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THE AGA KHAN UNIVERSITY

Postgraduate Medical Education Programme

Medical College, East Africa

**KNOWLEDGE, ATTITUDES AND PRACTICE OF VENOUS
THROMBOEMBOLISM RISK ASSESSMENT AMONG SURGICAL
DOCTORS IN TANZANIA**

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DISSERTATION PROPOSAL SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENT FOR THE DEGREE OF MASTER OF MEDICINE (MMED)
IN GENERAL SURGERY

DAR ES SALAAM, TANZANIA.

14/06/2021

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Master of Medicine

In General Surgery

Members of the Dissertations Standard Committee appointed to vet the dissertation of

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find it satisfactory and recommend that it be submitted for evaluation by external examiners



Chair, Dissertations Standard Committee

14/06/2021

Date

DEDICATION

This dissertation is dedicated to my parents. Thank you for being with me in every step of this journey.

ABSTRACT

Introduction

Surgical patients are at increased risk of venous thromboembolism due to the nature of their conditions and treatments. The incidence ranges from 61.3% to 64.9% in developed countries, compared to 43% in Africa. Although venous thromboembolism is fatal, it is potentially preventable. Physician-implemented risk assessment models reduce events by 70%.

No country in sub-Saharan Africa has implemented a national venous thromboembolism risk assessment guideline. The subsequent burden is probably a reflection of low awareness and knowledge, negative attitudes, and substandard practice among physicians towards risk assessment.

Justification

In the current study, we assessed Tanzanian surgical doctors' knowledge, attitudes, and practices of venous thromboembolism risk assessment and further determined whether surgical physicians' age, gender, years of practice since graduation of bachelor of medicine (experience), and academic level were associated with their knowledge, attitudes, and practice on venous thromboembolism assessment. Findings of this study would allow conception of evidence-based recommendations and possible interventions targeted at reducing the incidence of hospital-acquired venous thromboembolism and its associated morbidity and mortality in Tanzania.

Methods

A prospective survey among surgical doctors was conducted at two, public national referral level hospitals in Dar es Salaam, Tanzania.

A researcher-administered questionnaire was used. The questions on knowledge were adopted from PROMOTE study, and the questions on attitudes and practice domains were developed by the investigators. The knowledge and practice domains were assessed according to the 10th ACCP guidelines.

Results: The overall mean venous thromboembolism knowledge score among surgical doctors was 55.2%. Although 66% of respondents felt hospitalization increased venous thromboembolism risk, 58% felt some surgical patients do not require venous thromboembolism risk assessment. About 45% felt venous thromboembolism prophylaxis increased treatment costs, 33% felt it increased hospital mortality and 47.7% felt some thromboprophylaxis interventions were ineffective. thromboembolism risk, only --- felt surgical patient required risk assessment. More than 8 out of 10 have had an experience of patient developing venous thromboembolism, a similar proportion doctors reported that they would prescribe thromboprophylaxis in a patient with significant risk, however some setbacks like inadequate knowledge (53.8%) was reported to limit practice.

Conclusion and Recommendations: The venous thromboembolism knowledge is not ideal among surgical doctors in Tanzanian referral level hospitals, this adversely impacts attitudes and practice and is a patient safety risk. There is a need to develop and adopt a comprehensive hospital-wide policy on VTE and ensure implementation of its guidelines and protocols in all clinical settings. Knowledge gaps need to be addressed, and sustainable program for regular and frequent regular re-training of surgical doctors in Tanzania tertiary level hospitals on VTE, its risk assessment, prevention and management needs to be set up.

LIST OF ABBREVIATIONS

ACCP:	AMERICAN COLLEGE OF CHEST PHYSICIANS
AKU:	AGA KHAN UNIVERSITY
DVT:	DEEP VEIN THROMBOSIS
INR:	INTERNATIONAL NORMALIZED TIME
LM WH:	LOW MOLECULAR WEIGHT HEPARIN
MMED:	MASTERS OF MEDICINE
MOI:	MUHIMBILI ORTHOPEDIC INSTITUTE
MNH:	MUHIMBILI NATIONAL HOSPITAL
MUHAS:	MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCE
PE:	PULMONARY EMBOLISM
RAM:	RISK ASSESSMENT MODELS
VTE:	VENOUS THROMBOEMBOLISM

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Once again I appreciate the services of Dr Masawa, who assisted in the proofreading and editing of my paper.

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Thank you all

DECLARATION

I declare that this dissertation proposal does not incorporate without acknowledgment any material previously submitted for degree or diploma in any university and that to the best of my knowledge, it does not contain any material previously published or written by another person except where due reference has been made in the text.

Any editorial assistance provided to me has in no way added to the substance of any dissertation proposal, which is the product of any own research endeavors.



(Signature of Candidate)

14-06-2021

Date

TABLE OF CONTENTS

ABSTRACT	v
LIST OF ABBREVIATIONS	vii
ACKNOWLEDGEMENT	viii
DECLARATION	ix
LIST OF TABLES	xii
CHAPTER 1	1
INTRODUCTION AND LITERATURE REVIEW	1
1.1 INTRODUCTION	1
1.2 JUSTIFICATION	3
1.3 RESEARCH QUESTION	3
1.4 OBJECTIVES	3
1.4.1 Primary Objective.....	3
1.4.2 Secondary Objective	3
CHAPTER 2	4
MATERIALS AND METHODOLOGY	4
2.1 STUDY DESIGN.....	4
2.2 STUDY SITE	4
2.3 POPULATION	5
2.3.1 INCLUSION CRITERIA	5
2.3.2 EXCLUSION CRITERIA.....	5
2.4 DATA COLLECTION	5
2.5 SAMPLE SIZE.....	6
2.5.1. PARTICIPANT SELECTION	6
2.6 DATA COLLECTION TOOLS.....	6
2.7 DATA MANAGEMENT.....	6
2.8 VARIABLES.....	7
2.9 DATA ANALYSIS	7
2.10 ETHICAL CONSIDERATION	8

2.11 SIGNIFICANCE OF THE STUDY	8
CHAPTER 3	9
RESULTS	9
3.1 DEMOGRAPHIC CHARACTERISTICS RESPONDENTS	9
3.2 SURGICAL DOCTORS' KNOWLEDGE ON VTE	10
3.3 SURGICAL DOCTORS ATTITUDE TOWARDS VTE RISK ASSESSMENT AND THROMBOPROPHYLAXIS.	11
3.4 PRACTICE OF SURGICAL DOCTORS ON VTE RISK ASSESSMENT AND THROMBOPHYLAXIS	12
3.5 ASSOCIATION BETWEEN DEMOGRAPHIC CHARACTERISTICS AND KNOWLEDGE LEVEL OF DOCTORS ON VTE RISK ASSESMENT AND PROPHYLAXIS	13
CHAPTER FOUR	14
DISCUSSION.....	14
CHAPTER FIVE	17
CONCLUSIONS.....	17
5.1 CONCLUSIONS.....	17
5.2 LIMITATIONS	18
CHAPTER SIX.....	19
RECOMMENDATIONS	19
6.1 RECOMMENDATIONS.....	19
REFERENCES.....	20
APPENDICES	25
Appendix 1: Study Questionnaire	25
Appendix 2: informed consent for participants.....	30

LIST OF TABLES

- Table 3.1: demographic data of the respondents
- Table 3.2: surgical doctors' knowledge on V TE
- Table 3.3: groups of specialties and their corresponding levels of knowledge and attitude
- Table 3.4: association between demographic data and knowledge

CHAPTER 1

INTRODUCTION AND LITERATURE REVIEW

1.1 INTRODUCTION

Venous thromboembolism (VTE) is a medical condition that comprises deep vein thrombosis (DVT) and pulmonary embolism (PE) (Makusidi, Isah et al. 2016, Wendelboe and Raskob 2016). A DVT occurs when a blood clot forms in the peripheral deep venous system, and PE occurs when the clot breaks loose and travels through the bloodstream to the pulmonary circulation, with resultant occlusion causing ventilation and perfusion mismatch, which may result in mortality (Wickham, Gallus et al. 2012). The Virchow triad explains the development of these clots. Several risk factors are associated with the development of VTE, including but not limited to major surgeries, trauma, immobilization, malignancies, hormonal imbalances, medication, age, obesity and heart failure (Wendelboe and Raskob 2016).

Surgical patients are at an increased risk of VTE due to the nature of their diseases and treatment that may result in immobility (Fall, Proulle et al. 2014, Kingue, Bakilo et al. 2014, Zhai, Kan et al. 2019). The VTE risk of a trauma patient increases to 80% (Scolaro, Taylor et al. 2015). A systematic review showed 2.4% to 9.6% of postoperative patients developed VTE, and the mortality was 60% (Danwang, Temgoua et al. 2017). The prevalence and incidence of VTE in hospitalized surgical patients range from 61.3% to 64.9% in developed countries (Cohen, Tapson et al. 2008, Ongen, Yılmaz et al. 2011, Pinjala 2012), compared to 43.8% in Africa (Kingue, Bakilo et al. 2014). The consequent mortalities are higher in Africa (Danwang, Temgoua et al. 2017).

The high VTE associated mortalities reflect the unavailability of diagnostics, limited treatment, and underutilization of VTE risk assessment in the African setting (Danwang, Temgoua et al. 2017). Although VTE is a morbid and fatal medical condition, it is potentially preventable, as 72% of VTE events arise from avoidable causes (Haut, Lau et al. 2015, Cardoso, Krokosz et al. 2016). Evidence-based risk assessment models (RAMs) for predicting VTE in hospitalized patients are based on known risk predictors. Their presence and significance are assessed once

the patient is admitted and reassessed as their status changes (Obi, Pannucci et al. 2015). Thromboprophylaxis will be instituted according to the real risk; these are prescribed as per the recommended guidelines (Geerts, Pineo et al. 2004, Gould, Garcia et al. 2012). The NHS and 10th version of the ACCP both have set a goal for all medical and surgical patients to be assessed for risk on admission (Autar 2007, Haut, Lau et al. 2015). Henceforth, physicians play a crucial role in ensuring provision of appropriate, timely, risk assessment and subsequent thromboprophylaxis. The appropriate measures reduce the rate of VTE events by 70% (Naidoo, Mothilal et al. 2019), with a corresponding ten-fold reduction of mortality (Obi, Pannucci et al. 2015, Naidoo, Mothilal et al. 2019).

Doctor-related factors associated with inadequate VTE risk assessment and thromboprophylaxis can be categorized as knowledge-based, encompassing a lack of awareness and lack of knowledge. Attitude based factors encompass disagreement with guidelines and underestimation of VTE risk. Perceptions based factors that ultimately determine practice include a perceived notion of increased risk of bleeding, increased physician's workload, and increased treatment cost (Maynard, Morris et al. 2010, Huang, Anderson et al. 2013, Rosenberg, Eichorn et al. 2014, Pannucci, Swistun et al. 2017, Kotaska 2018).

There is no country in sub-Saharan Africa (SSA) that has adopted or implemented a national VTE risk assessment and thromboprophylaxis guideline for admitted patients (Danwang, Temgoua et al. 2017). The subsequent burden is probably a reflection of low awareness and knowledge, negative attitudes, and inadequate practice towards VTE risk assessment, leading to under-diagnosis, under-reporting, and high burden. In a study conducted in Ethiopia, about a quarter of admitted patients eligible for VTE prophylaxis did not receive it (Obi, Pannucci et al. 2015). Only 9% of physicians in Nigeria prescribed thromboprophylaxis routinely, and half of them had never prescribed thromboprophylaxis (Heit 2007, Makusidi, Isah et al. 2016). In Tanzania, the baseline status of VTE thromboprophylaxis for admitted patients is unknown; however, it is hypothesized, based on literature from other SSA countries, that it may not be adequate.

1.2 JUSTIFICATION

In the current study, we wanted to assess Tanzanian surgical doctors' knowledge, attitudes, and practices towards VTE thromboprophylaxis. This study's insights will be an important initial step towards reducing and preventing VTE associated morbidities and mortalities. Furthermore, in the event, our hypothesis is correct, we will recommend urgent contextual interventions to decrease the burden venous thromboembolism.

1.3 RESEARCH QUESTION

What is the knowledge, attitude and practice of venous thromboembolism risk assessment and prophylaxis among surgical doctors in national referral level hospitals in Tanzania?

What are the factors that determine surgical doctors in Tanzanian referral level hospitals assessment of VTE risk and initiation of thromboprophylaxis?

1.4 OBJECTIVES

1.4.1 Primary Objective

- To assess surgical physicians' knowledge, attitudes, and practice on VTE risk assessment

1.4.2 Secondary Objective

- To determine if there is an association between surgical physicians' demographics and VTE risk assessment knowledge.
- To determine if there is an association between surgical physicians' VTE risk assessment knowledge and attitudes.
- To determine factors among surgical physicians that are associated with good knowledge on VTE risk assessment and thromboprophylaxis.

CHAPTER 2

MATERIALS AND METHODOLOGY

2.1 STUDY DESIGN

This was a cross-sectional survey among surgical doctors to assess VTE risk assessment knowledge, attitudes, and practices.

2.2 STUDY SITE

This study was conducted at Muhimbili national hospital referral (MNH) and Muhimbili orthopedic institute (MOI), Dar es salaam Tanzania.

MNH is a public national referral level hospital and the teaching site for Muhimbili University of Health and allied sciences (MUHAS).

MNH has about 300 full-time medical doctors and specialists. 1000 to 1200 outpatients are attended in a week. It has a bed capacity of 1500 admitting 1000 to 1200 inpatients per week from the outpatient clinics, and referrals from other health facilities in Tanzania.

The department of general surgery has rotating Master of Medicine (MMED) in General surgery students in three different years of studies, rotating first years of MMED Orthopedics and Traumatology, and MMED. General Urology students. There are also department medical officers, medical interns, and undergraduate students.

MOI is also a national referral level hospital for neurosurgery, orthopedics, and trauma. Apart from service, it is also a teaching institute, which hosts MMed orthopedics and MSc neurosurgery offered by MUHAS.

MOI has about 70 full time medical doctors and specialists. Orthopedic, trauma, and neurosurgery departments attend more than 10,000 patients per year in outpatient and inpatient care, it has a bed capacity of 150.

2.3 POPULATION

The study population was doctors in general surgery, plastic surgery, ear, nose, and throat (ENT), orthopedic, neurosurgery and urology. Our study population also included rotating residents, and faculty in the department, as they are all involved in managing surgical patients.

2.3.1 INCLUSION CRITERIA

Full-time specialists and medical officers working in the following departments: general surgery, urology, plastic surgery, orthopedic, neurosurgery and ENT were included.

Rotating residents in the departments of general surgery, urology, plastic surgery, orthopedic, neurosurgery and ENT during the study period were also included.

2.3.2 EXCLUSION CRITERIA

Full-time Specialists and registered medical officers in the sub-department of Pediatric surgery were excluded due to differing RAM in this population.

Intern doctors

2.4 DATA COLLECTION

A researcher-administered questionnaire was administered to consenting participants. Awareness of this study was raised by introductory presentations of this research at the departmental meetings before commencement of data collection. Data collected included physicians' demographics, level of experience, specialty of practice, and data aimed at assessing, knowledge, attitudes, and VTE risk assessment practices.

2.5 SAMPLE SIZE

Researcher administered questionnaires were used in consenting participants to improve the response rate of the survey. The total number of eligible participants was determined to be 150 doctors.

2.5.1. PARTICIPANT SELECTION

Convenient sampling method was employed. All doctors in the department who consented for the study were included in the study.

2.6 DATA COLLECTION TOOLS

The questions assessing the knowledge domain were adopted from a validated questionnaire in the PROMOTE study that assessed chest physicians' knowledge on VTE risk assessment(Bikdeli, Sharif-Kashani et al. 2011). The authors of this study developed questions on attitudes and practice domains. Dr. B.Y developed the 1st draft of questions and discussed them with Dr. M.K.N for consensus on appropriateness. Suitable questions were then further discussed with Dr. N.H a post-doctoral fellow with experience in descriptive quantitative methodology. The final questionnaire was piloted among 10 respondents. Revisions made in the process were included in the final tool after consensus discussions between B.Y, M.K.N. and N.H. Data obtained from the pilot study was not included in the final analysis. The knowledge and practice domains were assessed according to the 10th ACCP guidelines(Wigle, Hein et al. 2019).

2.7 DATA MANAGEMENT

Collected data were stored in a secure cupboard, retrieved during data entry to statistical package software, SPSS version 25 for coding and subsequent analysis. Access to the data was limited to the current researchers and was password protected. At completion of the study the data will be managed in the Aga Khan University institution repository.

2.8 VARIABLES

Independent variables consisted of age, gender, years of practice since graduation of Bachelor of Medicine (experience), and academic level. Dependent variables (outcomes) were knowledge, attitude, and practice of VTE risk assessment and thromboprophylaxis.

2.9 DATA ANALYSIS

Age in years and experience in years since graduating MD were presented in mean and standard deviation. Experience (in years) was then categorized into 5 groups, differing with the other for 5 years. Age was categorized in 4 groups; each group had a 10-year range. Gender, specialty, and level of education were summarized using frequencies and percentages.

Responses from knowledge-based questions part were marked as either appropriate or not appropriate as per 10th version of ACCP guidelines. The knowledge-based responses were converted into proportions, that is appropriate marks scored over total available marks for 20 knowledge-based question. This data was entered in SPSS as a numerical data and converted into percentages and analyzed using mean and standard deviation. These responses were further categorized as follows; 0-33% as poor knowledge, 34-66% as average knowledge and 67% and above as good knowledge.

Responses from attitude part were collected using Likert scale questions and were categorized and entered in SPSS as ordinal variables. The responses were compared to known facts from the 10th version of ACCP guideline, and the responses were calculated into percentages. These were analyzed using frequencies and percentages. The percentage was then categorized as follows; 0-33% as poor attitude, 34-66% as average attitude and 67 and above as good attitude.

Responses from practice part were marked as appropriate or not appropriate as per 10th version of ACCP guidelines. The marks for each question were calculated over total number of responses in the respective question and entered in SPSS as a numerical data. Further practice questions were answered by selection of most appropriate answer, these responses were categorized and entered in SPSS as nominal data. These were analyzed using frequencies and

percentages. Associations between variables were determined by fisher's exact test. A p-value of 0.05 was considered of statistical significance.

2.10 ETHICAL CONSIDERATION

Data collected were kept confidential and solely for the purpose of this study. Subsequent use from the AKU repository will require ethical clearance from appropriate ethical bodies. Furthermore, the identification of participants will be prevented by using serial numbers instead of names or other potential identifiers.

Informed consent was sought for participation into the study with clear explanations of benefits, potential risks, and a choice to withdraw at any stage during the study without any repercussions. This proposal was submitted and reviewed by AKU ethical committee before commencement. Permission and ethical clearance were also sought from MNH and MOI.

2.11 SIGNIFICANCE OF THE STUDY

This study's findings would inform of the present knowledge, attitude, and practice of VTE risk assessment and thromboprophylaxis among surgical doctors. These findings would allow recommendations of possible interventions targeted at reducing the incidence of hospital acquired VTE and its associated morbidity and mortality in Tanzanian tertiary level hospitals.

The findings of this study will be disseminated to the respective institutions, and to other key stake holders through CME, local and international conference so that this knowledge will improve patient care.

CHAPTER 3

RESULTS

3.1 DEMOGRAPHIC CHARACTERISTICS RESPONDENTS

The overall response rate in this study was 80% (121/150), major reported reasons for non-participations were time constraints. A total of 121 doctors were recruited into the study. Males formed 76.9 % (93/121) and females 23.1 % (28/121). The mean age of the respondent was 37.7 years (95% confidence interval 36.54 – 38.99 years), the youngest being 27 and oldest 63 years. Working experience (years since Bachelor of Medicine graduation), ranged from 1 to 31years with a mean of 9.06 years (95% confidence interval 8.01-10.10 years). Included subspecialties were 20 doctors from ENT, 16 doctors from neurosurgery, 27 doctors from orthopedic, 29 doctors from general surgery and 29 doctors from urology. *The details of the demographic characteristics of study participants are contained in table 3.1.*

Table 3.1; demographic characteristics of the respondents

Demographic	Demographic described (years)	Frequency	Percentage (%)
Sex	Males	93	76.9
	Females	28	23.1
Age (in years)	Equal or less than 35	55	45.6
	36-45	50	41.3
	46-55	14	11.6
	equal or more than 56	2	1.7
Experience (in years)	<5 years	41	33.9
	5-10	39	32.2
	10-15	27	22.3

	15-20	6	5
	>20	8	6.6
Specialty	ENT	20	16.5
	Neurosurgery	16	13.2
	general surgery	29	24
	Orthopedic	27	22.3
	Urology	29	24
	TOTAL	121	100

3.2 SURGICAL DOCTORS' KNOWLEDGE ON VTE

The overall mean knowledge score on DVT/VTE of the doctors was 55.3%, standard deviation 12.3% according to the PROMOTE questionnaire. The lowest score was 20% and the highest was 80%. The proportion of respondents with good knowledge on DVT/VTE ($\geq 67\%$) was 16.5% (20/121), moderate knowledge (34-66%) was 81% (98/121), and 2.5% (6/121) had poor knowledge (had less than 34%). *See table 3.2*

Table 3.2; surgical doctors' knowledge on VTE

Knowledge Level	Frequency	Percentages (%)
Good Knowledge	20	16.5
Moderate Knowledge	98	81
Poor Knowledge	3	2.5
TOTAL	121	100

3.3 SURGICAL DOCTORS ATTITUDE TOWARDS VTE RISK ASSESSMENT AND THROMBOPROPHYLAXIS

Attitude of surgical doctors towards VTE risk assessment was assessed by inquiring doctors' opinions on different known risk factors and prophylactic modalities compared to 10th version of ACCP guidelines.

On assessment of attitudes of whether hospitalization increased VTE risk, 66.1% (80/121) respondents felt hospital admission increases VTE risk, 15.7% (19/121) were unsure and 19.8% (24/121) did not feel hospitalization increased VTE risk. Assessing whether the respondents felt that some surgical patients do not require VTE risk stratification, 58.7% (71/121) agreed, 14% (17/121) were unsure and 27.3% (33/121) disagreed. Most, 56.2% (68/121) of the respondents thought that VTE prophylaxis reduces hospital stay which was the positive attitude, unlike 25.7% (31/121) who disagreed, 18.2% (22/121) were unsure.

Attitudes on whether VTE prophylaxis is associated with increases treatment cost, respondents almost balanced the two sides, 45.5% (55/121) suggested that they do, 16.5% (20/121) were unsure while 48% (56/121) did not agree. When asked whether administration of pharmacological thromboprophylaxis increases the risk of mortality 33.1% (40/121) agreed, 22.3% (27/121) disagreed and 44.6% (54/121) were unsure. Lastly, 20.7% (25/121) thought that mechanical thromboprophylaxis are not effective, 47.9% (58/121) disagreed, this was a positive attitude, 29.8% (36/121) were unsure.

These responses were then transformed into ordinal data and calculated into percentages based on scale of positivity of an attitude. Overall mean score was 56.4%, the lowest score was 30% and the highest score was 80%. It was then categorized into good (> 67%), average (34-66%), and poor (< 33%) attitude. Among the respondents, 16.5% had good attitude, 81.8% had an average attitude and 1.7% had a poor attitude towards VTE risk assessment and prophylaxis. *See table 3.3.*

Table 3.3; groups of specialties and their corresponding levels of knowledge and attitude

		Groups of specialties					
		ENT	urology	General	neurosurgery	Orthopaedic	Total

				surgery			
knowledge	Good	2	7	8	2	1	20
	average	16	22	20	14	26	98
	poor	2	0	1	0	0	3
attitude	Good	0	0	0	0	2	2
	Average	17	25	23	13	21	99
	poor	3	4	6	3	4	20

3.4 PRACTICE OF SURGICAL DOCTORS ON VTE RISK ASSESSMENT AND THROMBOPHYLAXIS

Practice was assessed by determining proportions of doctors that practice VTE risk assessment and prescribe appropriate thrombo-prophylaxis according to the risk when necessary.

Among 121 doctors, 82.6% (100/121) have had patients who developed VTE, 17.4% (21/121) doctors did not have this experience. Most of the doctors, 88.4% (107/121) responded to have prescribed VTE thrombo-prophylaxis in patients with significant VTE risk while 11.6% (14/121) do not prescribe thromboprophylaxis even for patients with significant VTE risks. According to the respondents, reasons for not prescribing thrombo-prophylaxis included inadequate knowledge at 53.8% (7/13), unavailability of the prophylaxis at 15.4% (2/13) and risk of bleeding at 30.8% (4/13).

Most doctors, 66.1% (80/121) routinely prescribe thrombo-phylaxis postoperatively while 33.9% (41/121) of doctors do not. About half, 54.3% (50/92) stated that they do so until when the patient is mobile, while 16.3% (15/92) do so until discharge and 29.3% (27/92) for a specific duration. Common perioperative complications of using VTE prophylaxis that were mentioned by the respondents included wound oozing, 50% (40/80), wound hematoma, 27.5% (22/80), minor hemorrhage, 11.3% (9/80), major hemorrhage, 6.3% (5) and death, 5% (4/80). The most cited prescribed thrombo-prophylaxis was low molecular weight heparin, 76.6% (82/107), followed by those who use combinations of drugs 9.1% (10/107), then aspirin, 6.6% (7/107). Unfractionated heparin and graduated compression stockings each were used by 1.7% (2/107) of the doctors.

3.5 ASSOCIATION BETWEEN DEMOGRAPHIC CHARACTERISTICS AND KNOWLEDGE LEVEL OF DOCTORS ON VTE RISK ASSESMENT AND PROPHYLAXIS

Based statistical analysis done by fisher's exact test (fisher's exact was used because more than 20% of the cells had values below 5), there was no association between knowledge and age of the respondents (surgical doctors), p-value =0.5. Increased years of experience had no association with high knowledge level among doctors, p-value =0.5. There was no association between specialty and level of knowledge, p-value = 0.6. Gender (sex) had no significant association with the VTE risk assessment and prophylaxis knowledge (p-value = 0.4). *See table 3.4*

TABLE 3.4; association between demographic data and knowledge

DEMOGRAPGHY	FISHER'S EXACT P - VALUE
Age vs knowledge	0.5
Sex vs knowledge	0.4
Specialty vs knowledge	0.6
Experience in years vs knowledge	0.5

3.6 ASSOCIATION BETWEEN SURGICAL PHYSICIANS' VTE RISK ASSESSMENT KNOWLEDGE AND ATTITUDES

Majority of respondents in this study had an average level of knowledge and attitude (81% and 81.8% respectively). However, there was no association between knowledge and attitude of surgical physicians towards VTE risk assessment and prophylaxis (p-value = 0.4).

CHAPTER FOUR

DISCUSSION

This study has used 10th version of the ACCP guidelines, which is currently the latest version, to assess knowledge and practice, compared to other similar studies in sub-Saharan region that used earlier versions of ACCP guidelines (Ekwere, Ino-Ekanem et al. 2015, Makusidi, Isah et al. 2016). In the current study more than 7 out of 10 doctors (76%) were aware of at least one of VTE risk stratification model compared to similar studies among doctors in Africa that found an awareness rate of 45.2% (Korubo, Ekeke et al. 2015).

Only 16.5% of participants had a good VTE knowledge level. The predominance of average knowledge level, 81% is similar to a study with the same cut-off points in knowledge done in Nigeria that showed a good knowledge of 83%. In this study from Nigeria, knowledge was assessed by an earlier version of the ACCP (Ekwere, Ino-Ekanem et al. 2015). Although the predominance of moderate knowledge found in this study at first may appear positive, this means that a total of 83% of doctors, those with good and poor knowledge, would not perform adequate VTE risk assessment due to lack of knowledge.

It is established that hospitalization increases VTE risk to about 10% (Geerts, Pineo et al. 2004, Cohen, Agnelli et al. 2007, Geerts, Bergqvist et al. 2008). This underscores the importance of VTE risk assessment in hospitalized patients. The first doctor-patient encounter is critical in determining this risk that sets the stage for provision of appropriate thromboprophylaxis and ultimately reducing the associated adverse patient outcomes. This study revealed that 64.4% of the doctors felt that hospitalization increases VTE risk. In other earlier studies in west Africa, only 10% of participants felt hospitalization increased VTE risk (Bhatti, Ahsin et al. 2012, Makusidi, Isah et al. 2016). This is an important notion as, theoretically it impacts how the doctor may perceive the importance of risk assessment on admission, and the seriousness that would be given to provision of appropriate thromboprophylaxis. (Caprini, Tapson et al. 2005).

Timely VTE risk assessment and provision of appropriate thromboprophylaxis is associated with a 10-fold VTE risk reduction (Spyropoulos, Anderson Jr et al. 2011, Nendaz, Spirk et al. 2014). Despite the finding that 64% of all participants in this study felt that hospitalization increases VTE risk, 58.6% of all participants had the notion that not all patients require assessment for VTE risks on admission. This notion may be one of the major factors negatively impacting adoption VTE risk assessment on admission. This provider related factor plays a role the patient encounter and impacts first doctor-patient encounter on admission and ultimately limits the potential VTE risk reduction at the detriment of the patient.

This notion is due to lack of knowledge, and possibly further propagates prevalent misconceptions including that VTE prophylaxis increases hospital total cost, increases bleeding risk and that some prophylaxis methods are ineffective as were also found in this study. System factors are important in ensuring appropriate provision of VTE risk assessment and prophylaxis. In the current study, both study sites did not have an established VTE risk assessment and thromboprophylaxis protocol, this is also an important gap that must be addressed.

Eighty-two percent of respondents have had experienced a patient with VTE in their practice, the high number corresponds with documented high prevalence of VTE in surgical patients, 61.3% to 64.9% (Cohen, Tapson et al. 2008, Ongen, Yılmaz et al. 2011). This result is similar to a cross sectional study in Nigeria, where 87.9% of participants had experienced patients with VTE (Makusidi, Isah et al. 2016).

Majority of the respondents (88.4%) said that they would prescribe VTE prophylaxis for high-risk patients. Given the VTE associated morbidities and mortality, and limited therapeutic capacity in this region, this response rate outlines the inadequate practice in the high-risk population patient population. In a study by Owoo, in Nigeria among surgical doctors, 99 % of respondents said they prescribe prophylaxis in patients with high VTE risks (Owoo 2018). Self-reported reasons for failure of prescribing thromboprophylaxis in this study included inadequate knowledge 53.8%, unavailability of the prophylaxis 15.4% and risk of bleeding at 30.8.

Each patient carries a different VTE risk after surgery as surgery is one of the risk factors to VTE e.g patients undergoing hip fracture surgery for at least 10–14days postoperatively(Gao, Long et

al. 2016). Therefore, for each postoperative patient there is a specific time for VTE prophylaxis based on his/her risk and the performed surgical procedure, failure to do so exposes the patient to VTE. Most doctors (66.1%) in this study do prescribe thrombophylaxis postoperatively, 54.3% do so only until when the patient is mobile, while 16.3% do so until discharge and 29.3% for a specific duration. This practice may be related to doctor self-reported reasons for failure of prescribing thrombophylaxis, as opposed to the risk category of the patient.

Improved knowledge, attitude and practice on VTE risk assessment and prophylaxis has been observed in centers with an established VTE protocol, thus, the practice is recommended (Caprini, Tapson et al. 2005, Cohen, Agnelli et al. 2007, Pannucci, Swistun et al. 2017). Adopting one protocol also resolves conflicting responses among doctors. This explains the disparity between the observed practice and established standards of practice shown in this study. However, even in the setting of a good knowledge on VTE risk assessment and prophylaxis there has been a documented poor compliance as low as 18.8% and 32%(Gao and Kause 2010, Ekwere, Ino-Ekanem et al. 2015). This further supports the prescription for a comprehensive, documented, and visible hospital-wide policy.

In the current study there was no statistically significant association between demographic variables and knowledge. According to PROMOTE study, years since one has completed bachelor of medicine were inversely proportional to the knowledge on VTE risk assessment and prophylaxis(Bikdeli, Sharif-Kashani et al. 2011). A possible explanation could be lack of continuous medical education on VTE. A study to assess impact of CME on VTE prophylaxis reported a 28% increase in the practice after the CME(Anderson, Wheeler et al. 1994). In the settings where CMEs on VTE are done the level of knowledge on VTE increases with age and the level of doctors' experience(Owoo 2018), these to the study by Watt et al which showed that junior doctors had less knowledge on VTE risk assessment and prophylaxis(Watt, Williams et al. 2016).. No studies have compared association between knowledge and surgical subspecialties.

CHAPTER FIVE

CONCLUSIONS

5.1 CONCLUSIONS

Knowledge on venous thromboembolism among clinical health surgical doctors in tertiary level hospitals in Tanzania is generally less than ideal. Even though the knowledge of the important mechanisms for the development of VTE is generally average, there is still some gaps in attitude and practice that may adversely affect patient safety that may result in developing avoidable VTE associated morbidities and mortality.

CHAPTER SIX

LIMITATIONS

6.1 LIMITATIONS

1. Despite the acceptable overall 80% response rate in this survey, there is still risk of response bias.
2. This study focused on health providers' factors and did not look into patient associated factors.
3. This was study was a quantitative study which means that we could not explore why doctors had had a certain attitude, or why have they adopted a certain practice.

CHAPTER SEVEN

RECOMMENDATIONS

7.1 RECOMMENDATIONS

Based on the results of this study that shows inadequate knowledge, negative attitudes, and practices towards VTE risk assessment and thromboprophylaxis, there is a need to develop and adopt a comprehensive hospital-wide policy on VTE and ensure implementation of its guidelines and protocols in all clinical settings. Knowledge gaps need to be addressed, and sustainable program for regular and frequent regular re-training of surgical doctors in Tanzania tertiary level hospitals on VTE, its risk assessment, prevention and management needs to be set up.

Facility level interventions that have worked elsewhere include adoption of VTE risk assessment models, that will assist doctors in the detection and management of adult hospitalized patients who are at risk of VTE. This system includes setting up and empowering thromboprophylaxis stewardship team which should make sure that there is efficient implementation and monitoring. Patient compliance is should also be targeted by ensuring awareness of the public on VTE.

REFERENCES

1. Anderson, F. A., H. B. Wheeler, R. J. Goldberg, D. W. Hosmer, A. Forcier and N. A. Patwardhan (1994). "Changing clinical practice: prospective study of the impact of continuing medical education and quality assurance programs on use of prophylaxis for venous thromboembolism." Archives of internal medicine **154**(6): 669-677.
2. Autar, R. (2007). "NICE guidelines on reducing the risk of venous thromboembolism (deep vein thrombosis and pulmonary embolism) in patients undergoing surgery." Journal of Orthopaedic Nursing **11**(3-4): 169-176.
3. Bhatti, A. M., S. Ahsin, B. Salim and J. Mansoor (2012). "Knowledge, attitude and practices of healthcare providers towards deep vein thrombosis prophylaxis in five teaching hospitals of Rawalpindi." Journal of Ayub Medical College Abbottabad **24**(2): 136-139.
4. Bikdeli, B., B. Sharif-Kashani, S. Raeissi, S. Ehteshami-Afshar, N. Behzadnia and M. Masjedi (2011). "Chest physicians' knowledge of appropriate thromboprophylaxis: insights from the PROMOTE study." Blood Coagulation & Fibrinolysis: an International Journal in Haemostasis and Thrombosis **22**(8): 667-672.
5. Caprini, J. A., V. F. Tapson, T. M. Hyers, A. L. Waldo, A. K. Wittkowsky, R. Friedman, K. J. Colgan, A. C. Shillington and N. S. Committee (2005). "Treatment of venous thromboembolism: adherence to guidelines and impact of physician knowledge, attitudes, and beliefs." Journal of vascular surgery **42**(4): 726-733.
6. Cardoso, L. F., D. V. C. Krokosz, E. F. de Paiva, I. S. Furtado, J. Mattar Jr, M. M. d. S. e Sá and A. C. O. de Lira (2016). "Results of a venous thromboembolism prophylaxis program for hospitalized patients." Vascular health and risk management **12**: 491.
7. Cohen, A. T., G. Agnelli, F. A. Anderson, J. I. Arcelus, D. Bergqvist, J. G. Brecht, I. A. Greer, J. A. Heit, J. L. Hutchinson and A. K. Kakkar (2007). "Venous thromboembolism (VTE) in Europe." Thrombosis and haemostasis **98**(10): 756-764.
8. Cohen, A. T., V. F. Tapson, J.-F. Bergmann, S. Z. Goldhaber, A. K. Kakkar, B. Deslandes, W. Huang, M. Zayaruzny, L. Emery and F. A. Anderson Jr (2008). "Venous

- thromboembolism risk and prophylaxis in the acute hospital care setting (ENDORSE study): a multinational cross-sectional study." The lancet **371**(9610): 387-394.
9. Danwang, C., M. Temgoua, V. Agbor, A. Tankeu and J. Noubiap (2017). "Epidemiology of venous thromboembolism in Africa: a systematic review." Journal of Thrombosis and Haemostasis **15**(9): 1770-1781.
 10. Ekwere, T., B. Ino-Ekanem and A. Ekanem (2015). "Venous thromboembolism: awareness and practice of thromboprophylaxis among physicians in a tertiary-care hospital." International Journal of Medicine and Biomedical Research **4**(1): 14.
 11. Fall, A. O., V. Proulle, A. Sail, A. Mbaye, P. S. Ba, M. Diao, M. Seck, M. Gadji, S. B. Gning and S. Diop (2014). "Risk factors for thrombosis in an African population." Clinical Medicine Insights: Blood Disorders **7**: CMBD. S13401.
 12. Gao, F. and J. Kaese (2010). "Thromboprophylaxis awareness among hospital staff." British Journal of Nursing **19**(18): 1175-1178.
 13. Gao, Y., A. Long, Z. Xie, Y. Meng, J. Tan, H. Lv, L. Zhang, L. Zhang and P. Tang (2016). "The compliance of thromboprophylaxis affects the risk of venous thromboembolism in patients undergoing hip fracture surgery." Springerplus **5**(1): 1-7.
 14. Geerts, W. H., D. Bergqvist, G. F. Pineo, J. A. Heit, C. M. Samama, M. R. Lassen and C. W. Colwell (2008). "Prevention of venous thromboembolism: American College of Chest Physicians evidence-based clinical practice guidelines." Chest **133**(6): 381S-453S.
 15. Geerts, W. H., G. F. Pineo, J. A. Heit, D. Bergqvist, M. R. Lassen, C. W. Colwell and J. G. Ray (2004). "Prevention of venous thromboembolism: the Seventh ACCP Conference on Antithrombotic and Thrombolytic Therapy." Chest **126**(3): 338S-400S.
 16. Gould, M. K., D. A. Garcia, S. M. Wren, P. J. Karanicolas, J. I. Arcelus, J. A. Heit and C. M. Samama (2012). "Prevention of VTE in nonorthopedic surgical patients: antithrombotic therapy and prevention of thrombosis: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines." Chest **141**(2): e227S-e277S.
 17. Haut, E. R., B. D. Lau, P. S. Kraus, D. B. Hobson, B. Maheshwari, P. J. Pronovost and M. B. Streiff (2015). "Preventability of hospital-acquired venous thromboembolism." Jama Surgery **150**(9): 912-915.
 18. Heit, J. A. (2007). The epidemiology of venous thromboembolism in the community: implications for prevention and management. The vein book, Elsevier: 323-330.

19. Huang, W., F. A. Anderson, F. A. Spencer, A. Gallus and R. J. Goldberg (2013). "Risk-assessment models for predicting venous thromboembolism among hospitalized non-surgical patients: a systematic review." Journal of thrombosis and thrombolysis **35**(1): 67-80.
20. Kingue, S., L. Bakilo, R. Mvuala, J. Z. Minkande, I. Fifen, Y. P. Gureja, H. J. C. Razafimahandry, N. Okubadejo, D. Oke and A. Manga (2014). "Epidemiological African day for evaluation of patients at risk of venous thrombosis in acute hospital care settings." Cardiovascular journal of Africa **25**(4): 159.
21. Korubo, K., O. Ekeke and H. Omunakwe (2015). "Awareness of Venous thromboembolism among doctors in a Nigerian tertiary centre." East African Medical Journal **92**(12): 579-584.
22. Kotaska, A. (2018). "Venous thromboembolism prophylaxis may cause more harm than benefit: an evidence-based analysis of Canadian and international guidelines." Thrombosis journal **16**(1): 25.
23. Makusidi, M. A., M. D. Isah, F. Akintomide, M. Abdullahi and A. Yakubu (2016). "Knowledge, attitude and practice of venous thromboembolism prophylaxis among medical practitioners in a teaching hospital setting." Orient Journal of Medicine **28**(1-2): 36-43.
24. Maynard, G. A., T. A. Morris, I. H. Jenkins, S. Stone, J. Lee, M. Renvall, E. Fink and R. Schoenhaus (2010). "Optimizing prevention of hospital-acquired venous thromboembolism (VTE): Prospective validation of a VTE risk assessment model." Journal of Hospital Medicine: An Official Publication of the Society of Hospital Medicine **5**(1): 10-18.
25. Naidoo, P., R. Mothilal and L. C. Snyman (2019). "Assessment and management of venous thromboembolism risk during pregnancy and the puerperium (SAVE): The South African cohort." South African Medical Journal **109**(3): 186-192.
26. Nendaz, M., D. Spirk, N. Kucher, D. Aujesky, D. Hayoz, J. H. Beer, M. Husmann, B. Frauchiger, W. Korte and W. A. Wuillemin (2014). "Multicentre validation of the Geneva Risk Score for hospitalised medical patients at risk of venous thromboembolism." Thromb Haemost **111**: 531-538.

27. Obi, A. T., C. J. Pannucci, A. Nackashi, N. Abdullah, R. Alvarez, V. Bahl, T. W. Wakefield and P. K. Henke (2015). "Validation of the Caprini venous thromboembolism risk assessment model in critically ill surgical patients." JAMA surgery **150**(10): 941-948.
28. Ongen, G., A. Yılmaz, A. Cirak, C. Ersoy, F. Erden, F. Altıntaş, C. Yıldırım, H. Güven, A. Demir and L. Kaynar (2011). "Venous thromboembolism risk and thromboprophylaxis among hospitalized patients: data from the Turkish arm of the ENDORSE study." Clinical and Applied Thrombosis/Hemostasis **17**(5): 539-545.
29. Owoo, C. (2018). Assessment of the Knowledge, Practices and Prevention of Venous Thromboembolism in Korle Bu Teaching Hospital, University of Ghana.
30. Pannucci, C. J., L. Swistun, J. K. MacDonald, P. K. Henke and B. S. Brooke (2017). "Individualized venous thromboembolism risk stratification using the 2005 Caprini score to identify the benefits and harms of chemoprophylaxis in surgical patients: a meta-analysis." Annals of surgery **265**(6): 1094-1103.
31. Pinjala, R. (2012). "Venous thromboembolism risk & prophylaxis in the acute hospital care setting (ENDORSE), a multinational cross-sectional study: results from the Indian subset data." The Indian Journal of Medical Research **136**(1): 60.
32. Rosenberg, D., A. Eichorn, M. Alarcon, L. McCullagh, T. McGinn and A. C. Spyropoulos (2014). "External validation of the risk assessment model of the International Medical Prevention Registry on Venous Thromboembolism (IMPROVE) for medical patients in a tertiary health system." Journal of the American Heart Association **3**(6): e001152.
33. Scolaro, J. A., R. M. Taylor and N. A. Wigner (2015). "Venous thromboembolism in orthopaedic trauma." JAAOS-Journal of the American Academy of Orthopaedic Surgeons **23**(1): 1-6.
34. Spyropoulos, A. C., F. A. Anderson Jr, G. FitzGerald, H. Decousus, M. Pini, B. H. Chong, R. B. Zotz, J.-F. Bergmann, V. Tapson and J. B. Froehlich (2011). "Predictive and associative models to identify hospitalized medical patients at risk for VTE." Chest **140**(3): 706-714.
35. Watt, B. J., D. T. Williams, L. Lewis and C. J. Whitaker (2016). "Thromboprophylaxis prescribing among junior doctors: the impact of educational interventions." BMC health services research **16**(1): 1-8.

36. Wendelboe, A. M. and G. E. Raskob (2016). "Global burden of thrombosis: epidemiologic aspects." Circulation research **118**(9): 1340-1347.
37. Wickham, N., A. Gallus, B. N. Walters, A. Wilson and N. V. P. G. A. Committee (2012). "Prevention of venous thromboembolism in patients admitted to Australian hospitals: summary of National Health and Medical Research Council clinical practice guideline." Internal medicine journal **42**(6): 698-708.
38. Wigle, P., B. Hein and C. R. Bernheisel (2019). "Anticoagulation: updated guidelines for outpatient management." American family physician **100**(7): 426-434.
39. Zhai, Z., Q. Kan, W. Li, X. Qin, J. Qu, Y. Shi, R. Xu, Y. Xu, Z. Zhang and C. Wang (2019). "VTE Risk Profiles and Prophylaxis in Medical and Surgical Inpatients: The Identification of Chinese Hospitalized Patients' Risk Profile for Venous Thromboembolism (DissOLVE-2)—A Cross-sectional Study." Chest **155**(1): 114-122.

APPENDICES

Appendix 1: Study Questionnaire

QUESTIONNAIRE

INSTRUCTION: PLEASE FILL ALL THE QUESTIONS

PART 1: PERSONAL INFORMATION

1. Age:
2. Gender:
 - Female
 - Male
3. Please indicate the option that best describes your academic level (please tick as many that apply)
 - ENT resident
 - urology resident
 - General surgery resident
 - Neurosurgery resident
 - Orthopedic surgery resident
 - Other residents
 - ENT surgeon
 - Urologist
 - General surgeon
 - Neurosurgeon
 - Orthopedic surgeon
 - Others, please specify
4. How long is it since you finished your first medical degree? _____years

PART 2: KNOWLEDGE

5. Do you know about any risk stratification models/tool/scoring system for prevention of venous thromboembolism?
 - Yes
 - No
- If yes, please name the model/tool/scoring system.....

6. Please indicate the issues you consider as notable risk factors that favor thromboprophylaxis (Maximum of 8):

.....
.....
.....
.....
.....
.....
.....
.....
.....
.....
.....

7. An 80-year-old smoker male underwent thoracotomy due to squamous cell lung cancer. His weight is 86 kg and his height is 168 cm. Postoperatively, he suffered from GI bleeding, which was controlled with conservative measures.

When do you ambulate the patient?.....

Do you recommend VTE prophylaxis for this patient?.....

If yes, please describe the preferred regimen(s)/method(s).....

8. A 38-year-old male suffered from abdominal pain which after a few hours was localized in the right lower quadrant. With a history of loss of appetite since the previous night, one episode of vomiting, and leukocytosis; a clinical diagnosis of acute appendicitis was made and he underwent laparoscopic appendectomy.

The previous year his father had a deep vein thrombosis after a car accident which had led to tibial fracture.

When do you suggest to ambulate the patient?.....

Would you prescribe pharmacological thromboprophylaxis for this patient? yes/no

Would you prescribe non-pharmacological thromboprophylaxis for this patient?.....yes/no

9. A 38-year-old male with a 26-packyear history of smoking, and COPD, has been hospitalized due to hemoptysis which has been around two full cups. Blood pressure is 115/72 mmHg. He has been bedridden due to severe lightheadedness following hemoptysis.

Does he need thromboprophylaxis?.....

If yes, please describe the recommended regimen(s)/ method(s).....

10. A 68-year-old female has been admitted at the intensive care unit (ICU) due to severe burn injury and is receiving unfractionated heparin for thromboprophylaxis. An abdominal ultrasound exam incidentally revealed a large non-homogenous mass below the liver dome. If she is scheduled for laparotomy:

When will you stop heparin before operation?.....

When will you start thromboprophylaxis after surgery? yes/no

If yes, what is the recommended regimen?
.....

PART 3: ATTITUDE

BESIDES EACH STATEMENT PRESENTED BELOW, PLEASE INDICATE WHETHER YOU (TICK AT THE CIRCLE ON THE CHOICE); STRONGLY AGREE, AGREE, UNDECIDED, DISAGREE OR STRONGLY DISAGREE

11. Hospital admission increases the risk of VTE

Strongly agree Agree Undecided Disagree strongly disagree

12. Some patients in surgical department do not require VTE risk stratification

Strongly agree Agree Undecided Disagree strongly disagree

13. VTE prophylaxis reduces hospital stay

Strongly agree Agree Undecided Disagree strongly disagree

14. VTE prophylaxis increases treatment cost

Strongly agree Agree Undecided Disagree strongly disagree

15. Administration of pharmacological thromboprophylaxis increases the risk of mortality

Strongly agree Agree Undecided Disagree strongly disagree

16. Mechanical thromboprophylaxis are not effective

Strongly agree Agree Undecided Disagree strongly disagree

PART 4: PRACTICE

17. Has any of your patient ever got VTE?

- Yes
- No

18. In which operation would you use VTE prophylaxis?

Varicose vein surgery	yes/no
Oncology surgery	yes/no
Patient on oral contraceptive pill	yes/no
Patient on hormonal replacement	yes/no
Lap cholecystectomy < 40 years	yes/no
Lap cholecystectomy >40 years	yes/no
Laparotomy >40 years	yes/no
Laparotomy <40 years	yes/no
Inguinal hernia repair <40 years	yes/no
Arthroscopic knee surgery	yes/no
Total hip replacement	yes/no

19. Do you prescribe VTE prophylaxis for patients with significant risk?

- Yes
- No

20. If no, what are the reasons that attributes? (tick where appropriate)

- Inadequate knowledge on VTE prophylaxis
- Unsure on the dosage
- Unavailability of the prophylaxis
- Risk of bleeding
- Others.....

.....
.....

21. if yes, which of the following means do you use (you can tick more than one response)

- aspirin
- low molecular weight heparin (LMWH)
- dextran
- unfractionated heparin
- oral anticoagulants
- pneumatic compression
- graduated compression stockings
- other
- combinations

22. do you use VTE prophylaxis postoperatively?

- Yes
- No

23. If so, until when

- When mobile
- On discharge
- For a specific duration

24. Have you ever encountered bleeding complication when using VTE?

- Yes
- No

25. Please state bleeding complication that you have ever encountered

- Wound oozing
- Wound hematoma
- Minor hemorrhage
- Major hemorrhage (hemoglobin decline of 2g/dl or 2 requiring units of blood transfusion)
- death

Appendix 2: informed consent for participants



THE AGA KHAN UNIVERSITY EAST AFRICA, DAR ES SALAAM CAMPUS

This informed consent is for surgical doctors from general surgery, urology and otorhinolaryngology (ear nose and throat) department, who are invited to participate in our research to assess surgical doctors on knowledge, attitude and practice on venous thromboembolism (blood clots in veins and dislodging to other areas, commonly the blood vessels in the lung) risk assessment and thrombophylaxis in Tanzania. The investigator of this research is Dr Biswalo M Yango, under the supervision of Dr. Athar Ali, the content supervisor and principal investigator of this research. They are affiliated with the Aga Khan Hospital Tanzania and Aga Khan University East Africa, Medical College, Dar es salaam campus. This study is sponsored by the Aga Khan University. You will be given a copy of this informed consent form.

PART I: INFORMATION SHEET

Introduction

I am a research assistant, participating in this research under the Aga Khan University East Africa. You are invited to participate in this research. You may wish to talk to anyone you feel comfortable about participating in this research. There may be some words you do not

understand. Please ask me to stop as we go through the information and I will take time to explain. If you have any questions later, you can ask me, Dr Biswalo M Yango or Dr. Athar Ali.

Purpose of the study

Surgical patients are at increased risk of blood clots in veins and dislodging to other areas, commonly the blood vessels in the lung, due to the nature of their conditions and treatments. This may result into a fatal condition. This occurrence is preventable as the majority of patients who develops blood clots have known risks. It has been shown risk assessment for blood clots is not done consistently. To find out why this is so, I'm conducting this study to assess surgical doctors knowledge, attitudes and practice towards assessment of risks of blood clots and dislodgement to the blood vessels in the lungs. The findings from this study be used to recommend possible interventions to reduce the burden of the condition in Tanzania.

Research Intervention

There is no research intervention.

Participant Selection

All doctors in the departments of general surgery, urology, plastic surgery, neurosurgery, orthopedic surgery and ear nose and throat from MNH and MOI will be requested to participate.

Voluntary Participation

Your participation in this research is entirely voluntary. It is your choice whether to participate or not without any repercussions.

Unfamiliar procedures.

Your views will be collected by a researcher through a structured interview.

Risks

There are no any risks relating to participating in this research.

Benefits

There may not be any benefits to you, but the results of this research will be used to recommend possible interventions aiming at reducing the subsequent problems of blood clots in veins and dislodgement.

Confidentiality

Information that we obtain from your participation will be kept confidential, it will be kept away in a place where only the research team has access to. Your name or other information that will allow your identification will not be used each questionnaire will be assigned a number, and this information will be stored in a secure locker.

Sharing Results

The knowledge that we get from this research will be made available to the public. Confidential information will not be shared. We aim to publish our results so that interested people can learn from our results and improve on our findings

Right to Refuse or Withdraw

You do not have to take part in this research if you do not wish to do so. You may stop participating in the research at any time you choose. It is your choice and all your rights will still be respected.

This proposal has been reviewed and approved by the research committee office of Muhimbili national hospital and Muhimbili orthopedic institute, under the respective office to make sure participants are protected from harm. It has also been reviewed by the ethics review committee of the Aga Khan University East Africa- Dar es salaam campus which is supporting the study.

PART II: CERTIFICATE OF CONSENT

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions that I have asked, have been answered to my satisfaction. I consent voluntarily to participate as a participant in this research.

Name of participant _____

Signature of participant _____

Date _____

(DD/MM/YYYY)

Statement by the researcher/person taking consent

I have accurately read out the information sheet to the potential participant, and to the best of my ability made sure that the participant understands that the following will be done:

1. he/she will be required to fill a questionnaire on assessment of his/her knowledge, attitude and practice of VTE assessment and thrombophylaxis practice.

I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability.

I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily. A copy of this ICF has been provided to the participant.

Print Name of Researcher/person taking the
consent_____

Signature of Researcher /person taking the
consent_____

Date _____

(DD/MM/YYYY)