RESEARCH ARTICLE

Nurses' knowledge of perceived thrombophlebitis risk factors and its prevention practice at a teaching hospital in Malaysia

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Abstract:

Thrombophlebitis is an inflammation of the blood vessel wall related to presence of intravenous access devices. It is vital for nurses to be knowledgeable and practice the preventive measures for thrombophlebitis. The aim for this study is to identify nurses' knowledge on risk factors of thrombophlebitis, nurses' practice on prevention of thrombophlebitis and its relationship at Hospital Al-Sultan Abdullah (HASA). A quantitative cross-sectional study was conducted among 120 nurses in selected ward at Hospital Al-Sultan Abdullah HASA). A stratified random sampling followed by simple random sampling was used to recruit the samples. A self-administered questionnaire was distributed for data collection via Google form. The researchers used Statistical Package for Social Sciences (SPSS vs.28) to analyze the frequency and percentage for level of knowledge and level of practice of nurses. For the relationship between nurses' perception and practice on prevention of thrombophlebitis, Spearman Rho was used to analyze the data. The mean percentage of nurses' knowledge was good 87.02 %, SD 8.27% and the mean percentage for nurses' practice was also good 85.25 %, SD 8.28%. Besides, there was a significant but weak relationship between nurses' perception and practice on preventing thrombophlebitis with the p-value <0.05. Nurses play a crucial part in preventing thrombophlebitis. Even though the knowledge and practice in this study were good, there are minority of respondents with low scores, thus nurses need to maintain and improve their knowledge and skills periodically to play a crucial role in preventing thrombophlebitis.

Keywords: Perception, Risk factors, Practice, Thrombophlebitis, Prevention, Nurses

1. INTRODUCTION

Intravenous (IV) therapy serves a wide range of purpose such as blood sampling, medication administration and nutritional supplementation. Because it is an invasive therapy, it places the client at a high risk of developing an infection. The infection that commonly occurs may require further treatment, placing the patient in discomfort and pain nevertheless prolonging hospitalization and cost incur. The most common local adverse reaction associated with intravenous therapy is called phlebitis (Phillips & Gorski, 2014).

The clinical manifestations of Phlebitis include palpable venous cord, localized redness, warmth, and swelling. Thrombophlebitis is defined as the inflammation of the vessel wall due to the formation of blood clot (Dwivedi, Singh, & Gaharwar, 2018). Most nursing interventions and preventive strategies, such as placing, observing, and evaluating a peripheral venous catheter site, was part of standard nursing care (Arbaee, 2016). Therefore, nurses holds responsibility for the prevention of thrombophlebitis. With proper care and maintenance to the hospitalized client, thrombophlebitis could be prevented.

The complications associated with peripheral IV cannula and IV therapy may have a devastating effect on patient's health and quality of life (Dwivedi et al., 2018). Several studies claimed that nurses' understanding of risk factors and application of thrombophlebitis prevention techniques not only lowered the incidence of phlebitis but also lessen the burden of prolong hospitalization (Milutinović, Simin, & Zec, 2015). The quality of care, patient safety, and patient satisfaction ratings could all been improved because of nurses' understanding and early identification of phlebitis risk factors, which could also shorten hospital stays and lowered total healthcare cost (Milutinović et al., 2015). This shows nurses with good knowledge and skill with well planned and implementation of nursing care may improve overall health outcome of the patient.

2. MATERIALS AND METHODS

2.1 Questionnaire instrument

The study utilized an online questionnaire to gather data from the respondents. The questionnaire was adopted with permission from two previous studies: "Perception of Risk Factors for Phlebitis Among Malaysian Nurses" by (Ying, Yusuf, & Keng, 2020) with the Chronbach's Alpha value of 0.8 and "Assess Nurse Knowledge and Practice Towards Care and Maintenance of Peripheral Intravenous Cannulation in Services Hospital Lahore, Pakistan" by (Zonobia, Muhammad, & Robina, 2018) with the Chronbach's Alpha value of 0.9.

2.2 Sample collection

This study employed a stratified sampling involving nurses from various adult care wards such a medical, surgical, orthopedic, psychiatric, ICU, and obstetrics and gynecology wards with the population of (N=152). The required sample size was (n=120). A computer generated simple random sampling name list was then used to select participants to fill the required sample size. Prior to data collection, ethical clearance was obtained from UiTM Research Ethical Committee and from the Department of Research, Innovation & Industrial Linkage of Hospital Al-Sultan Abdullah (HASA). Consent from participants was obtained prior to completing the questionnaire. The link to the questionnaire was made available for each nurse, allowing them time to complete it. The researcher verified the completion of each survey. To ensure participant's privacy and confidentiality, all data were protected using password.

2.3 Statistical analysis

Data were analyzed using Statistical Package for Social Sciences (SPSS) Version 28. A descriptive analysis of frequency and percentage were applied to identify nurses' perceptions of the risk of thrombophlebitis at HASA and to determine nurses' practice on the prevention of thrombophlebitis at HASA. Spearmen Rho was utilized to determine the relationship between nurses' perception and practice on the prevention of thrombophlebitis.

3. RESULTS AND DISCUSSION

3.1 Socio-demographic characteristics of respondents

Socio-demographic characteristics of the respondents by age, gender, highest level of nursing education, years of clinical experience, and clinical area (Table 1). A total of 120 respondents among staff nurses at HASA aged less than 30 years old to more than 40 years old willingly participated in the present study. 65 out of 120 respondents (54.2%) were from the age group of 30-40 years old. A total of 95% (n=114) of respondents were female. As for their level of education, 111 of the respondents (92.5%) were diploma holders, 6.7% (n=8) were degree holders and only 0.8% (n=1) of them held a master. 2.5% (n=3) of the respondents had less than 2 years of clinical experience and 55 (45.8%) of them had 5-10 years of experience. For the clinical area, 30% (n=36) are those from medical ward and only 7 respondents out of 120 were from psychiatric ward (5.8%).

Table 1. Demographic data of respondents (n=120)

Variables	Frequency (n)	Percentage (%)
Age (Years)(n=120)		
< 30	52	43.3
30-40	65	54.2
> 40	3	2.5
Gender		
Male	6	5.0
Female	114	95.0
Highest Level of Nursing Education		
Diploma	111	92.5
Degree	8	6.7
Master	1	0.8
Years of Clinical Experience		
<2 years	3	2.5
2-5 years	34	28.3
5-10 years	55	45.8
>10 years	28	23.3
Clinical Area		
Medical Ward	36	30.0
Surgical Ward	19	15.8
Intensive Care Unit (ICU)	27	22.5
Orthopaedic Ward	14	11.7

Psychiatric Ward	7	5.8
Obstetrics & Gynaecology Ward	17	14.2

3.2 Knowledge on thrombophlebitis risk factors among nurses

The level of knowledge, which was categorized as poor, moderate, and good as shown in Table 2 adapted from Ying et al. (2019). There were 105 respondents (87.5%) with a good perception level, followed by 15 (12.5%) with a moderate level of perception. Finally, there was no respondents (0%) who had poor perception level.

Table 2. Score range for level of knowledge (n=120)

Level Of Perception	Score Range (%)	Total Sample, n=120	
		Frequency	Percentage (%)
Moderate	≥50 - <80	15	12.5
Good	≥80-100	105	87.5

**Overall Mean Score (SD): 87.02% (8.27%)*

3.3 Nurses' practice on preventing thrombophlebitis

Table 3 displayed the level of practice, which was divided into three categories: poor, acceptable, and good adapted from Suliman et al. (2018). 7 respondents (5.8%) had an acceptable practice whereas 111 respondents (92.5%) had a good practice. Unfortunately, two of the respondents (1.7%) who had poor practice.

Table 3. Score range for level of practice (n=120)

Level Of Practice	Score Range (%)	Total Sample, n=120	
		Frequency	Percentage (%)
Poor	<50	2	0
Acceptable	≤50-75	7	5.8
Good	>75-100	111	94.2

**Overall Mean Score (SD): 85.25% (8.28%)*

3.4 Correlation between knowledge and practice

Table 4 shows the correlation between perception score and practice score. The p-value was 0.017 and the correlation coefficient was 0.217.

Table 4. Correlation between perception and practice score (n=120)

Variables	Practice Score	
	Correlation coefficient (r)	p-value
Perception Score	0.217	0.017*

**Spearman Rho*

Majority of nurses had good knowledge on risk factors of thrombophlebitis. Even so, there was a small percentage of nurses who scored moderately. A similar study findings showed that nurse's perception were generally good, but it was less than satisfactory in some area (Chong, Yusuf, & Keng, 2020). On the contrary, other study mentioned that nurses were not knowledgeable on every aspect of IV cannulation (Hossain, 2016).

This study findings also revealed that majority of the respondents in HASA had good levels of practice and a minority of them reported moderate and poor levels. This was supported in an earlier study by Osti et al. (2017) whereby most of their respondents were following the right procedures. In contrast, a different study by Zonobia et al. (2018) showed that their nurses only practice at a very low level. The researcher further elaborated that the findings indicate that nurses generally follow the procedures but fall short in applying them.

In concise, this study showed a very good results on nurses' practice on prevention of thrombophlebitis. With only 20 patients per ward, nurses are likely to have sufficient time to observe and care for each patient effectively. Additionally, the age demographic of the nursing staff, with the majority under 40 years old, may have contributed positively to their performance. As a result, their combination of time availability and relatively young age may facilitate further improvements in their practices for preventing thrombophlebitis.

This study found that there was significant positive weak relationship between nurses' perception on risk factors of thrombophlebitis and its prevention practice. This elaborates that the more knowledgeable staff nurses are about thrombophlebitis risk factors, the better their practices will be.

Conversely, the relationship between these two variables appears to be weak. This illustrates that having good knowledge does not necessarily correlate with excellent nursing practices. Knowledgeable nurses may reduce the risk factors of thrombophlebitis

still malpractice and ignorance of the minority of the respondents with modest knowledge could lead to decrease quality of care (Khoso et al., 2021).

4. CONCLUSION

The high rates of thrombophlebitis are concerning as it is the most common occurring complication related to cannulation.. Nurses play a crucial part in the prevention of thrombophlebitis. This study found a significant association between nurses' perceptions and their practices regarding IV cannulation, although the correlation analysis revealed a positive but weak relationship. Despite the significant relationship, there is a need for new approaches and corrective actions to ensure that nurses receive specialized training. Such training would enhance their knowledge and confidence in IV cannulation and care, ultimately reducing the risk of complications that could jeopardize patient safety.

ACKNOWLEDGEMENTS

Authors would like to acknowledge both UiTM and HASA with special thanks to all professional and health care workers in HASA for supporting this study.

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