

# The Effect of Nursing Guidelines on Knowledge and Practice of Patients With urinary catheter

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**Abstract:** Indwelling urinary catheterization is an invasive intervention with potentially serious outcomes that can lead to morbidity and mortality issues in hospitalized patients.

**The aim of the study:** to evaluate the effect of nursing guidelines on knowledge and practice of patients with urinary catheter.

**Methods:** A quasi-experimental research design was utilized in the current study. The study was conducted at different in-patient units, affiliated to Cairo University Hospital.

**Subjects:** A purposive sample of 50 adult male and female patients connected with a urinary catheter.

**Tools of the study:** two tools were used for data collection: 1) demographic and medical sheet, 2) Pre and post knowledge assessment sheet.

**Results:** there was a highly statistically significant difference on total scores of knowledge and practice of patients connected with urinary catheter before and after implementing the nursing guidelines.

**Conclusion and recommendations:** The current study concluded that nursing guidelines for patients connected with a urinary catheter have positive significant difference on patient knowledge and practice. The study recommended that self-care concept should be empowered as an essential part of all levels and strategies of patient's health care.

**Keywords:** urinary catheter, knowledge and practice.

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## What is already known about the topic?

- Patient with urinary catheter receive little attention compared with nurses and health care personnel in providing measures to care for urinary catheter.
- Catheter associated urinary tract infection (UTI) were the third incidence of hospital acquired infection in the ICU in Cairo, Egypt with excessive mortality.
- UTIs that occur during the period of hospitalization are precipitated by the use of indwelling catheter this referred to CAUTIs. The risk of developing CAUTI is associated with long durations of indwelling catheter.

## What this paper adds

- Increase patient's knowledge and practice of caring with urinary catheter.
- Improving self care of patient with urinary catheter had a profound impact in prevention of (UIT).
- Getting the patient aware of handling care of urinary catheter and orienting them with the possible complication of neglecting its care encourage them to be involved in care of their catheter and in turn enhance their quality of time

## 1. INTRODUCTION

Indwelling urinary catheters are widely used in hospitalized patients and can be an appropriate means of therapeutic management under specific circumstances. However, many indwelling urinary catheters are used without clear indications. Thus putting patients at an unnecessary risk for complications during their hospitalization. (Bernard, Hunter & Moore, 2012).

Indwelling urinary catheterization has a number of indications such as accurately monitor the urinary output of critically ill patients, increase the comfort of terminally or severely ill patients also, catheterization helps to manage skin damage caused by incontinence, when all other methods of managing urinary incontinence have failed and use for maintaining a continuous outflow of urine for patients undergoing surgical procedures, as part of standard preoperative preparation, maintaining a continuous outflow of urine for patient with voiding difficulties because of neurological disorders that cause paralysis or loss of sensation affecting urination, and providing immediate treatment of acute urinary retention. (Shehab, 2017)

The presence of an indwelling urinary catheter (IUC) is the principal risk factor for catheter-associated urinary tract infection (CAUTI) development. Despite the risk of prolonged catheter placement, few hospitals actively track catheterized patients and providers are often not aware of the presence of catheters in their patients. (Durkin et. al, 2014)

Catheter associated urinary tract infection (CAUTI) is one of the most frequently encountered health care associated infections today. Indwelling urinary catheters frequently become colonized with micro-organisms but the majority of cases will be asymptomatic, moreover (CAUTIs) are the most common healthcare-associated nosocomial infections in hospital above all when living in a long-term care facility. It causing increased morbidity, mortality, hospital costs, and increased duration of hospital stay. It is estimated that 65%-70% of catheter associated urinary tract infections (CAUTIs) may be prevented by following evidence-based strategies (Smith, 2009).

A urinary tract infection is defined by a combination of clinical features and the presence of bacteria in the urine. It caused by the presence and multiplication of microorganisms in the urinary tract moreover, it can result in several clinical syndromes, including acute and chronic pyelonephritis (infection of the kidney and renal pelvis), cystitis (infection of the bladder), urethritis (infection of the urethra), epididymitis (infection of the epididymis), and prostatitis (infection of the prostate gland). Catheter-associated complications include physical and psychological discomfort to the patient, bladder calculi, renal inflammation, and most frequently, catheter-associated urinary tract infections (CAUTI). (McGuckin, 2010)

Due to the high incidence of UTI in the hospital setting, preventive measures must be adopted to reduce complications and treatment costs. In this perspective it is necessary that educating patients is a must, to meet the increasingly incidence of (CAUTI) infection, and to ensure quality and safety of patient ( Nicolle, Coffin, Gould, Maragakis, Meddings, & Yokoe 2014).

Ineffective communication between physicians; other health team and patient could be a barrier and has a negative effect on continuity of care and it could be the first cause for lack of knowledge in the patient regarding self-care. Ongoing training is important to raise the patient's awareness of the late impacts from treatment and to promote a proactive way to deal with their diagnosis and treatment (Braaf et., al 2018).

Patients understanding of their condition and management at the side of shared decision making between the patient and health care professional are vital, not just for loyalty to treatment but also for patient's satisfaction with treatment and recognition of side effects. This would seem to be especially true for patients with catheters; nurses need to discuss with patients the procedure and the possible complications that can occur after catheter insertion. They should also ensure patients know who to contact if they experience problems.

Thus, objective of this study was to increase the level of knowledge and practice of patients with urinary catheterization, with a view to promote effective and optimum care for it and in turn decrease (CAUTI), which will also improve patient outcomes and decrease length of stay, thus improving patients safety.

## 2. SUBJECTS AND METHODS

**Research Design:** A quasi-experimental design was utilized in the current study.

**Research hypothesis:** There will be a significant difference on knowledge and practice of patient connected with urinary catheter before and after implementing the nursing guideline.

**Setting:** The study was conducted at different in-patient units in Cairo University Hospital as surgical, urological and emergency department.

**Subject:** A purposeful sample of (50) adult male and female patients connected with a urinary catheter were included in the study with the following inclusion criteria: Adult patients ( $\geq 18$  years), of both genders, and not received any educational intervention about catheter care.

**Tools of data collection:** two tools were utilized to collect data in the current study. It was designed by the investigators after reviewing the related literature.

**1. Demographic and medical data sheet:** -to assess demographic characteristics of patient such as age, gender, marital status, education, place of residence. **Medical data** such as diagnosis, number of catheterization, reason of catheterization, type of catheter and duration of catheter insertion

**2. Pre and post patient knowledge assessment sheet:** - it encompasses 24 questions covering two main sections; the first section is 13 question to assess the patients' knowledge regarding catheter self-care such as the indication, type of urinary catheter, time of removal or change, catheter care etc..., the second section contained 11question about patient practice regarding catheter care such as how to change the page, hygienic technique, fixation of catheter, how to deal with catheter during the movement, measuring the output etc...Both sections were collected pre and post implementing the nursing guideline.

**Scoring system:** Each right answer for any item took two grades with total score of 24. The scores of knowledge added and converted into a percent score. Satisfactory level of knowledge: If score is 50% or more, unsatisfactory knowledge: if scores less than 50%.

**Tools validity and reliability:** Content validity was done to identify the degree to which the used tools measure what supposed to be measured. Content and face validity of the tools were tested through subjecting the tools to a panel of five faculty members experts in medical surgical nursing. Each expert was asked to examine the instrument for content coverage, clarity, and whether the included items are suitable to achieve the aim of the current study. Reliability of the tools were tested using Cronbach's Alpha which showed satisfactory level of reliability for knowledge tool represented (0.745 )

**Pilot study:** A pilot study was carried out on 10% randomly selected patients(10%) to test clarity, feasibility, objectivity and internal consistency of the study tools, and estimate the need time to complete each tool. Needed modifications were done in data collection tools.

#### **Ethical Consideration:**

An official permission letter was obtained before conduction of the study from the Medical and Nursing Director of inpatient units at Cairo university hospital. Participants in the current study were voluntary. Informed consents were obtained from patients who met the inclusion criteria. The participants have the right to withdraw from the study at any time without giving any reasons.

**Procedure:** The procedure included three phases: preparatory phase, implementation phase and evaluation phase.

**The Preparatory phase:** This phase concerned for constructing and preparing of different data collection tools, designing the nursing guidelines and teaching materials after reviewing the related literature. The tools were given to five experts (jury) in the field of medical surgical nursing to examine the content validity; modifications of the content were done according to the judgment of the jury. Pilot study was conducted on 10% of total sample to test the feasibility, objectivity and applicability of the study tools. The aim and purpose of the study was explained by the researchers to the patient prior to data collection, as well as their approval to participate in the study was obtained. The researchers assess the patient knowledge regarding catheter self-care by using the pre and post knowledge assessment sheet for each patient connected to urinary catheter, before the implementation of the nursing guideline to detect the baseline patient knowledge regarding the catheter self-care.

**The implementation phase:** Data of the current study were collected through two months 2017. The purpose and nature of the study were explained to patients admitted to different departments of Cairo university hospitals; also their agreements to participate in the study were confirmed. The researcher emphasized that participation in the study was

entirely voluntary; anonymity and confidentiality were assured through coding the data. Initially each patient interviewed individually and medical data records reviewed to fill out socio-demographic and medical data sheet, also patient knowledge regarding catheter self-care were completed. Then the patient was subjected to the designed nursing guideline in one session taken from 20-30 minutes according to patient understanding to theoretical part and mastering of the required skill.

**The evaluation phase:** after implementation of nursing guideline, the patient knowledge assessment sheet was filled in again immediately. Evaluations the effect of nursing guideline was done by comparing the results of patients' knowledge and practice pre and post the implementation by using the same data collection tool. Evaluation was based on finding difference or no difference before and after administering the program. **Statistical analysis:** The data was analyzed using a statistical package for social science software (SPSS) version 20 for Windows; mean, standard deviation, t- test, Probability level was set at  $P \leq 0.05$  for all tests.

### 3. RESULT

Results of the study will be presented into two parts: Part 1: represent demographic characteristics of the study sample.

**Table (1): Frequency and Percentage Distribution of Socio-Demographic Data among Study sample (n=50)**

Socio-demographic	No	%
<b>Age</b>		
18-29 years	7	14.00
30-39 years	7	14.00
40-49 years	8	16.00
50-59 years	7	14.00
60 years or more	21	42.00
Mean $\pm$ SD	49.72 $\pm$ 1.59	
<b>Marital status</b>		
Single	15	30.00
Married	29	58.00
Divorced	6	12.00
<b>Occupation</b>		
Not working	40	80.00
Working	10	20.00
<b>Education level</b>		
Cannot read & write	30	60.00
Primary	8	16.00
Secondary	7	14.00
University	5	10.00
<b>Place of residence</b>		
Urban area	35	70.00
Rural area	15	30.00

Data in table (1) revealed that, 42% of them their age were more than 60 years old, 16% of them have 40-49 years with mean age of ( $X \pm SD$  49.72  $\pm$  1.59). The results also showed that, 58% of the study sample was married and 80% of them not working. Regarding the education level 60% of the patient cannot read or write and 70 % lived in urban area as shown.

**Table (2): Frequency and percentage distributions of medical data among the study sample (n=50)**

Medical data	No	%
<b>Diagnosis</b>		
GIT surgery	12	24.00
Genitourinary	32	64.00
Accident/trauma	6	12.00
<b>Reason of catheterization</b>		
Retention	18	36.00
Dysuria	2	4.00
Associated surgery	30	60.00

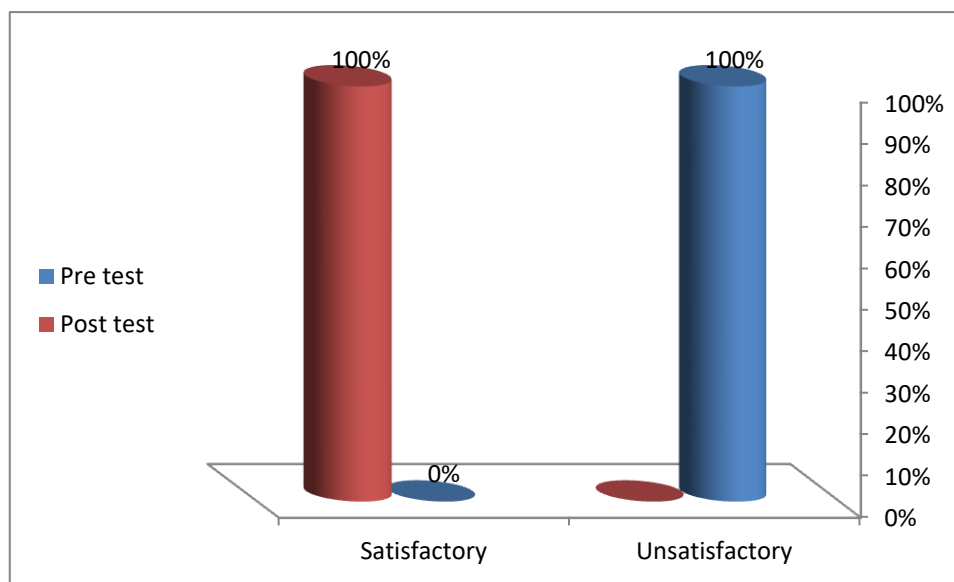
<b>Number of catheterization</b>		
First	46	92.00
Second	4	8.00
<b>Duration of insertion</b>		
Less than week	26	52.00
More than week	23	46.00
Month/more	1	4.00
<b>Type of catheter</b>		
Fully catheter	44	88.00
Silicone catheter	6	12.00
<b>Previous education about catheter care</b>		
Yes	0	0.00
No	50	100.00

Regarding the medical data table (2) revealed that, 64% of the study patient diagnosed with genitourinary disorders, followed by 24% diagnosed with GIT surgery. Also, 60% from the patient insert catheter during the surgery followed by 36% inserted due to urinary retention. Regarding the number of catheterization 92% among the patient was the first time for insertion and 52% of the catheter remains for less than week, 88% was fully catheter. The table showed that, 100% of the patient doesn't received education about catheter care.

**Part 2:-patient knowledge and practice about catheter care.**

**Table (3): pre post minimum and maximum scores regarding patient knowledge and practice about catheter care (N 50)**

Items	Minimum	Maximum	Mean ± SD
Knowledge before	13	18	13.70 ± 1.12
Knowledge after	26	26	26.00 ± 0.00
Practice before	11	18	13.00 ± 2.10
Practice after	22	22	22.00 ± 0.00



**Figure (1): Frequency and percentage distribution of pre and post knowledge total score among study sample (n=50)**

The findings pointed out that the entire study sample (100%) had satisfactory level of knowledge after the implementation of the guideline ( $\geq 50\%$ ) with a total mean score ( $26.77 \pm 0.00$ ) as compared to with pre implementation of the guideline with a total mean score ( $13.72 \pm 4.80$ ) as in figure (1).

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**Table (4): Comparison Paired T-Test for the Mean Differences knowledge Score before and after Implementing the Program (n=50)**

Items	Mean Difference	T	Df	P
Knowledge before and after	13.65	85.463	49	.000
Practice before and after	12.97	43.583	49	.000

It appeared in table (4) that, there was a highly statistical significant difference in the mean score of Knowledge and practice of the patient regarding catheter self-care before and after implementing the nursing guideline with the following t and p-value ( $t = 85.463$  and  $t = 43.583$  at  $p = .000$ ) and mean score 13.65 and 12.97 respectively.

#### 4. DISCUSSION

Urinary tract infections (UTI) are among the most frequent complications related to the procedure of catheterization. This study builds on the limited literature about the teaching guidelines to prevent UTI for patients and these guidelines mainly directed to health care personnel from this point in which neglecting patient awareness toward participation in their care of urinary catheter so, the researcher decide to conduct this study.

Regarding the demographic characteristic of the patients the finding of this study showed that, near half of the sample were more than 60 years old with mean age  $49.72 \pm 1.59$ . The previous findings were in agreement with (Eglal & Manar, 2018) in her study of the effect of implementing urinary catheter care bundle on the prevention of catheter-associated urinary tract infections she found that the mean age of patients in the baseline group was  $46 \pm 10.72$  years and in the intervention group was  $53 \pm 14.20$ , respectively. The sample was nearly the same in some previous studies, with a mean of 49 yrs as in two studies (Wilde et al. 2010, Wilde & Brasch 2008)

In the current study the researchers found that 100% of the study sample doesn't receive any information regarding care of urinary catheter. So information given to patients in an attempt to decrease the incidence of UTI in which intensifying that people with an indwelling catheter have an increased risk of developing a urinary tract infection. Urinary tract infections can cause to experience stinging or burning in the bladder, abdominal or lower back pain, give a temperature and make a feeling generally unwell. It is helpful for these patients to be aware of the color and odor of urine. If the patients observe cloudy urine, contain blood or smell offensive, they should increase fluid intake and speak to doctor or nurse.

The current study finding suggested that there were lack of knowledge of all participant regarding care of catheter that this is in agreement of the study conducted by (Wild et., al 2013) as they found that many people lacked knowledge about their catheters,

The investigators outcome of their result were congruent with Mary et al, (2015) in his a one-year RCT study of participants receiving a self-monitoring and self-management intervention for catheter that, those patients had less catheter blockage during the first six months. Also, Self-management approaches are needed to avoid catheter-related problems.

A study entitled as patient perspectives on indwelling urinary catheter use in the hospital, there were 75% of patients perceived that they had not received adequate education about indwelling urinary catheter consequences and 65% of patients felt that they had not received adequate information on the risks of having an indwelling urinary catheter and about 15–20 % of hospital inpatients are catheterized, and it has been estimated that in an average sized hospital 10–15 patients will die each year from catheter-related sepsis (Safdar, Codispoti, Purvis, & Knobloch, 2016).

In addition, they found six out of the 20 (30%) patients reported that, they were aware an indwelling urinary catheter increased the risk of infection. Also thirteen out of the 20 (65%) patients reported that, the risk involved with having an indwelling urinary catheter was not explained to them. This study highlighted the importance of health care workers providing education to patients to make them more aware of the risks involved in having an indwelling urinary catheter.

In a study entitled as "Impact of the lack of community urinary catheter care services on the Emergency Department" they emphasized that Patient education plays a key role. We are aware that there can be a highly variable quality of education and training on catheter care. Therefore, we have improved patient education of basic catheter self-care to ensure they are able to manage their urinary catheter as much as possible ( Tay, Lyons, Karrouze, Taylor, Khan, & Thompson, 2016).

### 5. SUMMERY, CONCLUSION AND RECOMMENDATION

People living with an indwelling urinary catheter often experience catheter related issues, which can be debilitating and affect their quality of life. Based on the findings of the present study, it can be concluded that, the majority of patients were lacked the essential knowledge regarding urinary tract infection and its effect on themselves and their medical condition. The study findings also reported inadequacies regarding their self-care practices which represent their lacking of the concept of healthy self-care practice. Also, patient awareness and engagement regarding indwelling urinary catheters and their consequences could be improved. Implementing educational programs for both health care workers and patients that incorporate patient preferences is likely to increase the involvement of patients in decision-making regarding urinary catheters care and may lead to a decline in CAUTIs.

It can be concluded that: There was statistically significant improvement of patient's knowledge regarding self-care during the urinary catheterization. There was statistically significant difference in the total score of patient's knowledge as well as practice regarding urinary catheter care throughout the intervention between pre and posttest of implementing the guide line. Therefore, the researchers recommended to improve the quality of patient care provided. Since urinary tract infection may be symptomatic and asymptomatic in most cases and suggested for routine screening of patients with unexplained sources of fever and signs of infection. Raising the patient's awareness regarding, warning signs of UTI. Health education about self-care practices to be geared for reinforcement, modification and/or abolishment according to their benefits versus harm. Self-care concept should be empowered as an essential part of all levels and strategies of patient's health care.

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