DOI: https://doi.org/10.54393/pjhs.v4i05.692

PAKISTAN JOURNAL OF HEALTH SCIENCES

https://thejas.com.pk/index.php/pjhs

Volume 4, Issue 5 (May 2023)

Original Article

Knowledge and Practice of Nurses Regarding Prevention of Deep Vein Thrombosis among Critically ill Patients Admitted in ICU In Pubic Tertiary Care Hospital

Nusrat Parveen [1*], Sarfraz Masih[1] and Muhammad Afzal[1]

[1]Lahore School of Nursing, Faculty of Allied Health Sciences, The University of Lahore, Lahore, Pakistan

ARTICLE INFO

Key Words:

Deep Vein Thrombosis (DVT), Knowledge, Practice, Prevention

How to Cite:

Parveen, N. ., Masih, S. ., & Afzal, M. . (2023). Knowledge and Practice of Nurses Regarding Prevention of Deep Vein Thrombosis among Critically ill Patients Admitted in ICU In Pubic Tertiary Care Hospital: Prevention of Deep Vein Thrombosis among Critically ill Patients. Pakistan Journal of Health Sciences, 4(05). https://doi.org/10.54393/pjhs.v4i05.692

***Corresponding Author:**

Nusrat Parveen

Lahore School of Nursing, Faculty of Allied Health Sciences, The University of Lahore, Lahore, Pakistan

nusratcheema176@gmail.com

Received Date: 3rd April, 2023

Acceptance Date: 23rd May, 2023

Published Date: 31st May, 2023

ABSTRACT

Deep vein thrombosis is the major cause of disability and death worldwide and it is a major preventable contributor. There is a wide range of literature reported about DVT. **Objective:** To find out the association between education and duration of working experience of nurses with their knowledge and practice. **Methods:** Analytical cross-sectional study design was conducted on 56 nurses. Purposive sampling technique was used to recruiting study participants. Data were collected through international tool. Data were analyzed through SPSS VS-24. P-value ≤0.05 was considered significant. **Results:** Majority of the participants was females (96.4%) of mean age 33.41 ± 5.30 years and 53.6% of nurses had poor knowledge. Out of the total 56 nurses, 02(3.6%) were male and 54(96.4%) were females. Most of the nurses included in the study had a BS Nursing diploma of 23(41.1%), a general nursing diploma of 22(39.3%), and a post-basic 11(19.6%). About fifty percent (46.4%) participants had poor practices. There was a significant association between nurses' knowledge and experience of nurses in the field (p-value<0.05). **Conclusions:** Nurses had good knowledge of the prevention of DVT and somehow of the practices of DVT. It was also found that, nurses have low levels of general knowledge of DVT, risk factors of deep vein thrombosis, and unsatisfactory practices about the prevention of DVT.

INTRODUCTION

A major preventable contributor to morbidity and mortality on a global scale is deep vein thrombosis (DVT) [1]. One of the most prevalent avoidable causes of mortality is deep vein thrombosis and it is important to screen out the subjects who are at higher risk of having deep vein thrombosis, those with orthopedic, stroke, cardiology diagnoses, Diabetes mellitus (DM), and overweightness to begin preventative treatment as soon as possible [2]. There is a wide range of disparity in the reported frequency of deep vein thrombosis, which ranges from 48 per 100,000 to 160 per 100,000 [3]. As much as 75% of venous thromboembolism-related deaths are thought to be caused by hospital-acquired venous thromboembolism, with half of these incidents developing shortly after hospitalization for surgery or a medical condition [4]. Long-term immobilization, the use of sedatives and analgesics, deep vein catheterization, tracheotomy, surgery or other invasive procedures, and possibly even cancer are all potential risk factors for deep vein thrombosis, which is a very lethal lump of blood that can occur in intensive care unit patients [5]. Those people, who are already at a high risk of morbidity and mortality, these factors will collectively raise the risk of DVT. As a result, ensuring that patients in the ICU don't develop DVT is of the utmost importance [6]. To prevent Deep Venous Thrombosis, nurses can make a significant contribution, while having trainings will improve their knowledge and as well practices [7]. This study points out the future

DOI: https://doi.org/10.54393/pjhs.v4i05.692

researchers in the right direction to focus on improving paramedical staff's awareness and expertise in the prophylactic management of deep vein thrombosis (DVT) [8]. In many parts of the world, thrombotic diseases rank among the top causes of death and disability [9]. The prevention of deep vein thrombosis can be accomplished by the use of mechanical or pharmacological methods or both. The use of elastic compression stockings, intermittent pneumatic compression (IPC), and foot compression equipment are all examples of mechanical ways of prevention [10]. Utilization of heparin and heparin with a low molecular weight are components of pharmacological prophylaxis (LMWH) [11]. The role of the nurse in the delivery of care is essential to the functioning of the healthcare system [12]. There is a knowledge and practice gap among nurses in the prevention of deep vein thrombosis (DVT) [13]. If they had not enough knowledge and practices the patients could be affected adversely and it can cause death rates [14]. The primary responsibility of nurses regarding the treatment of DVT is to provide health education to patients about risk factors [15]. It is possible that nurses who provide treatment on a hospital level are the first members of the medical staff to recognize potential risks for deep vein thrombosis and to take appropriate action [16]. The objectives of this study were to assess the knowledge and practice of nurses regarding the prevention of deep vein thrombosis among critically ill patients admitted to ICU and to find out the association between education and duration of working experience of nurses with their knowledge and practice regarding prevention of deep vein thrombosis among critically ill patients of ICU.

METHODS

This analytical Cross-Sectional study was conducted on 56 participants in surgical, medical, ICU units at Services Hospital, Lahore. Non-probability purposive sampling technique was used to recruiting study participants. The sample size was calculated by 5% margin of error and 80% of power of test taking expected percentage of knowledge as 60%. Diploma holder, post-RN, Generic BSN, and MSN nurses of both genders between the ages of 25-50 years were included in this study. Nurses who have attended any additional session related to DVT management before the research period, nurses working in managerial posts, all nurses who are unwilling to participate, and nurses whose families have DVT were excluded. The data for this study were collected after taking the approval from research Ethical Committee of University of Lahore. The data were collected by the researcher. Informed consent was taken from each participant. Primary researcher explained the study. Collected data were kept private and confidentiality were assured. The tool "Knowledge and Practices of Nurses on Deep Vein Thrombosis (DVT) Risks and Prophylaxis" [17]. Permission has been taken through email conversation for use of the tool in this study. It was divided into three parts (A, B, & C). In part A, it consists on the demographic data of 4 items, (age, level of education, total years of service, years in recent working unit, and duration of working experience). In part B, it is measured through 34-item multiple-choice questions, adapted from a knowledge questionnaire. The correct response is marked as "1" and wrong or missed as "0". Knowledge is categorized as low level < 59% (0-20 score), moderate level 60-79% (21-27 scores), and high level 80-100% (28-34 scores). In part C, it was measured through 13 items of multiple-choice questions for measuring practice. Practice competency is categorized as low level <59 (1-23 scores) moderate level 60-79 (24-31 scores) and high level 80-100 (32-39 scores). Data were entered in SPSS Version-24.0 for analysis. For quantitative variables, mean ± SD was computed. For qualitative variables, frequency and percentage were computed. To find out the association between duration of work experience of nurses with their knowledge regarding the prevention of deep vein thrombosis among critically ill patients in ICU, a chi-square test was applied p-value < 0.05 was considered statistically significant.

RESULTS

In this study, table 1 shows that the mean age of study participants was 33.41 ± 5.30 years, the minimum age was 22 years and the maximum age was 45 years. From the total number of participants, those who were working in the medical ICU were 25 (44.6%) similarly in the surgical ICU were 30 (53.6%). Out of the total 56 nurses, 02(3.6%) were male and 54(96.4%) were females. Most of the nurses included in the study had a BS Nursing diploma of 23(41.1%), a general nursing diploma of 22(39.3%), and a post-basic 11(19.6%). The working experience of the nurses in the hospital, 53.6% of nurses had 1-5 years' experience, 32.1% of nurses had 6-11 years' experience, and 14.3% of nurses had 11-15 years' experience. Of the total participants, those who were working in their current department/unit for 1-5 years were 46(82.1%), and those who remained in the same department/unit for 6-10 years were only 10(17.9%) included in this study. Out of the total participants who had attended the workshop only 02(3.6%), and the majority of participants have not attended any DVT workshop were 54(96.4%).

Table 1: Demographic Characteristics of Participants (Nurses, n=56)

Demographic Characteristics	Frequency (%)
Gender	
Male	02(3.6)
Female	54(96.4)

DOI: https://doi.org/10.54393/pjhs.v4i05.692

Age (Years)	
Mean ± SD	33.41 ± 5.30
Min age	22 years
Max age	45 years
Working Unit of Employees	
Medical ICU	25(44.6)
Surgical ICU	31(55.4)
Level of Education	
General Nursing	22(39.3)
BS Nursing	23(41.1)
Post Basic	11(19.6)
Working Experience in the Hospital	
1 to 5	30(53.6)
6 to 10	18(32.1)
11 to 15	8(14.3)
Working Experience in the Current Unit	
1 to 5	46(82.1)
6 to 10	10(17.9)
Workshop attended on DVT	
Yes	2(3.6).
No	54(96.4)

Results revealed that 53.6% of nurses had poor knowledge, 26.8% of nurses had moderate knowledge, and 19.6% of nurses had high knowledge (Table 2).

Table 2: Nurses Knowledge about DVT

Level of knowledge	Frequency (%)
Low	30(53.6)
Moderate	15(26.8)
High	11(19.6)
Total	56(100)

According to table 3, 46.4% of nurses had poor practices, 51.8% of nurses had moderate practices, and only 1.8% of nurses had high practice levels.

Table 3: Levels of Practice

Levels of practice	Frequency (%)
Low	26(46.4)
Moderate	29(51.8)
High	01(1.8)
Total	56(100)

According to the above table 4, 13 (23.21%) of the study's total participants had low knowledge of DVT, including those who had worked for only one to five years. Even those who had worked for six to ten years also had low knowledge of DVT and those who had worked for 11-15 years had low-moderate knowledge.

Table 4: Association of Working Experience vs. Level of Knowledge

Working experience in a hospital (Years)	Level of Knowledge f (%)			Total	p-value
	Low	Moderate	High		
1 to 5	13(23.21)	7(12.50)	10(17.86)	30	0.042
6 to 10	13(23.21)	4(7.14)	01(1.79)	18	
11 to 15	04(7.14)	4(7.14)	0(0)	8	
Total	30	15	11	56	

DISCUSSION

The main focus of the present study was to assess the knowledge and practice of nurses regarding the prevention of deep vein thrombosis among critically ill patients admitted to the ICU and to find out the association between education and the duration of working experience of nurses with their knowledge and practice. The present study investigated 56 nurses, the minimum age was 22 years, and the maximum age was 45 years in this study. The mean age of the participants was 33.41 ± 5.30 years, in other study, the mean age was 27.7 years, 31.8 years of the participants. There were only 3.6% of males, and 96.4% of females included in the present study. In this study, those participants who were working in the medical ICU were 25 (44.6%) similarly in the surgical ICU 30 (53.6%). The level of education of the study participant was, from general nursing 22(39.3%), BS nursing 23(41.1%), and post-basic 11(19.6%). The level of experience from the total number of participants who had 1-5 years of experience was 30(53.6%), those who had 6-10 years of experience 18(32.1%), and those having experience 11-15 years were only 8(14.3%). The majority of the nurses had not attended the workshop on DVT 54(96.4%), and those attended the workshop only 2(3.6%). These findings were compared with literature discovered statistically significant variations between nurses' educational backgrounds and their prior experiences with various risk factors, preventative measures, and deep vein thrombosis practices. In was recommended in literature that for the enhancement of DVT knowledge, nurses must be educated on important subjects such as risk factors, treatment approaches, prevention of the disease, and therapeutic interventions. Though, through training, scientific symposiums, and workshops nurses' knowledge and practices should be continuously improved. In the present study, 53.6% of nurses had poor knowledge. Our study has a lower rate than others conducted in South Korea it was (74.3%), Ethiopia (60.5%) and 71.3% on Cyprus Island [17-19]. The results of the present study about nurses' knowledge of the prevention of DVT revealed that most of the items had correct responses (6 of 8) items. Premarathna *et al.*, conducted a quantitative study on hundred nurses in intensive care units and found that 42% of the nursing professionals had limited knowledge of how to prevent DVT in admitted patients in hospitals. DVT preventative measures can be mechanical or pharmaceutical. Elastic compression stockings, foot compression devices, and intermittent pneumatic compression are examples of mechanical prophylaxis strategies. Gradual compression stockings (GCSs) can lower the risk of incidence of DVT in both general and orthopedic surgery, according to a meta-analysis that was done to assess their efficacy for DVT

DOI: https://doi.org/10.54393/pjhs.v4i05.692

prevention in various groups of hospitalized patients [20]. Another contradicted our study; they had the majority of the wrong answers on DVT prevention [21]. In the present study, nurses had good knowledge about compression stockings, heparin, the elevation of legs, the exercise of foot and leg, bed rest, and fluid restriction. In the present study, it was revealed that 53.6% of nurses had poor knowledge, 26.8% of nurses had moderate knowledge, and 19.6% of nurses had high knowledge. In this study, good practice in DVT prevention had a higher rate than in previous studies, in the Ethiopian study 48.8% good practice rate of 44% conducted in Brazil [15, 18]. This gap may be caused by the fact that the Chinese study only evaluated nurses' prophylactic DVT prevention practices and small sample size. According to nurses' level of knowledge and working experience in the hospital, 13(23.21%) of the study's total participants had low knowledge of DVT, including those who had worked for only one to five years. Even those who had worked for six to ten years also had low knowledge of DVT and those who had worked for 11-15 years had low-moderate knowledge. In the same way, a study conducted by Yesuf *et al.*, found that the who's working experience was greater than 10 years, were more knowledgeable about DVT as compared to nurses with less than five years of professional experience. The results revealed that there is no significant association between nurses' knowledge and level of education as the p-value is statistically insignificant (p=0.258)[18].

CONCLUSIONS

In conclusion, the present study revealed that nurses had good knowledge of the prevention of DVT and somehow of the practices of DVT. It was also found that in the current study, nurses have low levels of general knowledge of DVT, risk factors of deep vein thrombosis, and unsatisfactory practices about the prevention of DVT.

Authors Contribution

Conceptualization: NP
Methodology: SM
Formal analysis: SM, MA
Writing-review and editing: NP, MA

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

Source of Funding

The authors received no financial support for the research, authorship and/or publication of this article.

REFERENCES

[1] Stone J, Hangge P, Albadawi H, Wallace A, Shamoun F, Knuttien MG, *et al*. Deep vein thrombosis: pathogenesis, diagnosis, and medical management. Cardiovascular Diagnosis and Therapy. 2017 Dec; 7(Suppl 3): S276. doi: 10.21037/cdt.2017.09.01.

[2] Malhotra K, Bawa A, Goyal K, Wander GS. Global impact of deep vein thrombosis awareness month: challenges and future recommendations. European Heart Journal. 2022 Sep; 43(36): 3379-81. doi: 10.1093/eurheartj/ehac252.

[3] Li W, Cao S, Liu B, Zhang Z, Liu Z, Feng H. Influence of the 4G/5G polymorphism of plasminogen activator inhibitor-1 gene in acute unprovoked deep vein thrombosis and residual vein thrombosis. Journal of Vascular Surgery: Venous and Lymphatic Disorders. 2023 Mar; S2213-333X(23)00070-7. doi: 10.1016/j.jvsv.2023.02.007.

[4] Lee KE, Lim F, Colombel JF, Hur C, Faye AS. Cost-effectiveness of venous thromboembolism prophylaxis after hospitalization in patients with inflammatory bowel disease. Inflammatory Bowel Diseases. 2022 Aug; 28(8): 1169-76. doi: 10.1093/ibd/izab246.

[5] Chatterjee D, Arendt KW, Moldenhauer JS, Olutoye OA, Parikh JM, Tran KM, *et al*. Anesthesia for Maternal–Fetal Interventions: A Consensus Statement from the American Society of Anesthesiologists Committees on Obstetric and Pediatric Anesthesiology and the North American Fetal Therapy Network. Anesthesia & Analgesia. 2021 Apr; 132(4): 1164-73. doi: 10.1213/ANE.0000000000005177.

[6] Mehta Y and Bhave A. A review of venous thromboembolism risk assessment models for different patient populations: What we know and don't! Medicine. 2023 Jan; 102(2): e32398. doi: 10.1097/MD.0000000000032398.

[7] Dyke EV, Jauncey-Cooke J, Johnston AN. e-Learning interventions for nurses to prevent venous thromboembolism in patients: A realist review. Journal of clinical nursing. 2022 Nov. doi: 10.1111/jocn.16571.

[8] Glize B, Cook A, Benard A, Sagnier S, Olindo S, Poli M, *et al*. Early multidisciplinary prevention program of post-stroke shoulder pain: A randomized clinical trial. Clinical Rehabilitation. 2022 Aug; 36(8): 1042-51. doi: 10.1177/02692155221098733.

[9] Abbas A, Raza A, Ullah M, Hendi AA, Akbar F, Khan SU, *et al*. A Comprehensive Review: Epidemiological strategies, Catheterization and Biomarkers used as a Bioweapon in Diagnosis and Management of Cardio Vascular Diseases. Current Problems in Cardiology. 2023 Jul; 48(7): 101661. doi: 10.1016/j.cpcardiol.2023.

DOI: https://doi.org/10.54393/pjhs.v4i05.692

101661.

[10] Kim DS, Won YH, Ko MH. Comparison of intermittent pneumatic compression device and compression stockings for workers with leg edema and pain after prolonged standing: a prospective crossover clinical trial. BMC Musculoskeletal Disorders. 2022 Dec; 23(1): 1-4. doi: 10.1186/s12891-022-05975-6.

[11] Ramakrishna R, Alexander W, Baytieh L. Use of a Mobile Intermittent Pneumatic Compression Device (Vekroosan) in Mobile Patients with Chronic Venous Disease. Journal of Hematology. 2021 Feb; 10(1): 8. doi: 10.14740/jh684.

[12] Khodier DI, Mahmoud FH, Hakeim EH, Mohamed SA. Assessment of nurses' knowledge and practice regarding prevention of deep venous thrombosis among hospitalized patients with COVID-19. ASSESSMENT. 2022 May; 5(2): 101-23. doi: 10.53730/ijhs.v6nS6.11120.

[13] Luo Y, Zhou C, Deng Q, Xu W, Zhang X. Prevention of deep venous thrombosis in stroke: a best practice implementation project. JBI Evidence Implementation. 2021 Sep; 19(3): 279-87. doi: 10.1097/XEB.0000000000000278.

[14] Lehan K and Lehan JR. Capstone Project: Educational enhancements to reduce venous thromboembolism events in orthopedic surgical patients. International Journal of Nursing & Health Care Science. 2021 Aug; 1(13): 53.

[15] Silva JS, Lee JA, Grisante DL, Lopes JD, Lopes CT. Nurses' knowledge, risk assessment, and self-efficacy regarding venous thromboembolism. Acta Paulista de Enfermagem. 2020 Aug; 33: 1-12. doi: 10.37689/acta-ape/2020A00125.

[16] Wang Y, Wu XJ, Ma YF, Xu Y, Wang XJ, Zhu C, *et al*. Chinese orthopaedic nurses' knowledge, attitude and venous thromboembolic prophylactic practices: A multicentric cross-sectional survey. Journal of Clinical Nursing. 2021 Mar; 30(5-6): 773-82. doi: 10.1111/jocn.15615.

[17] Shah SS, Abdi A, Özcem B, Basgut B. The rational use of thromboprophylaxis therapy in hospitalized patients and the perspectives of health care providers in Northern Cyprus. PLoS One. 2020 Jul; 15(7): e0235495. doi: 10.1371/journal.pone.0235495.

[18] Yesuf NN, Abebe T, Adane R, Lelisa R, Asefa M, Tessema M, *et al*. Nurses knowledge and practice towards prevention on deep vein thrombosis in University of Gondar Comprehensive Specialized Hospital, northwest Ethiopia. International Journal of Africa Nursing Sciences. 2021 Jan; 15: 100357. doi: 10.1016/j.ijans.2021.100357.

[19] Al-Mugheed KA and Bayraktar N. Knowledge and practices of nurses on deep vein thrombosis risks and prophylaxis: A descriptive cross-sectional study. Journal of Vascular Nursing. 2018 Jun; 36(2): 71-80. doi: 10.1016/j.jvn.2018.02.001.

[20] Premarathna KS, Rajapaksha AU, Adassoriya N, Sarkar B, Sirimuthu NM, Cooray A, *et al*. Clay-biochar composites for sorptive removal of tetracycline antibiotic in aqueous media. Journal of Environmental Management. 2019 May; 238: 315-22. doi: 10.1016/j.jenvman.2019.02.069.

[21] Sahoo S, Rani S, Parveen S, Singh AP, Mehra A, Chakrabarti S, *et al*. Self-harm and COVID-19 Pandemic: An emerging concern–A report of 2 cases from India. Asian Journal of Psychiatry. 2020 Jun; 51: 102104. doi: 10.1016/j.ajp.2020.102104.