ORIGINAL ARTICLE

Knowledge, attitude and practice of venous thromboembolism prophylaxis among medical practitioners in a teaching hospital setting

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ABSTRACT

Background: Venous thromboembolism (VTE) is a common and potentially fatal clinical condition that is both preventable and treatable. The risk factors for the disease cut across patients and general population which underscores the need for prophylactic measures, early identification and prompt treatment. We aimed to assess the knowledge, attitude and practice of prophylaxis in venous thromboembolism among medical doctors in Usmanu Danfodiyo University Teaching Hospital, Sokoto, North-West Nigeria.

Methodology: The knowledge, attitude and practice of VTE prophylaxis among medical doctors was assessed using a validated self-administered questionnaire. The questionnaire consisted of two sections and a total of thirteen questions enquiring on knowledge and attitude/practice of VTE management.

Results: 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±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.

Conclusion: Majority of the practitioners were knowledgeable about VTE and agreed that prophylactic measures are pivotal in preventing and/or reducing morbidity and mortality from the disease. Practice of VTE prophylaxis was suboptimal among the respondents, and the contributory factors included paucity of clear cut guidelines and inadequate knowledge of the disease magnitude. These underscore the need for guidelines towards VTE prophylaxis.

DISCLOSURES: NONE

Keywords: *Pulmonary embolism, risk factors, health knowledge, preventive measures*

INTRODUCTION

Venous thromboembolism (VTE) is an important preventable cause of morbidity and mortality among hospitalized patients. Venous thromboembolism is a constellation of deep venous thrombosis (DVT) and pulmonary embolism (PE).[1] The annual incidence of VTE is 1-1.4:1000 with bias for female gender and recurrence being more common in males.[2,3] This incidence might be an underestimation taking cognizance of the fact that a significant number of patients are usually asymptomatic.[1,4,5]

The diagnosis of VTE is extremely important in order to avoid potential fatal acute (pulmonary embolism) and long term complication (pulmonary hypertension) associated with it.[1]This will, also, prevent unjustified anticoagulant therapy with its attendant risk of bleeding in a patient misdiagnosed with the condition.

Venous thromboembolism prophylaxis is a useful and cost effective intervention which has been shown to reduce morbidity and mortality.[1,6,7] Despite this vintage position, VTE prophylaxis and guidelines for its implementation are sparse or lacking in most hospitals.[8,9] Reports have also shown significant reluctance at conscious effort in preventing VTE associated morbidity and mortality by attending physicians.[8,9,10,11,12] Knowledge, attitude and practice of VTE prophylaxis among medical doctors is crucial in improving VTE related mortality and morbidity.[13,14,15,15,17]

The prophylaxis for VTE includes early mobilization after surgery, intermittent pneumatic compression, graduated compression stockings, inferior vena cava filters and anticoagulants.[1]

The aim of his study is to determine the knowledge, attitude and practice of VTE prophylaxis among medical doctors in Usmanu Danfodiyo University Teaching Hospital, Sokoto.

METHODOLOGY

This is a hospital based cross-sectional survey conducted between July and December 2015 at Usmanu Danfodiyo University Teaching Hospital (UDUTH), Sokoto, a 500-bed tertiary health facility which serves as a regional referral centre for the North-West geo-political zone of Nigeria and beyond. A self-administered questionnaire, partly adapted from surveys by Ahsin, *et al,* and Zobeiri, *et al,* was formulated to assess knowledge, attitude and practice of VTE prophylaxis among medical doctors.[10,14]

The questionnaire consisted of 2 sections of 9 multiple choice questions and 6 close-ended questions assessing VTE knowledge, attitude and prophylaxis practice. The questionnaire was personally delivered by the researchers and questions were kept short for quick response. To ensure clarity, validity and reliability of the questionnaire, a pilot study among 5 medical doctors was conducted and the responses necessitated changes in the questions in order to meet the required standard.

The respondents needed to initially consent to the study and provide information on their years of practice, current position/cadre and department; anonymity was maintained. In addition, the respondents were requested to complete the questionnaires to the best of their knowledge and without consultation. All cadres of medical doctors except for house officers, who in the course of their clinical practice manage patients, were eligible to participate in the survey. The House officers were excluded from participating in this study because most of them just started internship and had no practical experience of managing patients. Ethical approval was obtained from Ethical and Educational Research Committee of Usmanu Danfodiyo University Teaching Hospital, Sokoto before carrying out this study.

Statistical Package for Social Sciences, version 19 was used for statistical analysis. Respondents were grouped according to their cadre (Medical Officer, Junior Residents, Senior Residents and Consultants). Categorical variables were presented in frequencies and percentages, while cross

tabulations was used to compare the independent variables. Logistic regression was used to find predictors of prescribing VTE prophylaxis. The *p-value* of <0.05 was taken as statistically significant.

RESULTS

A total of 200 questionnaires were administered for this survey, and 161 were correctly filled giving a response rate of 80.5%. Majority of the respondents were males (81.4%), junior residents cadre (41.6%) and with less than 5 years post-qualification experience (46.6%), *see Table 1.*

Assessment of knowledge of VTE laid emphasis on its epidemiology, risk factors, clinical presentation and prevention/treatment. Furthermore, assessment of attitude and clinical practice as it regards VTE was based on mode(s) of practice, importance of prophylaxis and clinical experience.

The mean (SD) score of questions on knowledge was 4.56±1.545. The most appropriate response for each question on knowledge and practice of VTE prophylaxis ranged from 5%-82% of respondents (Tables 2 and 3). However, the question on prevalence of VTE had the most divergent response and least percentage of appropriate answer. The majority of the respondents, constituting 82% (132 respondents) and 76.4% (123 respondents) had a good knowledge of VTE mechanism and VTE risk factors, respectively.

Table 1. Profile of participants; n=161

Parameters	**Frequency (%)**
SEX	
Males	131 (81.4)
Females	30 (18.6)
YEARS OF CLINICAL PRACTICE	
Less than 5 years	75 (46.6)
5-9 years	57 (35.4)
10-14 years	13 (8.1)
15-19 years	9 (5.6)
20 years and above	7 (4.3)
RANK	
Medical Officer	58 (36.0)
Junior Residents	67 (41.6)
Senior Residents	16 (9.94)
Consultant	20 (12.4)
DEPARTMENT	
Anaesthesia	7 (4.3)
Public Health	5 (3.1)
Dental	9 (5.5)
ENT	2 (1.2)
Family Medicine	15(9.3)
Histopathology	1 (0.6)
Int Medicine	31(19.2)
Obs and Gynae	37(22.9)
Ophthalmology	2 (1.2)
Orthopaedic	2 (1.2)
Paediatrics	8 (4.9)
Radio-oncology	2 (1.2)
Radiology	8 (5.0)
Surgery	32(19.9)

Table 2. Questions and responses on VTE knowledge

S/No	QUESTION	RESPONSE	FREQUENCY (%)
1	What is diagnosis and commencement of VTE prophylaxis is based on	a-Clinical criteria b-Simple haematological tests c-Sophisticated imaging d-Clinical suspicion is enough No response	100(62.1) 11(6.8) 8(5.0) 40(24.8) 2(1.2)
2-	Which one is correct	a-DVT of the thigh has 40% chance of PE b-Calf DVT has 50% probability of PE c-Proximal site of DVT decreases risk of PE d-DVT is the most common source of PE No response	12(7.5) 29 (18) 7 (4.3) 105(65.5) 8(4.9)
3	What is the most important mechanism of VTE risk	a-Hypercoagulability b-Stasis c-Vascular injury d-a,b and c No response	9 (5.6) 15 (9.3) 4 (2.5) 132 (82.0) 1(0.6)
4	Which one of this is not a risk factor for DVT	a-Cardiac failure b-Peripartum state c-Oral contraceptive pill d-Surgery duration of less than 30 minutes No response	19 (11.8) 13 (8.1) 3 (1.9) 123 (76.4) 3 (1.9)
5	Which one is not applicable for DVT prophylaxis	a-Intermittent pneumatic compression b-Low dose heparin c-Warfarin with INR 2.5-3 d-Elastic stocking No response	31 (19.3) 15 (9.3) 63 (39.1) 41(25.5) 11 (6.8)
6	In Pulmonary embolism which one is not correct	a-Most common cause of preventable mortality in hospital. b-DVT is the most common cause c-most common cause of cyanosis in surgery d-most of them have normal chest x-ray No response	26 (16.1) 16 (9.9) 65 (40.4) 42 (26.1) 12 (7.5)
7	Which one of the following statements reflects the outcome of DVT without prophylaxis or treatment.	a-Proximal extension b-Limited by fibrinolysis or organization in calf DVT. c-Embolization risk increased d-All of the above No response	11 (6.6) 4 (2.5) 50 (31.1) 83 (51.6) 13 (8.1)
8	The following are standard modalities for treatment of VTE except	a-Heparin only b-Heparin + warfarin c-Inferior vena cava filters d-Embolectomy No response	60 (37.3) 21 (13) 30 (18.6) 29 (18.0) 21 (13.0)
9	What percentage of hospital deaths could be attributed to pulmonary embolism	a- 1% b- 2% c- 5% d-10% e-20% f-Don't know No response	3 (1.9) 9 (5.6) 17 (10.6) 5 (3.1) 2 (1.2) 112 (69.6) 13 (8.1)

Although, 151 respondents (93.8%) concurred that VTE prophylaxis is clinically important, only 90 respondents (55.9%) have ever prescribed VTE prophylaxis. In the same vein, only 14 respondents (8.7%) routinely prescribed VTE prophylaxis. While low

molecular weight heparin appears to be the most prescribed VTE prophylaxis, warfarin was the least prescribed among respondents constituting 40.4 %(65 respondents) and 1.9% (3 respondents), respectively. Low molecular weight heparin was most frequently prescribed by the respondents (40.4%) followed by combination of methods (9.9%). The least frequently used DVT prophylaxis method from this study was compression stockings (3.7%), *see Table 3*.

Table 3.Question and responses on attitude and practice of VTE prophylaxis

S/No	QUESTION	RESPONSE	FREQUENCY (%)
1	Do you think DVT prophylaxis is clinically important?	Yes No Don't know No response	151 (93.8) 5 (3.1) 1 (0.6) 4 (2.5)
2-	Have you ever prescribed VTE prophylaxis	YES NO No response	90 (55.9) 66 (41.0) 5 (3.1)
3	If you prescribe VTE prophylaxis is it	a-routinely b-most of the time c-less often d-never/rarely No response	14 (8.7) 21 (13.0) 54 (33.5) 8 (5.0) 64 (39.7)
4	Does your hospital or unit have a policy regarding VTE prophylaxis	a-Yes b-No Don't know No response	35 (21.7) 53 (32.9) 68 (42.2) 5 (3.1)
5	What type of prophylaxis have you prescribed	a-unfractionated heparin b-Low mol weight heparin c-Compression stockings d-warfarin e-combination of above f-None No response	14 (8.7) 65(40.4) 6 (3.7) 3 (1.9) 16 (9.9) 41 (25.5) 16 (9.9)
6	In your opinion and practice are most of hospitalized patients who develop DVT symptomatic	a-Yes b-No Don't know No response	48 (29.8) 83 (51.6) 21(13) 9 (5.6)

Forty-eight out of the 90 respondents who reported to have ever prescribed VTE prophylaxis were junior residents while, medical officers (15 respondents) had the least number of respondents that have ever prescribed VTE prophylaxis (Table 4). From the logistic regression model the male gender, length of medical practice >10 years and rank of consultant were not predictors of VTE prescription ($p<0.05$), *see Table 5*.

Table 4.Prescription of VTE prophylaxis by rank of respondents

RANK OF RESPONDENT	YES N (%)	NO N (%)
Medical Officer	15(27.8)	39(72.2)
Junior Resident	48(76.2)	15(23.8)
Senior Resident	11(68.7)	5(31.3)
Consultant	16(80)	4(20)

Table 5.Predictors of prescription of VTE prophylaxis

Variable	Odds ratio (OR)	Sig	95.0% C.I. Lower	95.0% C.I. Upper
Years of practice (10 years and above versus below 10 years	1.469	.392	.609	3.543
Sex (male versus female)	.974	.964	.308	3.077
Rank (Consultant versus other ranks)	.112	.194	.004	3.039

DISCUSSION

The profile of the respondents showed that junior resident doctors were in the majority, and this is not surprising as they form the largest percentage in our hospital. Our finding is in keeping with the report by Ahsin, *et al,* even though in their study, house officers dominated their study participants but were excluded from our study because most of them just started internship and had no practical experience of managing patients.[10] The respondents cut across all subspecialties in our study in order to have adequate representation of response that could be used to draw a meaningful conclusion.

Practitioners in the department of internal medicine, obstetrics and gynaecology and surgery are the majority of the respondents. This may not be unconnected with the fact that majority of patients who might have higher risk factors for VTE are seen in those departments. Those departments have the largest number of doctors compared to the rest.

The mean score of VTE knowledge assessment was noted to be low in our study and this could be probably due to the fact that a significant proportion of the respondents were very young in medical practice. This is in contrast to other studies that reported higher scores.[14,17] On the other hand, the risk factors and mechanisms of VTE had the maximum appropriate response in our study.

Knowledge of the prevalence of VTE was low in our study probably due to the fact that various prevalence rates were reported within the country. In Nigeria, a prevalence rate of less than 5% was reported, and this may well be under-reported.[19,20]

The overall knowledge on VTE prophylaxis among our respondents was far below the

ideal. It may be related to the fact that the condition is not often diagnosed, added to the low practice of autopsy to determine the gravity of the disease. Our findings concur with the findings by Kakkar, *et al,* Al-Dorzi, *et al,* and *Ahsin, et al*, though, it contrasts with the findings by Ekwere, *et al*.[18] Most of those who had the knowledge on VTE prophylaxis in our study agreed that it was cost effective.

The correct prescription pattern of VTE prophylaxis was best adhered to by the consultant cadre, followed by senior residents, and this is not too surprising because the consultants are more knowledgeable and experienced. The physicians and surgeons had the highest VTE prophylaxis prescription rates, compared to other specialists.

Low molecular weight heparin was the predominantly prescribed DVT prophylaxis, and this was in keeping with other reports.[10] The properties of low molecular weight heparin which include adequate bioavailability, good safety profile, cost effectiveness, easy dosing have contributed to its preference as a mode of DVT prophylaxis.

CONCLUSION

Most practitioners are knowledgeable about VTE and agreed that prophylactic measures were pivotal in preventing and/or reducing morbidity and mortality from the disease. Practice of VTE prophylaxis was sub-optimal and contributory factors included paucity of clear-cut guidelines and inadequate knowledge on the disease magnitude. This underscores the need for guidelines and improved attitude towards VTE prophylaxis.

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