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To assess the nurses compliance towards catheter care bundle for prevention of catheter associated urinary tract infection among patients admitted in tertiary care hospital Bathinda (Punjab)

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Abstract

Urinary catheterization is one of the most common procedures performed in hospitals especially in intensive care units. The urinary catheter is considered as a single biggest risk factor for acquired urinary tract infections (UTIs), and more than 80% of all acquired UTIs are attributable to catheter use. Thus the present Study was planned to assess the nurses compliance towards catheter care bundle to prevent CAUTI among Patients Admitted in Tertiary Care Hospital, Bathinda (Punjab).

Objectives 1. To assess the nurses compliance towards catheter care bundle regarding prevention of CAUTI among patients. 2. To find out the association between nurses compliance towards catheter care bundle for prevention of CAUTI among patients with their socio demographic variables. Descriptive survey design was used. A Quantitative Non experimental Approach was adopted to conduct the Study. 300 staff nurses were selected using Non Probability convenience Sampling Technique. The present study included staff nurses working in all wards/units of hospital. A prevalidated tool comprising Socio demographic variables and standardized compliance tool as per CDC guidelines were used to collect the data.

Results: 300 staff nurses that most of staff nurses i.e. 185 (61.6%) were in the age group of 21-30 years. Most of them i.e. 222 (74%) were females. About 75(25%) each of staff nurses were presently working in ICU and CCU followed by 67(22.3%) in surgery. Most of staff nurses 178 (60%) were GNM by qualification followed by 100(34%) were B.sc and only 22 (7%) were having M.Sc. nursing qualification. Most of staff nurses 104(34.5%) were having more than 5 years of experience followed by 100 (33.3%) having 3-5 years years of experience in present ward. Half of the staff nurses 188(62.6%) had not attended training regarding infection control whereas most of staff nurses 220 (73.3%) had not attended any training regarding catheter care. Almost Half of staff nurses 126(42%) were having inadequate compliance towards CCB regarding prevention of CAUTI. There was Statistically Significant Association found between compliance and age, gender, professional qualification, any training attended regarding infection control and any training attended regarding catheter care.

Conclusion: In the present study it is concluded that most of the participants have inadequate compliance towards catheter care bundle for prevention of CAUTI and needs further focus and support to improve nursing care quality.

Keywords: CAUTI, catheter, compliance, CCB, nurses

Introduction

Urinary catheter insertion considered as the most important predisposing factor for catheter-associated urinary tract infection (CAUTI) ^[1]. The daily risk varies from 3-7% for an acquisition of bacteriuria when the urinary catheter remains in situ ^[2]. Catheter-associated urinary tract infection is one of the most common Hospital-Acquired Infections (HAIs). The global burden of HAIs is underestimated in developing countries due to lack of surveillance systems ^[3]. The Association for Professionals in Infection Control and Epidemiology (APIC) in the United States (US) also reported that CAUTI is accounting for 25.6% of all HAIs ^[4].

As per National Healthcare Safety Network (NHSN) report among UTIs acquired in a hospital, approximately 75% are associated with urinary catheter [5]. On the other hand, catheter associated urinary tract infection is related to the presence of catheter in bladder for a long period of time and not present at the time of admission [6]. According to CDC in 2015 reports 75% cases of patients were presented with catheter associated urinary tract infections and major public health problem in terms of morbidity and financial cost [7]. Urinary catheters should be used only when absolutely necessary. If a catheter must be used, it should be removed as soon as possible rather than increasing risk of developing infection. Previous study shows in acute care settings that most of the nurses have poor knowledge regarding CAUTI. The Association for Professionals in Infection Control (APIC) also indicated that CAUTI has been reported to be associated with increased morbidity, mortality, hospital cost, and length of hospital stay. Nurses play an important role in urinary catheter insertion, maintenance, and removal [8]. It's observed in general settings all the patients were catheterized in ICUs even some of them were catheterized for long duration and they were not properly giving care to them. Nurses are responsible for catheter care and responsible for the utilization of standard care in the ICUs because the use of urinary catheterization in Intensive Care Unit (ICU) can range as high as 100% [9].

Urinary cauterization is a procedure that must be done under aseptic technique by qualified nurses otherwise it can cause CAUTI. The best way of CAUTIs prevention is to avoid catheterization. Unfortunately, attention focused on different issues to reduce CAUTI. For minimizing the risk of CAUTI simple procedures should be follow like maintaining a closed catheter system, maintain urine flow and minimize the duration of catheterization [10].

CDC reports in 2013 that 99,000 deaths occur each year related to HCAI, which is very high as compared to AIDS, breast Cancer and Car accidents related deaths combined and exceed of 40 billion dollars in health care cost [11]. Majority of CAUTI are preventable. By following proper guidelines and preventive measures such as washing hands effectively by using appropriate techniques, meticulous care of the indwelling catheter and proper removal of the catheter CAUTI can be prevented. Unnecessary urinary catheterization and the prolonged duration of catheterization should be avoided. Evidence based practices need to be followed in order to improve patient care [12]. With this background, authors undertook this study to provide an insight regarding the compliance of nurses towards catheter care bundle for prevention of CAUTI among patients in a tertiary care hospital. It will also provide a scope for determining any non-compliance with the preventive recommendations and also improvising the infection control policy of the hospital.

Statement

To assess the nurses compliance towards catheter care bundle to prevent CAUTI among Patients Admitted in Tertiary Care Hospital, Bathinda (Punjab)

Objectives

1. To assess the nurses compliance towards catheter care bundle regarding prevention of CAUTI among patients.

2. To find out the association between nurses compliance towards catheter care bundle for prevention of CAUTI among patients with their socio demographic variables..

Materials and Methods

Research approach: Quantitative non experimental approach.

Research design: Cross sectional Descriptive survey study was used to assess the nurses compliance towards catheter care bundle for prevention of catheter associated urinary tract infection. A cross-sectional is that study that collects information from a population at specific time of period.

Setting: The setting for this research was all wards of Adesh hospital, Bathinda.

Population: Data was collect from all staff nurses who were working in all wards of Adesh hospital, Bathinda.

Sampling: Convenience sampling technique was used to enroll all the staff nurses in the study.

Study time: The data was collected in the Month of October 2020.

Research tool

A prevalidated tool comprising Socio demographic variables consist of 7 variables.

Nurses compliance Standardized 11 statements as per CDC guidelines: Scored yes or no SPSS version 21 is statistical computer software for data analysis. The data will be analysis on SPSS version 21. Cross sectional descriptive study was done on frequencies, tables, charts, graphs.

Data collection procedure

In this study standardized tool was used. This scale was prepared based on 2009 CDC guidelines for prevention of catheter-associated urinary tract infections published by Healthcare Infection Control Practices Advisory Committee (HICPAC). This scale consists of 11 statements which based on nurses compliance toward catheter care bundle regarding prevention of CAUTI. Feedback of the participants regarding nurses compliance will be calculated by two point score 'yes' scored 1 and 'NO' scored 0.

Ethical consideration

Ethical principle was performed during research study. Permission was taken from the Ethical committee of Desh Bhagat University. I was taken permission from the medical superintendent of Adesh hospital. Give complete information to the participant related to research. It makes sure that no harm will be given to the participant. Study was beneficial. All nurses were having open opportunity to participate in research. No one was being forced to participate in research. Informed consent will be signed by nurses. Before signing consent nurses will be informed about purpose, methodology, risk and benefits of investigation.

Results

The present study was carried out in the month of Oct 2020 in all wards of the hospital. A total of 300 staff nurses were included in study.

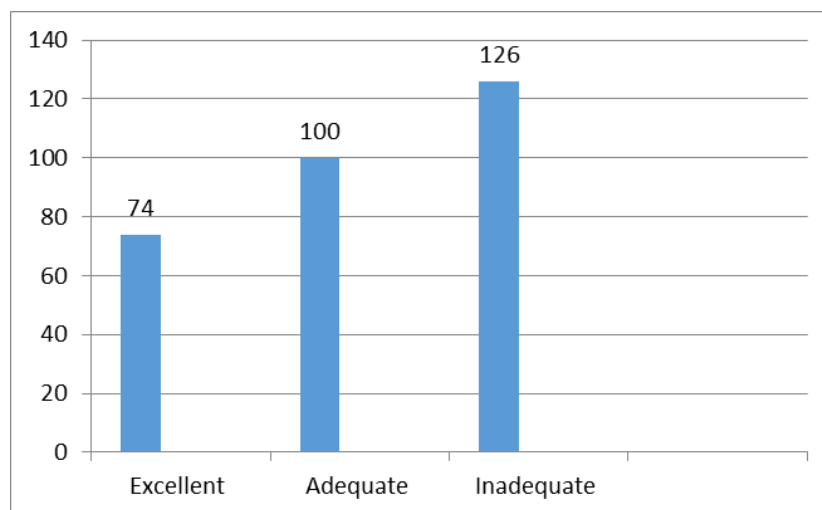
Table 1: Frequency and percentage distribution nurses compliance towards catheter care bundle for prevention of Catheter associated urinary tract infection N=300

Level of attitude	Scores	f	%
Inadequate	3-4	126	42
Adequate	5-7	100	33.4
Excellent	8-8	74	24.6

Maximum score =11 Minimum score =00

Data presented in table: 1 shows that nurses compliance level was categorized into 3 levels: Excellent, Adequate and Inadequate. Almost Half of staff nurses 126(42%) were having inadequate compliance towards catheter care bundle

followed by 100 (33.4%) were having adequate whereas 74 (24.6%) staff nurses reported excellent compliance towards catheter care bundle for prevention of Catheter associated urinary tract infection.

**Fig 1:** Frequency and percentage distribution nurses compliance towards catheter care bundle for prevention of Catheter associated urinary tract infection**Table 2:** Statement wise distribution Nurses compliance towards catheter care bundle regarding prevention of Catheter associated urinary tract infection N=300

	Compliance	Yes (%age)	No (%age)
1	I usually minimize use and duration of indwelling urinary catheters in all patients.	144 (48)	156 (52)
2	I normally document catheter insertion date and expected date of removal	89 (29.6)	211(70.3)
3	I change urinary catheters only as necessary and not routinely	144 (48)	156 (52)
4	I use external urinary catheters as an alternative to indwelling urethral depending on individual care needs.	220 (73.3)	80 (26.6)
5	I use strict aseptic technique for catheter insertion	176 (58.6)	124 (41.3)
6	I wash my hands before and after catheter insertion or manipulation.	156 (52)	144 (48)
7	I secure IUCs after placement to prevent urethral traction	230 (76.6)	70(23.3)
8	Unless contrary indicated, I normally use the smallest bore catheter size possible.	142 (47.3)	158 (52.6)
9	I change the catheter and collecting system aseptically whenever there's a compromised drainage system.	154 (51.3)	146(48.6)
10	I use Standard Precautions when handling the catheter or collecting system.	168 (56)	132 (44)
11	I normally examine patients with positive urine cultures for the presence of an indwelling catheter	116(38.6)	184 (61.3)
	Overall Compliance Level= 56.4%		

Table 2 illustrates Half of staff nurses (52%) responded no for I usually minimize use and duration of indwelling urinary catheters in all patients. 70.1% of staff nurses responded no for I normally document catheter insertion date and expected date of removal. Half of staff nurses (52%) responded no for I change urinary catheters only as necessary and not routinely. Most of staff nurses 73.3% responded yes for I use external urinary catheters as an alternative to indwelling urethral depending on individual care needs.58.6% of staff nurses responded yes for I use strict aseptic technique for catheter insertion. About half of staff nurses responded yes and no for I wash my hands before and after catheter insertion or manipulation. Most of

staff nurses (70%) responded no for I secure IUCs after placement to prevent urethral traction. 52.6% responded no for unless contrary indicated, I normally use the smallest bore catheter size possible. Almost half of 50% each of staff nurses responded yes and no for I change the catheter and collecting system aseptically whenever there's a compromised drainage system.56% of staff nurses responded yes for I use Standard Precautions when handling the catheter or collecting system.61.3% of staff nurses responded no for I normally examine patients with positive urine cultures for the presence of an indwelling catheter. However Overall Compliance Level was 56.4%.

Table 3: Association of nurses' compliance towards CCB regarding prevention of CAUTI with selected Sociodemographic variables N=300

Socio Demographic variable	Inadequate (3-4)	Adequate (5-7)	Excellent (8-8)	χ^2 /Fischer's exact test	df	P value
a) Age (in years)						
1. 21-30	88	52	45	11.5*	4	.020
2. 31-40	32	32	23			
3. >40	6	16	6			
b) Gender						
1. Male	17	44	17	10.8*	2	0.004
2. Female	78	114	20			
c) Area of work						
1. ICU	15	35	25	16.3	10	0.089
2. CCU	29	38	13			
3. Medical ward	06	13	01			
3. Surgery ward	22	33	12			
4. Orthopaedic ward	10	20	05			
5. Gynae and obstetrics ward	07	13	03			
d) Professional qualification						
1. GNM	78	92	08	13.5*	4	0.008
2. B.Sc. Nursing	24	73	03			
3. Msc.Nursing	03	09	00			
e) Years of Experience						
1. <2years	16	74	06	9.06	4	0.04
2. 3-5 years	34	64	02			
3. >5 years	30	68	06			
f) Any training attended regarding infection control						
1. Yes	12	97	3	13.7**	2	.001
2. No	32	130	26			
g) Any training attended regarding Catheter care						
1. Yes	12	60	08	7.85*	2	0.01
2. No	54	126	40			

* Significant at 0.05 ** Significant at 0.01 level

The data presented in Table-3 showed that there is significant association of nurses compliance with age ($\chi^2=11.5$, $p=0.020$), gender ($\chi^2=10.8$, $p=0.004$), professional qualification ($\chi^2=13.5$, $p=0.004$), any training attended regarding infection control ($\chi^2=13.7$, $p=0.001$) and any training attended regarding Catheter care ($\chi^2=7.85$, $p=0.01$). However, there is no significant association of area of work and years of experience.

Discussion

300 staff nurses that most of staff nurses i.e. 185 (61.6%) were in the age group of 21-30 years. Most of them i.e. 222 (74%) were females. About 75(25%) each of staff nurses were presently working in ICU and CCU followed by 67(22.3%) in surgery. Most of staff nurses 178 (60%) were GNM by qualification followed by 100(34%) were B.sc and only 22 (7%) were having M.Sc. nursing qualification. Most of staff nurses 104(34.5%) were having more than 5 years of experience followed by 100 (33.3%) having 3-5 years years of experience in present ward. Half of the staff nurses 188(62.6%) had not attended training regarding infection control whereas most of staff nurses 220 (73.3%) had not attended any training regarding catheter care. Present study findings are inconsistent with study conducted by which showed the demographic information of the participants which show that data consisted of male 0% Female 100, age of the patients 18-25 years was 64.4% participant's s, 26-35 years was 32.5% participants, 36-50 was 3.1% participants. Education level of the participants General nursing were 69.4%, BSN/PRN were 28.8% participant and MSN 1.9% participant are married 22.% was participants and are single were 77.5% [13].

In our study, 42% had inadequate compliance and 33.3% had adequate compliance towards catheter care bundle

regarding prevention of CAUTI, which was supported by Salha *et al.* [14]

Current research showed a significant association between compliance and gender, professional experience which is consistent with study conducted by Parker *v et al.* [15]. The current study results indicate that nurses' level of implementation of the CDC guidelines for CAUTI prevention is low 56.4% which coincides with study conducted by Methu C. W. *et al.* [16]

Limitations

The Sample size was small, as many participants were not be able to include in the study due to the COVID-19 pandemic, hence a large sample size be required in order to generalize these results to the whole population

Conclusion

The study was conducted in Adesh hospital Bathinda among 300 staff nurses. In this research attitude of nurses studied towards catheter care for prevention of catheter associated urinary tract infection. It is concluded that most of the participants have adequate compliance towards catheter care for prevention of CAUTI and needs further focus and support to improve nursing care quality. Many nurses agreed to take active part to enhance their knowledge and change attitude to improve quality care. All the health care personnel should have regular training regarding prevention of CAUTI, and all efforts should be made by hospital authorities to include prevention of CAUTI in its high priority list.

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