus (up to 10%), while Klebsiella pneumonia and Proteus species account for most of the remaining infections [1]. Catheter associated urinary tract infection (CAUTI) are a significant problem in hospitals despite considerable spending on education and prevention. About5,60,000 CAUTI are reported by Centre of disease control and prevention (CDC) each year [2]. It has been estimated that 7 million visits to emergency units and 100,000 hospitalization annually and accounts for 35% of nosocomial infection [3].

Urinary tract infections represent the second most often observed infectious diseases in the community. Urinary catheterization is a known source of bacterial infections, which in the worst-case scenario can lead to death. More than 5 million patients every year will be catheterized. Up to 25 percent of patients who are catheterized for more than seven days will develop catheter associated urinary tract infection. It is the most common nosocomial infection, comprising more than 40 percent of all hospital-acquired infections [4].

To minimize the potential for introduction of microorganisms into the bladder, urinary catheters should only be inserted by properly trained individuals.

Hand hygiene is the most important means of preventing infection and should be performed immediately before and after insertion or any manipulation of the catheter device or site. The Investigator also felt during her clinical experience that many of the staff nurses posted in intensive care unit, uro- ward, and surgical ward failed to maintain proper aseptic technique while providing catheter care [5].

So the investigator found that it is necessary to assess the knowledge and practice of staff nurses regarding prevention of urinary tract infection in patients with indwelling catheter. Further the investigator felt that the written material must be supplied to staff nurses working in critical care and wards which will help them in preventing urinary tract infection in patients with indwelling catheter.

**Problem Statement**

A study to assess the effectiveness of self instructional module on knowledge and practice among staff nurses regarding prevention of urinary tract infection in patients with indwelling catheter in selected hospitals.

**Objectives of the study**
- To assess the knowledge and practice of nurses regarding prevention of urinary tract infection in patients with indwelling catheter.
- To assess the effectiveness of SIM on the knowledge and practices of nurses regarding prevention of urinary tract infection.
- To find out the correlation between knowledge and practice of staff nurses regarding prevention of urinary tract infection.
- To find out the association between knowledge and practice among nurses with selected demographic variables.

## 2. Methods

An evaluative approach was adopted for the study to determine the effectiveness of SIM on knowledge and practice among staff nurses regarding prevention of urinary tract infection in patients with indwelling catheter in selected hospital. The design selected for the present study was Pre-experimental, one group pre-test –post-test design. The study was divided into three phases.

PHASE 1: Pre-test i.e. assessing the existing knowledge and practice of staff nurses regarding prevention of urinary tract infection in patients with indwelling Catheter through structured questionnaire and observational checklist.

PHASE 2: SIM on knowledge and practice regarding prevention of urinary tract Infection in patients with indwelling catheter.

PHASE 3: Post-test i.e. assessing the knowledge and practice of staff nurses regarding prevention of urinary tract infection in patients with indwelling catheter.

The setting of the present study was critical care unit and wards of selected hospitals of the city. The population for the study was staff nurses working in the critical care area and wards of selected hospital. Subjects for the present study comprised of staff nurses working in critical care area and wards.Non –probability purposive sampling technique was used for the present study. The sample comprised of 30 staff nurses working in critical care area and wards of the selected hospital.

The present study is aimed at assessing the effectiveness of SIM on knowledge and practice among staff nurses regarding prevention of urinary tract infection in patients with indwelling catheter in selected hospitals. The data collection prepared for the study are structured questionnaire to assess the knowledge and observational checklist to assess the practice related to prevention of urinary tract infection in patients with indwelling catheter. The tool has been prepared to assess the knowledge and practice of staff nurses regarding prevention of urinary tract infection in patients with indwelling catheter.

The description of the tool is given below:

TOOL 1: Structured Questionnaire: – Is to collect the data and to assess the knowledge of nurses regarding prevention of urinary tract infection in patients with indwelling catheter. Structured questionnaire has two sections as given below:
Section I: Items to assess demographic data. This section consist of 4 items to collect the information regarding the staff nurses demographic characteristics such as age ,gender, educational status and total years of experience.
Section II: This section contains 30 items to collect information regarding knowledge of staff nurses related to prevention of urinary tract infection in patients with indwelling catheter.

TOOL 2: Observational Checklist: - To collect information regarding the practice of staff nurses regarding prevention of urinary tract infection in patients with indwelling catheter. The pilot study was conducted from 26/8/2014 to 02/9/2014 to assess the feasibility of the study. The subjects of the pilot study were from selected hospital. 6 staff nurses were selected using non-probability purposive sampling technique. The reliability of the tool was calculated to be 0.9538 for knowledge aspects and 0.8072 for practice aspects. Split half method, Inter rater method was used to find out the reliability for knowledge and practice aspects which was analysed using Karl Pearson co-efficient correlation. Thus the tool was found to be reliable. Permission was obtained from Medical Director and Nursing Director of selected hospital. The purpose and nature of the study was explained to the authority to gain co-operation .Then the consent was taken from the willing staff nurses from critical care areas and from wards. The data was collected from 10th September 2014 to 11th October 2014.

## 3. Results and Discussions

Table 1: shows that majority (77%) of the subjects were from the age group of 21-25 years whereas (23%) of them were in the age group of 26-30 years. Majority (67%) of subjects were females and only 33% were males. Maximum (97%) did their B.Sc. nursing, whereas 3% did their PBSc nursing. 57% of the subjects had 1-3 years of experience remaining 43% of the subjects had > 3 years of total experience.

The table 2: shows that majority (73%) of the staff nurses had good knowledge while 27% had average knowledge in pre-test whereas in post-test majority (80%) of staff nurses had excellent knowledge while 20% had good knowledge.

The table 3: shows that there is an equal representation (43.3%) of the staff nurses with satisfactory and good practices, whereas 10% had excellent practice and 3.3% had poor practice in the pre-test whereas in post-test majority (60%) had good practice and 37% had excellent practice and 3% had satisfactory practice.

The table4: shows that the mean knowledge score in the pre-test was 17.20+ 2.44 and that of post test was 25.63 +3.28, which is highly significant as p value <0.0001.This shows that SIM was effective in improving the knowledge of nurses regarding prevention of urinary tract infection in patients with indwelling catheter.

The table 5: shows that the mean practice score in the pre-test was 11.37+ 3.24 and that of post test was 14+2.17, which is highly significant as p value <0.0001.This shows that SIM was effective in improving the practices of nurses regarding prevention of urinary tract infection in patients with indwelling catheter.

The table 6: shows that there is a positive correlation between knowledge and practice score of staff nurses regarding prevention of urinary tract infection in patients with indwelling catheter as p value is< 0.05. There were no significant difference in the pre-test knowledge score with selected demographic variables such as age, gender and year of experience as the p value >0.05

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## 4. Conclusion

The findings of the study show that there is a highly significant difference between the pre-test and post-test knowledge and practice scores of the group. The SIM significantly brought out an improvement in the knowledge and practice aspect among nurses working in critical care areas and wards regarding prevention of urinary tract infection in patients with indwelling catheters. There is a positive correlation between knowledge and practice score of staff nurses regarding prevention of urinary tract infection in patients with indwelling catheter as p value is< 0.05.There is no significant association between the knowledge and practice scores with the selected demographic variables like age ,gender, years of experience and as p value >0.05. The study could help in increasing the knowledge and practice among staff nurses regarding prevention of urinary tract infection in patients with indwelling catheters.

## 5. Future Scope

On the basis of this study the following recommendations have been made for further study.
1) A similar study can be replicated on a larger population.
2) A similar study can be conducted using both experimental and control groups.
3) A similar study can be conducted by taking subjects from two different hospital settings.
4) A comparative study can be conducted to assess the effectiveness of computer simulated learning over traditional lecture method on knowledge and practice regarding prevention of urinary tract infection in patients with indwelling catheter.
5) This study will help in developing specific protocols related to care of patients with urinary tract infection having indwelling catheters.

## 6. Limitation

- Time constraint was a major problem faced for the study.
- There was difficulty in getting permission from administrative heads of the selected hospitals.
- Study cannot be generalized due to small number of subjects.
- There was difficulty in getting equal number of male and female subjects for the study.
- Few problems faced for data collection were busy staff schedule, shift changes, difficulty in getting the same staff and routine offs.
- Non probability purposive sampling was used for the study due to time constraint.

**Table 1:** Distribution of staff nurses in relation to demographic variables

| Parameters | | No of nurses | Percentage |
|---|---|---|---|
| Age (Yrs.) | 21 – 25 | 23 | 76.67 |
| | 26 – 30 | 7 | 23.33 |
| Gender | Male | 10 | 33.33 |
| | Female | 20 | 66.67 |
| Educational status | B.Sc. Nursing | 29 | 96.67 |
| | PB Sc Nursing | 1 | 3.33 |
| Total years of experience | 1 – 3 | 17 | 56.67 |
| | >3 | 13 | 43.33 |

**Table 2:** Distribution of data related to level of knowledge of nurses regarding prevention of urinary tract infection in patients with indwelling catheter

| Knowledge score | No of nurses (n=30) | | | |
|---|---|---|---|---|
| | Pre test | % | Post test | % |
| Poor (0-7) | 0 | 0 | 0 | 0 |
| Satisfactory (8-15) | 8 | 26.67 | 0 | 0 |
| Good(19-23) | 22 | 73.33 | 6 | 20 |
| Excellent(24-30-) | 0 | 0 | 24 | 80 |
| Total | 30 | 100 | 30 | 100 |

**Table 3:** Distribution of data related to level of practice of nurses regarding prevention of urinary tract infection in patients with indwelling catheter

| Practice score | No of nurses (n=30) | | | |
|---|---|---|---|---|
| | Pre test | % | Post test | % |
| Poor (0-5) | 1 | 3.33 | 0 | 0 |
| Satisfactory (6-10) | 13 | 43.33 | 1 | 3.33 |
| Good(11-15) | 13 | 43.33 | 18 | 60 |
| Excellent(16-20) | 3 | 10 | 11 | 36.67 |
| total | 30 | 100 | 30 | 100 |

**Table 4:** Effectiveness of SIM on knowledge scores of nurses regarding prevention of urinary tract infection in patients with indwelling catheter

| Parameters | Pre test | | Post test | | Wilcoxon Z value | P value |
|---|---|---|---|---|---|---|
| | mean | SD | mean | SD | | |
| Knowledge score | 17.2 | 2.44 | 25.63 | 3.28 | 4.7 | <0.0001 |

**Table 5:** Effectiveness of SIM on practice scores of nurses regarding prevention of urinary tract infection in patients with indwelling catheter

| Parameters | Pre test | | Post test | | Wilcoxon Z value | P value |
|---|---|---|---|---|---|---|
| | mean | SD | mean | SD | | |
| Practice score | 11.37 | 3.24 | 14 | 2.17 | 4.48 | <0.0001 |

**Table 6:** Correlation between knowledge score and practice score in study group

| Correlation between knowledge and practice score | r Value | P Value |
|---|---|---|
| Pre test | 0.37 | <0.05 |
| Post test | 0.39 | <0.05 |
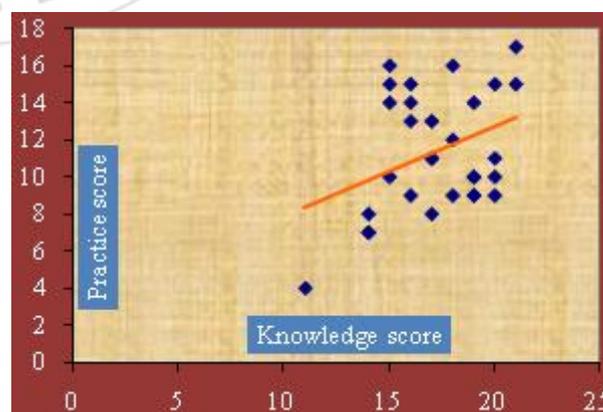


**Graph 1:** Scatter diagram showing correlation between pretest knowledge score and practice score in study group
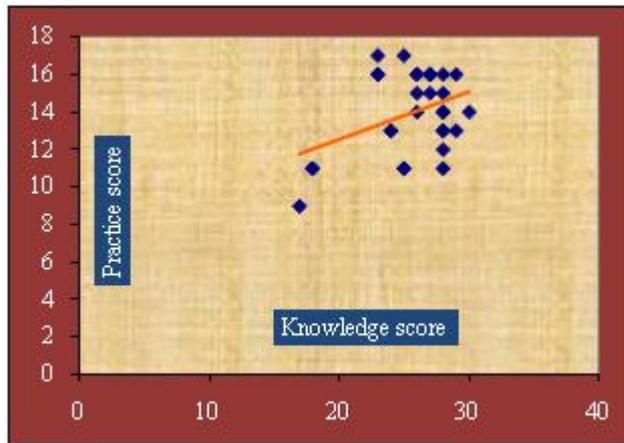
**Graph 2:** Scatter diagram showing correlation between post test knowledge score and practice score in study group.

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