

# Assessment of Knowledge Regarding Venous Thromboembolism Prophylaxis Among Staff Nurses at Intensive Care Units in a Selected Hospital in Palakkad

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## Abstract

*The present study was conducted to assess the knowledge regarding venous thromboembolism prophylaxis among staff nurses in intensive care units in a selected hospital in Palakkad. The objectives of the study were to assess the knowledge regarding venous thromboembolism prophylaxis among staff nurses in intensive care units, and to associate nurses' knowledge regarding venous thromboembolism prophylaxis with sociodemographic variables. A quantitative, nonexperimental descriptive exploratory research design was selected. Thirty samples were chosen through a non-probability convenience sampling method. Data were collected through questionnaire and analyzed by descriptive and inferential statistics. A total of 43.3% of nurses have average knowledge, 33.3% of nurses have good knowledge, 13.4% of nurses have excellent knowledge, and the remaining 10% of nurses have poor knowledge regarding venous thromboembolism prophylaxis. The present research found no notable correlation between the awareness of venous thromboembolism prophylaxis among intensive care unit staff nurses and their sociodemographic characteristics.*

**Keywords:** Venous thromboembolism, prophylaxis, intensive care units, anticoagulants, immobility, critical care

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## INTRODUCTION

Venous thrombosis is the formation of a thrombus (clot) in association with inflammation of the vein. Venous thromboembolism (VTE) ranks as the third most prevalent cardiovascular disorder. VTE prophylaxis encompasses both pharmacological and non-pharmacological interventions aimed at reducing the incidence of VTE [1]. Anticoagulants are considered the primary approach for preventing VTE. The actual frequency of VTE is challenging to ascertain due to its frequent asymptomatic presentation. In Western countries, the incidence is approximately one case of deep vein thrombosis (DVT) and 0.5 cases of pulmonary embolism (PE) per 1000 people per year [2]. Patients who are hospitalized face a heightened risk of VTE due to the presence of numerous risk

factors. Research from autopsy examinations has revealed that VTE occurs in hospitalized patients at rates reaching up to 34.7%, with fatal PE occurring in 9.4% of cases [3].

A staff nurse is a broad term used to describe an individual employed within a healthcare facility. They collaborate with other healthcare professionals to provide treatment and care for patients. Staff nurses are essential members of the healthcare team, often serving as frontline caregivers.

VTE is a frequent vascular condition that carries significant risks of death and complications. Past epidemiological research indicates annual incidence rates of 130 per 100,000 men and 100 per 100,000 women. Old age, obesity, malignancy, prolonged immobility, acute heart failure, hyperestrogenemia, and genetic susceptibility are the major factors for VTE development. Patients admitted to the intensive care unit (ICU) are at an increased susceptibility to VTE due to the presence of multiple compounded risk factors. Despite repeated recommendations for thromboprophylaxis in national and international guidelines, only 40% to 50% of medical patients and 60% to 75% of surgical patients actually receive appropriate thromboprophylaxis when admitted to hospitals.

Critical care nurses are vital in preventing VTE by managing risk factors, recognizing early symptoms in patients, and aiding in diagnosis. As health care providers, their role in safeguarding patients from VTE is crucial, and insufficient knowledge about VTE prophylaxis and appropriate nursing care can hinder effective nursing performance. This study investigates the understanding of VTE prophylaxis among nurses using structured questionnaires.

### **NEED FOR STUDY**

VTE is a frequent complication in critically ill patients and VTE prophylaxis is associated with reducing the risk of VTE in this patient population as the standard of care. Venous thromboprophylaxis is the most important patient safety strategy in patients admitted to an intensive care unit with increased rates of morbidity and mortality. Venous thromboprophylaxis is employed to minimize the risk of VTE.

Historically, the Asian population has been perceived to have a lower incidence of VTE events in contrast to the Western population. A retrospective study in Pakistan found a VTE prevalence of 5.6 per 10,000 critically ill patients, with only 24% receiving pharmacological thromboprophylaxis. In contrast, Indian hospitals reported a VTE incidence of 17.4 per 10,000 admissions.

Nurses play essential roles in VTE prophylaxis, including caregiving, educating, advocating, coordinating, and evaluating. A significant obstacle to effective nursing performance is a lack of knowledge about VTE prophylaxis. This study aimed to assess the knowledge levels of nurses in intensive care units regarding VTE prophylaxis, exploring the relationship between their knowledge and demographic factors through structured questionnaires.

This study will help to assess the knowledge of nurses about VTE and VTE prophylaxis in detail so that they can improve the knowledge in clinical nursing if there is a knowledge deficit. Every ICU should implement specific protocols, strategies, and ongoing surveillance as part of their care bundle. This research was conducted to assess the knowledge of nurses in ICUs, who are pivotal in preventing VTE due to their constant presence at the patient's bedside. The proficiency and understanding of these nurses are crucial for making informed care decisions, reducing patient risks, enhancing decision-making confidence, and preventing adverse outcomes in the treatment of patients with thromboembolism.

### **STATEMENT OF THE PROBLEM**

Assess the knowledge regarding VTE prophylaxis among staff nurses at ICUs in a selected hospital in Palakkad.

## **OBJECTIVES**

- To determine the level of knowledge regarding VTE prophylaxis among staff nurses.
- To find the association between nurses' knowledge and selected demographic variables.

## **REVIEW OF LITERATURE**

Al Aseri et al. [4] conducted a cross-sectional observational cohort study using a questionnaire to assess the knowledge and behavior of medical interns in Riyadh regarding VTE prophylaxis and treatment protocols.

The study concluded that the participants exhibited limited knowledge and unfavorable behavior concerning the assessment, diagnosis, and prevention of VTE. The majority expressed a need for additional training in this area. These findings highlight the importance of incorporating educational initiatives during undergraduate training and providing orientation for medical interns to enhance their understanding and practice of VTE risk assessment, diagnosis, and prevention protocols at the outset of their internship [4].

Wang et al. [5] conducted a preliminary study to assess registered nurses' knowledge of VTE prophylaxis through a nationwide survey in China. The aim was to identify disparities between current knowledge and guidelines to enhance clinical nursing practices. Results revealed that nurses with higher education levels, more experience, participation in continuing education, and those working in ICUs or in leadership roles exhibited better knowledge of thromboprophylaxis. Overall, the study highlighted varying levels of knowledge among nurses regarding VTE prophylaxis in China, with particular deficiencies noted in physical and pharmacological prophylaxis aspects [5].

Al-Hameed et al. [6] conducted a retrospective study to evaluate the effectiveness of a continuing medical education (CME) program on VTE prophylaxis. The study found that mortality rates were lower in patients who received VTE prophylaxis compared to those who did not. Furthermore, deaths associated with VTE accounted for 1.1% of total hospital deaths, down from 1.9% in the 12 months prior to the CME program. The findings suggest that CME programs designed to enhance VTE prophylaxis in tertiary-care hospitals lead to better usage of prophylaxis measures and reduced VTE-related mortality, making such programs highly beneficial [6].

## **METHODOLOGY**

### **Research Approach**

The methodology employed in this study is a quantitative research approach.

### **Research Design**

The study utilized a descriptive non-experimental research design to accomplish its goals.

## **SETTING OF THE STUDY**

The study was conducted in P K Das Institute of Medical Science, Vaniyamkulam.

## **SAMPLE AND SAMPLING TECHNIQUE**

The sample size of the present study was 30 staff nurses at ICUs in P K Das Institute of Medical Science, Vaniyamkulam, who met the sampling criteria. The study utilized a non-probability convenience sampling method for selecting participants.

## **SAMPLING CRITERIA**

### **Inclusion Criteria**

- Staff nurses who were willing to participate in this study.
- Staff nurses who were working in ICUs of different departments.
- Staff nurses who were available at the time of study.

### Exclusion Criteria

- Staff nurses who were not willing to participate in this study.
- Staff nurses who were working in outpatient department (OPD) and casualty, nursing supervisors, and nursing superintendent.
- Those who were not present at the time of study.

## METHOD AND TOOL FOR DATA COLLECTION

### Development and Selection of Tool

A structured questionnaire was used to collect the data. The tool was prepared on the basis of the objectives of the study (Table 1).

The findings of the study are presented in the following sections:

- Section 1: Distribution of demographic characteristics of staff nurses in ICUs.
- Section 2: Assessment of knowledge regarding VTE prophylaxis among staff nurses in ICUs.
- Section 3: Association between knowledge regarding VTE prophylaxis among staff nurses in ICUs and selected demographic variables.

## RESULTS

### Section 1: Distribution of Demographic Characteristics of Staff Nurses in ICUs

Table 2 reveals that most of the participants, 13 (43.3%), belong to 20- to 25-year age group, and 9 (30%) belong to 26- to 30-year age group, 6 (20%) belong to 31- to 35-year age group, and 2 (6.7%) are older than 36 years. The mean knowledge score was 9.73 (48.66%).

Table 3 reveals that most participants, 17 (56.7%), were BSc nursing graduates, 7 (23.3%) were from general nursing and midwifery (GNM), and 6 (20%) were from auxiliary nursing and midwifery (ANM).

Table 4 reveals that most participants, 16 (53.3%), have 0 to 3 years of experience, 6 (20%) have more than 10 years of experience, 4 (13.3%) have 4 to 6 years of experience, and 4 (13.3%) have 7 to 9 years of experience.

Table 5 reveals that most nurses, 13 (43.3%), were working in the medical intensive care unit (MICU), 8 (26.7%) were in surgical intensive care unit (SICU), 8 (26.7%) were in cardiac care unit (CCU), and 1 (3.3%) nurse was in the neurosurgery intensive care unit (NSICU).

**Table 1.** Scoring system.

Score Range	Grade
16–20	Excellent
11–15	Good
6–10	Average
<6	Poor

**Table 2.** Frequency and percentage distribution of staff nurses in intensive care units based on their age.

Demographic Variable, Age	Frequency (n = 30)	Percentage
20–25 years	13	43.3%
26–30 years	9	30%
31–35 years	6	20%
≥36 years	2	6.7%

**Table 3.** Frequency and percentage distribution of staff nurses based on their education.

Demographic Variable, Education	Frequency	Percentage
Auxiliary nursing and midwifery (ANM)	6	20%
General nursing and midwifery (GNM)	7	23.3%
BSc nursing	17	56.7%

**Table 4.** Frequency and percentage distribution of staff nurses based on years of experience.

Demographic Variable, Years of Experience	Frequency	Percentage
0–3	16	53.3%
4–6	4	13.3%
7–9	4	13.3%
≥10	6	20%

**Table 5.** Frequency and percentage distribution of staff nurses based on their working departments.

Demographic Variable, Working Department	Frequency	Percentage
Neurosurgery intensive care unit (NSICU)	1	3.3%
Surgical intensive care unit (SICU)	8	26.7%
Cardiac care unit (CCU)	8	26.7%
Medical intensive care unit (MICU)	13	43.3%

**Table 6.** Frequency and percentage distribution of staff nurses based on awareness about thromboembolism.

Awareness about Thromboembolism	Frequency	Percentage
Yes	12	40%
No	18	60%

Table 6 reveals that 18 (60%) nurses were not aware of thromboembolism and 12 (40%) nurses were aware of thromboembolism.

## Section 2: Assessment of Knowledge Regarding Venous Thromboembolism Prophylaxis Among Staff Nurses in ICUs

Table 7 reveals that most of the nurses, 13 (43.3%), had average knowledge with score range between 5 and 10, 10 (33.3%) nurses had good knowledge, 4 (13.3%) nurses had excellent knowledge with score range of 16 to 20, and 3 (10%) nurses had poor knowledge. The mean knowledge score was 9.73 (48.66%).

## Section 3: Association Between Knowledge Regarding Venous Thromboembolism Prophylaxis Among Staff Nurses in ICUs and Selected Demographic Variables

There is no significant association between nurse's knowledge regarding VTE prophylaxis and selected demographic variables (Table 8).

**Table 7.** Frequency and percentage distribution of staff nurses based on score range ( $n = 30$ ).

Score Range	Grade	Frequency	Percentage
16–20	Excellent	4	13.3%
11–15	Good	10	33.3%
6–10	Average	13	43.3%
≤5	Poor	3	10%

**Table 8.** Knowledge regarding venous thromboembolism prophylaxis among staff nurses in intensive care units with selected demographic variables.

Demographic Variable	Level of Knowledge				df	Chi-square
	Excellent	Good	Average	Poor		
<i>Age (years)</i>						
20–25	1	5	6	1	9	8.26
26–30	1	3	4	1		
31–35	1	2	3			
≥36	1	-	-	1		
<i>Education</i>						
Auxiliary nursing and midwifery (ANM)		3	3	-	6	7.311
General nursing and midwifery (GNM)	1	3	1	2		
BSc nursing	3	4	9	1		
<i>Years of experience</i>					9	12.08
0–3	1	7	8	-		
4–6	1	1	1	1		
7–9	2	1	-	1		
≥10		1	4	1		
<i>Level of Department</i>						
Neurosurgery intensive care unit (NSICU)	-	1	-	-	9	11.87
Surgical intensive care unit (SICU)	1	3	3	1		
Medical intensive care unit (MICU)	-	3	9	1		
Cardiac care unit (CCU)	3	3	1	1		
<i>Previous Knowledge</i>						
Yes	2	3	6	1	3	1.742
No	2	7	7	2		

## DISCUSSION

### Discussion of Demographic Variables

The purpose of the study was to assess the knowledge and association between the nurses' knowledge regarding VTE prophylaxis and selected demographic variables. Data was gathered from 30 staff nurses through a structured knowledge questionnaire. The study showed no significant correlation between the scores on the knowledge questionnaire and demographic factors such as age, educational background, department level, years of experience, and prior knowledge. Deep venous thrombosis represents a prevalent clinical issue associated with significant levels of morbidity and mortality. Risk factors such as trauma, venous stasis, and hypercoagulability are connected to the onset of this condition [7].

## **Discussion of Knowledge Regarding Venous Thromboembolism Prophylaxis Among Staff Nurses in ICUs**

Through chi-square analysis, we statistically analyzed the various demographic variables and their association with the knowledge of VTE prophylaxis among staff nurses. The examination indicated that there is no noteworthy association between nurses' understanding and demographic factors.

Knowledge encompasses familiarity, awareness, or comprehension of topics like facts, information, descriptions, and skills acquired through education or experience. Sufficient understanding of VTE prophylaxis among staff nurses in ICUs is crucial for preventing VTE.

The present study was done to assess the knowledge regarding VTE prophylaxis among staff nurses in ICUs at a selected hospital in Palakkad. The study was done to evaluate the association between knowledge regarding VTE prophylaxis among nurses in ICUs and selected sociodemographic variables [8].

## **DISCUSSION**

The present study has proved that majority of the staff nurses in ICUs have average level of knowledge regarding VTE prophylaxis and that there is no significant association between knowledge regarding VTE prophylaxis among staff nurses and age in years, education, years of job experience, level of department, and previous knowledge. This study provides the baseline information about the knowledge of staff nurses regarding VTE prophylaxis in ICUs [9–11].

### **Section A: Distribution of Demographic Characteristics of Staff Nurses in Intensive Care Units**

- Among 30 nurses, 13 (43.3%) were of age 20 to 25 years, 9 (30%) were aged 26 to 30 years, 6 (20%) were aged 31 to 35 years, and 2 (6.7%) nurses were 36 years or older.
- Among 30 participants, 17 (56.7%) were BSc nursing graduates, 7 (23.3%) had qualified GNM, and remaining 6 (20%) had qualified ANM.
- Among 30 nurses, 16 (53.3%) had 0 to 3 years of experience, 6 (20%) had more than 10 years of experience, 4 (13.3%) had 4 to 6 years of experience, and 4 (13.3%) had 7 to 9 years of experience.
- Among 30 nurses 13 (43.3%) were working in the MICU, 8 (26.7%) in the SICU, 8 (26.7%) in the CCU and remaining 1 (3.3%) was in the NSICU.
- Among 30 nurses 18 (60%) are in no awareness category and 12 (40%) are in yes awareness category.

### **Section B: Assessment of Knowledge Regarding Venous Thromboembolism Prophylaxis Among Staff Nurses in Intensive Care Units**

Among 30 nurses, 13 (43.3%) possessed average knowledge with a score range of 5 to 10, 10 (33.3%) nurses had good knowledge, 4 (13.4%) nurses had excellent knowledge with a score range of 16 to 20, and 3 (10%) possessed poor knowledge. The mean knowledge score was 9.73 (48.66%).

### **Section C: Association Between Nurses' Knowledge Regarding Venous Thromboembolism Prophylaxis and Selected Demographic Variables**

There was no association between the nurses' knowledge regarding VTE prophylaxis and selected demographic variables such as age in years, education, years of job experience, level of department, and previous knowledge. Deep venous thrombosis, which can be prevented and treated, represents a notable contributor to mortality among hospitalized individuals. Knowledge and thorough evaluation by nurses are key to enhancing the prevention of deep venous thrombosis.

## **CONCLUSION**

The present study has proved that majority of the staff nurses in ICUs have average level of knowledge regarding VTE prophylaxis. The mean knowledge score was 9.73 (48.66%) and there is no

significant association between knowledge regarding VTE prophylaxis among staff nurses and age in years, education, years of job experience, level of department, and previous knowledge. This study provides the baseline information about the knowledge of staff nurses regarding VTE prophylaxis in ICUs. Uterine leiomyoma may lead to vascular thrombosis due to the compression exerted on the pelvic vessels. Nurses exhibited limited self-confidence in risk assessment. The absence of a protocol poses a notable obstacle to the evaluation of venous embolism. These results enlighten that there is a need for permanent education focusing on prevention of thromboembolism.

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