



Analysis of The Use of Urine Catheters on Catheter-Related Urinary Tract Infections with The Infection Control Risk Assessment Method on Aspects of Knowledge and Attitudes in Hospitals in Yogyakarta

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ABSTRACT

Healthcare-Associated Infections (HAIs) have now become the cause of an increase in morbidity, mortality and length of hospital stay. Catheter-Associated Urinary Tract Infections (CAUTI) account for nearly 40% of all nosocomial infections. This reflects the poor quality of health services. This study aims to analyze the use of urinary catheters for CAUTI with the Infection Control Risk Assessment (ICRA) method in Indonesian hospitals. The design of this research is descriptive quantitative and qualitative. The population in the study were all nurses who worked in the hospital. The sample used in this study to determine the level of knowledge and attitudes related to urinary catheter placement were all nurses who worked in the Internal Medicine, Surgery, Geriatrics and Emergency Units of Panembahan Senopati Hospital Bantul, which collected 61 respondents. The sampling technique used is random sampling. Inclusion criteria are a 1-year nurse working period, and minimum education D3. The exclusion criteria were respondents who did not fill out the questionnaire completely. Informants in this study were IPCN, IPCLN, internal medicine specialists, emergency room nurse coordinators, and nurses in the inpatient ward. The rate of urinary catheter insertion was high (29.51%), moderate (63.93%), and low (6.6%). On a deeper knowledge of catheter insertion, which is well-informed. The attitude of urinary catheter placement was good (73.8%) and bad (26.2%). On a deeper attitude to catheter insertion, the scores are good. Nurses have a moderate level of knowledge and have a good attitude about urinary catheter placement. The most potential risks have been identified. Each potential has risks to take advantage of each and is related to each other. It is best to consider relevant strategies to address the problem.

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Kata kunci:

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ABSTRAK

Healthcare Associated Infections (HAIs) kini telah menjadi penyebab peningkatan morbiditas, mortalitas dan lama rawat inap. Infeksi Saluran Kemih terkait kateter (CAUTI) menyumbang hampir 40% dari semua infeksi nosokomial. Hal ini mencerminkan buruknya kualitas pelayanan kesehatan. Penelitian ini bertujuan untuk menganalisis penggunaan kateter urin pada CAUTI dengan metode Infection Control Risk Assessment (ICRA) di rumah sakit Indonesia. Desain penelitian ini adalah deskriptif kuantitatif dan kualitatif. Populasi dalam penelitian ini adalah seluruh perawat yang bekerja di rumah sakit. Sampel yang digunakan dalam penelitian ini untuk mengetahui tingkat pengetahuan dan sikap terkait pemasangan kateter urin adalah seluruh perawat yang bekerja di Unit Penyakit Dalam, Bedah, Geriatri dan IGD RSUD Panembahan Senopati Bantul yang berjumlah 61 responden.

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Teknik pengambilan sampel yang digunakan adalah random sampling. Kriteria inklusi adalah: masa kerja perawat 1 tahun, pendidikan minimal D3. Kriteria eksklusi adalah responden yang tidak mengisi kuesioner dengan lengkap. Informan dalam penelitian ini adalah IPCN, IPCLN, spesialis penyakit dalam, koordinator perawat ruang gawat darurat, dan perawat di ruang rawat inap. Tingkat pemasangan kateter urin tinggi (29,51%), sedang (63,93%), rendah (6,6%). Pada pengetahuan yang lebih dalam tentang penyisipan kateter, yang diinformasikan dengan baik. Sikap pemasangan kateter urin baik (73,8%) dan buruk (26,2%). Pada sikap yang lebih dalam untuk penyisipan kateter, skornya bagus. Perawat memiliki tingkat pengetahuan sedang, memiliki sikap yang baik tentang pemasangan kateter urin. Risiko yang paling potensial telah diidentifikasi. Setiap potensi memiliki risiko yang dapat dimanfaatkan masing-masing dan saling berkaitan. Yang terbaik adalah mempertimbangkan strategi yang relevan untuk mengatasi masalah tersebut.



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INTRODUCTION

The Centers for Disease Control and Prevention (CDC) estimates that 93,000 CAUTIs occurred in hospitals in the United States in 2011, urinary tract infections accounted for 12.9% of nosocomial infections and 23% of infections in intensive care units (ICUs). CAUTI is a leading cause of increased morbidity, mortality, Length of Stay (LOS), and hospital costs, accounting for >30% of all HAIs-related infections (Bagchi, et al. 2020). CAUTI increases the cost and length of stay (LOS) of patients in the hospital for 4 days (Shuman and Chenoweth, 2018).

CAUTI can cause complications such as prostatitis, epididymitis and orchitis in male patients, as well as cystitis, pyelonephritis, gram-negative bacteremia, endocarditis, vertebral osteomyelitis, septic arthritis, endophthalmitis, and meningitis in patients. Complications associated with CAUTI cause patient discomfort, lengthen hospital stay, and increased costs and mortality (Scott, 2009).

The risk of UTI increases with increasing duration of catheterization. The Centers for Disease Control and Prevention (CDC) strongly recommends the use of a urinary catheter only if there is an indication and removal of the catheter when there is no indication. However, 41% of physicians did not follow this recommendation, and clinical nursing staff may also neglect to carry out the necessary evaluations in determining urinary catheter removal. As a result, up to 47% of inpatient catheterizations are not required (Chen et al., 2013).

Infection Control Risk Assessment (ICRA) is part of the infection prevention and control program planning process in hospitals. ICRA is an infection control process planning that has an important value in setting program standards and its development, based on continuity of surveillance and constantly implementing regulatory changes if there are changes in the field (APIC, 2011).

Efforts to prevent the incidence of nosocomial infections, especially catheter-related urinary tract infections require a documented approach. The method developed by the Centers for Disease and Control, namely the Infection Control Risk Assessment (ICRA) is a documented process in the identification and prevention of infection events in hospitals as an effort to reduce the risk of infection transmission among patients, staff, health professionals, and hospital visitors (Subhan, 2015).

CAUTI in patients with urethral indwelling, suprapubic indwelling, or intermittent catheterization was defined by the presence of symptoms or clinical presentation signs of UTI and no other identified source of infection. These signs and symptoms are accompanied by bacteriuria of 1000 colony forming units (cfu/ml) of 1 bacterial species in a single catheter urine specimen or from a midstream urine specimen in a patient whose urinary, suprapubic, or catheter has been removed within 48 hours, previously. Asymptomatic urinary tract infection or so-called asymptomatic catheter-associated bacteriuria is defined as the presence of bacteriuria of 100,000 colony forming units (cfu/ml) of 1 bacterial species in a single catheter urine specimen in a patient without a clinical presentation of UTI. Signs and symptoms compatible with UTI are new or old onset fever, mental status changes, malaise, lethargy without cause, pelvic pain, costovertebral angle tenderness, acute haematuria, pelvic discomfort, and in patients whose catheter has been removed, such as dysuria, defecation. frequent and unbearable urination, or suprapubic pain and tenderness (Hooton et al, 2010).

The purpose of this study was to analyze the use of urinary catheters against urinary tract infections related to catheters using the infection control risk assessment (ICRA) method in hospitals in Yogyakarta on the aspects of knowledge and attitudes. It is hoped that the results of this study will improve the management of Cauti in hospitals and reduce the incidence of UTIs in hospitals.

METHOD

The design of this research is descriptive quantitative and qualitative. The population in the study were all nurses who worked in the hospital. The sample used in this study to determine the level of knowledge and attitudes of nurses regarding urinary catheter placement were all nurses who worked in the Internal Medicine, Surgery, Geriatrics and Emergency Units of Panembahan Senopati Hospital Bantul, totaling 61 respondents. The sampling technique used is random sampling. Inclusion criteria are: nurse working period 1 year, minimum education D3. The exclusion criteria were respondents who did not fill out the questionnaire completely. Informants in this study were IPCN, IPCLN, internal medicine specialists, nurse coordinators.

RESULTS AND DISCUSSIONS

Table 1.
Characteristics of Respondents

Identity Respondents	Characteristics (n)	Frequency (%)
Age		
20-29	17	27,9
30-39	28	45,9
40-49	7	11,5
50-59	9	14,8
Gender		
Man	17	27,9
Woman	44	72,1
Last Education		
Diploma 3	49	80,3
Diploma 4	1	1,6
Bachelor (S1)	2	3,3
Profession	9	14,8
Long Work		
<1 Years	1	1,6
1-2 Years	5	8,2
2-3 Years	14	23
4-5 Years	39	63,9
>5 Years	61	100
Σn	61	

Source: primary data

Based on data collection in the field, it can be seen that the characteristics of the respondents seen from the aspect of age are the most, namely the age range of 30-39 years as many as 28 people (45.9%). In this study, the majority of respondents were female (72.1%). When viewed from educational background, almost all respondents with D III Nursing education are 49 people (80.3%). Meanwhile, when viewed from the length of work of respondents in the hospital, the majority of respondents have worked for > 5 years (63.9%).

Table 5.
Deeper attitude towards urinary catheter delivery

No	Category	Frequency (n)				
		Question 1	Question 2	Question 3	Question 4	Question 1
1	Precautions	240	230	230	230	
2	Error Prevention	230	230	210	220	
3	Teamwork	220	230	210	230	230
4	Communication with patients	220	230	220		
5	Increased Knowledge and Skills	220	210	210		

Score: 0 until 244

The table 5 shows that most of the deeper attitude categories toward urinary catheterization scored high. So it can be concluded that the attitude of nurses in the installation of urinary catheters is good.

It is estimated that 17% - 69% CAUTI or 380,000 infections and 9000 deaths each year can be prevented by using appropriate infection prevention strategies. The most effective and consistent is removal of the catheter or avoidance of its use. It has been recommended and identified throughout the guidelines is the removal of the catheter or the avoidance of its use (Tambyah and Oon, 2012).

The use of a persistent urethral catheter is associated with an increased frequency of symptomatic urinary tract infections, bacteremia, and additional morbidity from non-infectious complications. The infection control program should develop, implement, and monitor policies and practices to minimize infections associated with the use of

Table 2.
Level of Knowledge of Urinary Catheter Installation

No	Criterion	Frequency	Percentage (%)
1	Tall	18	29,51
2	Medium	39	63,93
3	Low	4	6,6
	Sum	61	100

Source: primary data

The table 3 shows that of the 7 knowledge categories, the majority of the answers scored were good, the categories that tended to be low in frequency of answers were catheter insertion procedures and indications for catheter insertion. Followed by the category of catheter care. While the other categories have shown a fairly high result.

Table 4.
Attitudes towards the Use of Cateter Urine

No	Criterion	Frequency	Persentase (%)
1	Good	45	73,8
2	Bad	16	26,2
	Sum	61	100

Source: primary data

The results of the analysis that have been presented in Table 4 show that most of the respondents have a good attitude in the installation of urinary catheters, namely there are 45 nurses (73.77%). Respondents who have a bad attitude are 16 nurses (26.23%). The results of each category can be seen more clearly in the diagram below. The maximum score is 244 for each statement that can describe the attitudes of 61 respondents.

these devices. The main focus of this program should be to limit the use of persistent urethral catheters, and immediately remove the catheter when it is no longer needed (Nicolle, 2014).

The use of catheter removal reminder devices has increased since 2008, previously reported use of these devices was < 10%. In 2010, NICHE hospital respondents reported that the use of this strategy had increased to 56%. Overall, 56% of hospitals have the program. Although this interval is a 44% increase over the previous one, the hospital still does not have an early release strategy and there is no strong evidence to support the use of the device (Fink et al, 2012).

The single most effective way to reduce the occurrence of CAUTI among hospitalized patients is to limit catheter use to cases where it is correctly indicated and discontinued as soon as this indication is no longer present. One factor that makes this possible is the level of knowledge of the Health

Profession. The current study found that overall physicians were more knowledgeable about catheterization indications than nurses ($p < 0.05$) which is similar to previous findings. This means that educating nurses about the indications for catheterization will be very helpful in reducing the incidence of CAUTI because they can serve as a reminder to doctors after the indication for catheterization is complete. This is in line with research showing that nurses' enthusiasm for the need to have an in situ catheter helps reduce the occurrence of CAUTI (Ghuri et al, 2019).

Failure to identify appropriate indications for catheterization will lead to unnecessary use of catheters. Nearly 79% of nurses and 12% of doctors justified the use of catheters for the nursing care of incontinence patients. Nearly a third of respondents justified the use of catheters for routine urine sampling for culture and sensitivity testing and for monitoring urine output even in mobile patients. Lack of knowledge about the various indications is itself leading to increased use of catheters, so it would be useful to educate both doctors and nurses about the various indications for catheterization. Complete knowledge of all effective preventive measures will help them prioritize urinary catheter care (Jain et al, 2015).

CAUTI is the product of a complex set of interrelated behaviors performed by many individuals. In the UK's National Health Service (NHS), interventions targeting CAUTI prevention behaviors have been implemented at different levels from national evidence-based guidelines to local interventions to implement these guidelines. Some of these have been widely adopted across the country such as the Houdini protocol which contains seven criteria for nurse-driven decision making for catheter removal and the catheter passport which contains patient-held records of decision making and catheter care (Atkins et al, 2015).

CONCLUSION AND RECOMMENDATION

Based on the results of research and discussion, it can be concluded several things, as follows:

1. Most nurses have a high level of knowledge (29.51%), a moderate level of knowledge (63.93%), and a low level of knowledge (6.6%) regarding urinary catheter insertion.
2. Most nurses had a good attitude (73.8%) and a bad attitude (26.2%) regarding urinary catheter placement.
3. There are 7 potential risks, namely:
 - a. Cost constraint for urine culture examination as a policy for establishing a CAUTI diagnosis,
 - b. Lack of compliance with SOPs for urinary catheter installation and care,
 - c. Differences in perception between the PPI committee and specialist doctors regarding the determination of the CAUTI diagnosis, d. implementation of catheter care is not optimal,
 - d. CAUTI surveillance is not optimal,
 - e. The number of patient visitors, and
 - f. Lack of understanding of nurses about CAUTI

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Conflic of Interest

There is no conflict of interest for this manuscript.

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