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Original Research Article

THE CORRELATION BETWEEN NURSES KNOWLEDGE AND PHLEBITIS PREVENTION EFFORTS AT IDAMAN HOSPITAL, BANJARBARU CITY

Muhammad Fasya Aminullah [1], Herry Setiawan [1*], Eka Santi[1], M. Hadarani[2], Lola Illona E.K[1]

[1]School of Nursing, Faculty of Medicine, Universitas Lambung Mangkurat, Indonesia.
[2] RSD Idaman Kota Banjarbaru

***Correspondence:**
Herry Setiawan
Management Nursing Department, School of Nursing, Faculty of Medicine, Universitas Lambung Mangkurat, South Kalimantan, Indonesia
Email: ners_herry@ulm.ac.id

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Abstract

Background: A hospital is a type of healthcare facility that provides a variety of services. During the course of the treatment, patients may experience an increase in severity due to infectious diseases, one of which is Healthcare Associated Infections (HAIs). Another common type of HAIs is phlebitis. Phlebitis is a common infection associated with healthcare. Phlebitis prevention initiatives are primarily dependent on the expertise of nurses, this knowledge is directly tied to the nurses' performance of their duties and the success or failure of those duties in preventing patients from contracting phlebitis.
Objectives: The purpose of this study was to determine the correlation between nurse's knowledge and phlebitis prevention efforts at Idaman Hospital, Banjarbaru City
Methods: A cross-sectional, correlational design was adopted for this research. Probability sampling using stratified random sampling is used for the sampling. In all, 129 nurses made up the study's sample. Data was gathered using questionnaires on basic demographics of the nurse, nursing knowledge, and phlebitis prevention efforts by nurse.
Results: The results of the study found that there is a correlation between knowledge and efforts to prevent phlebitis at Idaman Hospital, Banjarbaru City (p value=0.001; OR=3.77). Nurses who have good knowledge have the opportunity to make efforts to prevent phlebitis events optimally by 3.77 times compared to nurses who have poor knowledge.
Conclusion: The better the nurse's understanding of the incidence of phlebitis, the more effective will be the nurses' efforts to avoid phlebitis at Idaman Hospital in Banjarbaru City.

Keywords: *Nurse's Knowledge, Phlebitis, Prevention Effort*

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INTRODUCTION

Medical institutions such as hospitals provide patients a wide range of services, from those strictly preventative to those more focused on treatment and recovery. During the course of treatment, a patient's health may worsen if they are exposed to an infectious disease (Nadeak, 2017) Community-acquired infections (CAIs) and Healthcare-Associated infections (HAIs) are two types of infectious diseases (Saragih & Perangin-Angin, 2021). Health care-associated infections (HAIs) are

infections that manifest in a patient within 48-72 hours after the initial treatment or within 10 days of treatment completion, according to the Centers for Disease Control and Prevention (CDC) (Collins, 2008).

Phlebitis is one of the most common Healthcare Associated Infections (HAIs). Symptoms of phlebitis, a kind of healthcare-associated infection (HAI), often occur at least 72 hours after intravenous treatment has been given (Rahayu & Kadri, 2017). Among developing nations in Southeast Asia, the CDC found that the rates of phlebitis were greatest in Malaysia (12.70%), Philippines (10.10%), and Indonesia (9.80%) in 2017. Those findings are detailed in a new study (Nito & Wulandari, 2020). Phlebitis is more common in public hospitals (50.11%) than in private hospitals (32.70%), according to 2017 data from the Indonesian Ministry of Health (Rahmawati, Marliany, & Sukmawati, 2020). Six months of phlebitis surveillance data from January to June 2019 at Ulin General Hospital, Banjarmasin showed the following: Surgical Area Infection (3.64%), Ventilator Associated Pneumonia (0.69%), Urinary Tract Infection (0.037%), Phlebitis (0.063%), and Decubitus (0.013%) (KPMKP, 2019)

When phlebitis strikes a patient in the hospital, it can have serious consequences. Disablement to death, a longer hospital stays (Increased Length of Stay), and the loss of a patient's capacity to perform a vital job are only some of the negative outcomes that can occur to patients (Alexander, Corrigan, Gorski, Hankins, & Perucca, 2010). Loss of income, stress and worry over the family member's illness, and higher out-of-pocket costs as a result of longer treatment times are only some of the negative effects (Weston, 2013).

Patients with phlebitis will have an increased length of hospital stay. Length of Stay (LOS) is the time patients spend receiving medical care in the emergency room, beginning when they register or enter the emergency room and ending when they return home or transfer to another unit (Rathlev et al., 2012). In 2018 study found that patients with phlebitis caused a five-day increase in treatment time (Ohannessian et al., 2018). In contrast, study conducted in Indonesia at the Inpatient Room of RSU X Manado indicated that the incidence of phlebitis increased the length of patient care to 11 days, although the normal LOS value for a patients range from 7-9 days (Langingi, Watung, Sibua, & Tumiwa, 2022).

Based on the Decree of the Ministry of Health of the Republic of Indonesia Number 1128 of 2022 concerning Hospital Accreditation Standards, prevention of phlebitis is included in the fifth of the six Patient Safety Goals, namely reducing the risk of infection related to health services. This regulation explains that hospitals can establish regulations that can be used and implemented in accordance with evidence-based hand hygiene guidelines with the aim of reducing the risk of infection related to health services (Kepmenkes RI, 2022). Prevention of phlebitis itself is an effort made by nurses to reduce the incidence of phlebitis. This effort is aimed at minimizing the incidence of phlebitis which is part of the Infection Prevention and Control Program (PPI) (Kemenkes RI, 2017). A study conducted in 2021 explained that the factors that can influence nurses in carrying out efforts to prevent phlebitis are knowledge, attitudes, motivation of the nurses themselves (Hamdayani & Adha, 2021).

Regulation of the Ministry of Health of the Republic of Indonesia No. 129 of 2008 concerning minimum hospital service standards stipulates the standard limit for the incidence of phlebitis in a hospital is ≤1.5% or 15 per mil (Kemenkes RI, 2008). Based on data from a preliminary study conducted at RSD Idaman Kota Banjarbaru on March 19-30 2022, it was found that there was an increase in the prevalence of phlebitis at Idaman General Hospital, Banjarbaru City from 1.33 per mil (0.133%) in 2020 to 2.28 per mil (0.228%) in 2021. Based on the interviews conducted, the efforts to prevent phlebitis in general that have been carried out by nurses are carrying out hand hygiene measures and using PPE before taking action on patients. As for the efforts made to

prevent the occurrence of phlebitis, the nurses took actions such as assessing the incidence of phlebitis using the VIP (Visual Infusion Phlebitis) Score, giving the patient's infusion date, and changing the location of the infusion needle. Based on the results of observations made in 4 out of 7 inpatient rooms, it was found that 20 patients had infusion sets installed, but of these 20 patients, all patients were not given the date of infusion in the fixation area. Based on the facts and phenomena above, prospective researchers are interested in knowing the relationship between nurse knowledge and efforts to prevent phlebitis at Idaman General Hospital, Banjarbaru City.

Objective(s): The aim of the study was to find the relationship between the knowledge of nurses and efforts to prevent the incidence of phlebitis at Idaman Hospital, Banjarbaru City.

METHODS

Study Design

This study employs a quantitative approach with a cross-sectional design to examine the connection between the independent variable and the dependent variable in a number of samples drawn from the population at the same time.

Setting

This study was conducted in seven inpatient rooms at the Idaman Hospital in Banjarbaru, Indonesia. Beginning in August 2022 and concluding in September 2022, researchers will collect data for the study.

Research Subject

Samples were gathered from the community at Idaman General Hospital in Banjarbaru City using probability sampling techniques, specifically a sampling strategy that gives equitable opportunity for a population (Sudigdo and Sofyan, 2014). A stratified random sampling was used to collect the sample. This method collects data by paying attention to or dividing a population into several groups in such a way that these groups do not overlap with one another. Following this, samples were drawn at random from each of these groups, which are referred to as strata (levels). For the purpose of this study, the researchers grouped the most recent education of the nurses who worked in the inpatient rooms of RSD Idaman Banjarbaru City.

There are a total of 163 nurses working in the seven inpatient rooms at the Idaman Gnereal Hospital in Banjarbaru City. According to the findings of the computations performed with the slovin formula (Nursalam, 2015). The total number of respondents who participated in this study was 129. After the researchers had determined the proportion of the number of samples in each inpatient room of Idaman Hospital, Banjarbaru City.

Instruments

Researchers utilized three instrument/questionnaire in this research. The first instrument holds the identities of all nurses. This questionnaire focuses on the general characteristics of nurses, including name (initials), age, gender, length of service, final education, clinical nurse career path, and job status.

The second instrument is comprised of nurses' knowledge of phlebitis and preventative measures. This questionnaire was self-designed by adapting literature from (Alexander et al., 2010; Gorski, 2017; Hamdayani & Adha, 2021; Lee, Kim, & Kim, 2019; Lulie, Tadesse, Tsegaye, Yesuf, & Silamsaw, 2021; Mandal & Raghu, 2019; Mihala et al., 2018; Nilamsari, Safitri, & Putri, 2020; Potter, Perry, Stockert P., & Hall, 2013; Rahayu & Kadri, 2017; Rohani & Setio, 2010). This questionnaire assesses nurses' knowledge of the incidence of HAIs in general, the incidence of phlebitis, the classification of phlebitis events, risk factors for phlebitis events, the impact of phlebitis events, and phlebitis therapy. This questionnaire consists of 20 multiple-choice question (MCQ) items from which the respondent must select only one accurate response based on his own judgement. Interpretation of values based on the Guttman scale yields a score of 1 for questions answered correctly and 0 for

questions answered wrong. The outcomes of the collected scores range between poor (<75%) to good (≥75%). This questionnaire has been tested by expert judgment on 3 experts, with an interpretation of the results of the I-CVI score of 0.94.

The third instrument details the preventative measures taken by nurses in the room to avoid phlebitis. This questionnaire was self-made by adapting previous research, specifically (Guanche-Sicilia et al., 2021; Pérez-Granda et al., 2020). This survey focuses on measures done by nurses to prevent phlebitis in the hospital. This questionnaire consists of 14 questions using a Likert scale, with alternate responses for positive statements, namely Always=4, Often=3, Sometimes=2, and Never=1, and for negative statements, namely Always=1, Often=2, Sometimes=3, and Never=4. The outcomes of the collected scores range between less optimal (if it is less or equal to the median value) to optimal (when above the median value). This questionnaire has been tested by expert judgment on 3 experts, with an interpretation of the results of the I-CVI score of 0.97. Then this questionnaire has been tested for construct validity with a total item correlation value of > 0.3388. As well as the value of the reliability test with Cornbach's alpha value of 0.888.

Data Analysis

The analysis used the Chi-Square test was used using statistical software with a significance level $\alpha<0.05$.

Ethical Consideration

This research has received an ethical letter from the research ethics committee of the Faculty of Medicine, University of Lambung Mangkurat with ethical number 236/KEPK-FK ULM/EC/VIII/2022.

RESULTS

Demographic of Respondents

Based on table 1, the result found that the most of the nurse respondents at Idaman Hospital in Banjarbaru City were in the age range of 26-35 years, namely in the early adult category as many as 92 people (71.31%). Most of them were female, 73 people (56.69%). Most of the respondents' last education was Diploma in nursing as many as 70 people (54.27%). Nearly half of the career paths of the nurse respondents at Idaman Hospital in Banjarbaru City are PK I as many as 50 people (38.76%). Most of the employment status of nurse respondents at Idaman Hospital, Banjarbaru City, were at most BLUDs, with 74 people (57.37%) and the average length of service for nurse respondents at Idaman Hospital, Banjarbaru City was 6.49 years, with the latest respondent's tenure of 1 years and the longest is 29 years.

Table 1. Distribution Characteristic of Respondents by Age, Sex, Education level, Career path, Employment status, and Length of Service (f=129)

Variable		F	%
Age	17-25 years	10	7.77
	26-35 years	92	71.31
	36-45 years	24	18.60
	46-55 years	3	2.32
	56-65 years	0	0
Sex	Male	56	43.41
	Female	73	56.69
Education level	Diploma of Nursing	70	54.27
	Bachelor of Nursing	2	1.55
	Registered Nurse	57	44.18
Career Path	Pra-PK	30	23.26
	PK I	50	38.76
	PK II	20	15.50
	PK III	27	20.93
	PK IV	2	1.55
	PK V	0	0
Employment Status	PNS	55	42.63
	BLUD	74	57.37
Length of service	**Mean**	**Min-Max**	**Std. deviation**
	6.49 years	1-29	5.739

Sources: Primary Data of Questionnaire, 2022

Table 2. Distribution of Frequency of Nurse Knowledge Regarding Phlebitis Incidence at Idaman Hospital, Banjarbaru City (f=129)

Nurse's Knowledge	F	%
Good	71	55.04
Less good	58	44.96
Total	**129**	**100**

Sources: Primary Data of Questionnaire, 2022

According to the finding presented in table 2, it is known that the majority of nurse respondents (71 of 129 respondents/55.04%) in 7 inpatient room of Idaman Hospital, Banjarbaru City have a good level of knowledge.

Table 3. Distribution of Frequency of Nurse Efforts to Prevent the Incidence of Phlebitis by Nurses at Idaman Hospital, Banjarbaru City (f=129

Efforts to prevent the incidence of phlebitis by nurses.	F	%
Optimal	50	38.76
Less optimal	79	61.24
Total	**129**	**100**

Sources: Primary Data of Questionnaire, 2022

According to the finding presented in table 3, it is known that the majority of nurse respondents (79 of 129 respondents/61.24%) in 7 inpatient room of Idaman Hospital, Banjarbaru City made efforts to prevent phlebitis incidents less than optimally.

Examination of the Correlation between Nurses Knowledge and Phlebitis Prevention Efforts at Idaman Hospital, Banjarbaru City

Table 4. Examination of The Correlation Between Nurses Knowledge and Phlebitis Prevention Efforts at Idaman Hospital, Banjarbaru City using Chi Square on 2022

Nurse's Knowledge	Efforts to Prevent the Incidence of Phlebitis by Nurses				Total		OR (95%)	*p-value*
	Optimal		Less Optimal					
	f	%	f	%	f	%		
Good	34	47.89	37	52.11	**71**	**55.04**	3.767 (1.739-8.161)	**0.001**
Less Good	45	77.59	13	22.41	**58**	**44.96**		
Total	**79**	**61.24**	**50**	**38.76**	**129**	**100.0**		

Sources: Primary Data Questionnaire, 2022

Based on the results of the data analysis in Table 4 using the Chi-Square test with a significance level of $\alpha < 0.05$, a p-value = 0.001 and an Odds Ratio (OR) of 3.767 are obtained. Based on the OR, it can be seen that the knowledge of nurses influences their efforts to prevent phlebitis at RSD Idaman Banjarbaru City, where nurses who have good knowledge have the opportunity to make efforts to prevent phlebitis events optimally by 3.77 times compared to nurses who have poor knowledge. Based on the results of data analysis, a p-value $< \alpha$ ($0.001 < 0.05$) was also obtained, which means that it can be concluded that there is a correlation between knowledge and efforts to prevent phlebitis at Idaman Hospital, Banjarbaru City.

DISCUSSION

According to the findings of a study that was carried out by researchers, it was discovered that there was a correlation between the nurses' knowledge and the nurses' prevention efforts in preventing phlebitis at Idaman Hospital, Banjarbaru City (P Value = 0.001) in the study's population of nurses. With an OR value of 3.77, this indicates that nurses who have a high level of knowledge are maximally capable of preventing phlebitis by a factor of 3.77 times when compared to nurses who have a low level of knowledge.

Knowledge is the impression humans obtain while using their five senses to perceive an object (Kiran & Dewi, 2017). According to Syarianingsih Syam & Kurnia Widi Hastuti,

(2018), knowledge is the principal capital for developing skills and attitudes. Knowledge inspires individuals to improve their behaviour. Therefore, personnel must be equipped with sufficient information to support their ability to carry out their responsibilities in accordance with a testable theory (Notoadmojo in (Syarianingsih Syam & Kurnia Widi Hastuti, 2018). Widari, Nirmala, & Yunita, (2022) assert that medical personnel's knowledge is the most crucial factor in providing medical services. As health professionals with main responsibility for nursing services and delivering holistic and comprehensive care, nurses must have a thorough understanding of how to prevent phlebitis as part of their professional duties.

According to the findings of research carried out by (Osti, Khadka, Wosti, Gurung, & Zhao, 2019), even though only 82.47 percent of respondents have sufficient information, 84.72 percent of respondents really practiced the correct care and maintenance of PIVC. In spite of the fact that the vast majority of nurses who participated in this study possessed substantial familiarity and experience with peripheral IV cannulation care and maintenance, the fact that certain nurses lacked this familiarity and expertise was observed, which could put patients in danger. It was further described that one of the primary concerns for the potential consequences of PIVC insertion, including phlebitis, is the placement and maintenance of the insertion by nurses who are incompetent and unskilled in clinical services. This can lead to an increase in costs as a result of the patient's extended stay in the hospital, further diagnosis, examination, and treatment were all necessary. According to a meta-analysis conducted by Lv & Zhang (2019), phlebitis can be prevented with proper intravenous therapy administration and maintenance.

Hassan et al., (2022) discovered a correlation between the two variables: the stronger the nurses' knowledge of acceptable PIVC insertion procedures, the larger the frequency of proper PIVC insertion practises ($\rho = 0.038$, $n = 77$, $p = 0.742$). In addition, this survey revealed that 72.7% of nurses lacked the necessary abilities for the PIVC installation process. Infiltration, extravasation, and neuropathy are possible problems of PIVC usage, however the majority of nurses are unaware of these dangers. 68.8 percent of nurses gave the incorrect response that the PIVC installation procedure was clean. This is worrying since the installation of PIVC requires the use of sterile procedures; if this is not taken into account, it may become a source of infection; thus, an aseptic approach must be used during the installation of PIVC. This study demonstrates a good association between nurses' knowledge and their actual practice. The more the nurses' understanding of PIVC, the more they will sweat genuine PIVC. Watung (2019) found that, of 84 patients who had an infusion, 46.6% had inadequate aseptic technique (n=39) and 33.3% of responders had phlebitis (n=28). These findings were corroborated by these findings. p=0.003 indicated that there was an association between the usage of aseptic methods and the occurrence of phlebitis with OR=4.868 based on the findings of cross-tabulation. Rusnawati, Bachtiar, & Deswita, (2020) discovered that non-sterile disinfection procedures are related with a considerably higher incidence of phlebitis than sterile ones (p=0.001, OR=3.333). Moreover (Baker and Anderaon in Watung, 2019), phlebitis may be prevented with correct aseptic infusion procedures, suitable IV catheters based on the size of the patient's veins, cautious placement based on the fluid administered, and catheter rotation at least once every 72 hours (3 days).

A nurse's knowledge can influence how their manages and maintains the intravenous therapy area, where PIVC therapy has the potential to cause various issues or even death due to the dangers and repercussions linked with it. Nurses must be knowledgeable and experienced in all aspects of intravenous infusion administration and care, in order to avoid patients from experiencing phlebitis. By delivering excellent care and safer procedures to patients, nurses must have substantial

knowledge and good practice skills in the administration of intravenous therapy to patients undergoing treatment, where aseptic techniques might lead to the development/occurrence of phlebitis in patients. If the aseptic technique is not followed correctly by the nurse, the incidence of phlebitis will rise. The aseptic technique is intended to reduce the risk of additional complications in patients as a result of intravenous therapy administered by nurses, one of which is phlebitis. These complications can cause harm to patients, such as increasing the length of time patients are treated, which results in higher treatment costs for patients.

CONCLUSION

There is a correlation between knowledge and efforts to prevent phlebitis at Idaman Hospital, Banjarbaru City. The better the nurse's understanding of the incidence of phlebitis, the more effective will be the nurses' efforts to avoid phlebitis at Idaman Hospital in Banjarbaru City. In order to prevent patients from developing phlebitis, nurses must be aware and skilled in all facets of intravenous infusion administration and care.

SUGGESTIONS

With the aim of optimizing efforts to avoid phlebitis in patients, nurses should continue to improve their understanding of phlebitis prevention and develop standard operating procedures (SOPs) for installing and maintaining an IV line. In the treatment room units, the Nursing Care Team Leader or IPCLN (Infection Prevention and Control Nurse) can supervise the nurses working in their rooms to always optimally prevent phlebitis in patients treated in the room. For affiliated health care agencies, in order for working nurses to maximize their efforts to minimize the occurrence of phlebitis in patients, nurses can gain or expand their expertise. For further researchers, they can continue this research by conducting experimental research with a quasi-experimental design, namely providing intervention to one group and another group as a control group, which then compares the data between pre-intervention and post-intervention in each group or further researchers can carry out research with a case control method design, namely a study by following one group and conducting an assessment at the end of the study.

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DECLARATION OF CONFLICTING INTEREST

There is no conflict of interest in this research.

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