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Research Article

A Correlational Study to Assess the Knowledge and Practices Regarding Catheter-associated Urinary Tract Infection Care Bundle among the Staff Nurses in Selected Hospitals of Maharashtra in View to Prepare the Information Booklet

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Abstract

Aim: The purpose of this research is to determine knowledge and practices of staff nurse regarding catheter-associated urinary tract infection (UTIS) care bundle.

Methods: The investigator chose to use a descriptive survey approach with a descriptive study design, to investigate the staff nurses' knowledge of and practices relating to the catheter-associated UTIS care bundle. The sample included 185 nursing staff who were employed in the Intensive Care Unit. Non-probability purposive sampling technique was employed to pick the sample for this study. The analysis of the data included both descriptive and inferential statistical methods. The Karl person co-relation coefficient test used to analyze the correlation and Chi-square test to determine the association between knowledge and practice regarding care for catheter-associated UTIS with demographic variables.

Results: The results of this study showed that 101 (54.89%) had moderate knowledge followed by 68 (36.95%) had inadequate knowledge, 15 (8.15%) had adequate knowledge regarding catheter-associated urinary tract infections (CAUTI) Care bundle. 114 (78.26%) had average level of practices, 47 (25.54%) had good level of practices and 23 (12.5%) had poor level of practices regarding CAUTI Care bundle, there is a positive correlation was identified between knowledge and practice, i.e., (r = 0.593).

Conclusion: According to the results of this investigation, staff nurses had knowledge and practices about the care bundle for catheter-associated UTIS that were moderate to average. Investigator recommends that the distribution of the informational booklet tool addressing the catheter-associated UTIS care bundle, both the knowledge and the practices will be enhanced.

Keywords: Care bundle, CAUTI, information booklet learning tool, knowledge, practice

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Introduction

The urinary tract, like the respiratory and digestive tract ends on the body and therefore can never be sterile throughout its length. However, when the tract is anatomically and physiologically normal, local and systemic defense mechanisms intact, organisms are confined to the lower end of the urethra. UTI is associated with the multiplication of organisms in the urinary tract and is defined by the presence of more than 1,00,000

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organisms per ml in a midstream sample of urine. In an undetermined minority, destruction of renal parenchyma and severe chronic renal failure ensue.[1]

The urinary tract is the most common site of Nosocomial infection accounting for more than 40% of the total number reported by acute care hospital and affecting an estimated 6,00,000 clients per year. Most of these infections (66–86%) follow instrumentation of urinary tract, mainly urinary catheterization. Although not all catheter-associated urinary tract infection (UTIS) can be prevented, it is believed that proper management of the indwelling catheter could avoid a large number.[2]

The risk of acquiring a UTIS depends on the method and duration of catheterization, the quality of catheter care. Reported infection rates vary widely, ranging from 1% to 5% after single brief catheterization. Recent studies have shown over 20% of clients catheterized and maintained on closed drainage in busy hospital wards may be expected to cause infection.[2]

The American National Healthcare Safety Network (NHSN) in collaboration with the Center for Disease Control, reported that a urinary tract infection (UTI) is an infection affecting any part of the urinary system, including the urethra, bladder, ureters, and kidneys (NHSN, 2016). On the other hand, catheter-associated urinary tract infections (CAUTI) are UTI related to the presence of a urinary catheter in the bladder for more than 2 days from the date of infection, and that was not present at the time of admission.[3]

While urinary catheters are used for the safety of the patients, complications can arise from their use and can be a source of morbidity for most patients in hospital and nursing home residents. Approximately, 12–16% of all hospitalized patients are catheterized while up to 50% of those patients do not have an appropriate indication thus increasing the risk of catheter-related infections. Similarly to this urinary catheters are used frequently in hospitalized patients whereby 25% of them undergo urinary catheterization during their hospital stay. Then, the frequency of urinary catheterization in the Intensive Care Unit (ICU) can be as high as 100% due to the high dependency of critically ill patients and utilization in the ICU (61%) was greater than in the non-ICU (20%) units.[4]

NHSN also reported that among UTIs acquired in the hospital, almost 75% are associated with a urinary catheter and 15–25% of hospitalized patients obtain urinary catheter for urine drainage, yet their extended use is the most important risk factor for developing CAUTI (NHSN, 2014). "They are the most common type of healthcare-associated infection with an estimated prevalence of 1–10%, representing 30–40% of all nosocomial infections accounting for approximately 13 000 deaths per year."[5]

A descriptive study design was used for the study. The study was carried out in a selected hospital of city. The sample comprised 184 staff nurses from the selected hospital, the hospitals were selected by purposive sampling technique. Considering the objective and the assumption the study conceptual framework was prepared based on the Modified Health Belief Model. Formal written permission was obtained from the authorities to conduct the study and informed consent was obtained from subjects before the data collection process. Data was collected by administering a structured knowledge questionnaire, and practice checklist. The data was analyzed using descriptive and inferential statistics.

Objectives

1. To assess the knowledge regarding CAUTI care bundle among staff nurses.
2. To assess practices regarding CAUTI care bundle among staff nurses.
3. To determine the correlation between knowledge and practices regarding CAUTI care bundle among staff nurses.
4. To find the association between knowledge and practices with demographic variables among the staff nurses.

Assumptions

1. The staff nurses may have limited knowledge regarding CAUTI care bundle.
2. The staff nurses may have inadequate practice regarding CAUTI care bundle.
3. There is no correlation between knowledge and practices regarding catheter-associated UTI care bundles among staff nurses.
4. Information booklet learning tool may enhance the knowledge and practices among staff nurses regarding CAUTI care bundle.

Materials and Methods

Research approach

The research method adopted for the present study is the descriptive survey approach.

Research design

In the present study, the investigator selected the descriptive survey design, keeping in the view of objectives of the study.

Setting of the study

"The present study was conducted in MGM Medical College and Hospital."

Population

The population of the targeted population is nurses who are working in ICU of selected hospitals.

Sample and sampling technique

In the present study, a non-probability purposive sampling technique use by the investigator.

Sample size

A total sample size of 184 staff nurses who met the inclusion criteria were selected for the present study.

Sampling criteria

Inclusion criteria

- Nurses working in the selected hospitals of the city.
- Nurses who are registered with nursing council.
- Nurses who are willing to participate in the study.
- Nurses who are working in the ICU of the hospital.

Exclusion criteria

- Nurses who are working in government hospitals.
- ANM nurses.
- Nurses who are working in NICU and PICU.

Description of the tool

The tool or the study instrument is divided into 3 parts.

- Part A: Sociodemographic variables
- Part B: Structured knowledge questionnaire regarding CAUTI care bundle
- Part C: Practice checklist regarding CAUTI Care bundle.

Statistics

Descriptive statistics

Frequency and percentage distribution are used to analyze the demographic data.

Inferential statistics

Karl person correlation coefficient test was used to analyse the correlation between knowledge and practices regarding CAUTI care bundle, Chi-square test was used to assess the association of knowledge and percentage with their demographic variables.

Results

The data obtained were organized in the master sheet for tabulation, statistically analyzed, and interpreted using descriptive and inferential statistics. The findings were presented under the following headings.

- Section A: Distribution of respondents according to demographic variables
- Section B: Assessment of knowledge regarding CAUTI care bundle
- Section C: Assessment of level of practices checklist regarding CAUTI care bundle
- Section D: Determine correlation between knowledge and practices regarding CAUTI care bundle among the staff nurses
- Section E: Association between knowledge and the demographic variables among the staff nurses
- Section F: Association between practices and demographic variables among the staff nurses.

Section A: Distribution of respondents according to demographic variables

Table 1 depicts that:

Table 1: Frequency and percentage distribution of respondents *n*=184

Characteristics	Category	Respondents	
		Frequency	Percentage
Age group (years)	20–29 years	105	57.06
	30–39 years	57	30.97
	40–49 years	12	6.52
	50 years and above	10	5.43
Gender	Male	15	8.15
	Female	169	91.84
Educational Qualification	GNM	83	45.10
	B. Bsc (N)	57	30.97
	P. B. Bsc (N)	44	23.91
	M.Sc (N)	0	00
Year of experience	<1 year	33	17.93
	1–5 years	87	47.28
	6–10 years	52	28.26
	More than 10 years	12	6.52
Have you heard about CAUTI Care bundle	Yes	180	97.82
	No	4	2.17
Are you aware of the elements of the CAUTI care bundle	Yes	179	97.28
	No	5	2.71
Do you utilize the CAUTI care bundle in your unit	Yes	183	99.45
	No	1	0.54
Have you completed any training program associated with CAUTI care bundle	Yes	170	92.39
	No	14	7.60

Age

The majority of the respondents 105 (57.06%) were in the age group of 20–29 years followed by 57 (30.97%) in the age group of 30–39 years, 12 (6.52%) in the age group of 40–49 years and 10 (5.43%) in the age group of 50 years and above.

Gender

The majority 169 (91.84%) of the respondents were female and 15 (8.15%) were male.

Educational Qualification

The majority of the respondents 83 (45.10%) completed the education as GNM followed by 57 (30.97%) were completed B.B.sc (N), 44 (23.91%) completed P.B.B.sc (N).

Years of experience

The year of experience majority of the respondents 87 (47.28%) are having the experience between 1 and 5 years followed by 52 (28.26%) respondents have experience between 6 and 10 years, 33 (17.93%) respondents have experience <1 year and 12 (6.25%) of respondents have more than 10 years of experience.

Have you heard about cauti care bundle

The majority of the respondents 180 (97.82%) heard about CAUTI care bundle following 5 (2.17%) did not hear about the CAUTI care bundle.

Are you aware of the elements of the cauti care bundle

The majority of the respondents 179 (97.28%) were aware about the elements of CAUTI care bundle following 5 (2.71%) did not aware of the elements of CAUTI care bundle.

Do you utilize the cauti care bundle in your unit

The majority of the respondents 183 (99.45%) utilized CAUTI care bundle in their unit following 1 (0.54%) did not utilize CAUTI care bundle in their unit.

Have you completed any training program associated with cauti care bundle

The majority of 170 (92.39%) respondents have completed their training program associated with CAUTI care bundle and 14 (7.60%) did not complete their training program associated with CAUTI care bundle.

Table 2: Knowledge score of staff nurses regarding cauti care bundle *n*=184

Knowledge score	Frequency	Percentage
Adequate	15	8.15
Moderate	101	54.89
Inadequate	68	36.95

Table 3: Practice level of staff nurses regarding cauti care bundle *n*=184

Practice level	Frequency	Percentage
Good	47	25.54
Average	114	78.26
Poor	23	12.5

Table 4: Correlation between knowledge and practices regarding CAUTI care bundle among staff nurses *n*=184

Particulars	Correlation
Knowledge versus practices	r=0.593

Section B: Assessment of knowledge regarding cauti care bundle

This section deals with the analysis and interpretation of knowledge level being summated using frequency and percentage.

The data presented in Table 2 depicts that in the majority of respondents 101 (54.89%) had moderate knowledge followed by 68 (36.95%) had inadequate knowledge, 15 (8.15%) had adequate knowledge regarding CAUTI Care bundle [Table 2].

Section C: Assessment of score level of practice checklist

This section deals with the analysis and interpretation of practice level being summated using frequency and percentage.

The data presented in Table 3 depicts that the majority of respondents 114 (78.26%) had average level of practice, 47 (25.54%) had good level of practice, 23 (12.5%) had poor level of practices regarding CAUTI Care bundle [Table 3].

Section D: Determine the correlation between knowledge and practices regarding cauti care bundle among the staff nurses

The presented data in Table 4 depicts that there is positive correlation was identified between knowledge and practices, i.e., r = 0.593 [Table 4].

Table 5: Association between the level of knowledge score with the selected demographic variables *n*=184

Socio-demographic variables	Total no. Of samples	Level of knowledge score						Df	*P*-value	χ^2 value	Result
		Adequate		Moderate		Inadequate					
		n	%	*n*	%	*n*	%				
Age								6	0.034	13.6	S
20–29 years	105	5	2.71	52	28.26	48	26.08				
30–39 years	57	6	3.26	35	19.02	16	8.69				
40–49 years	12	3	1.63	8	4.34	1	0.54				
50 years and above	10	1	0.54	6	3.26	3	1.63				
Gender								2	0.023	7.54	S
Male	15	4	2.17	7	3.80	4	2.17				
Female	169	11	5.97	94	51.08	64	34.78				
Educational Qualification								4	0.013	12.6	S
GNM	83	7	3.80	47	25.54	29	15.76				
B.Bsc (N)	57	5	2.71	22	11.95	30	16.30				
P.B.Bsc (N)	44	3	1.63	32	17.39	9	4.89				
M.sc (N)	0	0	00	0	00	0	00				
Year of experience								6	0.617	4.44	NS
<1 year	33	1	0.54	20	10.86	12	6.52				
1–5 years	87	8	4.34	43	23.36	36	19.56				
6–10 years	52	4	2.17	32	17.39	16	8.69				
More than 10 years	12	2	1.08	6	3.26	4	2.17				
Have you heard about CAUTI care bundle								2	0.320	2.28	NS
Yes	180	14	7.60	100	54.34	66	35.86				
No	4	1	0.54	1	0.54	2	1.086				
Are you aware of the elements of the CAUTI care bundle								2	0.575	1.11	NS
Yes	179	14	7.60	99	53.80	66	35.86				
No	5	1	0.54	2	1.08	2	1.08				
Do you utilize the CAUTI care bundle in your unit								2	0.003	11.3	S
Yes	183	14	7.60	101	54.89	68	36.95				
No	1	1	0.54	0	00	0	00				
Have you completed any training program associated with CAUTI care bundle								2	0.012	8.80	S
Yes	170	11	5.97	94	51.08	65	35.32				
No	14	4	2.17	7	3.80	3	1.63				

Section E: Association between knowledge and the demographic variables among the staff nurses

Table 5 depicts that there was no significant association between year of experience, Have You Heard About CAUTI Care Bundle, Are You Aware Of The Elements of the CAUTI Care Bundle, and knowledge level of CAUTI Care bundle among the staff nurses and there was significant association between age, gender, educational qualification, Do you utilize the CAUTI Care bundle in your unit, have you completed any training program associated with CAUTI Care bundle and knowledge level of CAUTI Care bundle among the staff nurses [Table 5].

Section F: Association between practice with demographic variables among the staff nurses

Table 6 depicts that there was no significant association between age, educational qualification, Have You Heard About CAUTI Care bundle, are you aware of the elements of the CAUTI Care Bundle, Do You Utilize The CAUTI Care Bundle In Your Unit and Practice level of CAUTI Care bundle among the staff nurses and there was significant association between, gender, years of experience, Have You Completed Any Training Program Associated With CAUTI Care Bundle and practices level of CAUTI Care bundle among the staff nurses [Table 6].

Discussion

Cutinho and Sheilini, Harish B at MAHE, Manipal on knowledge on practices of urinary catheter care and compliance to urinary catheter care bundle guidelines. The result was found Majority 89 (82.4%) of the participants had average knowledge, 18 (16.7%) had good knowledge on the prevention of catheter-associated UTIs. There was maximum noncompliance to the procedural steps while performing urine specimen collection, removal of urinary catheter and maintenance of urinary catheter.[6]

Algarni *et al*. study was conducted in Egypt Nurse's knowledge and practices toward the prevention of catheter-associated UTI at King Abdulaziz University Hospital. The study findings revealed that more than half of nurses (62.77%) had a low level of knowledge and 83.94% of nurses had a poor level of practice. While 16.1% of nurses had a good level of practice.[7]

Zachariah at Maharashtra University of Health Science, Maharashtra, India on the topic of Effectiveness of SIM on Knowledge and Practice among Nurses Regarding Prevention of UTI in Patients with Indwelling Catheter the result of the study was found that positive correlation between knowledge and practice score of staff nurses regarding prevention of UTI in patients with indwelling catheter as p value is <0.05. There

Table 6: Association between the level of practices level with the selected demographic variables *n*=184

Socio-demographic variables	Total no. Of samples	Level of practice score						Df	*P*-value	χ^2 value	Result
		Good		Average		Poor					
		n	%	*n*	%	*n*	%				
Age								6	0.374	6.46	NS
20–29 years	105	22	11.95	66	35.86	13	7.06				
30–39 years	57	12	6.52	39	21.19	6	3.26				
40–49 years	12	5	2.71	4	2.17	3	1.63				
50 years and above	10	4	2.17	5	2.71	1	0.54				
Gender								2	0.002	12.2	S
Male	15	8	4.34	3	1.63	4	2.17				
Female	169	39	21.19	111	60.32	19	10.32				
Educational qualification								4	0.067	8.77	NS
GNM	83	15	8.15	59	32.06	9	4.89				
B.Bsc (N)	57	19	10.32	33	17.93	5	2.71				
P.B.Bsc (N)	44	13	7.06	22	11.95	9	4.89				
M.sc (N)	00	00	00	00	00	00	00				
Year of experience								6	0.000	41.2	S
<1 year	33	2	2.71	25	6.52	6	3.26				
1–5 years	87	35	19.02	39	21.19	13	7.06				
6–10 years	52	3	1.63	46	25	3	1.63				
More than 10 years	12	7	3.80	4	2.17	1	0.54				
Have you heard about CAUTI care bundle								2	0.064	5.50	NS
Yes	180	46	25.00	113	61.41	21	11.41				
No	4	1	0.54	1	0.54	2	1.08				
Are you aware of the elements of the CAUTI care bundle								2	0.591	1.05	NS
Yes	179	45	24.45	112	60.86	22	11.95				
No	5	2	1.086	2	1.086	1	0.54				
Do you utilize the CAUTI care bundle in your unit								2	0.734	0.61	NS
Yes	183	47	25.54	113	61.41	23	12.5				
No	1	00	00	1	0.54	00	00				
Have you completed any training program associated with CAUTI care bundle								2	0.014	8.60	S
Yes	170	46	25.00	106	57.60	18	9.78				
No	14	1	0.54	8	4.34	5	2.17				

was 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.[8]

Anwar *et al*., at Lahor, Pakistan. The assessment of perceptions and practices of the nurses to prevent indwelling catheter-associated infection the study finding revealed that the practice and perceptions scores of the registered nurses' in the study group are insignificant with age, qualification ($P > 0.05$) but had a significant association with years of experience ($P < 0.05$).[9]

Conclusion

According to the findings of the recent study, it was concluded that the staff nurses had a reasonably adequate level of knowledge and exhibited average practices in relation to the care bundle for catheter-associated UTIs. Disseminating the information booklet on the catheter-associated UTI care bundle will improve both knowledge and practices.

References

1. Davidson's Infection of Kidney and Urinary Tract. In: Edwards CR, editor. Principles and Practice of Medicine. 17th ed. London: Churchill Living Stone; 1995. p. 649-53.
2. Wong ES, Hooton TM. Guideline for prevention of catheter-associated urinary tract infections. Infect Control Hosp Epidemiol 1981;2:125-30.
3. Loveday HP, Wilson JA, Pratt RJ, Golsorkhi M, Tingle A, Bak A, *et al*. National evidence-based guidelines for preventing healthcare-associated infections in NHS hospitals in England. J Hosp Infect 2014;86:S1-70.
4. Greene MT, Fakih MG, Fowler KE, Meddings J, Ratz D, Safdar N, *et al*. Regional variation in urinary catheter use and catheter-associated urinary tract infection: Results from a national collaborative. Infect Control Hosp Epidemiol 2014;35:S99-106.
5. Marra AR, Camargo TZ, Goncalves P, Sogayar AM, Mourra DF Jr., Guastelli LR, *et al*. Preventing catheter-associated urinary tract infection in the zero-tolerance era. Am J Infect Control 2011;39:817-22.
6. Cutinho MC, Sheilini M. Knowledge on practice of urinary catheter care and compliance to urinary catheter care guidelines-a hospital based study. Indian J Public Health Res Dev 2018;9:218-24.
7. Algarni SS, Sofar SS, Wazqar DY. Nurses' knowledge and practices toward prevention of catheter-associated urinary tract infection at King Abdulaziz university hospital. J Health Med Nurs 2019;4:50-73.
8. Zachariah CA. Effectiveness of SIM on knowledge and practice among nurses regarding prevention of UTI in patients with indwelling catheter. Int J Sci Res 2016;5:833-6.
9. Anwar G, Nawaz G, Afzal M, Majeed I, Waqas A. Assessment of perceptions and practices of the nurses to prevent indwelling catheter associated infection; Jinnah Hospital Lahore, Pakistan. Int J Appl Sci Biotechnol 2017;5:150-8.

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