

# Assessment of Knowledge and Practice Associated Factors of Venous Thromboembolism (VTE) Prophylaxis Among Health Professionals—A Cross Sectional Study

Mangalam Kumari<sup>1\*</sup>, Imran Khan<sup>2\*</sup>, Ranjita Sahoo<sup>3</sup>, Vibha Kumari<sup>4</sup>, Mohammed Umar<sup>5</sup>, R. Mahalakshmi<sup>6</sup>, Dr.C. Sathya Kohila Vani<sup>7</sup>, Archana.V<sup>8</sup>, A. Yuvaraja<sup>9</sup>, Velladurai.N.<sup>10</sup>, Divyapriya.V.<sup>11</sup>, Silambarasu Chinnu<sup>12</sup>

<sup>1\*</sup>Nursing Tutor, Department of Medical Surgical Nursing (gastroenterology), Narayan Nursing College, Gopal Narayan Singh University, Jamuhar, Rohtas, Bihar

<sup>2\*</sup>Associate Professor, Department of Medical Surgical Nursing (cardio-thoracic), Narayan Nursing College, Gopal Narayan Singh University, Jamuhar, Rohtas, Bihar.

<sup>3</sup>Nursing Tutor, Department of Medical Surgical Nursing (neuroscience), SUM Nursing College, Siksha 'O' Anusandhan (deemed to be university), Bhubaneswar, Odisha, India

<sup>4</sup>Nursing Tutor, Department of Medical Surgical Nursing, Narayan Nursing College, Gopal Narayan Singh University, Jamuhar, Rohtas, Bihar

<sup>5</sup>Nursing Tutor, Department of Community Health Nursing, Narayan Nursing College, Gopal Narayan Singh University, Jamuhar, Rohtas, Bihar

<sup>6</sup>Principal, Department of Child Health Nursing, PhD scholar, Bharath Institute of Higher Education and Research, Chennai, India

<sup>7</sup>Vice Principal, Department of Medical Surgical Nursing, Jeeva College of Nursing, Krishnagiri, The Tamilnadu Dr M. G. R Medical University, Chennai, India

<sup>8</sup>Assistant Professor, Department of Mental Health Nursing, PhD Scholar, Bharath Institute of Higher Education and Research, Chennai, India

<sup>9</sup>Senior Nursing Supervisor, Royal Care Super Specialty Hospital, Coimbatore, Tamilnadu, India

<sup>10</sup>Professor cum HOD, Department of Mental Health Nursing, Rohikhand College of Nursing, Pilibhit, Bareilly International University, Bareilly

<sup>11</sup>Assistant Professor, Department of Mental Health Nursing, TMU Nursing College, Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India

<sup>12</sup>Assistant Professor, Department of Child Health Nursing, TMU Nursing College, Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India

## Abstract

**Background:** Venous thromboembolism (VTE) is a leading cause of death and disability worldwide, which is a term referring to blood clots in the veins; venous thromboembolism includes deep vein thrombosis (DVT) and pulmonary embolism (PE) (CDC, 2020a). DVT occurs when a blood clot forms in a deep veins, usually in the lower leg, thigh, or pelvis; pulmonary embolism occurs when a clot breaks loose and travels through the bloodstream to the lungs (NHLBI, 2022). "DVT + PE = VTE: DVT and PE are collectively referred to as VTE". Venous thromboembolism (VTE) is a leading cause of postoperative morbidity; among hospitalized patients, it is a common and potentially fatal complication. Knowledge, positive attitude, and effective practice on VTE prophylaxis are vital for the proper management of patients. **Material and Methods:** A web based survey was conducted across, India. The researchers collected 71 responses from various health care professionals working at various hospitals of India using designed and developed Google forms along with analysis provided by the technology. The current paper provides snapshot of some of the factors associated with venous thromboembolism (VTE) among health professionals. **Result:** The Google forms were completed; with 53.5% (n=75) responses were poor in knowledge questionnaire and 75.7% (n=106) had poor knowledge related to preventive practice's. The researchers enlisted several factors like prolonged standing, long working hours, stressful interpersonal interaction, poor amenities and time constrained self care deficit. **Conclusion:** It was concluded that there is need for a planned intervention to increase the knowledge of health care professional and plan alternative educational programmes that would impact effectively in reducing venous thromboembolism (VTE) among health care professionals.

**Keywords:** Effectiveness, Venous thromboembolism (VTE), Health Care Professionals.

## 1. Background

The global hospital based epidemiologic data suggest that venous thromboembolism affects one in 1,000 persons yearly in North America and Europe; venous thromboembolism is estimated to cause 50,000 deaths in the United States every year; the other indices shows that venous thromboembolism occurs more often in Caucasians than in other races (Hyers, 1999).

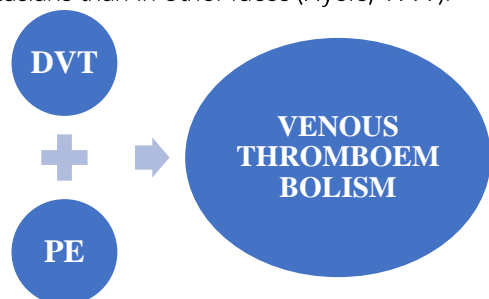


Figure 1: Representation of venous thromboembolism

Venous thromboembolism includes “Deep Vein Thrombosis (DVT)” and “Pulmonary Embolism (PE)” Venous thrombosis is the process of clot (thrombus) formation within veins; although this can occur in any venous system, the predominant clinical events occur in the vessels of the leg, giving rise to deep vein thrombosis, or in the lungs, resulting in a pulmonary embolus, which is collectively referred as venous thromboembolism (Blann & Lip, 2006). The manifestations range from painful leg swelling, chest pain, shortness of breath, and even death to severe complications like chronic thromboembolic pulmonary hypertension, and post thrombotic syndrome (PTS) (Bartholomew, 2017).

Venous thromboembolism is managed efficiently using anticoagulation therapy that is divided into three major parts i.e. the initial treatment (first 5 to 21 days), primary treatment (first 3 to 6 months), and secondary prevention (after the initial 3 to 6 months) (Renner & Barnes, 2020).

Preventive measures include the following tips can help prevent DVT (CDC, 2020b):

Move around as soon as possible after having been confined to bed, such as after surgery, illness, or injury.

If you’re at risk for DVT, talk to your doctor about:

Graduated compression stockings (sometimes called “medical compression stockings”)

Medication (anticoagulants) to prevent DVT.

When sitting for long periods of time, such as when traveling for more than four hours:

Get up and walk around every 1 to 2 hours.

Exercise your legs while you’re sitting by:

Raising and lowering your heels while keeping your toes on the floor

Raising and lowering your toes while keeping your heels on the floor

Tightening and releasing your leg muscles

Wear loose-fitting clothes.

You can reduce your risk by maintaining a healthy weight, avoiding a sedentary lifestyle, and following your doctor’s recommendations based on your

individual risk factors (CDC, 2020b).

Venous thromboembolism and health care professionals are very much related to each other due to prolonged standing, strained working hours and time constrained self care deficit; 10 – 20 out of 100 health care professionals suffer with deep vein thrombosis and associated problems (CDC, 2020c).

A study was conducted to assess knowledge, attitude and practice of venous thromboembolism prophylaxis among medical practitioners in a teaching hospital setting; A response rate of 80.5% was obtained following the administration of 200 questionnaires in this survey between July and December 2015. The majority of respondents were males (81.4%) and junior residents (41.6%) with a mean VTE prophylaxis knowledge score of  $4.56 \pm 1.545$ . Importance of VTE prophylaxis in clinical practice received an overwhelming concordance among respondents (93.8%). However, about 55.9% admitted to ever prescribing VTE prophylaxis with 8.7% doing it routinely. Low molecular weight heparin was the most frequently used agent for VTE prophylaxis among respondents (40.4%), and there was paucity of knowledge on VTE prevalence in clinical practice among the respondents. The study was concluded that knowledge was present among the health care professionals but practice of venous thromboembolism VTE prophylaxis was suboptimal (Makusidi et al., 2016). The aim of the researchers in the current study was to understand the level of knowledge and practice of preventive measures among the health professionals as health professionals are at the risk of prolonged standing, strained working hours and time constrained self care deficit. The researchers observed in the current research even though being health professionals there was lack of knowledge and practice hence, there was a need to develop a planned education module / program or any non pharmacological protocol which would be simple and less time to practice

### Objectives

The aim of the researchers in the current study was to understand the level of knowledge regarding venous thromboembolism and its preventive practices that can be adopted by the health professionals

To enlist the various factors that leads to venous thromboembolism among health care professionals.

## 2. Methodology

**Research approach:** Cross sectional Quantitative research approach was used for this study.

**Research design:** Observational population based survey design was conducted in a selected hospital across, India.

### Study Population

Health care providers working at tertiary care hospitals across India; it included doctors, nurses, dialysis technicians, lab workers, radiographers, OT technicians etc... Those involved in administrative

work were excluded in the study

### Sample size calculation

Considering the effect size 0.5 at 5% level of significance, 95% confidence interval and 80% power the minimum calculated sample size is 71. In current study samples were 140.

### Sampling technique

Simple random sampling technique was used to select the health care professionals.

### Intervention

The researchers after extensive understanding plans to prepare an educational module / protocol for the health care professionals, in order to improve knowledge and preventive practices that they could follow to prevent venous thromboembolism.

### Outcome variable

The outcome variable of the study was descriptive analysis of participant’s knowledge regarding venous thromboembolism and its prevention.

### Data collection tool

Tool consist of following section

**Section – A:** Questions related to Demographic variables of health care professionals

**Section – B:** Questions related to venous thromboembolism

**Section – C:** Questions related to preventive practices on venous thromboembolism

### Data collection procedure

Google form was prepared in such a manner that it was easily understandable and easy to answer among the health care professionals

Consent was obtained

140 health care professionals from across India participated in the study.

Socio-demographic and obstetric information were collected.

Responses to questionnaire related to knowledge and preventive practices were collected

Analysis was obtained by Google statistical system and represented in the current study

### Data analysis

Descriptive data analysis was carried out using Google statistical system

## 3. Result

According to the objectives of the study results were organized, tabulated, and analyzed and interpreted descriptive statistics. This part deals with descriptive data and presents frequency and percentage distribution of health care professionals who participated in the current cross sectional survey.

Frequency and percentage distribution of the demographic variables.

Frequency distribution of health care professional’s level of knowledge in relation to venous thromboembolism and preventive practices.

Enlisting factors that may pose a VTE risk to health care professionals

Table 1: Description of frequency and percentage distribution of demographic variables N=140

Variables	Classifications	Frequency	Percentage
Designation	Doctors	20	14.0
	Nurses	88	63.5
	Pharmacists	12	8.6
	Lab Technicians	4	2.9
	OT technicians	13	9.0
	Physiotherapist	3	2.0
Qualification	Diploma	33	23.5
	Undergraduate	43	30.7
	Post Graduate	59	42.3
	Doctorate	5	3.5
Experience of medical practice	Less than 5 years	98	70
	More than 5 years	38	27.2
	More than 10 years	2	1.4
	More than 15years	2	1.4
Type of Tertiary care hospital working	Teaching	69	49.3
	Non teaching	71	50.7
Nature of working hospital	Government	61	43.6
	Private	79	56.4
Working Unit	OPD (out-patient department)	4	2.9
	Ward (General, Medical, Surgical & Special)	45	32.1
	Labour Room	17	12.1
	Operation theatre	18	12.9
	Emergency	14	10
	ICU (intensive care unit)	27	19.3
	Burns and plastic surgery	15	10.7
Does Hospital have Venous Thrombosis preventing policy?	Yes	109	77.8
	No	31	22.2

The above table 1: depicts that majority of the samples were Nurses (n=88) i.e. 63.5%, majority had

completed post-graduate program (n=59) i.e. 42.3%, further, (n=98) 70% had less than 5 years of experience; majority i.e. 50.7% (n=71) were non teaching hospitals; majority i.e. 56.4% (n=79) worked in private hospitals; comparing to

patient ratio majority risk units were ICU 19.3% (n=27), OT 12.9% (n=18), and labour room 12.1% (n=17); furthermore 77.8% i.e. (n=109) hospitals had venous thrombosis preventing policy.

Table 2: Frequency distribution of health care professional’s level of knowledge in relation to venous thromboembolism and preventive practices. N = 140

	Good Knowledge		Average Knowledge		Poor Knowledge	
	f	%	f	%	f	%
Level of Knowledge in relation to venous thromboembolism	32	22.8	33	23.7	75	53.5
Level of Knowledge in relation to preventive practices	12	8.6	22	15.7	106	75.7

The above table 2: depicts that health care professionals knowledge levels in relation to venous thromboembolism and preventive practices; with 53.5% (n=75) responses were poor in knowledge questionnaire and 75.7% (n=106) had poor knowledge related to preventive practice’s.

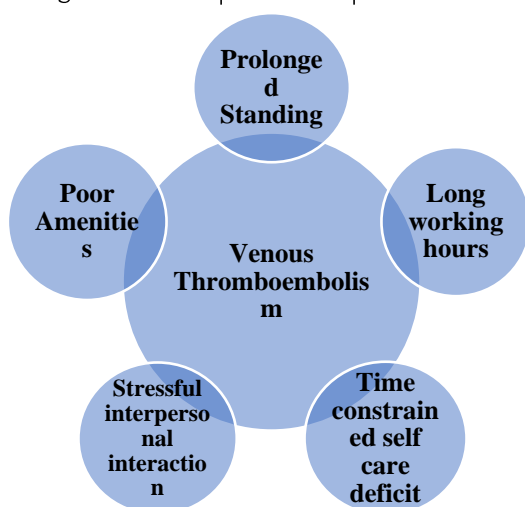


Figure 2: Enlisting factors that may pose a VTE risk to health care professionals

The researchers enlisted several factors like prolonged standing, long working hours, stressful interpersonal interaction, poor amenities and time constrained self care deficit.

#### 4. Discussion

A cross sectional study in which the knowledge and practice associated factors of venous thromboembolism (VTE) prophylaxis among health care professionals working in tertiary care hospital, across India was carried out using designed and developed Google forms along with analysis provided by the technology. Majority of the samples were Nurses (n=88) i.e. 63.5%, majority had completed post-graduate program (n=59) i.e. 42.3%, further, (n=98) 70% had less than 5 years of experience; majority i.e. 50.7% (n=71) were non teaching hospitals; majority i.e. 56.4% (n=79) worked in private hospitals; comparing to patient ratio majority risk units were ICU 19.3% (n=27), OT 12.9% (n=18), and labour room 12.1% (n=17); furthermore 77.8% i.e. (n=109) hospitals had venous thrombosis preventing policy.

The current study also revealed that health care

professionals knowledge levels in relation to venous thromboembolism and preventive practices; with 53.5% (n=75) responses were poor in knowledge questionnaire and 75.7% (n=106) had poor knowledge related to preventive practice’s. Moreover the researchers enlisted several factors like prolonged standing, long working hours, stressful interpersonal interaction, poor amenities and time constrained self care deficit

This study finding was supported by a similar study where the researcher conducted a study Assessment of knowledge, attitude, practice and associated factors of venous thromboembolism prophylaxis among health professionals - a cross sectional study; A total of 404 health professionals were assessed for satisfactory knowledge, positive attitude, and good practice towards venous thromboembolism. The results showed that 49.8% (95% CI: 44.8–54.7) had good knowledge, 87.1% (95% CI: 83.85–90.41) positive attitude, where only 39.9% (95% CI: 35.1–44.6) had good practice in prevention of venous thromboembolism (Kiflie et al., 2022). By these findings the researchers clearly confounded that the current study results were appropriate with the nature of the factors faced by the health care professionals.

#### 5. Conclusion

The researchers in the current study concluded that there is need for a planned intervention to increase the knowledge of health care professional and planned alternative educational programmes that would impact effectively in reducing venous thromboembolism (VTE) among health care professionals. Further there is need for strong implementation of VTE preventive protocols at each hospital.

#### What new was found out of the current study?

Practice to prevent venous thromboembolism lacked among health care professionals

There was strong need for implementation of venous thromboembolism prevention protocols at hospitals Need for alternative planned educational program or intervention in improving knowledge and practice among health care workers regarding venous thromboembolism

Further qualitative research is needed in listing out lived experiences and on ground realities of health care professionals faced in the hospital during duty hours

### Funding sources

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

### Conflict of interest statement

'Declarations of interest: none'

### References

- Bartholomew, J. R. (2017). Update on the management of venous thromboembolism. *Cleveland Clinic Journal of Medicine*, 84(12 Suppl 3), 39–46. <https://doi.org/10.3949/ccjm.84.s3.04>
- Blann, A. D., & Lip, G. Y. H. (2006). Venous thromboembolism. *BMJ*, 332 (7535), 215–219. <https://doi.org/10.1136/bmj.332.7535.215>
- CDC. (2020a, February 10). What is Venous Thromboembolism? | CDC. Centers for Disease Control and Prevention. <https://www.cdc.gov/ncbddd/dvt/facts.html>
- CDC. (2020b, February 10). What is Venous Thromboembolism? | CDC. Centers for Disease Control and Prevention. <https://www.cdc.gov/ncbddd/dvt/facts.html>
- CDC. (2020c, February 12). How Much Do You Know About HA-VTE? | CDC. Centers for Disease Control and Prevention. <https://www.cdc.gov/ncbddd/dvt/quiz-hcp.html>
- Hyers, T. M. (1999). Venous Thromboembolism. *American Journal of Respiratory and Critical Care Medicine*, 159(1), 1–14. <https://doi.org/10.1164/ajrccm.159.1.9803109>
- Kiflie, A. M., Mersha, A. T., Workie, M. M., Admass, B. A., Ferede, Y. A., & Bizuneh, Y. B. (2022). Assessment of knowledge, attitude, practice and associated factors of venous thromboembolism prophylaxis among health professionals. A cross sectional study. *International Journal of Surgery Open*, 39, 100436. <https://doi.org/10.1016/j.ijso.2021.100436>
- Makusidi, M. A., Isah, M. D., Akintomide, F., Abdullahi, M., & Yakubu, A. (2016). Knowledge, attitude and practice of venous thromboembolism prophylaxis among medical practitioners in a teaching hospital setting. *Orient Journal of Medicine*, 28(1–2), Article 1–2. <https://doi.org/10.4314/ojm.v28i1-2>
- NHLBI. (2022, September 19). Venous Thromboembolism - What Is Venous Thromboembolism? | NHLBI, NIH. <https://www.nhlbi.nih.gov/health/venous-thromboembolism>
- Renner, E., & Barnes, G. D. (2020). Antithrombotic Management of Venous Thromboembolism: JACC Focus Seminar. *Journal of the American College of Cardiology*, 76(18), 2142–2154. <https://doi.org/10.1016/j.jacc.2020.07.070>