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**PRACTICE OF VENOUS THROMBOEMBOLISM PROPHYLAXIS IN
HOSPITALIZED PATIENT AT TIKUR ANBESA SPECIALIZED
HOSPITAL ACCORDING TO THE EXISTING GUIDELINE.**

ADDIS ABABA, ETHIOPIA.

BY

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Abstract

Background: Venous thromboembolism (VTE) is a common and potentially fatal clinical condition that can be both preventable and treatable. The risk factors for the disease differ across patients and general population which underscores the need for prophylactic measures, early identification and prompt treatment.

Objective: Assessment of the current practice of prophylaxis in venous thromboembolism in Hospitalized patient at Tikur Anbesa Specialized Hospital according to the existing guideline.

Method: A Hospital-based descriptive cross-sectional study was conducted from Feb, 2019-Aug, 2019 at TASH, Addis Ababa, Ethiopia. Data was collected using questionnaire administered from the patient file and analyzed by using SPSS 23. The findings of study were presented with Charts, Figures and Tables.

Results: In this survey 200 questionnaires were administered from the chart of the patients who were at risk for VTE. 78.5% of patients had high and highest risk factor for VTE. For One hundred sixty nine (69.5%) patients VTE prophylaxis was given. Eighteen (9%) patients had major bleeding. Most 129 (64.5%) were offered UFH while 9 (4.5%) were offered Enoxaparin. Sixty one (30.5%) patients were not in any form of prophylaxis. Mechanical prophylaxis were not used.

Conclusion: Most of hospitalized patients were at risk for VTE. More than two thirds of those patients received appropriate prophylaxis.

Recommendation: Promotion of optimal prophylaxis within the health care system is primary and essential to strengthen VTE prophylaxis practice. Reorientation of health professionals at all levels on the importance of prophylaxis of optimal VTE prophylaxis practice. Dissemination of information and education regarding the advantage of optimal VTE prophylaxis.

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CHAPTER ONE: INTRODUCTION

1.1 Background

Hospitalized patients are at risk of developing venous thrombo-embolism (VTE) ¹. Venous thrombo-embolism (VTE): Formation of a blood clot with a vein is known as venous thrombosis which can occur in any vein, but the most common manifestation is deep vein thrombosis (DVT), which occurs predominately in the large veins in the leg. If part or all of a DVT or other thrombus breaks away from the blood vessel wall and travels through the venous blood system, is known as an embolus¹⁷. An embolus that is carried in the direction of blood flow towards the lungs can block one of the arteries in the lung, this is known as a pulmonary embolism¹⁷.

There are a number of risk factors for venous thromboembolism(VTE) like increasing age, surgery ,trauma, previous history of venous thromboembolism(VTE), malignancy and cancer therapy, immobility, pregnancy and the post-partum period, estrogen containing oral contraception, acute medical illness, heart or respiratory failure, inflammatory bowel disease, nephrotic syndrome, myeloproliferative disorders, paroxysmal nocturnal hemoglobinuria, obesity, varicose veins, central venous catheterization, inherited or acquired thrombophilia¹⁵.

Worldwide, the proportion of hospital patients at risk for VTE ranged among countries from 36% to 73% and proportion of medical patients at risk for VTE ranged among countries from 21% to 71 %, for surgical patients the range is from 44% to 80%⁴.Moreover about one-third of patients with DVT develop chronic complications including post thrombotic limb syndrome, chronic embolic pulmonary hypertension and a higher risk of recurrent DVT⁴.

In general there are numerous guideline are existing on the use of thrombo-prophylaxis. There are two methods of thrombo-prophylaxis: pharmacology and mechanical. Recommendations to use this prophylaxis are based the risk stratification, contraindication and complications of the drugs^{12:15}.

There are many clinical evidence that shows thrombo-prophylaxis reduces the risk of DVT and pulmonary embolism (PE). Although numerous guidelines used this days for thrombo-prophylaxis are existing for many years, yet thrombo-prophylaxis remains underused throughout the world. Passive dissemination of guidelines is unlikely improve VTE prophylaxis practice. A number of active strategies used together, which incorporate some method for reminding clinicians to assess patients for VTE risk and assisting the selection of appropriate prophylaxis, are likely to insure achievement of optimal outcomes¹².

In Ethiopia no published data exists about the reasons for underutilization of VTE prophylaxis, and awareness and their practices on medical practitioners. Even though we have a standard VTE prophylaxis guidelines at TASH.

This study is intended to assess the current practice of VTE prophylaxis in hospitalized patients at TASH according to the existing guideline. Based on results of this study we can direct efforts to improve knowledge and adherence and practice to use VTE prophylaxis based on the existing guideline.

1.2 statement of problem

Evidence based consensus guidelines for VTE prophylaxis have been available for many years. Despite the existence of these guidelines, VTE prophylaxis remains underused. Existing studies have assessed compliance with prophylaxis guidelines within defined institutions or countries, but to date, the proportion of at risk patients who should receive prophylaxis globally remains unknown⁴.

Worldwide the proportion of patients receiving ACCP recommended prophylaxis for VTE ranged from 2% to 84%. This showed that different practice of clinicians across the world⁴. A study in Pakistan about KAP of health care providers towards DVT prophylaxis in hospitalized patients showed that less than the ideal¹. In Africa practice of VTE prophylaxis is sub optimal and contributory factors included lack of clear-cut guidelines and inadequate knowledge on the disease magnitude²⁻⁷.

In 2014 Dr.Amha published VTE prophylaxis and treatment guideline at TASH. But, practice of VTE prophylaxis at TASH is not studied¹⁵.

It is customary to see lots of patients coming to TASH from its catchment areas, with trauma, surgical, medical and oncology cases in which most of them who are at risk for developing VTE.

A five-year prospective study was done earlier on the demographic characteristics, risk factors and complications of DVT at TASH. In order to increase the knowledge base for a more successful intervention against prophylaxis of VTE in low income settings, and implementation of the existing guideline, it is crucial to gain deeper insights and a recent data about the current practice in hospitalized patient at TASH.

1.3: Significance of the study

Venous thrombo embolism is one of the most common preventable causes of morbidity & mortality in developing countries. Ethiopia is one of the developing countries, which has the highest morbidity & mortality. TASH have trauma center and oncology center and patients who are coming to this center usually have a risk for developing VTE.

This study will help to understand the practice of VTE prophylaxis. It also help to educate and to give training for physicians. Which can give also a picture about the status of quality of prophylactic measure for VTE.

CHAPTER TWO: LITERATURE REVIEW

2.1 Venous thrombo embolism

Venous thromboembolism is a complication that is commonly seen among critically ill patients admitted to both surgical and medical wards. Thrombosis either develops spontaneously (idiopathic or with underlying abnormality in coagulopathy) or is associated with conditions such as surgery, trauma or prolonged bed rest^{1•15}. VTE and its sequel of pulmonary embolism and post thrombotic syndrome are not only troublesome and morbid but in cases of massive PE can be fatal. Therefore, prophylaxis for VTE, early recognition and appropriate treatment can save many lives².

According to the study done in Europe in 2007, the estimated total number of symptomatic VTE events per annum within the six EU countries was 465,715 cases of DVT, 295,982 cases of PE, and 370,012 VTE related deaths. Almost three quarters of all VTE-related deaths were from hospital-acquired VTE. This is also true in another similar study done in Asia, hospital acquired VTE is increasing. PE accounts up to 6% of hospital deaths¹⁴.

A cross sectional study done by the Center for Outcomes Research at the University of Massachusetts Medical School (UMMS) conducted ENDORSE (Epidemiology International Day for Evaluation of patients at Risk for Venous Thrombo embolism in the Acute Hospital Care Setting) showed that from 358 hospitals in 32 countries, a significant percentage of patients were at risk of VTE but of only 58.5% of at risk surgical and 39.5% of at risk medical patients received appropriate thrombo prophylaxis⁴.

A cross-sectional survey done at Senegal on the basis of the global ENDORSE methodology showed that on 2008, 520 patients (278 medical; 242 surgical) were enrolled in 12 hospitals across Senegal, 57% were at risk of VTE; 57.4% were medical patients and 60.3% were surgical patients. Among those at risk, 31.6% medical patients 35.6% surgical patients received prophylaxis¹¹.

VTE is common among Ethiopians. A five year prospective study designed to obtain information on the demographic characteristics, risk factors and complications of DVT in 66 Ethiopians is reported. There were 44 females and 22 males with a female to male ratio of 2:1. Their age

ranged between 13 and 80 years (mean= 34+/- 12.8 years). Fifty one subjects (77%) were below the age of 41 years. Sixty three cases (95%) presented with lower and three with upper limb DVT. In 26 females (40%) pregnancy and related conditions such as childbirth, abortions and CS were the risk factors their DVT. Immobilization was considered a risk factor in 12 cases (18%) and 12 other patients did not have an apparent risk factors for their DVT. Post thrombotic syndrome was observed in 26% of the study population. 12% of the patients developed recurrent DVT and 9% had non-fatal PE⁶.

In TASH there is a guideline on VTE treatment and prophylaxis published by Dr. Amha on 2014. It recommends prophylaxis against VTE should be considered in every hospitalized patient based on the individual patient risk stratification. The adoption of adequate thrombo-prophylaxis in high risk patients during hospitalization results in long standing protection against thrombo embolic events with low risk of bleeding. It has VTE risk assessment form to recommend prophylaxis. For low risk patient no specific measure or early ambulation is enough; for moderate risk: intermittent pneumatic compression (IPC), UFH, and LMWH; for high risk: IPC, UFH, LMWH, FXI; for highest risk: pharmacological (UFH, LMWH, warfarin, or FXI) alone or in combination with IPC¹⁵.

2.2 Practice

Recommendations for use prophylaxis are available. However, there are different practices among different subspecialties in its use and applications.

In general, physicians have different approach to VTE prophylaxis and usually this is influenced by the subsets of patients seen and encountered in practice as well as the availability of the medications used for prophylaxis. The use of standard criteria for stratification of patients for VTE prophylaxis use is underutilized. Many patients who might benefit from routine use of these medications are sometimes not properly identified.

A multinational survey from member countries of the European Federation of internal medicine studied on attitudes towards and practice of VTE prevention in general internal medicine wards. In this study 226 physicians from 30 countries were included and it showed that 79% of the physicians were aware of of the clinical guidelines to prevent VTE. The magnitude of the clinical problem was over and under estimated by many (12.2% and 40.1%, respectively). Only 46.7%

thought there were mostly receiving proper prophylaxis. 64% worked in departments without a formal VTE prophylaxis program. Risk of bleeding, lack of awareness and lack of decision support systems were the three most common reasons for deferring treatment (88.6%, 32.3% and 27.9%, respectively)¹⁶.

The study done at Calabria on knowledge and habits among hospital doctors concerning primary prevention of VTE showed that out of 340 physicians ,contacted, 154(45%) agreed to take part in the survey. 82% of those who responded used VTE prophylaxis on routine basis. Unfractionated heparin (71%) was the most frequently used methods; early ambulation (55%), low molecular weight heparin (49%) and elastic stocking (49%) were less frequently employed⁵. Surprisingly, one third used aspirin.

Another study on knowledge, attitude and practices of healthcare providers towards deep vein thrombosis prophylaxis in five teaching hospital of Rawalpindi, Pakistan. And result showed that most (98.8%) of the respondents agreed that DVT prophylaxis was clinically important, only 63.3% had actually prescribed it themselves: out of these only 10.3% respondents did it routinely and 29% did it most of the time. Routine prophylaxis prescription was claimed by 23% respondents in surgery, 7.2% in medicine and by 3.4% of gynecologists. LMWH was the preferred prophylaxis used followed by combination of methods and UFH¹.

A study in Sokoto Hospital, Nigeria, on knowledge, attitude and practice of VTE among medical practitioners in teaching hospital setting. And the result showed that majority of the respondents were males (81.4%) and junior residents (41.6%). 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. LMWH 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 respondents³.

In Ethiopia there is a standard treatment guideline for primary hospitals and VTE treatment included at section of medical condition during pregnancy¹⁸. In this guideline prophylactic measures for VTE is not included. Even though presence of VTE prophylaxis and treatment guideline at TASH, the practice of VTE prophylaxis is not studied.

CHAPTER THREE: OBJECTIVES

3.1. General Objective:-

- To assess the practice on prophylaxis of VTE in Hospitalized patient at TASH, Addis Ababa, Ethiopia.

3.2 .Specific Objectives:-

- To determine VTE risk factor in hospitalized patient at TASH
- To determine the proportion of patients being offered VTE prophylaxis according to TASH VTE prophylaxis guideline.
- To know the type and dosages of prophylaxis is used.

CHAPTER FOUR: METHODS AND PARTICIPANT

4.1. Study Area and Period

TASH is one of the health institutions in the city and it is the largest tertiary level referral Hospital in the country. It has clinical departments: Emergency medicine, Internal Medicine, Oncology Surgery pediatrics, Gyn /Obs, Family medicine, ophthalmology, psychiatry, dentistry and ENT along with other follow up and special clinics for specific disease.

The study was conducted from Feb 2019-Aug 2019 G.C at TASH in Addis Ababa, Ethiopia. Addis Ababa is the capital city of Ethiopia and the seat of Africa union. According to 2007, census it has population 3,384,569. It has an altitude of 2300m above sea level.

4.2. Study Design:

A hospital based descriptive cross sectional study was conducted

4.3. Population

4.3.1. Source of population:

All patients admitted at TASH who had risk for developing VTE.

4.3.2. Study population:

The study subjects were patients who were admitted to the ED, Orthopedics, Surgical, Medical wards, and at ICU.

4.4. Inclusion and exclusion criteria

4.4.1. Inclusion criteria

All Patient who were admitted at TASH, were 18 and above years of age.

4.4.2. Exclusion criteria

- Patients who were less 18 years of age and no risk factor for VTE.

4.5. Sample size and sampling technique:

5.1. Sample size:

Considering time and cost a total of 200 sample patient who were admitted in TASH for a period of Feb- Aug 2019 selected for the study.

5.2. Sampling technique:

The study used convenient sampling.

4. 6. Study Variables

6.1. Independent variables:

- Age
- Sex

6.2. Dependent variable:

- Practice
- Risk factor

4.7. Data Collection Method:

7.1: Data collection instruments and methods:

A modified standard questionnaire which has open ended questions was used to collect data from the chart of the patient.

7.2. .Data collection procedure:

The data was collected through a modified standard questionnaire.

7.3. Data processing and analysis:

The data was entered, cleaned and analysis with SPSS version 23 and descriptive analysis was done on the current practice of VTE prophylaxis in Hospitalized patient. Finally the data presented in frequency distribution tables.

7.4. Data quality control:

The checklist was pretested in Black Lion Hospital and the checklist was standardized after the pretest. Close supervision will be done by principal investigator and supervisor during data collection and completeness of data will be checked daily. Beside on daily identified gap correction was done.

7.5. Data Presentation

After data processing and analysis, the results was presented using tables, and percentages with discussion, association of variables and comparison of results by international values and values from similar studies done in area in the other country.

4.8. Operational definitions:

- VTE
- Prophylaxis
- Practice

4.9. Ethical consideration

Ethical clearance was obtained from Department of of Emergency Medicine. Ethical committee was given Black Lion Hospital, and permission was also obtained from Black Lion Hospital administration.

4.10. Dissemination plan

Finding of the study will be given to hospital and the research findings will be made available to the scientific community through presentation in meetings or conference as well as through national and international scientific publications.

CHAPTER FIVE: RESULTS

5.1 STUDY POPULATION

Patient's characteristics:

Two hundred patients from ED and inpatients were selected during the month of February to August in 2019. The mean age was 42 years, ranging from 18-90 years, most were in 21-40 years (50.5%). 111 (55.5%) of patients were males, while 89 (44.5%) of patients were females. 35 (17.5%) of the patients admitted to Orthopedics ward, 38 (19%) to medical ward, 36 (18%) to surgical ward, 43 (21.5%) to ED, and 48 (24%) to ICU. Comorbidities were aspiration pneumonia, malignancy, cardiac disease, HTN and DM.

Fig 1. Age distribution

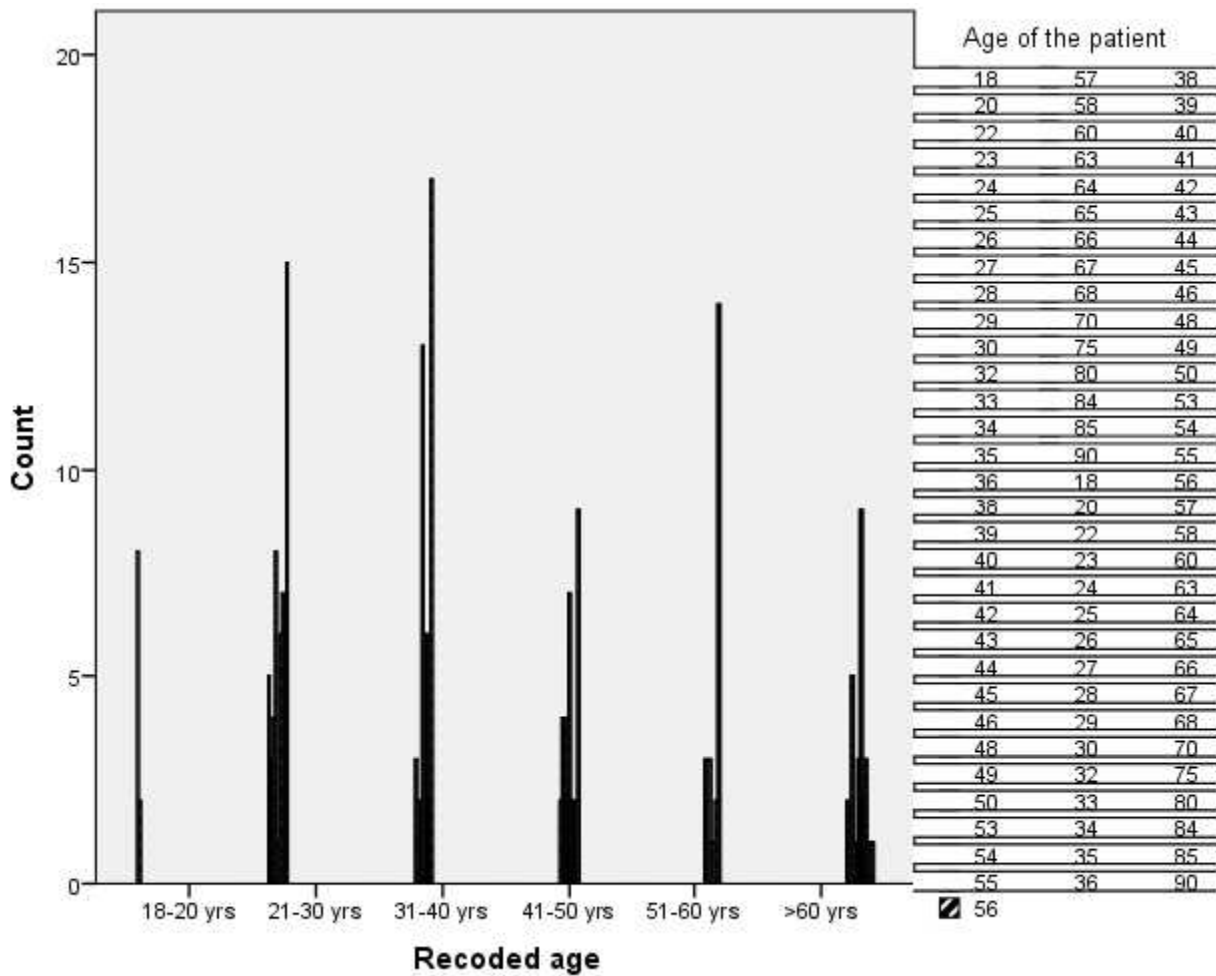


Fig 1: Admittion ward

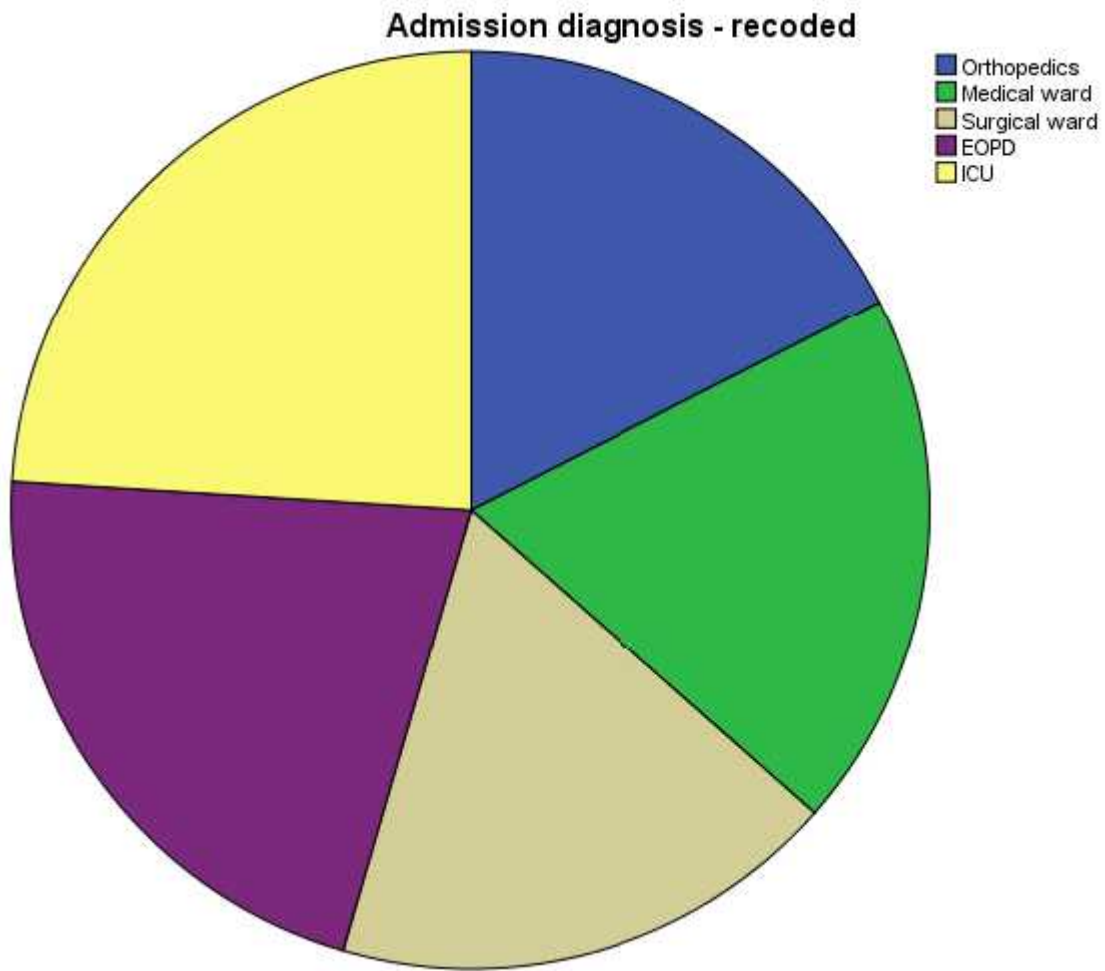
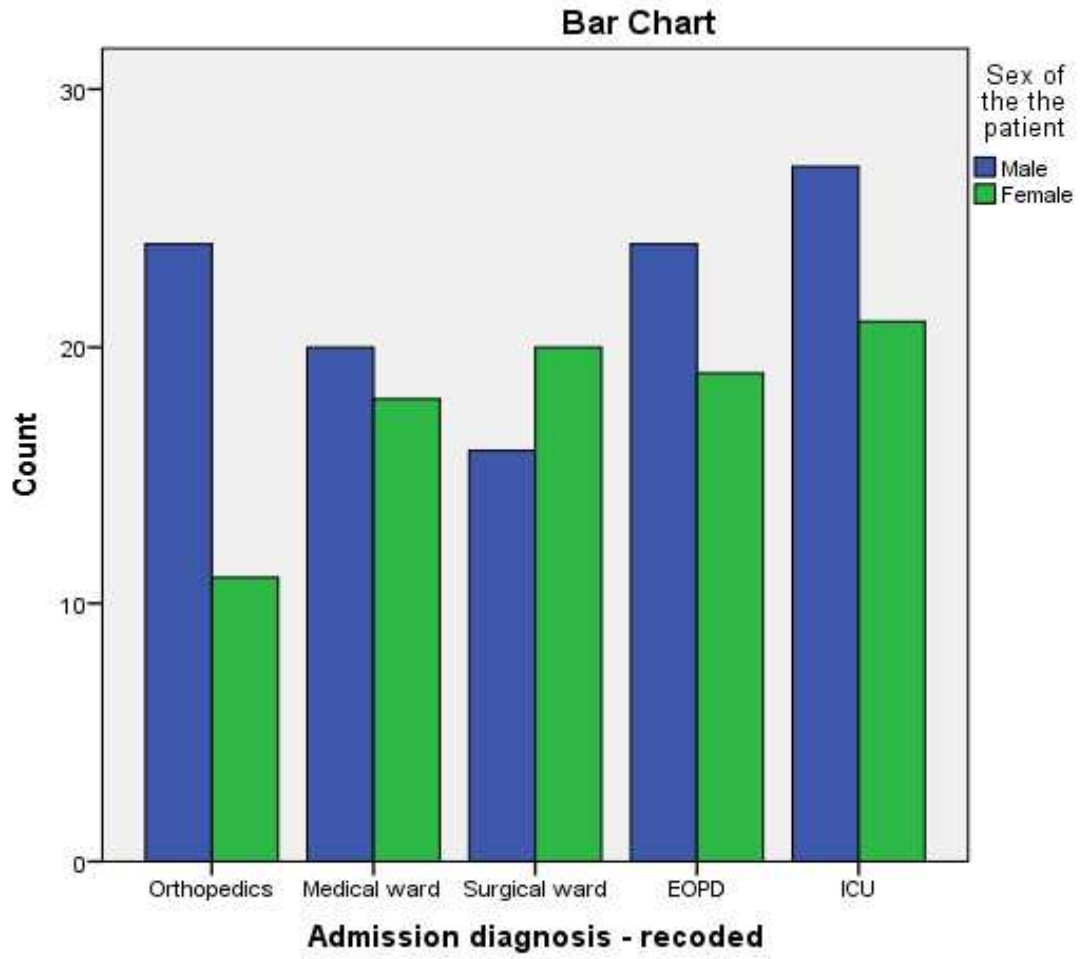


Fig 2: sex of the patients vs admition ward



5.2 Risk factor for VTE in newly admitted patients at TASH:

Immobility is the commonest risk factor mainly in the surgical, orthopedic and ICU patients. And followed by previous DVT, malignancy and old age.

Table 3 Risk factor distribution for VTE

Risk Factor for VTE	Number	Percent
Immobility	177	88.5%
Previous DVT	12	6.0%
Malignancy	29	14.5%
Old age	30	15.0%
Total	200	100.0%

5.3 The proportion of patients being offered VTE according to 2014 TASH VTE

Prophylaxis and treatment guideline:

VTE prophylaxis was appropriately prescribed in 139(69.5%) out of 200 patients. While 61(30.5%) patients were not in any form of VTE prophylaxis. 18(9%) had bleeding.

UFH and Enoxaparin were the forms of prophylaxis used in 138 patients. UFH was used in 129(64.5%) patients with the dose 7500 SC BID in surgical, medical, ED and ICU patients and 5000 SC TID in orthopedic patients. Enoxaparin was given in 9(4.5%) with the dose of 40 Mg SC daily. Mechanical prophylaxis was not used.

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Admission diagnosis - recoded	Between Groups	1.051	1	1.051	.511	.476
	Within Groups	407.144	198	2.056		
	Total	408.195	199			
Comorbid condition - recoded	Between Groups	2.357	1	2.357	.735	.399
	Within Groups	89.810	28	3.207		
	Total	92.167	29			
Contra Indication - recoded	Between Groups	.052	1	.052	.882	.362
	Within Groups	.889	15	.059		
	Total	.941	16			
Recoded age	Between Groups	.280	1	.280	.125	.724
	Within Groups	443.640	198	2.241		
	Total	443.920	199			
Methods of VTE PROPHYLAXIS - recoded	Between Groups	.125	1	.125	.410	.523
	Within Groups	29.985	98	.306		
	Total	30.110	99			

The above table shows that the association of sex with different factor.

CHAPTER SIX: DISCUSSION

Previous studies done on the demographic characteristics, risk factors and complications of venous thrombo embolism; those conducted in the practice of venous thrombo embolism prophylaxis according to the guideline is scarce, which limits comparison of results.

The study showed that, more than two thirds of hospitalized patients who were at risk received the TASH recommended method of prophylaxis. On a study conducted in Kenya, though majority of medical patients were at high risk for venous thrombo embolism with only slightly more than half received appropriate action which is lower than the value found in this study. This variation could be this study done only for admitted medical patients. A study done at Senegal showed that on 520 patients (278 medical; 242 surgical), 57% were at risk of VTE. Among those at risk, 31.6% medical patients and 35.6% surgical patients received prophylaxis. This variation could be different sample size. The ENDORSE study conducted on 358 hospital in 32 countries, significant percentage of patients were at risk of VTE but 58.5% of at risk surgical and 39.5% of at risk medical patients received appropriate prophylaxis.

In this study Immobility (88.5%) is the commonest risk factor. This value is higher than while in the previous study which was 12%.

In this study 129(64.5%) were offered unfractionated heparin. The study in Kenya showed that, 71.9% of medical patients received unfractionated heparin which is comparable.

The study also showed that bleeding is the commonest contraindication for VTE prophylaxis particularly in medical patients. While in Kenya seventy eight (19.5%) out of 400 had risk of bleeding. This variation could be different sample size.

Considering gender previous study showed that VTE is more common in male than females with a 2:1 ratio while in this study it showed 1.2:1 which is lower than from the previous study. The variation could be larger sample size.

Effective doses for VTE prophylaxis are 7500 twice daily and 5000 three times daily of unfractionated heparin and 40miligrams of enoxaparin given once in a day. Similar study in Kenya showed that 5000 of unfractionated heparin given twice or three times daily and 40miligrams of enoxaparin given once a day.

CHAPTER SEVEN: CONCLUSION

Most of in hospitalized patients were at risk for VTE. More than two third of those patients received appropriate prophylaxis. From the results and discussions held above, it was shown that good VTE prophylaxis was noticed in the ICU patient. Immobility, old age, Previous DVT and malignancy are the top four risk factor for VTE. UFH was the most frequently methods of VTE prophylaxis, while bleeding was the major contraindication to give VTE prophylaxis.

CHAPTER EIGHT. RECOMMENDATION

- Promotion of optimal prophylaxis within the health care system is primary and essential to strengthen VTE prophylaxis practice.
- Reorientation of health professions at all levels on the importance of prophylaxis of optimal VTE prophylaxis practice
- Dissemination of information and education regarding the advantage of optimal VTE prophylaxis.

LIMITATIONS

- Convenient sampling technique
- Single center study

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Annex

Annex 1. Patient Data Collection Checklist

Part1. Demographic status of the patient

1.1 Card no _____

1.2 Age _____

1.3 Sex

A. Male

B. Female

Part2. Practice VTE prophylaxis on the patient based on the TASH VTE prophylaxis guideline

2.1 Admission diagnosis

2.2 Type of surgery

2.3 Duration of surgery _____

2.4 Length of stay _____

2.5 Comorbid condition _____

2.6 Risk factor for VTE _____

2.7 Methods of VTE Prophylaxis _____

2.8 Dose _____

2.9 Contraindication for prophylaxis _____

Name of data collector _____

Signature _____

Date _____