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Research Article

Assessment of Perceptions and Practices of the Nurses to Prevent Indwelling Catheter Associated Infection; Jinnah Hospital Lahore, Pakistan

Ghuzala Anwar[1], Ghalib Nawaz[2*] Muhammad Afzal[3], Iram Majeed[1] and Ali Waqas[3]

[1]Department of Nursing, University of Lahore, Pakistan
[2] Department of Internal Medicine, Shaukat Khanum Cancer Hospital and Research Center Lahore, Pakistan
[3]Lahore school of Nursing, University of Lahore, Pakistan

*Corresponding author's email: rtghalib@gmail.com

Abstract

Nursing is an art science and an essential health care profession in which the skilled knowledgeable persons are committed to provide care to sick peoples and strive for the, protection and promotion of health and prevention against diseases and helps to minimize the risk and risk related injuries. Urinary tract infections are very common infection in the hospital settings almost responsible for 40% nosocomial infections. All the urinray tract infection is expected that approximately more than 70% infection reported because of indewelling cathters.**Objectives**: To assess the perceptions of nurses regarding indwelling urinary catheter and its care. To assess the practices of nurses to prevent the indwelling catheter related urinary tract infection. **Methodology:** Descriptive cross sectional design and data was collected through a five point Likert scale questioner. Study population was the nursing staff from the Jinnah hospital Lahore. Sample size was 184 nurses from all indoor departments of the Jinnah Hospital Lahore. **Results**: The findings show that the practice and perceptions scores of the registered nurses' in the study group are insignificant with age, qualification and experience (i.e., p-value > 0.05) with the evidence-based guidelines for prevention of catheter associated urinary tract infection. Results of study indicated insignificant relationship between registered nurses' practice and perceptions regarding the indwelling urinary catheter associated infection.

Keywords: Nurses; Urinary Indwelling Catheter; Urinary Tract Infections.

Introduction

Nursing is an art science and an essential health care profession in which the skilled knowledgeable persons are committed to provide care to sick peoples and strive for the, protection and promotion of health and prevention against diseases and helps to minimize the risk and risk related injuries.(Potter *et al.*, 2016)

Urinary tract infection are very common infection in the hospital settings almost responsible for 40% nosocomial infections.(Saint *et al.*, 2008; Banks *et al.*, 2016).All the urinray tract infection is expected that approximately more than 70% infection eported because of indewelling cathters.(Weber *et al.*, 2011).According to center of dieases control and precvention, A study conducted by excessive use of medication to minimize or to treat infection can increse bactarial resistance. (Paulozzi, 2016). Because of this resistance more than 23,000 people die every year in the US. (Centers for Disease Control & Prevention, 2015).A study conducted by Ashraf, Iram, Rasheed & Shukat in 2015 on catheter associated urinary tract infection concludes that as compared to non-catheterize patients, catheter associated infection account for more than 80% of all health care associated infections. (Ashraf *et al.*, 2015). Another study in Pakistan depicts 31 positive catheters tips out of sixty patients.(Qureshi & Abid, 2010)

According to the society of Urological Nurses and associate Urological Nursing (2008), nurses' awareness regarding to the application of the nurse driven protocol and use of indwelling catheter is very much important. Nursing interventions can minimize the indwelling catheter related infection during hospitalization.(Gotelli *et al.*, 2008).

According to center of diseases control, catheter related urinary tract infections occur when a Foleys catheter is inserted inside the urinary bladder more than 48 hours. Therefore, it is much necessary to identify the date of event and date of catheter insertion to rule out cathteter infection. Infection occurs specifically because of catheter placement inside the human urinary bladder.(Centers for Disease

Control & Prevention, 2015). Indwelling urinary catheter is inserted in the human body by means of urethra and connected with the bag. Indwelling urinary catheters are used for the elimination of the urine from the body or intermittent bladder irrigation. (Centers for Disease Control & Prevention, 2015).

Nurses as a health care providers are responsible for the care and maintenance of indwelling catheters. Nurses can prevent patients from the catheter-associated infection with the application of the best practices for indwelling catheter care. (Oman *et al.*, 2012). According to the society of Urological Nurses and associate Urological Nursing (2008), Mostly indwelling catheters are passed to the patients in the hospital in a very inappropriate way and left unattended. Society of Urological Nurses and associate Urological Nursing. (Gotelli *et al.*, 2008)

Indwelling urinary catheter is a very flexible plastic tube (catheter) which is inserted directly into the bladder of human beings and remains dwells. It assists to drain out urine from the bladder. Cather's are designed in different material such as rubber, plastic, latex and silicon. (Schumm & Lam, 2008).

Catheter associated infection is prevalent during hospitalization (CDC, 2015). The incorrect usage and care of indwelling urinary catheter may lead to urinary tract infection in the patients. (Blodgett, 2009). Furthermore, urinary catheterization can lead to urinary tract infection and it is the procedure performed by the highly trained nurses by following the proper aseptic methods. (Banks *et al.*, 2016).

Center of diseases control and prevention (CDC,2015) explain as the indwelling catheter associated urinary tract infection(CAUTI) can be reported in the patients with evident clinical manifestation and diagnostic findings positive as well when a patient had indwelling catheter present more than three days.(Magers *et al.*, 2013).

On the other hand, Catheter related urinary tract infections are the common infection in the health care settings. Which are specially reported because of device which is used for the urinary elimination? (Lo *et al.*, 2014) Catheter related urinary tract infections also related to the type and material of the indwelling catheter.(Blodgett, 2009). Moreover, the placement and nursing care after insertion of the indwelling urinary catheter (IUC's) is the practice of the nurses. Nurses should follow the evidence base practices and the approaches to provide indwelling catheter care to the patients. The possibility of catheter in related urinary tract infection increases more if the indwelling urinary catheter is in placed to a patient bladder.(Blodgett, 2009).

If a patient gets urinary tract infection during hospitalization, it can slow the recovery process. The joint commission also addresses the In addition, the longer duration of indwelling urinary catheter in any patient will lead to a lot of complication such as infection and inflammation of pylorus, blood stream infection, inflammation of the nephrons, straw colour urine etc (Blodgett, 2009).

On the other hand, Indwelling urinary catheters are the basic devices which are used for patients in different type of conditions Blodgett, (2009). Prevention of catheter related to urinary tract infections is an important component of the delivery of safe quality care.[13] (Blodgett, 2009). According to joint commission, it is very alarming condition and huge patient safety related issue prevention of catheter associated urinary tract infection as national patient safety goal. (The Joint Commission, 2012).

"Urinary tract infections (UTIs) are most common problem of health care-associated infection, with an estimated 93,300 UTIs in acute care hospitals in 2011. Urinary Tract Infections additionally account for more than 12% of infections reported by acute care hospitals. Virtually all healthcare-associated Urinary Tract Infections are caused by instrumentation of the urinary tract.(Magers, 2013).About 12%-16% of adult hospital inpatients have an indwelling urinary catheter at some time during their hospitalization, and every day the indwelling urinary catheter remains, a patient has a 3%-7% greater than before risk of gaining a catheter-related urinary tract infection.(Lo *et al.*, 2014).

Nurses are responsible and accountable for their actions, decisions and practices to maintain the safety, wellbeing, interests and rights of patients. During urinary catheter procedure Nurses ensure the patients that there is no harm in the insertion of urinary catheters insertion. The nurse must follow the right actions during catheter care of patient and must be implement the proper knowledge and understanding of implications and to care by following the updated policies, protocols a, standards and approved practice of evidence base guidelines clarify if any problem in the clinical decision order and practice.(Martin, 2012)

The basic aim of this study is to assess the nurse's perception and practices and to minimize. Nurse's perception and the practice correctly can minimize the indwelling catheter associated e catheter related urinary tract infections urinary tract infections.

It is perceived that duration of urinary indwelling catheter is very important concern for the catheter related urinary infection. Less likely insertion of indwelling catheter and prompt removal can be minimize the risk of catheter related infection (Chenoweth *et al.*, 2014). A study shows Innumerable literature supported that the most common and prevalent type of infection in hospitalized patients is the indwelling catheter related urinary tract infection. **(**Medding *et al.*, 2010)

A study indicates Prolong urinary catheterization enhance the danger of catheter related infection.**(**Bernard *et al.*, 2012**).**Accordingly, stop orders for the catheters are highly concern matter for nurses it empowers the nurses on the basis of frequent assessment for example every 24hrs, or in case of major and minor surgical procedure. A study conducted that large number of indwelling catheters are used in the hospital setting to provide treatment and management for specific problems and mostly indwelling catheters has no any orders or clear purpose of insertion indication. Through the infection prevention practices more than 69% urinary tract infection can be minimize.(Saint *et al.*, 2016)

According to (Lob *et al.*, 2016) most prevalent infection in admitted patient is indwelling catheter associated urinary tract infection ranges from 30% to 40% of all hospital acquired infections. Moreover, Catheter associated infections are directly linked with larger no of disease ratio increased no of hospitalization and increased health care cost.it is important to identify the risk factors, document the number of days of catheterization to prevent them.(Lob *et al.*, 2016)

According to another study it's very simple for the trained nurse to judge that patient has need for the catheter and whatever patient's catheter should be removed or not. Nurses must be made daily rounds to assess the catheterization need if it is no more needed than should inform the concerning physician for the order to discontinue indwelling catheters. Because of these practices 45% unnecessary catheters were removed during hospitalization.(Fakih *et al.*, 2008).A common practice noticed in the hospital is indewelling urinary cathter insertion. Because of the folyes cathteter patient feel very uneasy and they are on the risk to get an other infections from the hospitals. Patient mobility is limited , even though there are clear indications for the need of indewelling cathteter .The cathters remain inside the human body for a longer peroid of of time after insertion and its very importatnt to rember about the total numbers of days of cathter.Because it is very tough to avoid urinary tract infection except to avoide the procedure of excessive cathterization. Nurses are the key person to provide catheter care mostly in the hospitalized patients. It also comes under the responsibility of the nurses to insert and provide daily routine catheter care and play an important role in the removal of indwelling catheter. Nurses are also the concerning persons for the sample collection in the diagnosis of catheter associated urinary tract infection (Fakih *et al.*, 2008)

While dealing with the care and management of indwelling catheters nurses are the first person who noticed the first clinical change in the urine colour and patient condition (Fakih *et al.*, 2008).Furthermore study explains that Nurses are liable and answerable for their activities, judgments and practices to maintain the patient safety, comfort and rights etc.(Martin, 2012**).** Another study depicts that Organizational Recommendation and adaptation of different strategies to prevent catheter associated urinary tract infection to nurses helps the nurses and provides them principles for best practice of urinary catheter care to healthcare workers. The incidence of post-operative urinary retention is indicated catheterization which is considered as an important factor of urinary tract infection.(Alsaidi *et al.*, 2013).

According to Banks et al, (2016) catheter associated infections can be stopped by the limited use of catheters, catheters care and cleaning ,proper positioning of the catheter over the thigh, care of urine bag and maintenance and proper rounds by the nurses , timely cancellation of catheter orders, education and training of the nursing staff, proper documentation regarding catheter insertion.(Banks *et al.*, 2016)

Objectives

1. To assess the perceptions of nurses regarding indwelling urinary catheter and its care.
2. To assess the practices of nurses to prevent the indwelling catheter related urinary tract infection.

Problem Statement

The Major focus of this study was the perceptions and practices of nurses to prevent the indwelling catheter related urinary tract infection. Because the catheter associated urinary tract infection are increasing day by day.

Problem statement of my study was the major focus for the perceptions and practices of the nurses for the prevention of indwelling catheter related urinary tract infection. Because the cases of catheter associated urinary tract infections are on an increasing rate in Pakistan.

A study conducted on catheter associated urinary tract infection concludes that as compared to non-catheterize patients, catheter associated infection account for more than 80% of all health care associated infections.(Ashraf *et al.*, 2015). Another study in Pakistan depicts 31 positive catheters tips out of sixty patients.(Qureshi & Abid, 2010)

Research Question

In my study the research question was

- What are the perceptions of the nurses regarding indwelling urinary catheters and its care?
- What are the practices of the nurses to prevent the indwelling catheter related urinary tract infection?

Theoretical Framework

The theory of reasoned based action (Fig 1) is used about the perception believes of the nurses which reflect their practices according to their perceptions.

Fig 1: Fishbein Aizen Theory of Reasoned Action. (Adapted from Fishbein et.al, 1976)

Firstly, Nurses believes about the perception of the indwelling urinary catheter care and practices were observed than their attitudes related to Nurses believes and behavior's their intention towards their current practices was assessed. Moreover, opinions of the nurses the perception and practices of the nurses according to norms, motivation observed which reflects their behavior.

Definitions of the Key concepts

Operational Definitions

Perception: Perception is a process of thinking.

Practice: Practice is a working in related field.

Prevention: Prevention is a process which we reduce the rate of the diseases.

Nurses: Nurses are those people which provide fun fundamental care to the sick person.

Nursing: Nursing is an art and science of providing care to the sick and injured persons.

Indwelling Catheter: Indwelling Catheter is the specific material device to drain out urine directly from urinary bladder by placement inside the body.

Infection: Infection is an entrance of microorganism to the body to developed disease.

Indwelling Cather Associated Urinary Tract Infections: infections, which can occur due to placement of Cather inside the human bladder.

Care: The provision of what is important to maintain health and wellbeing.

Conceptual Definitions

Perception: According to Hat field, G. (2003) **"**The consciousness of particular material or things present to sense."(Hatfield, 2003).

Practice: A well establish method of legal procedure.(Potter *et al.*, 2016)

Prevention: Act of preventing something. (Potter *et al.*, 2016)

Nurses: Nurse is a skill full person who provides care and practice with the license. (Potter *et al.*, 2016)

Nursing: Nursing is the art and science of caring for sick and disable persons. (Potter *et al.*, 2016

Material and Method

A descriptive cross sectional study was conducted at Jinnah hospital Lahore. Sample Size of After approval from ethical committee and informed consent 184 staff nurses was determined using this formula given by Solvin. $n = \frac{N}{1+ (N) (e)\ 2}$ (Solvin, 1960).With Margin of error= e= 0.05 at 95% confidence interval. Nurses working in medical and surgical wards were included in our study and those working in psychiatry unit, emergency nurse, skin unit nurses, and OPD nurses were excluded. Perception and practices of nurses regarding indwelling urinary catheter was collected through a questioner consisting of 20 items measuring perception and practices on five point Likert's scale adopted from (Martin, 2012) and (Philyaw, 2016).The data was entered and analyzed in Statistical Package for Social Sciences (SPSS) version 21. Mean and SD deviation was calculated for numerical variables like age, perception and practices score. Score was compared in different age group and t test was used to assess statistical significance with $P < .05$ as statistical significance.

Results

In this study, 40.4% nurses were age group of 20- 30 years and 49.1% were 31-45years. 42.8% were married and 55.6% were unmarried. 73.4 % were registered nurses (RN). 58.2% were working at Jinnah Hospital for 6 month to 5 years. (Table 1)

Organization

Participants included in this study were n= 184 (100%), which is totally belongs to indoor departments of Jinnah hospital Lahore. (Refer to Table 1)

Designation

In this study the n=184 (100%) were Charge nurses of the indoor department of Jinnah hospital Lahore. (Refer to Table 1)

Gender

In this study the n=184 (100%) were females by gender, who actively participated in the repose related to questioner. As shown in Table 1.

Table: Demographic characteristics of respondents

S. N.	Variables		Frequency	Percentage
1	Organization	Jinnah Hospital Lahore	184	100.0
2	Designation	Charge Nurses	184	100.0
3	Age	20- 25YEARS	63	34.2
		26-30YEARS	85	46.2
		31-35YEARS	20	10.9
		36-40YEARS	12	6.5
		41-45YEARS	4	2.2
		Total	184	100
4	Marital Status	Married	80	42.8
		Unmarried	104	55.6
		Total	184	100.0
5	Qualification	RN	135	73.4
		BSN	8	4.3
		POST RN	9	4.9
		Generic Nurses	16	8.7
		RN/Specialization	16	8.7
		Total	184	100.0
6	Stay in Organization	6months-5years	107	58.2
		6 -10 Years	43	23.4
		11-15 Years	16	8.7
		16-20Years	18	9.8
		Total	184	100.0

Table 2: Distribution of frequency percentage of the Nurses Perception related to care of indwelling catheter.

Variables	Strongly Disagree	Disagree	Uncertain	agree	Strongly agree
	Row %	Row %	Row %	Row%	Row %
I know which of my patient have an indwelling urinary catheter	3.3%	3.3%	6.5%	52.7%	34.2%
I know how many days each of mu patient have had a catheter	3.8%	8.7%	14.7%	41.3%	31.5%
The presence of catheter is reported as shift change	4.9%	13.0%	13.0%	38.0%	31.0%
The number of days the patient has had a catheter is reported at shift change	7.1%	23.4%	15.8%	32.6%	21.2%
I sometimes forget which of my patients have indwelling urinary catheters	21.7%	26.1%	17.9%	22.3%	12.0%
Indwelling urinary catheters are convenient for nursing staff	5.4%	16.3%	13.0%	48.9%	16.3%
I remind the physicians daily which of their patients have indwelling urinary catheters	7.1%	25.0%	16.8%	33.7%	17.4%
Patients who are incontinent should have indwelling urinary catheters	4.3%	15.2%	8.7%	50.5%	21.2%
Patients who have difficulty getting to bathroom should have indwelling urinary catheters	3.3%	16.8%	17.9%	38.6%	23.4%
Patients who have skin break down should have indwelling urinary catheters	14.7%	28.3%	15.2%	29.9%	12.0%
Appropriate indications for Foleys catheter insertion	1.6%	3.3%	2.7%	48.9%	43.5%
Inappropriate indications for Foleys catheter insertion	20.1%	27.7%	22.3%	20.7%	9.2%
Lack of routine hygiene of the per-urethral area with soap and water during the bath	6.5%	14.1%	7.6%	37.0%	34.8%
Length of catheter days	3.3%	8.7%	14.7%	50.0%	23.4%
Breaking of the closed system	3.3%	13.0%	17.4%	50.0%	16.3%
Not properly securing the bags	19.0%	18.5%	10.9%	37.5%	14.1%
No kinks and dependent loops in the catheter/catheter secured	7.1%	15.8%	13.0%	45.1%	19.0%
Urinary bag higher than bladder	20.1%	31.5%	6.5%	27.7%	14.1%
Regular emptying of urinary bag	3.8%	14.7%	4.9%	42.9%	33.7%
Aseptic techniques used during obtaining urine culture	23.4%	12.5%	4.3%	23.4%	36.4%

Mean total score was 69.97 SD 8.55 with minimum score of 40.0 and maximum score of 93.0. Among nurses less 30 years of age mean total score was 70.06 SD 8.60 with minimum score of 45.0 and maximum score of 93.0. Among nurses greater 30 years of age mean total score was 69.63 SD 8.44 with minimum score of 40.0 and maximum score of 85.0. ($P > .05$). Among RN and BSN nurses mean total score was 69.86 SD 8.49 with minimum score of 40.0 and maximum score of 93.0. Among qualified nurses mean total score was 70.39 SD 8.85 with minimum score of 56.0 and maximum score of 92.0. ($P > .05$). Among nurses with less 5 years of experience mean total score was 69.99 SD 9.21 with minimum score of 40.0 and maximum score of 93.0. Among nurses with l greater than 5 years of experience mean total score was 69.96 SD 7.60 with minimum score of 40.0 and maximum score of 56.0. ($P < .05$). (Table 3).

Table 3: Comparison of Perception Score with Age (years) and qualification and years of experience.

	Case Summaries Score					t test
Score	**N**	**Mean**	**Std. Deviation**	**Minimum**	**Maximum**	**(P value)**
Total score	184	69.9783	8.55452	40.00	93.00	
Age						
< 30 years	148	70.0608	8.60804	45.00	93.00	t = .265
> 30 years	36	69.6389	8.44191	40.00	85.00	p=.792
Qualification						
RN & BSN	143	69.8601	8.49490	40.00	93.00	t = .349
Qualified Nurse	41	70.3902	8.85403	56.00	92.00	p=.728
Years of experience						
< 5 years	107	69.9907	9.21084	40.00	93.00	t = .023
> 5 years	77	69.9610	7.60789	56.00	89.00	p=.982

Discussion and Conclusion

Patients are always at risk for acquiring potentially life-threatening hospital-acquired infection. The purpose of the proposed study is to describe registered nurses' practice and perceptions of indwelling urinary catheters and the actual preventive practices to prevent indwelling catheter associated infection.[15 -17] Although, in my study the relationship of between registered nurses' practice and perceptions regarding the indwelling urinary catheter associated infection was not significant .In my view the possible reason for that was the overall perception and practices of the nurses were very poor in all groups.

According to the society of Urological Nurses and associate Urological Nursing, nurse's awareness regarding to the application of the nurse driven protocol and use of indwelling catheter is very much important. Nursing interventions can minimize the indwelling catheter related infection during hospitalization. The centers of diseases control recommend catheter related urinary tract infections occur when a Foleys catheter is inserted inside the urinary bladder more than 48 hours. So, it is much necessary to identify the date of event and date of catheter insertion to rule out catheter infection. Infection occurs specifically because of catheter placement inside the human urinary bladder.(Lob *et al.*, 2016)

There the findings shows that the practice and perceptions scores of the registered nurses' in the study group are insignificant with age, qualification (p-value > 0.05) but had a significant association with years of experience. (p-value < 0.05)

The majority of the study participants knew which of their patients had indwelling urinary catheters, but did not know how many days their patients had indwelling urinary catheters. It is well demonstrated in the literature that the number of days a patient has an IUC has a direct relationship on the risk of developing a catheter-associated urinary tract infection (CAUTI).(Blodgett, 2009). Although the presence of indwelling urinary catheter is reported at shift, the number of days a patient has indwelling urinary catheters are not reported at shift change. The findings validate a process for assisting the registered nurses to easily identify the number of catheter days and education to reinforce the importance of reporting the number of catheter days at shift change is needed to further reduce the total number of catheter days experienced by the patient.(Alsaidi *et al.*, 2013)

In my study almost 49% of the study group felt the presence of an IUC was convenient, while 13% were uncertain about their perceptions related to the convenience of an IUC. The study participants remember which of their patients have indwelling urinary catheters, but 32.1% of them do not remember to remind the physicians that their patients have indwelling urinary catheters.

Almost 49% of the study group practiced the appropriate indication of catheter insertion while 14.7% were uncertain about their practices related to indwelling urinary catheters the length days monitoring. The study participants remember which of their patients have breaking of the closed system, but 37.5% of them do not properly securing

the bags. 18.5% nurses do not regularly empty the urinary bags.

The conclusion of my study is majority of nurses had good perception and practices regarding indwelling catheter. The study findings shows that the practice and perceptions scores of the registered nurses in the study group are insignificant with age, qualification but statistical significant with years of experience with the evidence-based guidelines for prevention of catheter associated urinary tract infection.

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