Available online on 20.07.2022 at http://jddtonline.info

Journal of Drug Delivery and Therapeutics

Open Access to Pharmaceutical and Medical Research

Open Access Full Text Article

Research Article

How is the practice of nurses in preventing infection of central venous catheters in hospitalized patients?-Nurse knowledge and attitudes

Santa Manurung[1]*, Yupita Dewi[2]

[1] *Department of Nursing, Health Polytechnic of Jakarta III, Jakarta, Indonesia*
[2] *Nursing, Dharmais Cancer Hospital, Jakarta, Indonesia*

Article Info:

Article History:

Received 23 May 2022
Reviewed 02 July 2022
Accepted 14 July 2022
Published 20 July 2022

Cite this article as:

Manurung S, Dewi Y, How is the practice of nurse in preventing infection of central venous catheters in hospitalized patients?-Nurse knowledge and attitude, Journal of Drug Delivery and Therapeutics. 2022; 12(4):101-103

DOI: http://dx.doi.org/10.22270/jddt.v12i4.5591

*Address for Correspondence:

Santa Manurung, Department of Nursing, Health Polytechnic of Jakarta III, Jakarta, Indonesia

Abstract

Central venous catheter (CVC) is an action that is often performed in treatment. There are several indications for the installation of a central venous catheter, ranging from measurement of central venous pressure (CVP), chemotherapy to parenteral nutrition. Central venous catheter wound care that is not carried out according to the procedure can cause various complications, one of which is infection. The incidence of sepsis due to central venous catheter placement is a significant cause of morbidity and mortality for patients. All nurses are required to have good skills and attitudes in the practice of implementing central venous catheter wound care in accordance with the procedure. Objective: This study aims to analyze the relationship between knowledge and attitudes of nurses regarding wound care to nurses practice in preventing wound infections in patients with central venous catheters. Methods: The design of this study was cross sectional using a descriptive correlational design. This research was conducted in July 2020. The number of samples involved in this study were 69 nurses with Diploma III educational qualifications in the inpatient ward of Dharmais Cancer Hospital. Data analysis using chi-square. Results: Bivariate analysis showed a value of p<0.05 for nurses knowledge and attitudes regarding central venous catheter wound care on nurse practice in preventing central venous catheter infection. Conclusion: there is a relationship between the level of knowledge and attitudes of nurses in wound care to the practice of nurses in preventing wound infections in patients with central venous catheters in hospital inpatient rooms.

Keywords: Nursing knowledge, attitude, practice, infection prevention, central venous catheter.

INTRODUCTION

Hospitals can be a repository of various diseases that occur in patients and visitors with career status. The success of a hospital in fulfilling its responsibilities is marked by an increase in the quality of hospital services.[1,2]

Infection control is a parameter for high-quality health care, infections that occur as a result of the process of disseminating health services to their source, either by all patient staff or from other sources. Hospital inpatient rooms as one of the hospital facilities are closely related as a source of infection. This is because patient care involves many parties, such as doctors, nurses, medical devices and public officials who work in the field of inpatients. Hospital health service quality standards always depend on the structure, processes and outcomes of the hospital service system. Quality standards for hospital health services can also be assessed based on the level of use of service facilities by the community, service quality and hospital efficiency.[3–5]

Central venous catheter (CVC) placement is a routine procedure performed in intensive and perioperative therapy. In the United States, more than 150 million intravenous catheters are used each year, of which 5 million are placed in central veins.[6,7] Based on observations at Dharmais Cancer Hospital there were 54 insertion of central venous catheters in the intensive care unit, 325 insertion of central venous catheters in the elective operating room and a total of 306 insertion of central venous catheters in the diagnostic treatment room from July to December 2019.

Insertion of a central venous catheter has many benefits, including the measurement of hemodynamic variables that cannot be measured accurately by non-invasive methods and which can be used to administer drugs and nutritional supplements that cannot be safely administered via a peripheral venous catheter. Unfortunately, 15% of central venous catheter use is associated with unforeseen complications. Mechanical complications are reported in 5-19% of patients, infection in 5-26% of patients and thrombosis in 2-26%.[8–10]

Nurses have a duty to help clients achieve optimal health and independent living through the recovery process with minimal cost, time and energy. Therefore, in this case, nurses must be able to treat central venous catheter wounds in accordance with the development of science and technology so that infection does not occur. Wound care is the daily care of nurses in the ward, especially in the medical-surgical treatment room. Nurses must have sufficient practical knowledge and skills related to the nursing process based on global assessments, plan appropriate interventions, take action and evaluate the results found during care and document the results systematically.[11–13]

Knowledge is the most important and most important basis for health professionals when implementing health services. Nurses as health professionals who are primarily responsible for care

services and for the implementation of holistic and global care must have a high level of knowledge and skills in the nursing profession, including the prevention of central venous catheter wound infections. The attitude of the nurse is an inner reaction that arises and is obtained based on her knowledge. Knowledge and attitude greatly influence a person's behavior. Knowledge, attitude, and practice of a nurse must be considered in an effort to prevent infection of central venous catheter wounds. Increased efforts to prevent and control wound infections in central venous catheters require supportive attitudes towards change for the better, especially for nurses.[14–16]

MATERIALS AND METHODS

The research design was descriptive correlational, aiming to analyze the relationship between knowledge and attitudes with the practice skills of nurses who treat wounds to prevent infection of central venous catheter wounds at Dharmais Cancer Hospital. The data were taken using the cross sectional method, where the data were obtained by observing the independent variable and the dependent variable simultaneously. The population and sample were 69 nurses with a Diploma III education level in the Teratai and Cempaka inpatient rooms at Dharmais Cancer Hospital, with a total sampling technique.

The instrument used in the form of a questionnaire, namely for nurses knowledge about central venous catheter wound care, nurses attitudes towards infection prevention and for nurses' practice in central venous catheter wound care. Data analysis using chi-square.

RESULT

Table 1. Frequency distribution of respondents based on their characteristics

Characteristics		n	%
Gender	Male	21	30.4
	Female	48	69.6
Age	< 25 years	15	22.0
	25 – 40 years	49	71.0
	> 40 years	5	7.0
Working period	1 – 5 years	36	52.0
	6 – 10 years	26	38.0
	>15 years	7	10.0
Education	Diploma III Nursing	69	100

Table 1 shows that all respondents in this study had a Diploma III education level. Most of them have a working period of 1 – 5 years as many as 36 people (52%). Of the 69 respondents, most of them were female, as many as 48 nurses (69.6%) and most of them were in the age range of 25-40 years, namely 49 nurses (71%).

Table 2. Frequency distribution of nurse knowledge

Knowledge	n	%
Good	49	71.0
Enough	20	29.0
Total	69	100

Table 2 shows that, most of the nurses in the criteria of good knowledge are 49 nurses (71%) and enough knowledge is as many as 20 nurses (29%).

Table 3. Frequency distribution of nurse attitude

Attitude	n	%
Good	65	94.0
Enough	4	6.0
Total	69	100

Table 3 shows that, most of the nurses in the criteria of good attitude were 65 nurses (94%) and 4 nurses had enough attitude (6%).

Table 4. Frequency distribution of nurse practice in central venous catheter wound care

Practice	n	%
Good	65	94.0
Enough	4	6.0
Total	69	100

Table 4 shows that, most of the nurses in 2 criteria, namely good practice as many as 49 nurses (71%) and enough practice as many as 20 nurses (29%).

Table 5. Chi-square analysis of the relationship between knowledge and nursing practice

Knowledge	Nurse practice						p-value
	Good		Enough		Total		
	n	%	n	%	n	%	
Good	48	70	1	1	49	71	
Enough	15	22	5	7	20	29	0.002
Total	63	91	6	9	69	100	

Based on table 5, it can be seen that, the results of the correlation test indicate that the p-value is 0.002 ($p<0.05$), so there is a significant relationship between knowledge and practice of nurses on efforts to prevent infection of central venous catheter wounds.

Table 6. Chi-square analysis of the relationship between attitude and nursing practice

Attitude	Nurse practice						p-value
	Good		Enough		Total		
	n	%	n	%	n	%	
Good	63	91	2	3	65	94	
Enough	0	0	4	6	4	6	0.001
Total	63	91	6	9	69	100	

Based on table 6, it can be seen that, the results of the correlation test indicate that the p-value is 0.001 ($p<0.05$), so there is a significant relationship between attitude and practice of nurses on efforts to prevent infection of central venous catheter wounds.

DISCUSION

The level of knowledge is closely related to one's education and experience, where a nurse with high education and supported by good work experience will make the nurse understand the cognitive aspects of an object.[17,18]

Based on the results of the study, there was a significant relationship between knowledge and practice of nurses on efforts to prevent infection of central venous catheter wounds. This is supported by the results of the study which showed that most of the respondents had good knowledge about prevention of central venous catheter wound infection, namely 49 nurses (71%). Knowledge is very influential on a person's attitudes and actions, in the sense that the better the respondent's knowledge about preventing central venous catheter wound infection, the better the respondent's attitude towards efforts to prevent central venous catheter wound infection.

Knowledge or cognitive is dominant which is very important for the formation of one's actions because from experience and research it turns out that behavior based on knowledge will be more lasting than behavior that is not based on knowledge. Knowledge generally comes from the senses that occur through the human senses, namely the senses of sight, hearing, smell, taste and touch. Knowledge included in the cognitive domain

has 6 levels, including knowing (know) is defined as remembering a material that has been studied previously, understanding (comprehension) is defined as an ability to explain correctly about known objects, and can interpret the material correctly, application (application) is the ability to use the material that has been studied in real situations or conditions, analysis (analysis) is a component to describe material or an object into components, but it is still in an organizational structure and is still related to each other, synthesis (synthesis) refers to an ability to create or connect parts in a new whole form, and evaluation (evaluation) is related to the ability to make an assessment of a material or object.[19]

Based on the results of the study, there was a significant relationship between the attitude of nurses and the practice of nurses towards efforts to prevent infection of central venous catheter wounds. This is supported by the results of the study which showed that most of the attitudes of nurses towards the prevention of central venous catheter wound infection were in the good attitude category, as many as 65 nurses (94%).

Attitude is an individual's tendency to make a closed response to certain stimuli or objects in the surrounding environment. Attitude is still a readiness or willingness to act, not implementing certain motives or in other words attitude is not yet an action or activity. This can be caused by the education level of the respondents, most of whom have a D3 Nursing educational background, where the higher the education level of a person, the better the level of knowledge and creates a positive attitude towards the application of prevention of central venous catheter wound infection.[20,21] This is also in accordance with Notoatmodjo's theory which suggests that education is a change in human beings so that education is one of the factors that can influence a person's perception to make it easier to make decisions and act.[19]

CONCLUSION

Based on the results of the study, it can be concluded that there is a relationship between the level of knowledge and attitudes of nurses in wound care to the practice of nurses in preventing wound infections in patients with central venous catheters in hospitals.

ACKNOWLEDGEMENTS

The authors thank all participants and research assistants who have participated in conducting the research.

CONFLICT OF INTEREST

The author declared that don't have conflict of interest

ETHICAL CLEARANCE

This research has received ethical approval from the Research Ethics Committee, Dharmais Cancer Hospital No.092/KEPK/VIII/2020.

REFERENCES

1. Carpman JR, Grant MA. Design that cares: Planning health facilities for patients and visitors. John Wiley & Sons; 2016.

2. Graban M, Toussaint J. Lean hospitals: improving quality, patient safety, and employee engagement. Productivity Press; 2018. https://doi.org/10.4324/9781315380827

3. Mehta Y, Gupta A, Todi S, Myatra SN, Samaddar DP, Patil V, et al. Guidelines for prevention of hospital acquired infections. Indian J Crit care Med peer-reviewed, Off Publ Indian Soc Crit Care Med. 2014; 18(3):149. https://doi.org/10.4103/0972-5229.128705

4. Shaughnessy MK, Micielli RL, DePestel DD, Arndt J, Strachan CL, Welch KB, et al. Evaluation of hospital room assignment and acquisition of Clostridium difficile infection. Infect Control Hosp Epidemiol. 2011; 32(3):201-6. https://doi.org/10.1086/658669

5. Ismainar H. Keselamatan pasien di rumah sakit. Deepublish; 2015.

6. Frykholm P, Pikwer A, Hammarskjöld F, Larsson AT, Lindgren S, Lindwall R, et al. Clinical guidelines on central venous catheterisation. Acta Anaesthesiol Scand. 2014; 58(5):508-24. https://doi.org/10.1111/aas.12295

7. Deliberato RO, Marra AR, Corrêa TD, Martino MDV, Correa L, Dos Santos OFP, et al. Catheter related bloodstream infection (CR-BSI) in ICU patients: making the decision to remove or not to remove the central venous catheter. PLoS One. 2012; 7(3):e32687. https://doi.org/10.1371/journal.pone.0032687

8. Au AK, Rotte MJ, Grzybowski RJ, Ku BS, Fields JM. Decrease in central venous catheter placement due to use of ultrasound guidance for peripheral intravenous catheters. Am J Emerg Med. 2012; 30(9):1950-4. https://doi.org/10.1016/j.ajem.2012.04.016

9. Chopra V, Anand S, Hickner A, Buist M, Rogers MAM, Saint S, et al. Risk of venous thromboembolism associated with peripherally inserted central catheters: a systematic review and meta-analysis. Lancet. 2013; 382(9889):311-25. https://doi.org/10.1016/S0140-6736(13)60592-9

10. Mushtaq A, Navalkele B, Kaur M, Krishna A, Saleem A, Rana N, et al. Comparison of complications in midlines versus central venous catheters: are midlines safer than central venous lines? Am J Infect Control. 2018; 46(7):788-92. https://doi.org/10.1016/j.ajic.2018.01.006

11. Potter PA, Perry AG, Stockert PA, Hall AM. Fundamentals of Nursing. 8th ed. St Louis, Missouri Elsevier Mosby. 2013; 643-57.

12. Sudono B, Arumawati DS, Haris RA. Gambaran kemampuan berpikir kritis perawat primer dalam pelaksanaan asuhan keperawatan di Rumah Sakit Islam Surakarta. J Ilmu Keperawatan Indones. 2017; 10(1).

13. Basri B, Utami T, Mulyadi E. Konsep dasar dokumentasi keperawatan. Media Sains Indonesia; 2020.

14. Feo R, Kitson A. Promoting patient-centred fundamental care in acute healthcare systems. Int J Nurs Stud. 2016;57:1-11.

https://doi.org/10.1016/j.ijnurstu.2016.01.006

15. Aloush S. Educating intensive care unit nurses to use central venous catheter infection prevention guidelines: effectiveness of an educational course. J Res Nurs. 2018; 23(5):406-13. https://doi.org/10.1177/1744987118762992

16. Azwar S. Sikap manusia: teori & pengukurannya. Yogyakarta: Pustaka Pelajar. 2015;

17. Karaman S. Nurses' perceptions of online continuing education. BMC Med Educ. 2011; 11(1):1-6. https://doi.org/10.1186/1472-6920-11-86

18. Sitorus E, Prabawati D. Hubungan tingkat pengetahuan dan motivasi perawat dengan tingkat kepatuhan dan ketepatan dalam melakukan five moment hand hygine. J Ilm Kesehatan Keperawatan. 2021; 17(1):32-40. https://doi.org/10.26753/jikk.v17i1.529

19. Notoatmodjo S. Ilmu perilaku kesehatan. Jakarta: rineka cipta. 2010; 200:26-35.

20. Watson JB, Kimble GA. Behaviorism. Routledge; 2017. https://doi.org/10.4324/9781351314329

21. Akerjordet K, Severinsson E. The state of the science of emotional intelligence related to nursing leadership: an integrative review. J Nurs Manag. 2010; 18(4):363-82. https://doi.org/10.1111/j.1365-2834.2010.01087.x