

**KNOWLEDGE REGARDING PERCEPTION OF RISK FACTORS FOR
PHLEBITIS AMONG NURSING STUDENTS**

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Paper Received: 24.01.2022 / **Paper Accepted:** 06.03.2022 / **Paper Published:** 11.03.2022**Corresponding Author:** Saba Bibi; Email: sabahabib32@gmail.com; doi:10.46360/globus.met.320221002

Abstract

Nursing care in the hospital is important for health promotion, improved outcomes, and health and well-being restoration. This includes care for the implantation, upkeep, and able to monitor of peripheral intravenous cannula. Phlebitis (physical, biological, and microbial) is a popular local complicating factor of external intravenous fluids delivered via a cannula. The accepted pressure injury rate is 5% or less, as per the Infusion Nursing profession Society (INS) guidelines.

Material and Method: The design of this study was quantitative descriptive cross sectional to assess knowledge regarding perception of risk factors for phlebitis among nursing student. The study was held in university of Lahore for 6 months, a quantitative descriptive cross sectional design was used. The students had sample size 94. SPSS version 21 analyzed the results.

Results: A lack of acknowledgement of features navy blue shaker cabinet's risk factors was another source of worry. Even though our study has recommended that cannula size affects the progress of phlebitis, 60% percent of nurses in this investigation were uninformed that by using a 16G cannula raises the risk of phlebitis.

Conclusion: The majority of nurses failed to acknowledge the adverse effects of cannula content, length and width, time between cannula alternatives, and solutions used to wash the central line as possible risk factors. Nevertheless, risk factors associated with the client and the injected therapy was well recognized.

Keywords: Knowledge, Perception, Risk Factor, Phlebitis.

Introduction

Nursing care in the hospital is important for health promotion, improved outcomes, and health and well-being restoration. This includes care for the implantation, upkeep, and able to monitor of peripheral intravenous cannula (Astle, 2019) [2].

Phlebitis (physical, biological, and microbial) is a popular local complicating factor of external intravenous fluids delivered via a cannula. The accepted pressure injury rate is 5% or less, as per the Infusion Nursing profession Society (INS) guidelines. However, research results show a great difference in incidence rate. According to Webster, the nosocomial infection rate ranges from 2.3 percent to 67 percent (3). Age, gender, and related illnesses are the most common patient-related possible causes. The incidence of varicose veins rises with age, with most raised the following that obvious signs of phlebitis were current in around half of patients above the stage of 60 (Vidhya, 2017) [18].

The Gorki Model for Safe Administration Of drugs, which estimates positive health outcomes which including side effect, preventative measures, and patient and the health care provider satisfaction, occurs when four important areas are properly examined: proper patient selection, improved health education, careful and thorough patient care and detailed surveillance and evaluation, and multi professional teamwork and coordination, according to the INS Codes of Quality 2016. These are only probable when fact transfusion care is provided by knowledgeable and skilled nurses (Urbanetto, 2016) [17].

Some states still have a higher incidence of phlebitis. According to (Peixoto) 2016 research in Brazil, the occurrence of phlebitis is 1.25 percent when a peripheral vascular catheter is placed, and

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1.38 percent after an IV is removed. Moreover, elevated phlebitis rates occur in the UK, ranging from 20 to 80 percent. In Pakistan, the incidence of phlebitis keeps rising, varying from 70% to 80% (Mohammad, 2016).

As a result, the Centers for Disease Control and Prevention (CDC) and the Healthcare Infection Control Practices Advisory Committee (HICPAC) generated the Interventions for the Management of Intravascular Catheter-Related Infections (Center European Prevention and Controls disease 2016), and other guidelines were developed in Europe. These guidelines cover the following topics: catheter selection, implantation site selection, infection control practices and cutaneous antibiotic therapy during catheterization, catheter maintenance and site care, cannula substitute techniques, and antibacterial drugs prophylactic.

As an outcome, there is a need to acknowledge the most common possible risks in continuing to support phlebitis in RST dr. Soedjono Magelang so that pressure injury prevention and management can be reduced and the quality of health services in hospitals can be managed to improve (Gargar, 2017) [4].

It is essential to evaluate intravenous access on a regular basis in order to identify bacteremia early. If the evaluation is complete on a scale, it will be simpler to share the results and take appropriate action. Many health centers would not use a scale to evaluate phlebitis. It is important to identify the rate of phlebitis and the challenges in order to facilitate action. This is a systematic review developed to evaluate the rate and intensity of phlebitis on a level and to identify factors associated for phlebitis (Yeesin, 2017) [20].

Purpose of Study/Objective

The purpose of study to investigate nurses' perceptions awareness and practices of phlebitis and the side effects for phlebitis in nursing students of education clinic in university of Lahore. Its ultimate goal was to support health decision makers in reducing the incidence of phlebitis in IV therapy patients by given that professional nurse learning on phlebitis promotion and knowledge.

Research Questions

What is the Knowledge regarding perception of risk factors for phlebitis among nursing students?

Significance of the Study

The aim of study is to provide a wide range of information regarding risk factors of phlebitis in nursing. It is highly suggested that nursing staff play an active role in prolonged nursing practice

meant to improve their expertise of peripheral venous catheter care.

Literature Review

According to Abdul Haque Khoso (2021) [6], inadequate detection or delayed reporting promotes 20 to 80 percent of phlebitis. Numerous studies have also found that healthcare professionals' skills not only decrease the incidence of phlebitis but also the hospital's responsibility. The goal of the nurse is to improve the patient's condition by using good experience and competencies, reducing external catheter side effects, and improving the quality of services. According to this study, the incidence of phlebitis in Pakistan was 7% in 2006 and since then has increased to 17% in 2016 (Abdul Haque Khoso, 2021).

According this study, a research was conducted in West Bengal, India, from July 2018 to April 2019. In our survey, the occurrence of phlebitis was found to be 31.4 percent. The female gender, age less than 60 years, injections in the lower extremity, large cannula size, catheterization inserted in emergency cases, and Intravenous drug management were all correlated with increased estimated incidence of phlebitis (Mandal, 2019) [10].

A study was conducted at Kathmandu University (2020), and phlebitis established in 136/230 patients, according to the research results (59.1 percent). In most cases, it was very mild. According to this study, male sex, small catheter size (20G), placement at the site of left arm, Intravenous fluids drug management, and blood components transfusion were associated with the increased incidence rate of infusion related phlebitis. After three days of catheterization, the rate of phlebitis increased significantly (Annand, 2020) [1].

A Study was conducted in Malaysia, according to this study; Tan et al. (2012) discovered that 35.2 percent of the 428 adult patients with an external catheter in surgical and medical wards had thrombophlebitis in a tertiary care teaching hospital in Tanzania's central region.

This year 2020 According to Ying, C, nurses' knowledge and early identification of risk factors in the development of phlebitis may help to reduce this complication. Nurses play a key role in preventing phlebitis. Early diagnosis will enable for prompt treatment, avoiding risks to treatment and reducing the occurrence of phlebitis (Ying, 2020) [21].

Phlebitis causes emergency surgery and therapeutic interventions to be extended, increases economic

consequences, reduces positive patient outcomes, and can result to other health problems such as septicemia, pain, unpleasantness, anxiety, the chance of clot formation, deep vein thrombosis, and infarction.

Furlan, M.S. stated in 2020 that The Infusion Nurses Society (INS) advises that the acknowledged of phlebitis rate be 5% or less. Nowadays, a 0.5 percent to 59.1 percent phlebitis occurrence is approximated, with an incidence of between 20 and 80 percent of participants going to follow intravenous treatment (Furlan, 2020) [3].

According to this study, 88.9% of the subjects said for continuous fluid phlebitis and 11.1% said for intermittent fluid phlebitis, and found significant, which comparable which is the similarity with a cross-sectional study agreed that continuous peripheral infusion is increased the risk of phlebitis when compared to intermittent flow of infusion. According to the literature, pattern infusion has a significant relationship with phlebitis, as does continuous administration of peripheral fluid and infusion flow rate (Maki, 2016) [9].

According to this study, thrombophlebitis is the most severe and common complication associated with IV catheterization with incidence varying from 7.14 % to 79% in different settings. In a study conducted in 2019 in Karachi the incidence came out to be 7.14 % and in a similar study conducted in Karachi in 2016 thrombophlebitis occurred in 16% of the study population (Jamal, 2019) [5].

According to another study conducted in Islamabad, 26% of the catheters were removed due to thrombophlebitis and the incidence came out to be 41.2%. In 2011 study conducted in Lahore and similarly 79% of the patients suffered from thrombophlebitis in a research conducted in Multan in 2015 (Bashir, 2015).

According to this Malaysian study, thrombophlebitis is the inflammation of the vessel wall caused by the formation of a blood clot. Localized redness, warmth, swelling, and a palpable venous cord are clinical signs of phlebitis. Patient characteristics, therapy administered, health professional practices, and cannula characteristics have all been identified as risk factors for the development of phlebitis in studies conducted over the last two decades.

Methodology

Study Design

A descriptive cross sectional study is designed to figure out awareness regarding perception of risk factors for phlebitis among nursing students.

Sample Size

The population of this study was selecting nursing undergraduates of LSN university of Lahore. The goal population consists of 94 students of nursing.

Study Setting

This study was conducted in the University of Lahore Nursing students.

Study Population

The 3rd year and 4th year of BScN nursing students, and post RN students for the study population.

Sampling Technique

Simple random sampling was used in this study

Research Instrument

A well written organized and approved inquiry form from the study was used for group of data from the applicant. After taking informed approval, information was collected from Nursing Student.

Data Gathering Procedure

A proper written document of approval to conduct the study was essential. Also, proper consent was achieved from writers to use this survey and the feedback form was spread to the nursing students

Inclusion Criteria

This includes 3rd year or 4th year, Post RN nursing students to contribute in our research study and who gave informed consent.

Exclusion Criteria

The Exclusion criteria 1st year, 2nd year nursing students were not in our research study, this part also rejects those who will be far away at the time of the data collection method.

Study Duration

The study took more than 2 months to complete i.e. from September 2021 to December 2021.

Data Collection Techniques

Various students were evaluated for the purpose of recognizing complications. Assessment contains survey, explanations, attention groups, discussions.

Ethical Consideration

In this study, ethical consideration was preferred for this purpose; the permission was obtained from the ethical committee of the health care institution before data collection. It is a written approval from the head of the department of Lahore school of Nursing in the form of consent was taken before data collection from participants. Students were given with the right of autonomy.

Results

Table 1: Demographic Characteristic of Participant's

Gender	Female	54(57.4%)
	Male	40(42.6%)
	Total	94(100%)
Education of the Students	BSN 3 rd year	49(52.12%)
	BSN 4 th year	41(43.61%)
	Post RN	4(4.25%)
	Total	94(100%)
Age of the Students	Less than 20 years	69(73.4%)
	20-25 year	25(26.6%)
	Total	94(100%)

Table 2: Knowledge Regarding Perception of Risk Factors for Phlebitis Among Nursing

SrNo	Question	Response	f (%)
1	Do you think that the infusion of drugs that are acidic increases the risk for phlebitis	Yes No Don't, know Total	66(70.2%) 13(13.8%) 15(16%) 94(100%)
2	Do you think that the infusion of drugs that are alkaline increases the risk for phlebitis	Yes No Don't, know Total	11(11.7%) 26(27.7%) 57(60.6%) 94(100%)
3	Do you think that the infusion of drugs that have a high osmolality increases the risk for phlebitis	Yes No Don't, know Total	27(28.7%) 39(41.5%) 28(29.8%) 94(100%)
4	Do you think that the infusion of drugs that have a high concentration increases the risk for phlebitis	Yes No Don't, know Total	71(75.5%) 4(4.3%) 19(20.2%) 94(100%)
5	Do you think that the risk of phlebitis increases if flushing is not done after the administration of medication	Yes No Don't, know Total	41(43.6%) 35(37.2%) 18(19.1%) 94(100%)
6	Do you think that the risk for phlebitis increases if flushing is not done in between each administration of medications	Yes No Don't, know Total	55(58.5%) 16(17%) 23(24.5%) 94(100%)
7	Do you think that the administration of large volumes of crystalloids and colloids at high flow rates increases the risk for phlebitis	Yes No Don't, know Total	66(70.2%) 21(22.3%) 7(7.4%) 94(100%)
8	Do you think that trauma to the vein during cannula insertion increases the risk for phlebitis	Yes No Don't, know Total	42(44.7%) 17(18.1%) 35(37.2%) 94(100%)
9	Do you think that replacing the cannula more frequently than every 72-96 hours (3-4 days) increases the risk	Yes No Don't, know Total	20(21.3%) 38(40.4%) 36(38.3%) 94(100%)
10	Do you think that leaving the cannula in situ for more than 96 hours (4 days) increases the risk for phlebitis	Yes No Don't, know Total	38(40.4%) 17(18.1%) 39(40.1%) 94(100%)

11	Do you think that insertion of the cannula into antecubital fossa increases the risk for phlebitis	Yes No Don't, know Total	44(46.8%) 25(26.6%) 25(26.6%) 94(100%)
12	Do you think that the use of 16G cannula increases the risk for phlebitis	Yes No Don't, know Total	20(21.3%) 38(40.4%) 36(38.3%) 94(100%)
13	Do you think that preparation of the skin with 2% of chlorhexidine in alcohol before cannulation decreases the risk for phlebitis	Yes No Don't, know Total	55(58.5%) 25(26.6%) 14(14.9%) 94(100%)
14	Do you think that maintaining hand hygiene and aseptic techniques during care of the cannulated site decrease the risk for phlebitis	Yes No Don't, know Total	17(18.1%) 21(22.3%) 56(59.6%) 94(100%)
15	Do you think that a soiled dressing increases the risk for phlebitis	Yes No Don't, know Total	46(48.9%) 18(19.1%) 30(31.9%) 94(100%)
16	Do you think that cannulation for a patient with age of 60 or above increases the risk for phlebitis	Yes No Don't, know Total	22(23.4%) 32(34%) 40(42.6%) 94(100%)
17	Do you think that cannulation for a patient with diabetes mellitus increases the risk for phlebitis	Yes No Don't, know Total	65(69.1%) 13(13.8%) 16(17%) 94(100%)
18	Do you think that cannulation for a patient with ongoing infection increases the risk for phlebitis	Yes No Don't, know Total	22(23.4%) 31(33%) 41(43.6%) 94(100%)
19	Do you think that daily assessment of cannulation site for signs of phlebitis decreases the risk for phlebitis	Yes No Don't, know Total	55(58.5%) 24(25.5%) 15(16%) 94(100%)

Discussion

The goal of this study was to look into nurses' perception of phlebitis adverse outcomes in university of Lahore. Regardless of the fact that the Health ministry Malaysia Nursing Schism accepted for publication Recommendations on Secure Mode Of operation for Administering of Total parenteral nutrition (Bolus) Treatments for Nursing staff (Health Ministry Malaysia Registered Nurse Division, 2017), only 56.8% of people participating said that they had a clear understanding of phlebitis risk variables including such acidification, osmotic pressure, and transfusion concentration of the drug. Nurses are usually expected to be educated with peripheral venous therapy.

A lack of acknowledgement of features navy blue shaker cabinet's risk factors was another source of worry. Even though some studies have recommended that cannula size affects the progress

of phlebitis, 57.3 percent of nurses in this investigation were uninformed that by using a 16G cannula raises the risk of phlebitis. Artificial phlebitis, as according Martinho and Rodrigues (2018), occurs when the catheter is too wide for the chosen vein, causing excessive pressure on the vein's interior lining, resulting in inflammation.

The broad and thick passage of the cannula may promote phlebitis, as according Kaya (2016), while Urbanetto (2016) [17] observed a important link between both the use of the larger cannula and the occurrence after infusion of phlebitis.

The result that 56.3 percent of the nurses didn't even consider that inserting the catheter more commonly than every 72 to 96 hours (3 to 4 days) could increase the side effects of phlebitis is also reason for concern. This is opposed to Standardized criteria (O'Grady et al, 2011), which indicated that

outer venous cannulas should not be exchanged less regularly than every 72 to 96 hours to reduce vein inflammation and traumatic phlebitis.

The study found that 84.9 percent of nurses were knowledgeable that separation the cannula in place for more than 96 hours (4 days) could raise the threat of phlebitis.

This not only indicates a high level of knowledge of the risk of contagious phlebitis, but also confirms (Cicolini, 2014) findings from a cross observational field education, which found that the chance of obtaining phlebitis rose with cannula duration, increasing at 96 hours. After 96 hours, phlebitis rates reached 90–100%, according to Endogen and Dent (2016). Another encouraging result was that 84.4 percent of nurses believed that appropriately securing cannulas reduces the risk of phlebitis.

Limitation

The study was conducted during a short period of time .data was collected from university of Lahore, knowledge regarding risk factors of phlebitis.

Conclusion

In hospital settings, phlebitis is a frequent cause of peripheral venous catheter insertion. Even though their information of phlebitis adverse outcomes was normally decent, the nurse respondents' awareness of phlebitis risk factors might be less than satisfied. In some areas It is highly suggested that nursing staff play an active role in prolonged nursing practice meant to improve their expertise of peripheral venous catheter care. The majority of nurses failed to acknowledge the adverse effects of cannula content, length and width, time between cannula alternatives, and solutions used to wash the central line as possible risk factors. Nevertheless, risk factors associated with the client and the injected therapy was well recognized. Nurses were aware that some intrinsic illnesses, and also the phlebitis impacts of certain medicines and liquids, such as Ceftriaxone, Benzyl penicillin, Magnesium Glubionate, Theophylline, and Monotherapy Carbamazepine, enhanced the frequency of phlebitis.

Conflict of Interest

There is no conflict of interest between the authors in this manuscript.

Acknowledgement

First of all, I am grateful to the Allah Almighty for establishing me to complete this research. I wish to express my sincere thanks to Mr. Muhammad Afzal, Principal of Lahore School of Nursing and Prof. Dr. Syed Amir Gilani, Dean, Faculty of

Allied Health Sciences for providing me with all the necessary facilities. I would like to thank my supervisor, Kousar Parveen and Co-Supervisor - Dr. Kabir Ozigi Abdullahi for providing guidance, encouragement and valuable time to carry out this project. My appreciations also go to all the faculty members of the Department of Lahore School of Nursing for their help, encouragement and taught best knowledge of the subjects. Last but not least, I am very thankful to my family and friends to their encouragement and support. It is a huge pleasure for me to conduct this research as a learner. Thank You!

References

1. Anand, L., Lyngdoh, V., Chishi, L., Chyne, I. D., Gandhimathi, M. & Borgohain, U., (2020). "Risk factors of phlebitis in adult patients of tertiary teaching hospital of North-Eastern India."
2. Astle, B.J., Duggleby, W., Potter, P.A., Perry, A.G., Stockert, P.A. and Hall, A.M., (2019). "Canadian Fundamentals of Nursing (6th ed.)", Milton, Canada: Elsevier Inc Canada.
3. Furlan, M.S. and Costa-Lima, A.F., (2020). "Direct cost of procedures for phlebitis treatment in an Inpatient Unit."
4. Gargar, A.P., Cutamora, J.C. & Abocejo, F.T., (2017). "Phlebitis, Infiltration, and Localized Site Infection Among Patients with Peripheral Intravenous Catheters". *European Scientific Journal*
5. Jamal, Z., Umair, M., Zubair, R., Zafar, N., Rauf, F. & Affif, M., (2019). "Peripheral Intravenous Catheter related Thrombophlebitis -Incidence and Risk Factors A Cross Sectional Study". *Journal of Rawalpindi Medical College*.
6. Khoso, A.H., (2021). "Associated Risk Factors of Phlebitis among Registered Nurses at PMC Hospital Nawabshah". *Experience and Education Based Study*.
7. Lal, B., (2020). "Factors Contributing To Phlebitis Among Patients Admitted In Medical-Surgical Units At Tertiary Care". *Liaquat Medical Research Journal*.
8. Luyu L, Zhang J. "The incidence and risk of infusion phlebitis with peripheral intravenous catheter."
9. Maki, D.G. and Ringer, M., (2016). "Risk factors for infusion-related phlebitis with small peripheral venous catheters: a randomized controlled trial". *Annals of internal medicine*.
10. Mandal A. & Raghu K., (2019). "Study on incidence of phlebitis following the use of peripheral intravenous catheter". *Journal of Family Medicine and Primary Care*.
11. Mandal, A. & Raghu, K., (2019). "Study on incidence of phlebitis following the use of peripheral intravenous catheter."

12. Mohammed, E.K. and James, S., (2018). "A Cross Sectional Study to a Cross Sectional Study to Assess Nurse's Perception of Risk Factors for Infusion Phlebitis in Selected Hospitals, Jazan, Saudi Arabia". *IOSR Journal of Nursing and Health Science*
13. Pradini, P.C.A., (2016). "Faktor-Faktor yang Berhubungan Dengan Kejadian Phlebitis pada Pasien Rawat Inap di RSUD Tugurejo Semarang". *Jurnal Ilmu Kesehatan Masyarakat UNNES*.
14. Sarı D., Eser I. and Akbıyık A., "Phlebitis associated with peripheral intravenous catheters and nursing care."
15. Shahnaz, A., Bashir, M. and Khan, B., "Incidence of Phlebitis with Intravascular Cannulas in Surgical Patients during the Postoperative Period."
16. Sumara, R., (2017). "Hubungan Lokasi Terapi Intravena dengan Kejadian Plebitis". *Journal Keperawatan Muhammadiyah*.
17. Urbanetto, J. de S., Peixoto, C.G. and May, T.A., (2016). "Incidence of Phlebitis Associated with The Use of Peripheral IV Catheter and Following Catheter Removal". *Revista Latino -Americana de Enfermagem*.
18. Vidhya, (2017). "Effectiveness of Aloe Vera Gel Application Versus Magnesium Sulphate Application on Reduction of Intravenous Phlebitis Among Adult Patients In Annammal Hospital". Kuzhithurai (Dr. M.G.R. Medical University).
19. Webster J., Osborne S. & Rickard C.M., (2013). "Clinically-indicated replacement versus routine replacement of peripheral venous catheters."
20. Yeesin, A., Rojanaworarit, C. and Chansatitporn, N., (2017). "Incidence of Peripheral Phlebitis and its Predictive Characteristics In female Inpatients Hospitalized at a Public Hospital in Thailand."
21. Ying, C.X., Yusuf, A. & Keng, S.L., (2020). "Perceptions of risk factors for phlebitis among Malaysian nurses."
22. Ying, C.X., Yusuf, A. & Keng, S.L., (2020). "Perceptions of risk factors for phlebitis among Malaysian nurses". *British Journal of Nursing*, 29(2), S18-S23.