International Journal of Research in Medical Sciences
Rathore G et al. Int J Res Med Sci. 2024 Dec;12(12):4635-4642
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012
DOI: https://dx.doi.org/10.18203/2320-6012.ijrms20243719

Original Research Article

A study to assess the clinical probability of deep vein thrombosis among patients admitted in Maharishi Markandeshwar institute of medical sciences and research, Mullana, Ambala, Haryana

Ghanshyam Rathore[1]*, Manisha Saklani[2]

[1]Department of Obstetrics and Gynecological Nursing, M. M. College of Nursing, M. M. (Deemed to be) University, Mullana, Ambala, Haryana
[2]Department of Medical-Surgical Nursing, M. M. College of Nursing, M. M. (Deemed to be) University, Mullana, Ambala, Haryana

Received: 06 October 2024
Revised: 18 November 2024
Accepted: 19 November 2024

***Correspondence:**
Ghanshyam Rathore,
E-mail: Grakhecha08@gmail.com

ABSTRACT

Background: Deep vein thrombosis (DVT) is a major cause of morbidity and mortality worldwide, with an estimated yearly prevalence of 1 in 1,000 and about 350,000 new cases in the USA annually. DVT involves a blood clot in deep veins, primarily in the legs or pelvis. Its significance lies in clot migration, which can lead to life-threatening pulmonary embolism (PE). The development of DVT is summarized by Virchow's Triad: venous stasis, endothelial injury, and hypercoagulability.
Methods: The current study approach was the quantitative approach and descriptive design. The study sample included patients admitted in the ward of MMIMSR, Ambala, Haryana
Results: In the study, 72.1% of participants were in the "no special risk" category. The "average desirable" category had 65.6% of participants. For mobility, both "limited (uses aids, self)" and "complete bed rest" categories had 27% each. The "no injury" category included 58.1%. Swelling was noted in 81.9%, and warm skin in 65.6%. Significant associations with DVT were found for age, ward, and illness duration ($p<0.05$). The highest risk levels for DVT were "moderate risk" (41.4%) and "high risk" (34%), with "no risk" and "low risk" categories being smaller.
Conclusions: This study concludes that hospitalized patients may risk developing DVT. Screening should be performed using Dr. Ricky Autar's DVT risk assessment tool. Preventive interventions and personalized risk stratification are crucial for moderate and high-risk DVT categories. Timely surveillance, education, AI diagnostics, wearable tech, and policy changes can improve early detection, treatment, and management of DVT.

Keywords: DVT, Clinical probability, Hospital patient, Risk assessment

INTRODUCTION

Worldwide, DVT is a leading cause of morbidity and mortality. Its yearly prevalence in the general population is estimated to be 1 in 1,000 in some groups, and there are about 350,000 new cases of DVT in the USA each year.[1,2] The frequency of DVT acquired in hospitals is significantly higher than in the general population; it has been estimated that around 50% of all instances of venous thromboembolism (VTE) are caused by this type of DVT.[3] The numerous risk factors that are present in hospitalized patients are the cause of this high prevalence. Cancers, vascular disease, trauma, surgery, and other diseases that result in extended hospital stays are some of the most significant risk factors.

Virchow notably outlined the biology of venous thrombosis, encompassing three key factors: endothelial damage, hypercoagulability, and stasis.[4] Both superficial and DVT can occur from venous thrombosis; this article will concentrate on the latter. Even though the lower extremity is more common than the upper extremity when it comes to the origins of venous thrombotic events, other vascular sites such the mesentery, pelvis, brain, portal tract, etc. can also experience these events. Due to post-thrombotic syndrome, which involves local tissue damage, DVTs alone may result in morbidity. When PE results from VTE, it is the most dangerous consequence with a high fatality rate.[4]

DVT is a medical condition characterized by the formation of a thrombus or blood clot within the deep veins, predominantly affecting the lower extremities such as the legs or pelvis.[5] The clinical significance of DVT extends beyond the local effects of venous obstruction, as it can lead to potentially fatal complications like PE when a clot dislodges and travels to the lungs.[6] VTE is the encompassing term for both DVT and PE, representing a continuum of the same pathological process.[7]

The pathophysiology of DVT involves a complex interplay of factors, often summarized by Virchow's Triad, which includes venous stasis, endothelial injury, and hypercoagulability.[8] These factors contribute to the risk of thrombus formation and are influenced by both genetic and acquired conditions. The incidence of DVT varies with age and is associated with several risk factors such as immobilization, surgery, malignancy, and certain medications, including antipsychotics (APs), which have been implicated in increasing the risk of thromboembolic events.[9]

The diagnosis of DVT is based on clinical assessment supplemented by imaging and laboratory tests. While the clinical presentation may include symptoms such as swelling, pain, and redness in the affected limb, some cases may be asymptomatic.[10] Anticoagulation therapy remains the cornerstone of DVT management, with the aim of preventing clot propagation and reducing the risk of PE. Treatment modalities have evolved from vitamin K antagonists (VKAs) to include direct oral anticoagulants (DOACs).[8]

The diagnosis of DVT is a critical process that involves a combination of clinical assessment and various diagnostic tests. Venography is considered the reference standard for DVT diagnosis, but due to its invasive nature and potential complications, non-invasive methods such as ultrasonography have become more prevalent.[11] Ultrasonography, particularly with venous no compressibility as a major diagnostic criterion, is highly sensitive and specific for symptomatic DVT. [12]

These non-invasive methods include ultrasonic imaging, which has largely replaced venography in many institutions, as well as plethysmography, Doppler flow studies, radioisotope tests, thermography, and peripheral blood tests that reflect coagulation or thrombolysis activity.[13]

Additionally, the introduction of DVT scores, D-dimer testing, and venous ultrasound has made venography replaceable in most cases.[14] Magnetic resonance venography is also a potential stand-alone test for DVT, although it requires further evaluation.[15]

DVT is a significant public health concern due to its prevalence and the potential for severe complications. It is estimated to affect approximately 1 per 1,000 individuals annually and contributes to a substantial number of deaths.[8] Moreover, DVT can lead to long-term complications such as post-thrombotic syndrome, which is characterized by chronic pain, swelling, and skin changes in the affected limb.[16]

Despite its prevalence, the underlying causes of DVT are complex and not fully understood, with recent studies leveraging genetic data to identify causal risk factors.[17] Understanding the pathogenesis and epidemiology of DVT is essential for developing targeted prevention and treatment strategies.[17,18] In conclusion, DVT is a multifactorial condition with a wide spectrum of clinical presentations and outcomes. Its management requires a multidisciplinary approach, and awareness among healthcare professionals is crucial for early detection and treatment. Continued research into the pathogenesis and risk factors of DVT is essential for developing targeted prevention strategies and improving patient outcomes.

Objectives

Objectives were to assess the clinical probability of DVT among patients admitted in MMIMS and R. 2. To find out the association of the clinical probability of DVT with selected sociodemographic variables.

METHODS

The current study approach was the quantitative approach and descriptive design. The study sample included patients admitted in the ward (surgery ward, general ward, post-natal ward, C.C.U, pre-operative ward, post-operative ward, intensive care ward) of MMIMSR, Ambala, Haryana

The inclusion criteria of this study were patients who were admitted in medical, surgical IPD ward and Intensive care unit patients who were willing to participate in the study. Exclusion criteria were patients who are diagnosed with DVT and taking treatment patient of Anticoagulation therapy.

Based on the convenient sampling technique,215 sample were included in this study. The sample size was calculated by prevalence based formula considering $Z_{1-\alpha/2}$

(1.96), P (64%), Q (0.36) and d (0.05), with this formula sample size were 353.[19]

$n=Z^2\times P\times q\ (1-P)/d^2$

Followed this, further sample were calculated by finite sample size formula considering sample size (353), population (353) and result of calculation was 215.

$n=S/1+(S-1/P)$

The data were gathered by using socio-demographic variable comprises of items related to sample characteristics (age, ward, family history, date of admission, diagnosis, duration of illness, morbid illness). DVT risk assessment Scale comprises of 10 items (clinical parameter, age-specific groups, gender, surgical intervention, mobility, trauma risk category, high-risk diseases, BMI, special risk category). Score range <6-no risk, 07-10 low, 11-14 moderate, >15 high. Tool was converted into Hindi language for data collection from general population. The reliability of this scale was assessed by the inter-rater method of reliability for communication and consistency of the DVT scale the three measures of equivalence were applied: total percentage agreement, kappa statistic, and intra-class correlation coefficients (ICC). The test result showed the reliability of the DVT scale was 0.94-0.99.[20]

Patient fulfilling the inclusion criteria were selected through the convenient sampling technique. The informed consent was taken and they were explained about the study and confidentiality and anonymity was assured. After informed consent socio-demographic variable were obtained from the participants. The risk for DVT were assessed in participants by using the DVT risk assessment scale developed by Dr. Ricky Autar.

Study period

This study was carried out in month of April to June 2024

Statistical analysis

The analysis was done by using SPSS version 26 (SPSS inc., IBM Corporation). Descriptive statistics like frequency, percentage, and inferential statistics like X^2 were used for the analysis of the data. The chi-square (X^2) test was used to determine the association of level of back pain with the selected personal variable. $P<0.05$ was taken as statistically significant.

Ethical consideration

Ethical approval was taken from the institutional ethics committee of M.M. (Deemed to be) university, Mullana, Ambala, Haryana (Certificate reference number- dated: 08/12/2023/ IEC-2711). Written informed consent was obtained from each study subject involved in the study. Confidentiality of the data was maintained and the study subjects were given full autonomy to withdraw from the study at any time.

RESULTS

Socio-demographic

The frequency and percentage of samples in terms of sample characteristics. The age group ">60" comprises the biggest proportion of patients, making up 23.72% of the sample. With 55.8% of the patients being female, the gender predominant is female. At 28.37% of patients, the ICU has the highest patient occupancy rate. 95.8% of patients have no family history of the illness. 45.1% of patients have a length of illness of "1-15 days," which is the most prevalent. Most patients-81.9%-do not suffer from a morbid illness (Table 1).

Clinical parameter

The data table provided the percentages of various clinical variables among the participants. For swelling, 81.9% had swelling and 18.1% did not. Warm skin was observed in 65.6% of the participants, while 34.4% did not exhibit this symptom. Red skin was present in 52.6% of the participants, with the remaining 47.4% showing no such sign. Visible skin abnormalities were noted in 35.8% of the cases, whereas 64.2% had none. Haemoglobin levels were below 11 gm% in 22.3% of the participants and between 11 and 17 gm% in 77.7%; none had levels above 17 gm%. Platelet counts indicated that 7% had no test, 11.2% had counts below 1.5 lakh, 76.7% had counts between 1.5 and 4.5 lakh, and 5.1% had counts exceeding 4.5 lakh. Clotting time was not tested in 21.4% of the participants, was less than 8 minutes in 17.2%, between 8 and 15 minutes in 54%, and over 15 minutes in 7%. Arterial blood gas (ABG) results were normal in 57.2%, showed respiratory acidosis in 14.4%, respiratory alkalosis in 19.5%, metabolic acidosis in 7%, and metabolic alkalosis in 1.9%. Lastly, D-dimer testing was not performed in 93% of the participants, was negative in 1.9%, and positive in 5.1% (Table 2).

DVT

Frequency distribution of different mobility levels among a certain population. Highest values were for individuals with "limited (uses aids, self)" mobility and those with "complete bed rest," both categories having a frequency of 58, which constituted 27% of population each.

The frequency distribution of trauma risk categories in a certain population. The highest value was for the "no Injury" category, which had a frequency of 125, constituting 58.1% of the population.

The frequency distribution of BMI categories in a certain population. The highest value was for the "average desirable" category, which had a frequency of 141, constituting 65.6% of the population.

The table described the frequency distribution of high-risk categories in a certain population. The highest value was for the "no risk" category, which had a frequency of 98, constituting 45.6% of the population.

Table described the frequency distribution of special risk categories in a certain population. The highest value was for the "no special risk" category, which had a frequency of 155, constituting 72.1% of the total.

The frequency distribution of surgical interventions in a certain population. The highest value was for the "Abdominal" category, which had a frequency of 55, constituting 25.6% of the total (Table 3).

Sample population categorizes into four risk levels for DVT. “No risk” (<6) includes 7 individuals (3.3%), “low risk” (7-10) has 46 individuals (21.4%), “moderate risk” (11-14) is the largest with 89 individuals (41.4%), and “high risk” (>15) includes 73 individuals (34%). most of the population falls into the moderate and high-risk categories for DVT.

Association

Age, ward and duration of illness was found to be significantly associated with probability of DVT in participants at $p<0.05$ level of significance.

Table 1: Frequency and percentage distribution of participants in terms of socio-demographic variables.

Variables		N (%)
Age group (in years)	Mean±SD	52.05±1.420
	10-30	37 (17.20)
	31-40	43 (20)
	41-50	44 (20.46)
	51-60	40 (18.60)
	>60	51 (23.72)
Gender	Male	95 (44.2)
	Female	120 (55.8)
Ward	Surgery	20 (9.30)
	General	54 (25)
	Post natal	45 (21)
	CCU	12 (5.58)
	Pre-operative	7 (3.25)
	Post-operative	16 (7.44)
	ICU	61 (28.37)
Family history	No	206 (95.8)
	Yes	9 (4.2)
Duration of illness	1-15 days	97 (45.1)
	16-30 days	19 (8.8)
	1-6 month	40 (18.6)
	7-12 month	21 (9.8)
	>12 month	38 (17.70
Morbid illness	No	176 (81.9)
	Yes	39 (18.1)

Table 2: Frequency and percentage distribution of participants in terms of deep vein thrombosis.

Category	N (%)
Mobility	
Ambulant	22 (10.5)
Limited (uses aids, self)	58 (27)
Very limited (Needs help)	52(24)
Chair bound	25(11.5)
Complete bed rest	58 (27)
Trauma risk category	
No injury	125 (58.1)
Head injury	12 (5.6)
Chest injury	6 (2.8)
Spinal injury	6 (2.8)
Pelvic injury	15 (7)
Lower limb injury	51 (23.7)

Continued.

Category	N (%)
BMI	
Underweight	28 (13)
Average desirable	141 (65.6)
Overweight	38 (17.7)
Obese	8 (3.7)
Very obese (Morbid)	0
High risk category	
No risk	98 (45.6)
Ulcerative colitis	4 (2)
Anemia + sickle cell anemia	57 (26.5)
Haemolytic	7 (3.2)
Polycythaemia	0
Chronic heart disease	7 (3.3)
Myocardial infarction	7 (3.3)
Malignancy	0
Varicose veins	21 (9.8)
Cerebrovascular accident	2 (0.9)
Previous DVT	12 (5.6)
Special risk category	
No Special risk	155 (72.1)
Oral contraceptives	
20-35 years	12 (5.6)
>35 years	21 (9.8)
Pregnancy puerperium	27 (12.6)
Surgical intervention	
No surgical intervention	41 (19.1)
Minor surgery < 30 mins.	38 (17.7)
Planned major surgery	13 (6.0)
Emergency major surgery	13 (6.0)
Thoracic	1 (0.5)
Abdominal	55 (25.6)
Neurological	8 (3.7)
Urological	6 (2.8)
Orthopaedic (Below waist)	40 (18.1)

Table 3: Frequency and percentage distribution of participants in terms of clinical parameters.

Variables		N	Percent (%)
Swelling	No	39	18.1
	yes	176	81.9
Warm skin	No	74	34.4
	Yes	141	65.6
Red skin	No	102	47.4
	Yes	113	52.6
Visible skin	No	138	64.2
	Yes	77	35.8
Hgb %	<11 gm %	48	22.3
	11-17 gm %	167	77.7
	>17 gm%	0	0
Platlate	no test	15	7
	<1.5 lakh	24	11.2
	1.5-4.5 lakh	165	76.7
	>4.5 lakh	11	5.1
Clotting time	No test	46	21.4
	<8 min	37	17.2
	8-15 min	117	54
	>15 min	15	7

Continued.

Variables		N	Percent (%)
ABG	Normal	123	57.2
	R. acidosis	31	14.4
	R. alkalosis	42	19.5
	M. acidosis	15	7
	M. alkalosis	4	1.9
D-dimer	No- test	200	93
	Negative	4	1.9
	Positive	11	5.1

Table 4: Association of the socio-demographic variable with the probability of deep vein thrombosis.

Variables		DVT risk assessment				Chi-square		
		No risk	Low risk	Moderate risk	High risk	Value	Df	P value
Age (in years)	010-30	4	8	20	5	41.396	12	0 S
	31-40	3	14	17	9			
	41-50	0	14	9	21			
	51-60	0	6	16	18			
	>60	0	4	27	20			
Gender	Male	5	25	33	32	5.859	3	0.119 NS
	Female	2	21	56	41			
Ward	Surgery ward	1	3	10	6	56.127	18	0 S
	General ward	2	7	19	26			
	Post-natal ward	1	9	29	6			
	C.C. U	2	2	2	2			
	Pre-op ward	0	5	6	1			
	Post-op ward	0	1	1	12			
	ICU	1	19	22	20			
Family history	No	7	44	86	69	0.761	3	0.859 NS
	Yes	0	2	3	4			
Duration of illness	1-15 days	4	16	41	36	23.284	12	0.025 S
	16-30 days	1	1	5	12			
	1-6 month	1	15	13	11			
	7-12 month	0	4	14	3			
	>12 month	1	10	16	11			
Morbid illness	No	4	39	73	60	3.152	3	0.369 NS
	Yes	3	7	16	13			

*NS-Not significant, S-significant.

DISCUSSION

Present study was aimed to assess the clinical probability of DVT among patients admitted to a selected hospital in Ambala, Haryana. Discussion is presented based on the objectives and hypothesis of the study comparing and contrasting the findings of the present study with findings of the similar studies.

Majority of the participants of inclusion criteria belonged to the age group of >60 years and mean age (In year) in participants was 52.05. In similarity to a retrospective study author Kamerkar et al found 47 year as the mean age.[19] unlike to present study result author Alyousef et al found mean age 85.2 in their descriptive cross-sectional study.[21]

About 55.8% of the patients being female, the gender predominant is female. this study finding is identical to descriptive cross-sectional research by Alyousef et al where gender predominant was female 83 %.[21]

The ICU has the highest patient occupancy rate in this study at 28.37% of patients. Researcher Kumar et al communicated that prolonged ICU stay was the risk factor for DVT.[22]

About 95.8% of patients have no family history of the illness in this study. Author Bezemer et al. stated that they found 31.5% and 17.3% of total participants with 1st degree relatives with history of DVT.[23]

In present study BMI category (Average desirable), which had a frequency of 141, constituting 65.6% of the population. Finding of research of Ayman El-Menyar showed that 51% of female participants and 49% of male

participants have the BMI (Under normal limit) and this finding is disparate from current study findings.[24]

In the present study, 26.5 % of participants had anaemia and sickle cell anaemia. This study finding is in contrast to research finding of Xiong et al. they mentioned that 33.6% participant had anaemia.[25]

In this study 72.1% of the total participant had no special risk category. Some participant in age group of 20-35 year and more than 35 year taking oral contraception and percentage of those participant was 5.6% and 9.8%. Researcher AlSheef et al found 9.9% of total participants taking contraception pills.[26]

An initial hypercoagulable state occurs during a typical pregnancy. This is the primary risk factor that raises the possibility of thrombosis during pregnancy. In this study 12.6% of all participants were in pregnancy or puerperium. James et al mentioned in their study that pregnant women experienced DVT in first, second, and third trimester and it is about 44%, 24% and 26%.[27]

In this study age was found to be significantly associated with probability of DVT in participants at $p<0.05$ level of significance. Similar to this study author Zhang J, et al. found linear association ($p=0.065$) of age with DVT.[28]

Limitations

This study is designed to be descriptive, aiming to assess the prevalence rate of DVT. The study consists of a single sample group of 215 participants, with no control or experimental groups, and no interventions planned for the participants who are at risk for DVT.

CONCLUSION

This study concludes that patients admitted in hospital may have risk for developing DVT, for those patient screening should be performed, and for the screening DVT risk assessment tool (developed by Dr. Ricky Autar) can be used. The study findings underscore the need for preventive interventions and personalized risk stratification, especially in moderate or high-risk categories. Timely surveillance programs and proper education can help in the identification and treatment of DVT from an early stage. Subsequent studies should investigate novel diagnostic methods, including AI-based approaches and wearable technology for real-time monitoring.

Follow-up and longitudinal studies combined with novel pharmacological interventions may shed additional light on the condition and identify improved approaches for managing it. Vital changes in policies promoting comprehensive DVT screening and access to healthcare are necessary to decrease its incidence and the serious outcomes.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Devis P, Knuttinen MG. Deep venous thrombosis in pregnancy: incidence, pathogenesis and endovascular management. Cardiovasc Diagn Ther. 2017;7(3):S309-19.
2. Silverstein MD, Heit JA, Mohr DN, Petterson TM, O'Fallon WM, Melton LJ. Trends in the incidence of deep vein thrombosis and pulmonary embolism: a 25-year population-based study. Arch Intern Med. 1998;158(6):585-93.
3. Bergqvist D. Venous thromboembolism: a review of risk and prevention in colorectal surgery patients. Dis Colon Rectum. 2006;49(10):1620-8.
4. McLendon K, Goyal A, Attia M. Deep Venous Thrombosis Risk Factors. In: StatPearls. Treasure Island (FL): StatPearls Publishing; 2024.
5. Understanding and managing deep vein thrombosis | Nurse Prescribing. Available at: https://www.magonlinelibrary.com/doi/abs/10.12968/npre.2013.11.8.390. Accessed on 10 June 2024.
6. Lamsal R, Bista NR. Chapter 25 - DVT prophylaxis. In: Prabhakar H, editor. Essentials of Evidence-Based Practice of Neuroanesthesia and Neurocritical Care. Academic Press. 2022;359-65.
7. Koraćević G, Pavlović D. Venous Thromboembolism (Vte) Ought To Be Divided Into Deep Vein Thrombosis (Dvt) And Pulmonary Thromboembolism (Pte), Not Pulmonary Embolism (Pe). Facta Univ Ser Med Biol. 2024;(0):072-3.
8. Stone J, Hangge P, Albadawi H, Wallace A, Shamoun F, Knuttien MG, et al. Deep vein thrombosis: pathogenesis, diagnosis, and medical management. Cardiovasc Diagn Ther. 2017;7(3):S276-84.
9. Crossref. Chooser. Available at: https://chooser.crossref.org/. Accessed on 10 June 2024.
10. Talha S, Matthew W, Krishna D, Rahul N. Thrombectomy of a Complex Deep Vein Thrombosis: A Case Report. Cureus. 2023;15(1):e33413.
11. Diagnosis of deep vein thrombosis. Am J Health-System Pharmacy. Oxford Academic. Available at: https://academic.oup.com/ajhp/article-abstract/54/1/66/5155156?redirectedFrom=fulltext. Accessed on 10 June 2024.
12. Raja AS, Pines JM. Deep Vein Thrombosis-Evidence-Based Emergency Carein Ch. 51, Evidence-Based Emergency Care: Diagnostic Testing and Clinical Decision Rules, Third Edition. Wiley Online Library. 2023.
13. Wheeler B, Anderson Jr Frederick A. Diagnostic Methods for Deep Vein Thrombosis. Pathophysiol Haemost Thromb. 2009;25(1-2):6-26.

14. Jan B, Sebastian S. Deep vein thrombosis: Current diagnostic strategy. Eur J Intern Med. 2005;16(4):238-46.
15. McRae SJ, Ginsberg JS. The Diagnostic Evaluation of Deep Vein Thrombosis. Am Heart Hosp J. 2004;2(4):205-10.
16. Risk Factors of Deep Vein Thrombosis | IntechOpen. Available at: https://www.intechopen.com/chapters/30996. Accessed on 10 June 2024.
17. Constantinescu AE, Bull CJ, Goudswaard LJ, Zheng J, Elsworth B, Timpson NJ, et al. A phenome-wide approach to identify causal risk factors for deep vein thrombosis. BMC Med Genomics. 2023;16(1):284.
18. Currier PF, Hales CA. Pulmonary Embolism and Deep Vein Thrombosis. In: Yuan JXJ, Garcia JGN, West JB, Hales CA, Rich S, Archer SL, editors. Textbook of Pulmonary Vascular Disease. Boston, MA: Springer US. 2011;1231-8.
19. Kamerkar DR, John MJ, Desai SC, Dsilva LC, Joglekar SJ. Arrive: A retrospective registry of Indian patients with venous thromboembolism. Indian J Crit Care Med Peer-Rev Off Publ Indian Soc Crit Care Med. 2016;20(3):150-8.
20. Autar R. The management of deep vein thrombosis: The Autar DVT risk assessment scale re-visited. J Orthop Nurs. 2003;7:114-24.
21. Alyousef HA, Badawi SEA, Elghoneimy YA, Alameri RA, Almutairi AM. Nurses' Knowledge and Practices Regarding the Prevention of Deep Vein Thrombosis in Saudi Arabia: Descriptive Cross-Sectional Study. Med Arch. 2022;76(6):447-53.
22. Kumar A, Mehta Y, Ali T, Gupta MK, George JV. Deep vein thrombosis in medical and surgical Intensive Care Unit patients in a Tertiary Care Centre in North India: Incidence and risk factors. J Anaesthesiol Clin Pharmacol. 2017;33(2):181-6.
23. Bezemer ID, van der Meer FJM, Eikenboom JCJ, Rosendaal FR, Doggen CJM. The Value of Family History as a Risk Indicator for Venous Thrombosis. Arch Intern Med. 2009;169(6):610-5.
24. El-Menyar A, Asim M, Al-Thani H. Obesity Paradox in Patients With Deep Venous Thrombosis. Clin Appl Thromb. 2018;24(6):98-92.
25. Xiong X, Li T, Cheng B. Anemia and formation of deep vein thrombosis before operation in patients with knee osteoarthritis: a cross-sectional study. J Orthop Surg. 2023;18:33.
26. AlSheef M, Abuzied Y, Alzahrani GR, AlAraj N, AlAqeel N, Aljishi H, et al. Combined Oral Contraceptives and Vascular Thrombosis: A Single-Center Experience. Cureus. 2023;14(6):e25865.
27. James AH, Tapson VF, Goldhaber SZ. Thrombosis during pregnancy and the postpartum period. Am J Obstet Gynecol. 2005;193(1):216-9.
28. Zhang J, Fang Y, Pang H, Tao Y, Zhou J, Zhu S, et al. Association between age and incidence of deep vein thrombosis in patients with spinal cord injury: an observational cross-sectional study. Spinal Cord. 2022;60(11):1006-13.

Cite this article as: Rathore G, Saklani M. A study to assess the clinical probability of deep vein thrombosis among patients admitted in Maharishi Markandeshwar institute of medical sciences and research, Mullana, Ambala, Haryana. Int J Res Med Sci 2024;12:4635-42.