Assessment of the Knowledge about Venous Thromboembolism (VTE) on Pregnant Women Attending Kigali Referral Hospitals.

By

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DECLARATION

I, Christine ASHIMWE, hereby declare that the practicum capstone thesis has been written by me without any external unauthorized help, that it has been neither presented to any institution for evaluation nor previously published in its entirety or in parts. Any parts, words, or ideas in the thesis, however limited, that are quoted from or based on other sources, have been acknowledged as such without exception.

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DEDICATION

To the almighty God who provided everything that was needed for me to complete this Master's Program. God took care of everything that would have stopped me from continuing with this program and He strengthened me through the most difficult times.

To my family and friends who were always ready to listen to me and encourage me. To my husband, **Dr. Herbert GATSINZI**, who supported and encouraged me throughout. To my aunt **Mrs. Ruth KALISA** who took care of me for 2 years when I was very sick and always came to stay with my children when I went to intensive courses of this program. Finally to my daughters, **Kimberly**, **Khloe** and **Kiera** who were very mostly affected by my absence while I was at school. Thank you for your love, support and prayers. Without you close to me, I would not have been able to finish this Masters. I love you and May God bless you all!

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ABSTRACT

Background: VTE is among the major causes of maternal mortality worldwide. Increasing knowledge among pregnant women as well as promoting adherence to medications for pregnant women diagnosed with VTE can reduce risks for getting this condition. There was no data or research on the level of knowledge about VTE among pregnant women in Rwanda.

Methods: A cross-sectional study on pregnant women who attended antenatal care services at three referral hospitals in Kigali city using a questionnaire. Demographic data and VTE knowledge levels were collected.

Results: The knowledge level about VTE among the pregnant women who participated in this study is 9.33%. 76.33% have knowledge on the severity of VTE whereas 15.67% have good knowledge of the availability of treatment of VTE. Participants at CHUK whose occupation was in healthcare field and those who had more than 5 children had a significantly higher level of VTE knowledge.

Conclusion: This study shows that knowledge of VTE among pregnant women attending antenatal care in the three-referral hospitals in Kigali is low. More attention must be paid to education and awareness to ensure safe and high-quality antenatal care and thus maternal mortality reduction.

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LIST OF ACCRONYMS AND ABBREVIATIONS

ANC: Antenatal Care

ANOVA: Analysis of Variance

BMI: Body Mass Index

C/S: Cesarean Section

CHUK: Kigali University Teaching Hospital

DVT: Deep Vein Thrombosis

IRB: Institutional Review Board

KFH: King Faisal Hospital

OCP: Oral Contraceptive Pills

PE: Pulmonary Embolism

RMH: Rwanda Military Hospital

SPSS: Statistical Package for Social Studies

UGHE: University of Global Health Equity

VTE: Venous Thromboembolism

WHO: World Health Organization

CHAPTER ONE: INTRODUCTION

Background

Women's health is an important aspect of global health and Venous Thromboembolism (VTE) is a major cause of maternal mortality (Arya, 2011). Women during their pregnancy are five times more likely to get VTE than those who are not pregnant, mainly due to the limited physical activity, unavoidable hormonal changes, changes in blood coagulability and damage to vessels (Drife, 2003).

Research studies have shown that pregnant women who have some knowledge of VTE can mitigate some external risk factors like obesity, immobility, which can help to reduce the risk of developing VTE (Hill & Treasure, 2010). Ample knowledge level among patients with VTE also promotes adherence to treatment (Haymes, 2016).

Despite attending antenatal care (ANC) services; many pregnant women were often not informed about the risk of developing blood clots. According to Wendelboe et al., data on public knowledge about VTE is limited and there is no research conducted and documented in this area (Wendelboe et al., 2015). It is important to conduct this research to identify the knowledge of VTE among pregnant women for the Rwandan Government and Ministry of Health to address the issue accordingly and thus reduce maternal mortality.

Problem Statement

The level of knowledge about VTE among pregnant women attending ANC at the three referral hospitals in Kigali City was unknown.

Objective of the study

The objective of this study was to assess the knowledge about Venous Thromboembolism among pregnant women attending three referral hospitals in City of Kigali by May 2018.

Justification of the project

The results of this study generated information that could serve as basis for further research about VTE in Rwanda with emphasis on the signs and symptoms. The study results can also provide the basis to generate evidence-based interventions to increase awareness of VTE and eventually reduce the prevalence of VTE among pregnant women.

Organization of the dissertation

This report contains six chapters. Chapter 1 provides a description of the background, the problem statement, and objectives of the study. Chapter 2 presents the literature reviewed related to our study objectives. Chapter 3 describes the methodology that was used in this study. Chapter 4 presents the results, while Chapter 5 discusses the results and ends by conclusion and recommendations.

CHAPTER TWO: LITERATURE REVIEW

Venous Thromboembolism

Venous thromboembolism (VTE) can be defined as blood clots that form in the veins. It usually originates as a blood clot obstructing veins in a lower extremity called deep vein thrombosis (DVT). When the blood clot travels to the lungs and lodges there, it can cause pulmonary embolism (PE) (Calderwood & Thanoon, 2013; Moheimani & Jackson, 2011).

According to Caprini et al., 25-50% of patients with DVT will develop post-thrombotic syndrome, with impaired quality of life (Caprini et al., 2005). Post-thrombotic syndrome and chronic thromboembolic pulmonary hypertension cause morbidity, diminished quality of life, and loss in functional status. As stated by Samuel Z. Goldhaber & Bounameaux, Pulmonary embolism is the third most common cause of death from cardiovascular disease (Samuel Z. Goldhaber & Bounameaux, 2012).

VTE Worldwide

DVT, which is the most common form of VTE, is a major cause of hospital deaths worldwide. According to Raskob et al., VTE causes a major burden of disease across low, middle, and high-income countries (Raskob et al., 2014). In United States, there were about 900,000 cases of thromboembolism in 2010 and one third of them died. Of the survivors, 4% developed pulmonary hypertension.

It was estimated that in the U.S. alone, “VTE caused 100,000 to 180,000 deaths every year and its complications place a substantial burden on the U.S. health care system”. In 2008, “the Surgeon General's Call to Action to Prevent Deep Vein Thrombosis and Pulmonary Embolism was issued” ((US) & National Heart, 2008). VTE associated with hospitalization was the leading cause of disability-adjusted-life-years (DALYs) in low and middle income countries, and second

in high income countries, responsible for more DALYs than nosocomial pneumonia, catheter-related blood stream infections, and adverse drug events (Raskob et al., 2014).

Etiology and Risk Factors of VTE

Registro Informatizado de la Enfermedad Trombo- Embolica venosa (RIETE) is the largest PE and DVT registry in Europe (Laporte et al., 2008). It was established since 2008 and register three-month follow-up information of DVT patients in Europe. From the registry, out of 15,520 consecutive patients with acute VTE, 6,264 had symptomatic non-massive PE, and 248 had symptomatic massive PE. The reported clinical risk factors associated to VTE and related death-included immobilization for neurological disease, aged above 75 years, and cancer (Laporte et al., 2008). Anti-phospholipid antibody syndrome is one of the most common acquired (non-genetic) causes of VTE (Zee et al., 2006).

In 2004, two cohorts of about 21,680 participants were followed in a longitudinal investigation of thromboembolism etiology in different regions of the USA. This study reported that "an age-standardized incidence of first-time VTE was 1.92 per 1,000 person-years; the 28-day case-fatality rate was 11% after a first VTE episode". Among all the cases, "48% were idiopathic and unprovoked, meaning they were not associated with preceding surgery, trauma, immobilization, or cancer". Participants with cancer-associated VTE had "higher 28-day case-fatality rate of 25%" (Cushman et al., 2004).

In another cohort study "112,822 women at the beginning who were aged between 30 and 55 years and did not have cardiovascular disease or cancer were studied. After 16 years of follow-up, it was reported that there were 280 new PE cases of which 125 were idiopathic and unprovoked (S Z Goldhaber et al., 1997). During the same study, there were three major risk factors for PE that were identified. The three risk factors observed were smoking, obesity and

hypertension. Women who had a body mass index (BMI) of 29 kg/m2 had a relative risk of 2.9 of suffering from idiopathic PE compared to those with lower BMI. Women who had hypertension were at 1.9 risk of suffering from idiopathic PE. Relative risks were the same for PE cases that were provoked like those which were associated with trauma, cancer, and immobilization (S Z Goldhaber et al., 1997).

Obese women were also found at high risk of developing VTE in another research conducted in Netherlands (Abdollahi, Cushman, & Rosendaal, 2003) and USA (Stein, Beemath, & Olson, 2005).

Diet is also linked to developing VTE. In a prospective study conducted in the USA on 14,962 adults who were aged 12 years and older, 197 non-cancer-related VTEs were identified (Steffen, Folsom, Cushman, Jacobs, & Rosamond, 2007). A food frequency questionnaire that assessed the dietary intake at baseline and at year 6 showed that eating fish at least once weekly was associated with a 30% reduction in VTE incidence. Eaters of red meat eaters were two folds likely to develop VTE. Eating 2.5 servings of vegetables as well as fruits on average every day lowered by at least 30% the risk of developing VTE. According to this study, "consumption of at least 4 servings of fruit and vegetables daily and at least one serving of fish weekly was associated with the lowest incidence of VTE" (Steffen et al., 2007).

Psychosocial stress is also likely to increase the risk of developing PE. However, this was not studied extensively. 6,958 Swedish men were assessed using questionnaires in a 28-year cohort study and their stress levels were studied. The results showed that about two-thirds of participants had a higher rate of PE compared to those who had low stress levels (Rosengren et al., 2008).

Patients who were suffering from cancer, those who were bedridden as well as those who had chronic obstructive pulmonary diseases were at higher risk of recurrent VTE despite being on treatment of anticoagulation. Another cohort study conducted in Netherlands involving 673 patients found that 3% of them suffered recurrence regardless of being on anticoagulation and 79% of these recurrences were fatal (Nijkeuter et al., 2007). Long-haul air travelers are known to have higher risk in developing VTE. According to a study, which was conducted in Paris airport, the incidence of PE was 4.8 cases per one million of travellers traveling more than 10,000 km, in comparison of 1.5 cases per one million for those traveling 5,000 km (Lapostolle et al., 2001). People who are travelling should avoid wearing tight clothes during long distance travel; they should drink enough fluids to keep hydrated, as well as doing periodic calf muscle contraction (Geerts et al., 2008) to lower their chances of developing VTE.

Pregnancy as a Risk Factor of Venous Thromboembolism

VTE has been associated with maternal and fetal morbidity and mortality. “Thromboembolism was responsible for 19.6% of pregnancy-related deaths in the United States, higher than hemorrhage (17.2%)” (Chang J et al., 2003). It was estimated that pregnancy related complications between 0.5 and 1 in 1000 pregnancies per year in the United States were caused by VTE (Martin & Foley, 2006). Evidence suggests that the risk is higher in the period after childbirth (postpartum period). For women who had had cesarean deliveries, the risk of developing VTE was five to nine times higher than those who delivered by vaginal birth (Stein et al., 2004).

The risk of VTE in pregnant women is five to ten times higher than those who are not pregnant. The adaptation of the maternal hemostatic system (to prevent hemorrhage at the time of delivery) predisposes women to an increased risk of VTE. Women who are multiparous, obese gravidas,

have postpartum endometritis, history of VTE or underlying thrombophilia are at even higher risk. It is estimated that pregnant women have a history of VTE have 5% to 16% increased risk for VTE recurrence. If the first VTE was unprovoked, related to pregnancy, or related to use of oral contraceptives, there is a 7.5% high risk of having recurrence VTE in pregnancy (Stefano et al., 2006).

About 70% of women have thrombophilia, and pre-eclampsia during their pregnancy (Tan, 2002), which makes them more prone to having VTE. According to Simpson et al., "women with advanced maternal age, obesity, history of smoking, caesarean section, premature delivery, cardiac disease, and multiple births, physically inactive are at even higher risk in developing VTE" (Simpson, Lawrenson, Nightingale, & Farmer, 2001).

Treatment of VTE in Pregnancy

VTE during pregnancy needs immediate medical intervention and management. Management of VTE includes "oxygen support, blood pressure stabilization, cardiovascular and respiratory status assessment" (Bates, Greer, Hirsh, & Ginsberg, 2004). In some cases, intensive care service and close monitoring for cardiac failure might be required (Bates et al., 2004). Unfractionated heparin and low molecular weight heparin (LMWH) is also commonly used to treat VTE during pregnance. Warfarin is rarely used for acute VTE in pregnancy due to the risk of teratogenicity and fetal hemorrhage (Bates et al., 2004).

Prophylaxis against VTE

By using prophylaxis, about one in six cases of thromboembolism could be avoided (Arnold, Kahn, & Shrier, 2001). According to a study conducted at a university hospital in Brazil, it was found that "adequate prophylaxis reduces the risk of bleeding thus preventing deaths" (Kucher et

al., 2005). According to Caprini et al., “despite the existence of several protocols for the assessment of risk factors and prevention of DVT in medical practice, rates of adherence to these protocols ranged from 16 to 55%” (Caprini et al., 2005).

Importance of Antenatal Care in VTE

Prevention is better than cure and treatment thus preventing VTE is always preferable than treatment. Given the negative impact of VTE, it is important for pregnant women to know and get proper information about VTE especially during all stages of their pregnancy. Antenatal care (ANC) plays an essential role in the well being of the pregnant woman and fetus and in the reduction of maternal mortality rates (Yeoh, Hornetz, & Dahlui, 2016; Hanson, VandeVusse, Roberts, & Forristal, 2009; Hanson et al., 2009). “ANC is an great opportunity to providing pregnant women the knowledge about the burden and causes of VTE can potentially prevent and reduce death and morbidity” (Beckman, Hooper, Critchley, & Ortel, 2010).

VTE in Rwanda

To the researcher’s knowledge, there was no available data on the prevalence of VTE in Rwandan, or the knowledge level about VTE among the patients or pregnant women attending ANC services at the hospitals was unknown. In order to address this knowledge gap, this study was conducted to assess the knowledge level of pregnant women who attended the ANC services.

CHAPTER THREE: METHODS

Settings

The study was conducted at the ANC units of three hospitals in Kigali: King Faisal Hospital (KFH), Rwanda Military Hospital (RMH) and Kigali University Teaching Hospital (CHUK).

KFH is a 130-bed a semi private hospital based in Kacyiru Sector of Gasabo District. Most of the patients attended there are of middle class due to higher cost of services. Pregnant women who seek care at this facility usually have private insurances or are able to pay for the services. Some patients with Community Based Health Insurance (CBHI-Mutuelle de santé) were referred here only for special care that cannot be handled in other government health facilities. The ANC unit receives on average 30 women per day.

RMH is located in Nyarugunga sector of Kicukiro District in Kigali City of Rwanda. It is a national referral hospital for Eastern, Northern Provinces as well as parts of Kigali (particularly Masaka District). It has 250 beds. Majority of patients use CBHI and were referred from other district hospitals for specialized care. The antenatal unit of the hospital receives on average 25 women per day.

CHUK is located in Nyarugenge sector of Nyarugenge District in Kigali City. This is a university teaching hospital receives women mainly from western province and city of Kigali. The majority of women who seek maternal care here are those who cannot otherwise afford care elsewhere. The antenatal unit of the hospital receives on average 35 women per day.

Design

This study used a cross-sectional study design to assess the knowledge level of VTE in pregnant women attending ANC services in three referral hospitals in Kigali City.

Study population

All pregnant women consulting for ANC at the three hospitals comprised the study population.

Study Sample

Women who were attending the antenatal care (ANC) services at the three-referral hospitals during the study period (February and March 2018) and accepted to participate were recruited.

Inclusion and exclusion criteria

Pregnant women consulting in the antenatal care units in the three hospitals who were willing to participate were included in the study. However, pregnant women under 18 years of age, mentally incapacitated, or with an emergency need to see a doctor before survey and women who were pregnant for their first time and were below 12 weeks of gestational age were excluded.

Data collection tools

A questionnaire (Appendix 2) was developed based on the study objectives and literature review. The questionnaire was developed in English, then translated into Kinyarwanda and back translated to English by a different translator to ensure content validity. First part of the questionnaire collected information about the profile of the respondents such as hospital, age, education level, profession, parity and number of ANC visits. The second part included 20 close-ended "Yes" and "No" questions assessing the level of knowledge about VTE risk factors, causes, signs and symptoms, severity and availability of treatment. The knowledge score was calculated as a percentage of number of correct answers for each participant.

Data collectors

Three midwives who were working in the antenatal units of the respective hospitals were used as data collectors. Since they are midwives, they already have the knowledge on pregnancy and pregnancy related complications, and pregnant women would likely to feel comfortable around them. Three training sessions were provided to make sure that the data collected are of good quality and relevant to the study (Training material is shown in Appendix 3). Three data collection forms were completed by each data collector and verified by the main researcher before they could independently collect further data.

Data collection process

The data collectors approached participants at the ANC units. Signed consent forms were obtained from participants before they took part in the study. Depending on the preferred language of the participant, information sheets and consent forms were offered both in English and Kinyarwanda (appendix 1). Data collectors asked the questions from a questionnaire and filled out the questionnaires as the respondents answered. The data collectors read the questions and in order to minimize guessing of the answers, participants were allowed to ask clarifying questions. At the end of each interview information brochures with the correct answers (Appendix 4) were given to all participants.

Measures

They key measure of the study was the overall score of knowledge about VTE, divided into 5 categories of knowledge scores for risk factors, causes, signs and symptoms, severity and

availability of treatment. The association between sample characteristics and knowledge score was also measured.

Data analysis procedures

After data collection, data were entered into Microsoft Excel and then exported to a SPSS Software Version 22.0 (SPSS Inc, Chicago, IL, USA) for analysis. Descriptive statistics were used to present demographic data and knowledge scores. Chi-square tests were conducted to analyze the association between demographics and knowledge level. Participants were categorized into "no knowledge", "fair knowledge", "good knowledge" and "high knowledge" based on the total knowledge score (Table 1). Significant level was set at 0.05.

Table 1: Knowledge categorization based on knowledge score

Knowledge scale	**Knowledge score range**
No knowledge	0% - 24%
Fair knowledge	25% - 49%
Good knowledge	50% - 74%
High knowledge	75% -100%

Ethical considerations

Before conducting this study, an ethical clearance was obtained from Institutional Review Board (IRB) of University of Global Health Equity (UGHE). Permissions were also sought from all three hospitals Ethical and Research Committees in order to conduct the study. The participation was voluntary. Confidentiality, integrity, respect and dignity of the subjects were ensured. The

information that were gathered during this study kept in a locked draw to ensure security and confidentiality of the information and no name of participant or health provider appeared on the data collection form during data collection or results publication. During data collection identifiers were used in order to separate the respondents**.** Only research team members accessed the study data and information. All data handled and kept with confidentiality. The data collected during this study stored in files in both hard and soft copies. A password was settled and only used by the main researcher to access the soft copies in a file kept in a computer. These copies will be archived for 10 years after which they will be destroyed as per the University archiving policy.

CHAPTER FOUR: RESULTS

A total of 150 participants, 50 from each hospital, completed the questionnaires. The mean age of the respondents is 33.18 years with a standard deviation of 4.7. Participants' ages ranged from 23 to 42 years. 52.6% respondents were between 25 and 34 years. More than 72.6% of the respondent attended university studies. The average number of children among respondents was 3, with a range from one to 7 children and standard deviation of 1.2. The respondents on average attended 4 ANC visits, ranged from 3 to 9 visits. 88% of the respondents were not health professionals (Table 2).

Table 2: Profile of the study participants

Variable N=150		**KFH**	**RMH**	**CHUK**	**Total**
Sample (N)		**50**	**50**	**50**	**150**
Age in years	Mean (±SD)	33.32 ±4.9	33.46±4.7	32.76±4.45	33.18 ± 4.7
	15-24	3 (6.00%)	0 (0.00%)	2 (4.00%)	5 (1.38%)
	25-34	23 (46.00%)	27 (54.00%)	29 (58.00%)	79 (52.67%)
	=,>35	24 (48.00%)	23 (46.00%)	19 (38.00%)	66 (44%)
Education level	Primary	0(0.00%)	4 (8.00%)	6 (12.00%)	10 (6.67%)
	Secondary	5 (10.00%)	15 (30.00%)	11 (22.00%)	31 (20.67%)
	University	45 (90.00%)	31 (62.00%)	33 (66.00%)	100 (72.67%)
Parity (Number of	Mean (±SD)	2 (±1.11)	3 (±1.40)	3 (±1.08)	2 (±1.21)
	< 4 children	40 (80.00%)	34 (68.00%)	35 (70.00%)	109 (72.67%)

children)	≥4 children	10 (20.00%)	16 (32.00%)	15 (30.00%)	41 (27.33%)
ANC Visits	Mean (±SD)	5 (±1.27)	4 (±1.12)	4 (±1.01)	4 (±1.19)
	< 4 standards	0 (0.00%)	9 (18.00%)	13 (26.00%)	22 (14.67%)
	≥4 standards	50 (100.00%)	41 (82.00%)	37 (74.00%)	128 (85.33%)
Occupation	Health care professionals	3 (6.00%)	4 (8.00%)	11 (22.00%)	18 (12%)
	Non-health care professionals	47 (94.00%)	46 (92.00%)	39 (78.00%)	132 (88%)
Knowledge Score	No knowledge	22 (44.00%)	24 (48.00%)	17 (34.00%)	63 (41.67%)
	Fair knowledge	12 (24.00%)	11 (22.00%)	12 (24.00%)	43 (28.66%)
	Good knowledge	13 (26.00%)	11(22.00%)	14 (28.00%)	30 (20.00%)
	High knowledge	3 (6.00%)	4 (8.00%)	7 (14.00%)	14 (9.33%)

The sub category scores are shown in Tables 2&3.

Table 3: Knowledge about VTE

Sample (n=150)	**Knowledge score**
Knowledge Level	9.33%
Risk factors	45.67%
Causes	29.33%
Signs and symptom	17.67%
Severity of a condition	76.33%
Treatment availability	15.67%

The 3 questions that were answered correctly were, the one asking whether immobility was a risk factor for VTE, the one asking where medical consultation was required in case of VTE and the one asking whether overweight and obesity were among the risk factors. More than 80% of the total participants correctly answered "Yes".

The 3 questions that were answered incorrectly were, the one asking whether a major surgery, pregnancy and giving birth with C-section were the risk factors, the one asking whether swelling of leg and shortness of breath being among the symptoms of VTE where more than 70% answered "No".

Table 4: Questions correctly answered

Sample (n=150)		**Correct n (%)**
Risk Factors	**Sub-score**	**45.67%**
	Major surgery	70 (46.67%)
	Pregnancy	64 (42.67%)
	Birth with C/S	64 (42.67%)
	Use of OCP	55 (36.67%)
	Bedridden	112 (74.67%)
	Heavy Smoking	82 (54.67%)
	Immobility	122 (81.33%)
	Drinking water	6 (4.00%)
	Overweight and obese	119 (79.33%)
	Excessive alcohol consumption	33 (22%)

	Long air travel	59 (39.33%)
Causes	**Sub-score**	**29.33%**
	Blood clot in vein	44 (29.33%)
Signs and symptom	**Sub-score**	**17.67%**
	Swelling of leg	31 (20.67%)
	Shortness of breath can occur	20 (13.33%)
Severity of a condition	**Sub-score**	**76.66%**
	Doctor is required	115 (76.66%)
Treatment availability	**Sub-score**	**15.67%**
	VTE has no treatment	16 (10.67%)
	Cough syrup help to treat	31 (20.67%)

Age, education level or number of ANC visits were not statistically associated with being knowledgeable or not (P>0.05). The hospital attended (P=0.031), the number of children (P= 0.046) and the occupation of the respondents (< 0.001) were found significantly associated with knowledge level (Table 5).

Table 5: Analysis of High knowledge score by respondents' characteristics

Variable		**Knowledgeable (=,>75%) n (%)**	***P Value***
Age category	15-24	0 (0.00%)	0.99
	25-34	26 (32.91%)	
	=, >35	18 (27.27%)	
Hospital	CHUK	14 (28%)	0.031
	RMH	5 (10.00%)	
	KFH	4 (8.00%)	
Education level	Primary	0 (0.00%)	0.66
	Secondary	6 (19.35%)	
	University	17 (15.59%)	
ANC Visits numbers	< 4 standards	6 (27.27%)	0.73
	=, > 4 standards	26 (20.31%)	
Parity	<5 children	36 (32.73%)	0.046
	=, >5 children	27 (67.5%)	
Occupation	Health care professionals	14 (77.78%)	<0.001
	Non health care professionals	12 (9.09%)	

CHAPTER FIVE: DISCUSSION

The findings of this research show that the knowledge level among pregnant women in the three-referral hospitals in Kigali city is 9.33%, which is low. Among the five sub categories (risk factors, causes, signs and symptoms, severity and treatment availability), risk factors of VTE scored the highest with overall score 45.67% whereas treatment availability scored the lowest with 15.67%. It is therefore evident that emphasis on education should be put on the definition of disease, risk factors, causes, signs and symptoms as the knowledge score was low and more emphasis on the availability of treatment of VTE which had the lowest score. As far as risk factors are concerned, more than 50% of the participants did not know that the use of Oral Contraceptive Pills, closest clothes during long haul air travel and surgery were also risk factors of VTE. During education, emphasis must be on these risk factors.

The 3 questions that were most answered correctly were the one asking whether immobility was a risk factor for VTE, the one asking where medical consultation was required in case of VTE and the one asking whether overweight and obesity were among the risk factors where more than 80% of the participants answered correctly.

The 3 questions that were most answered incorrectly were the one asking whether major surgery, pregnancy and giving birth with C-section were the risk factors, the one asking whether swelling of leg as well as shortness of breath are among the symptoms of VTE where more than 70% answered incorrectly. This contributed to the overall low score of the of the participants' knowledge level about VTE.

There were no variations among the responses based on demographics such as education level, ages or number of ANC visits. Significant differences were obtained based on those with

increased parity (multi-parity). This might have been caused by a personal or family history of VTE, which we did not assess in this study. Knowledge of VTE was high among health care professionals may be because of their education background and experience dealing with cases of VTE in their work. At the Kigali University Teaching Hospital, 61.11% of the participants were health care professionals thus a high score. The reason for this was not examined.

Education on risk factors, and preventive measures as well as VTE, DVT, and PE, is required to foster participation of patients in treatment, promoting reporting of VTE signs and symptoms. Education should also be emphasized for the general public because we realized that the number of ANC visits and ages of women were unrelated to DVT knowledge.

Our study has a number of limitations. First, the small sample size limits our ability to generalize the study results beyond the three institutions. Therefore, during future studies a big sample size and other hospital countrywide must be involved.

Additionally, closed-ended survey questions may have helped respondents to guess rather than answer with regard to their knowledge. During further studies open-ended questions must be used to minimize guessing of the responders. Lastly, we did not collect data regarding individual history about VTE, family history about VTE and any previous training in VTE. All of these limitations must be addressed during further studies.

CHAPTER SIX: CONCLUSION AND RECOMMENDATION

This study shows that knowledge of VTE among pregnant women attending the referral hospitals in Kigali city is low. More emphasis should be put on the VTE education of target population such as pregnant mothers. Based on these results, education must be focused on, the availability of treatment, signs and symptoms, causes, risk factors and the potential forms of diseases that are DVT and PE which when combine make VTE.

This study provides the baseline for further research to determine the optimal approach to the education of pregnant women to promote prevention of VTE and its complications. Further researches are recommended in order to study the topics, which we didn't assess such as assessment of patients' history about VTE, prior education about VTE and involvement of other groups of people other than pregnant women. In order to provide more information about Thromboembolic diseases as this was the first study to be conducted in Rwanda.

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APPENDIX 1: PRACTICUM PROJECT INFORMATION AND CONSENT FORM

ENGLISH VERSION

Assessing the knowledge level of pregnant women on blood clotting in the deep veins in Kigali City Hospitals.

…/February/2018

Researcher identification

Main researcher: Christine ASHIMWE

Master of Science in Global Health Delivery candidate, University of Global Health Equity (UGHE)

Dear participant,

You are being invited to participate in a research project "**Assessing the knowledge level of pregnant women on blood clotting in deep veins in Kigali City Hospitals"**. Before accepting to join this project, you must understand and take into consideration the contents of this form, since it contains important information to assist you in deciding whether to participate or not.

This project is being conducted as part of a core requirement for the Master of Science in Global Health Delivery at the University of Global Health Equity. The project has received required ethical approval from UGHE and complies with international ethical standards for research to be carried out in Rwanda. Permission has also been obtained from "**King Faisal hospital administration.**

The purpose of this project

The purpose of this project is to "**Assess the knowledge level of pregnant women on blood clotting in the deep veins".**

The procedure for participation in this project;

If you chose to participate, you will be "**asked questions by a midwife to assess your knowledge on blood clotting in the deep veins**".

The possible benefits of taking part in this project;

Your participation will help "**put together a study about the knowledge on blood clotting in the deep veins which is the first one to be done in Rwanda on this topic and will help inform about the situation for better knowledge sharing and inform policy makers**"

Possible risks or discomforts related to taking part in this project;

If you choose to participate, you will "**be asked about your experience during antenatal visits which may make you uncomfortable however, the research team will ask only basic questions and allow you not to answer the questions you feel uncomfortable answering**"

Protection of your privacy;

If you choose to participate, "**the information collected during this study will be kept anonymous and confidential. It will not include any of your names and will only be accessed by the project team. The results will be used for research purposes only and not for your professional evaluation. We will not share your responses with anyone outside the research team at any time. All project data will be kept safe in a locked file with file password in a computer and be destroyed after 10 years**".

If I have any questions, concerns or complaints about this project, whom can I talk to?

In case: 1) You have questions, concerns, or complaints, 2) You would like to talk to the project team, 3) You think the project has harmed you, or 4) You wish to withdraw from the study; please feel free to contact the person below in any of the following languages you feel comfortable in, Kinyarwanda, English and French";

" **Christine ASHIMWE, Master of Global Health Delivery (MGHD) Candidate at 0788300627 or using email address cashimwe@ughe.org**"

Participation is voluntary

It is your right to decide to participate in this project or not. If you choose to participate, you may change your mind and leave the study at any time. Refusal to participate or stopping your participation will involve no penalty.

Statement of consent

Your signature (or finger print) below indicates you acknowledge that:

- You have understood the content of this form.
- You have had the opportunity to ask questions and received answers that were satisfactory.
- If needed, you took time to discuss this information with others to help you decide whether to participate.
- You will receive a dated and signed copy of the form.
- You agree to participate in this project.

Participant name	Signature/ finger print	Date
Researcher name/person requesting consent	Signature	Date

KINYARWANDA VERSION

INYANDIKO ISABA URUHUSHYA RWO GUKORERWAHO UBUSHAKASHATSI

"Gusuzuma ubumenyi rusange bw'abadamu batwite ku ndwara yo kuvura kw'amaraso mumigarura muma vuriro yo mumujyi wa kigali''

…/Gashyantare/2018

UMWIRONDORO W'UMUSHAKASHATSI

Amazina: **Christine ASHIMWE**

Umukandida usoza ikiciro cya kabiri cya kaminuza m'ubuzima rusange, kaminuza ya Global Health Equity (UGHE).

Mutumirwa,

Mutumiwe mu gikorwa cy'ubushakashatsi <<Gusuzuma ubumenyi bw'abadamu batwite ku ndwara yo kuvura kw'amaraso mumitsi y'imigarura muma vuriro yo mumujyi wa kigali>>. Mbere yuko wemera kudufasha mur'iki gikorwa, ugomba gusobanukirwa ibiri muri iyi nyandiko kuko harimo ubumenyi bw'ingirakamaro bwagufasha muguhitamo gukora cyangwa kudakora iki gikorwa. Ubu bushakashatsi burakorwa nka kimwe mubintu nkenerwa by'ingenzi mu masomo y'icyiro cya gatatu cya Kaminuza cya Global Health Delivery muri Kaminuza ya Global Health Equity. Ubu bushakashatsi bwahawe ibyemezo bikwiriye bivuye muri Kaminuza ya Global Health Equity kandi bukaba buri ku rwego mpuzampahanga bwemejwe gukoreshwa hano mu Rwanda. Uburenganzira nabwo bwatanzwe n'ibitaro byitirwe Umwami Faisal.

Impamvu y'ubushakashatsi;

Akamaro kuy'umushinga nukugirango dusuzume ubumenyi rusange bw'abadamu batwite ku ndwara yo kuvura kw'amaraso mumigarura.

Uko ubushakashatsi buri bukorwe;

Niwemera kugira uruhare muri ubu bushakashatsi, uzabazwa ibibazo k'ubumenyi rusange numuforomokazi ku ndwara yo kuvura kw'amaraso mumigarura.

Inyungu zaturuka n'ukwitabira ubu bushakashatsi;

Kwitabira ubu bushakashatsi bizafasha gukora inyigo ya mbere mu Rwanda k'ubumenyi rusange ku indwara yo kuvura kw'amaraso mumigarura mu bagore batwite, bikaba bizanafasha kumenyekanisha uko ikibazo kimeze muri rusange.

Ibibazo cyangwa imbogamizi byaturuka n'ukwitabira ubu bushakashatsi;

Nimuramuka muhisemo gutanga amakuru, muraza kubazwa k'ubumenyi cyangwa ku ibyo mwaba mwaranyuzemo mugihe mwisuzimishaga inda kwa muganga, bishobora kukubangamira muburyo ubwaribwo bwose, abashinzwe ubushakashatsi baraza kukubaza ibibazo bisanzwe ariko wemerewe kudasubiza ibibazo bikubangamiye muburyo ubwaribwo bwose.

Kurinda Ubwiru bw'ubuzima bwanyu bwite;

Amakuru azava muri iki gikorwa azagirwa ibanga. Amazina yanyu ntazagaragarizwa abandi, keretse ikipe iyoboye iki gikorwa yonyine. Ibisubizo byanyu bizakoreshwa ubushakashatsi bwonyine, ntibizakoreshwa mukubavura. Ntago tuzatangaza ibisubizo byawe byihariye ku bantu bari hanze y'ikipe y'ubushakashatsi. Ibizava muri ububushakashatsi bizabikwa neza ahantu hafunze, maze biteshwe agaciro nyuma y'imyaka 10.

Ngize ikibazo cyangwa impungenge bijyanye n'iki gikorwa, ni nde navugisha?

Mu gihe; mufite ibibazo cyangwa impungege,mwifuza kuvugisha uyoboye iki gikorwa, iki gikorwa cyaba cyaguhohoteye, cyangwa mushaka kuva muri iki gikorwa, mwabimenyesha **Christine ASHIMWE,** Umukandida usoza ikiciro cya kabiri cya kaminuza m'ubuzima

rusange, kaminuza ya Global Health Equity kuri telephone igendanwa **0788300627** cyangwa email address **cashimwe@ughe.org**". Wavugisha uyu muntu mururimi mwisanzuyemwo bya ari Kinyarwanda, Icyongereza cyangwa igifaransa;

Uruhare rwanyu ni ubukorera bushake;

Kugira uruhare muri iki gikorwa ni kubushake bwanyu. Nimwemera kugira uruhare muri iki gikorwa, mushobora kwisubiraho, mukava mu igenzura igihe icyaricyo cyose. Kwanga kwitabira iki gikorwa no guhagarika ntibihanirwa.

Urwandiko rw'inyemezo;

Umukono wawe cyangwa igikumwe bigaragazwa aha, byemeza y'uko;

- Mwumvise ibigize iyi nyandiko
- Mwabashije kubaza no kubona ibisubizo binoze
- Mbere y'uko mwemera gukora ubushakashatsi, mwabashije kubona umwanya wo kuganira n'abandi kubijyanye n'amabwiriza mwahawe
- Muhabwa uru rwandiko ruriho itariki n'umukono
- Mwemeye kugira uruhare mu gikorwa cy'ubu bushakashatsi

Izina ry'umutumirwa	Umukono/ Igikumwe	Itariki

Izina ry'umushakashatsi/ushaka icyemezo	Umukono/ Igikumwe	Itariki

APPENDIX 2: QUESTIONNAIRE

ENGLISH VERSION

AGE:……OCCUPATION:…….

LEVEL OF EDUCATION:……HOSPITAL:……

PARITY:……

NUMBER OF ANTENATAL VISIT (S):……..

Please indicate if the following statements about Venous Thromboembolism (VTE) are true or false.

Questions	**True**	**False**
1. People after major surgery have higher risk of getting VTE	□	□
2. Women during pregnancy have higher risk of getting VTE	□	□
3. Giving birth by C-section have higher risk of getting VTE	□	□
4. Women who use oral contraceptives (pills) have higher risk of getting VTE	□	□
5. Being on bed rest for a long period of time is a risk of getting VTE	□	□
6. Pregnancy can cause VTE	□	□
7. Smoking can increase the risk of VTE	□	□
8. People who exercise regularly have the same risk of VTE as those who don't	□	□
9. Drinking water causes swelling in the legs, and increases the risk of VTE	□	□

10. There is no treatment to VTE, there is no need to see a doctor	□	□
11. VTE can cause swelling in the leg	□	□
12. VTE can cause shortness of breath	□	□
13. Chest pain is one of the symptoms of VTE	□	□
14. Cough syrup can help improve your breathing caused by VTE	□	□
15. People have higher risk of getting VTE when travelling by air	□	□
16. VTE is a blood clot in the blood vessel	□	□
17. Overweight and obese people are at high risk of getting VTE	□	□
18. Excessive Alcohol consumption can cause VTE	□	□
19. If you ever have breathing difficulties, you should see a doctor	□	□
20. Having difficulty breathing is a sign of VTE	□	□

KINYARWANDA VERSION

IMYAKA:……UMURIMO:…….

AMASHULI WIZE:……IBITARO:……

WABYAYE ABANA BANGAHE:……

INSHURO WISUZUMISHIJE INDA:……..

Erekana niba ibi bibazo bikurikira ku ndwara yo kuvura kw'amaraso ar'ukuri (Yego) cyangwa atar'ukuri (Oya)

Ibibazo	**Yego**	**Oya**
1. Abantu iyo bamaze kubagwa bashobora kugira ingaruka zo kurwara indwara yo kuvura kw'amaraso	□	□
2. Mugihe umugore atwitwe, ashobora kugira ingaruka zo kurwara indwara yo kuvura kw'amaraso	□	□
3. Kubyara ubazwe bishobora kugutera ingaruka zo kurwara indwara yo kuvura kw'amaraso	□	□
4. Abagore bakoresha ibinini mu kuringaniza urubyaro, bishobora kubatera ingaruka zo kurwara indwara yo kuvura kw'amaraso	□	□
5. Guhora uryamye igihe kinini bishobora kugutera ingaruka zo kurwara indwara yo kuvura kw'amaraso	□	□
6. Gutwita bitera indwara yo kuvura kw'amaraso	□	□
7. Kunkwa itabi byongera ingaruka zo kurwara indwara yo kuvura kw'amaraso	□	□
8. Abantu bakora siporo burigihe n'abatazikora, bose bashobora kugira	□	□

ingaruka zo kurwara indwara yo kuvura kw'amaraso		
9. Kunkwa amazi bituma amaguru abyimba, bikanongera ingaruka zo kurwara indwara yo kuvura kw'amaraso	□	□
10. Nta buvuzi bw'indwara yo kuvura kw'amaraso bubaho, nta mpamvu yo kujya kureba muganga	□	□
11. Indwara yo kuvura kw'amaraso itera kubyimba kw'amaguru	□	□
12. Indwara yo kuvura kw'amaraso itera kubura umwuka wo guhumeka	□	□
13. Kuribwa mu gatuza ni kimwe mubimenyetso by'indwara yo kuvura kw'amaraso	□	□
14. Umuti w'amazi w'inkorora ushobora kukworohereza guhumeka neza, byatewe n'indwara yo kuvura kw'amaraso	□	□
15. Abantu bagenda mu ndege bashobora kugira ingaruka zo kurwara indwara yo kuvura kw'amaraso	□	□
16. Indwara yo kuvura kw'amaraso ni ndwara y'utubumbe tw'amaraso tuba mumitsi	□	□
17. Abantu bafite ibiro byinshi n'ubunini bukabije bashobora kurwara indwara yo kuvura kw'amaraso	□	□
18. Kunywa ibisindisha byinshi bikabije bishobora gutera indwara yo kuvura kw'amaraso	□	□
19. Nuramuka utangiye guhumeka nabi, ugomba kureba muganga	□	□
20. Guhumeka nabi nikimwe mubimenyetso by'indwara yo kuvura kw'amaraso	□	□

APPENDIX 3: DATA COLLECTORS' TRAINING MATERIAL

ENGLISH VERSION

TRAINING ON THE COLLECTION OF DATA ON THE VTE IN PREGNANCY PROJECT

The research project; Introduction

Women's health is an important aspect of global health. Pregnancy, which is a crucial part of women's health, is a risk factor of VTE, mainly because of limited physical activity and the unavoidable hormonal changes that take place during this period. Pregnancy increases the risk of VTE to fivefold in pregnant women compared to those who are not pregnant. Venous thromboembolism (VTE) is mainly caused by limited physical activity, sedentary lifestyle, delivery by C-section and dehydration.

This project will mainly focus on women during Antenatal Care (ANC) services. Pregnant women are oftentimes not informed about the risk of developing blood clots. The spread of information about the relationship between blood clots and pregnancy through educative sessions every antenatal visit is important. There is limited information about the risks of VTE during pregnancy given to pregnant women during antenatal care (ANC) in Kigali, Rwanda. This project is important to do at this point most especially in Rwanda where there is no known data on this topic.

It is important that you as data collectors understand the objectives of this project.

You were chosen as the data collectors because you are trained midwives. There will be one midwife per hospital to work as a data collector, which means this study will have three (3) data collectors in total. The choice of midwives was made because of the following reasons;

- You are readily available as you are the ones, who work in the antenatal units,

- Easy to train because you already have knowledge on pregnancy and pregnancy related complications,
- Pregnant women will open up to you more easily without stigma,
- Ethically, midwives protect the privacy of the participants.

Participants

The target population for this study is "pregnant women undergoing antenatal care at the three hospitals where the study will be conducted", King Faisal hospital (KFH), Rwanda military Hospital (RMH) and the University Teaching Hospital of Kigali (CHUK). Participants in this study will be sampled using "random sampling method" The member of the research team will sit in the antenatal triage room and randomly pick women who should be interviewed. An average number (30) of women at each hospital will be interviewed for a period of three months. The main criterion for participation in this study is for the woman to pregnant. All other women who come to the antenatal department for other services will be excluded from this study. The sample size is between 100 and 200 participants and the average being 150 participants. The pregnant women will be approached in the triage room (the data collector will be seated in the triage room). When a pregnant woman comes to have her vital signs taken before going to the doctor's room, she will be approached and requested if she would like to participate in this study. If she consents, she will be shown a private room where she will be assisted by a midwife (data collector) to fill out the questionnaire and be given an educational brochure afterwards.

The consent form

Before every interview session, consent will be sought and a consent form will be signed. You should explain clearly to every woman what the project is all about and their role in

participation. If the woman has questions or clarifications, you should be able to address them clearly.

Participant's privacy policy

It is very important and crucial to respect the participant's privacy. You should understand that if the woman doesn't feel comfortable in answering some of the questions for their own personal reasons, you should respect that and stop if the participant demands it.

The questionnaire

The questionnaire is composed of 20 close ended questions where the only answer can be 'True'' or ''False''. Each question will be discussed about in both Kinyarwanda and English. It is important that you understand the questions involved so that you are able to answer the questions or clarifications that might rise.

You will be trained on the following on the use of the questionnaire;

- Confidentiality and to how to protect the privacy of the research participants, and when to stop when the participant is not comfortable.
- How to use the data collection sheets (questionnaires),
- How to ask close ended questions
- How to advise the participant if found to have symptoms of VTE on seeking for urgent medical attention.

KINYARWANDA VERSION

INYIGISHO MUGUFATA AMAKURU KU NDWARA YO KUVURA KWAMARASO

Kubyerekeye ubushakashatsi

Ubuzima bw'abagore ningeze mubumenyi rusange mubuzima kwisi hose. Gutwita biri mubintu byongera ingaruka zo kurwara indwara yo kuvura kw'amaraso cyane cyane bitewe nuko nta siporo ngorarangingo ikorwa hamwe noguhindagurika kw'imisemburoibaho mugihe umugore atwite. Gutwita byongera inshuro eshanu ingaruka zo kurwara indwara yo kuvura kw'amaraso kuruta igihe udatwite. Indwara yo kuvura kw'amarasso iterwa cyane cyane no kudakora imirimo ngorarangingo ihagije, kubyara ubazwe nno kuba nta mazi ahagije mumubiri.

Uyu mushinga uzibanda cyane ku bagore baza kwisuzumisha inda mugihe batwite. Bigaragara cyane ko abagore batwite nta makuru bahabwa kubyerekeye nukuba yashobora kurwara indwara yo kuvura kw'amaraso. Gusakaza amakuru kw 'isano iri hagati yiy'indwara no gutwita nibyingenzi cyane mugihe umugore yaje kwisuzumisha inda mu Rwanda. Niyo mpamvu uyu mushinga aringenzi ko ukorwa kubera yuko nta makuru azwi kuri iki kibazo.

Nibyingenzi cyane ko usobanukirwa impamvu z'uyu mushinga. Impamvu watoranyijwe nuko uri umubyaza wabyigiye. Hazaba hari umubyaza umwe kuri buri bitaro uzajya ukusanya amakuru. Bivuze ko uyu mushinga uzaba ugizwe na na babyaza batatu muri rusange bazifashishwa mur'ubushakashatsi. Impamvu mwatoranyijwe nkbabyaza nuko;

- Muraboneka kandi nimwe mukora cyane aho abagore bisuzimira iyo batwite

- Byoroshye kubahugura kubera yuko musanzwe mufite ubumenyi kubyerekeye nu gutwita ningaruka zabyo
- Abagore batwite babiyumvamo cyane bikoroha mukubavugisha
- Mushobora kubika amabanga ya bagore bazakoreshwa mubushakashatsi neza

Abazifashihswa mu gutanga amakuru

Umubare munnini wabazifashishwa na bagore batwite baza kwisuzumisha inda mubitaro bitatu aho ubushakashatsi buzakorerwa; ariho Ibitaro byitiriwe umwami Faisal, ibitaro bikuru byagisirikare by'ikanombe hamwe n'ibitaro bikuru bya kaminuza I Kigali. Abagore abazifashishwa bazatoranywa muburyo bwa tombora. Nibura abagore 30 kuri buri bitaro nibo bazasabwa amakuru mugihe kingana na mezi 3. Umugore agomba kuba atwite kugirango yemererwe gutanga amakuru. Abandi bagore bose baza kwisuzumisha ibindi ntabwo bazasabwa amakuru. Abagore bangana na hagati yijana namaganabiri nibo bazifashishwa, cyangwa ikigereranyo cy'abagore 150.

Inyandiko isaba uruhushya

Mbere yuko ikiganiro gitangira, uruhushya rugomba gusabwa bakanabisinyira. Ugomba gusobanurira neza umugore icyo uyu mushinga ugamije n'urahare rwabo mugutanga amakuru. Niba umugore afite ibibazo mbere yugutangira, ugomba kuba ushobora kubimusobanurira neza nta mbogamizi

Ibanga n'ubwisanzure bw'abagore bazifashishwa mugutanga amakuru

Ni byingenzi cyane kandi ni ngombwa ko wubaha ubwisanzure n'amabanga yu mugore. Ugomba kumenya igihe umugore atisanzuye mukugusubiza ibibazo byerekeye n'ubushakashatsi kubera impamvu ze bwite, ko ugomba kubaha ubasabe bwe mugihe atifuje gukomeza gusubiza ibibazo

Ibyerekeye ibibazo bizabazwa

Hazakoreshwa inyandiko ifite ibibazo 20 bikenera ko basubiza ‘’Yego’’ cyangwa ‘’Oya’’. Buri kibazo turakiganiraho mundimi ebyiri arizo ikinyarwanda n’icyongereza. Ningombwa ko usabonakukirwa ibi bibazo kugirango ushobore gusibiza umugore aramutse hari ibibbazo akubajije.

Uraza guhugurwa muri bi bikurikira kubyerekeranye n’inyandiko y’ibibazo

- Kubika ibanga no kurinda ubwisanzure bw’umugore, no kumenya igihe ugomba kurekeraho kubaza ibibazo mugihe umugore atisanzuye
- Uko bakoresha inyandiko ikusanya amakuru
- Uko babaza ibibazo bisubizwa na ‘yego’ cyangwa ‘oya’
- Uko wagira inama umugore utwite uramutse usanze afite bimwe mubimenyetso by’indwara yo kuvura kw’amaraso ko agomba kureba muganga akamufasha byihuse

APPENDIX 4: PARTICIPANTS' INFORMATION HANDOUTS

ENGLISH VERSION

KNOW BLOOD CLOTTING IN THE DEEP VEINS – SAVE LIVES

Venous Thromboembolism (VTE) is the name for a disease that results from the formation of a blood clot in the deep veins. There are two types of VTE:

- **Deep Vein Thrombosis (DVT)** occurs when a clot forms in a deep vein, most usually in a leg.
- **Pulmonary Embolism (PE)** refers to a blood clot that breaks loose and travels through a vein to the lungs.

VTE is a serious, life-threatening condition that requires immediate medical attention.

RISK FACTORS FOR VTE DURING PREGNANCY

1. Pregnancy itself is a risk factor
2. Previous VTE in patient on hormonal contraceptives
3. Previous VTE during pregnancy (risk is 12%)
4. Age >35 years old
5. Obesity; BMI >30
6. Physical immobility
7. Dehydration
8. Infections

WARNING SIGNS YOU ARE CLOTTING

If blood clots form in legs, it becomes Deep Vein Thrombosis and the person presents with;

- Painful calf muscles
- Redness of the skin
- Warmth of the skin
- Swelling of the area

If the blood clot moves into your lungs and you develop Pulmonary Embolism (PE) you may have indicators such as:

- Chest pain worsening on breathing in
- Dry coughing
- Coughing up blood
- Dizziness or even fainting
- Rapid breathing
- Rapid pounding heart in your chest
- Shortness of breath

HOW TO PREVENT BLOOD CLOTS IN DEEP VEINS, LUNGS AND BRAIN

1. Lose weight, if you are overweight; Stay active

2. Exercise regularly; walking is fine

3. Avoid long periods of staying still

4. Get up and move around at least every hour whenever you travel on a plane, train, or bus, particularly if the trip is longer than 4 hours.

5. Do heel toe exercises or circle your feet if you cannot move around

6. Stop at least every two hours when you drive, and get out and move around

7. Drink a lot of water and wear loose fitted clothing when you travel

8. Talk to your doctor about your risk of clotting whenever you take hormones, whether for birth control or replacement therapy, or during and right after any pregnancy

9. Follow any self-care measures to keep heart failure, diabetes, or any other health issues as stable as possible

10. Ask your doctor about need for "blood thinners" or compression stockings to prevent clots, whenever you are admitted in the hospital.

	True	**False**
1. People after major surgery have higher risk of getting VTE	True	
2. Women during pregnancy have higher risk of getting VTE	True	
3. Giving birth by C-section have higher risk of getting VTE	True	
4. Women who use oral contraceptives (pills) have higher risk of getting VTE	True	
5. Being on bed rest for a long period of time is a risk of getting VTE	True	
6. Pregnancy can cause VTE	True	
7. Smoking can increase the risk of VTE	True	
8. People who exercise regularly have the same risk of VTE as those who don't		False
9. Drinking water causes swelling in the legs, and increases the risk of VTE		False
10. There is no treatment to VTE, there is no need to see a doctor		False
11. VTE can cause swelling in the leg	True	

12. VTE can cause shortness of breath	True	
13. Chest pain is one of the symptoms of VTE	True	
14. Cough syrup can help improve your breathing caused by VTE		False
15. People have higher risk of getting VTE when travelling by air	True	
16. VTE is a blood clot in the blood vessel	True	
17. Overweight and obese people are at high risk of getting VTE	True	
18. Excessive Alcohol consumption can cause VTE	True	
19. If you ever have breathing difficulties, you should see a doctor	True	
20. Having difficulty breathing is a sign of VTE	True	

KINYARWANDA VERSION

MENYA INDWARA YOKUVURA KW'AMARASO MUMIGARURA – RAMIRA UBUZIMA

Kuvura kw'amaraso mumigarura nindwara iterwa nuko amaraso yavuriye mumigarura y'amaraso. Hari ingero ebyiri ziyi ndwara:

- **Kuvurira mumaguru igihe amaraso yavuriye mubice byepfo akenshi mumaguru.**
- **Kuvura kw'amaraso mubihaha** bibaho igihe amaraso yipfundikiye mumaguru azamuka akagera mubihaha**.**

Kuvura kw'amaraso mumigarura nindwara yica vuba kandi ikenera yuko uyirwaye afashwa kubona muganga vuba.

BIMWE MUBISHOBORA KUGUTERA INDWARA YO KUVURA KW'AMARASO MUGIHE UTWITE

1. Gutwita byonyine bishobora kubitera
2. Kuba warwayeho iyi ndwara kandi uri nugufata ibinini byongera imisemburo
3. Kuba warwayeho iyi ndwara mugihe warutwite (byiyongeraho 12%)
4. Imyaka hejuru ya 35
5. Umubyibuho ukabije; birenze igipimo cya 30
6. Kudakora imirimo ngororangingo
7. Umwuma watewe no kutankwa amazi

8. Indwara za ifegisiyo

IBIMENYETSO BY'IBANZE IYO UTANGIYE KURWARA INDWARA YO KUVURA KW'AMARASO

Iyo utubumbe tw'amaraso tuvuriye mumaguru, umuntu agira ibimenyetso bikurikira

- Kuribwa cyane kunyama z'ipfundiko
- Gutukura kw'uruhu
- Ubushyuhe k'uruhu
- Kubyimba

Iyo utubumbe tw'amaraso tuvuriye mubihaha, umuntu agira ibimenyetso bikurikira

- Kubabara mugituza bikabije cyane iyo uhumeka
- Gukorora cyane nta gikororwa kiza
- Gukorora amaraso
- Kugira isereri, ukaba wanagwa hasi
- Guhumeka cyane
- Gutera cyane k'umutima
- Kubura umwaka

UKO WAKWIRINDA KUVURA KW'AMARASO MUMAGURU, MUBIHAHA NDETSE NOMUMUTWE

1. gabanya ibiro niba ubyibushye cyane
2. kora imirimo ngororangingo, kugenda namaguru ntacyo bitwaye
3. irinde ibintu bituma uhagarara igihe kinini

4. mugihe uri murugendo mundege, gariyamoshi cyangwa bisi, haguruka ugendagende nibura buri saha iyo urugendo rurenze amasaha 4
5. mugihe udashoboye guhaguraka, washing amano nagatsitsino
6. mugihe urimo gutwara imodoka, hagara nibura burimasaha abiri kugirango urambure amaguru
7. nkwa amazi menshi unambare imyendo ikurekuye mugihe uri murugendo
8. vugana namuganga wawe kungaruka zo kunkwa imiti y'imisemburo yaba ari iyo kuringaniza urubyaro cyangwa mugihe utwitwe na nyuma yokubyara
9. irinde indwara nkaz'isukari nyinshi mumubiri, iz'umutima cyangwa izindi izarizo zose
10. baza muganga wawe niba ukeneye imiti cynagwa amasogisi bigabanya kuvura kw'amaraso mugihe uri mubitaro

	Yego	**Oya**
1. Abantu iyo bamaze kubagwa bashobora kugira ingaruka zo kurwara indwara yo kuvura kw'amaraso	Yego	
2. Mugihe umugore atwitwe, ashobora kugira ingaruka zo kurwara indwara yo kuvura kw'amaraso	Yego	
3. Kubyara ubazwe bishobora kugutera ingaruka zo kurwara indwara yo kuvura kw'amaraso	Yego	
4. Abagore bakoresha ibinini mu kuringaniza urubyaro, bishobora kubatera ingaruka zo kurwara indwara yo kuvura kw'amaraso	Yego	
5. Guhora uryamye igihe kinini bishobora kugutera ingaruka zo kurwara indwara yo kuvura kw'amaraso	Yego	
6. Gutwita bitera indwara yo kuvura kw'amaraso	Yego	

7. Kunkwa itabi byongera ingaruka zo kurwara indwara yo kuvura kw'amaraso	Yego	
8. Abantu bakora siporo burigihe n'abatazikora, bose bashobora kugira ingaruka zo kurwara indwara yo kuvura kw'amaraso		Oya
9. Kunkwa amazi bituma amaguru abyimba, bikanongera ingaruka zo kurwara indwara yo kuvura kw'amaraso		Oya
10. Nta buvuzi bw'indwara yo kuvura kw'amaraso bubaho, nta mpamvu yo kujya kureba muganga		Oya
11. Indwara yo kuvura kw'amaraso itera kubyimba kw'amaguru	Yego	
12. Indwara yo kuvura kw'amaraso itera kubura umwuka wo guhumeka	Yego	
13. Kuribwa mu gatuza ni kimwe mubimenyetso by'indwara yo kuvura kw'amaraso	Yego	
14. Umuti w'amazi w'inkorora ushobora kukworohereza guhumeka neza, byatewe n'indwara yo kuvura kw'amaraso		Oya
15. Abantu bagenda mu ndege bashobora kugira ingaruka zo kurwara indwara yo kuvura kw'amaraso	Yego	
16. Indwara yo kuvura kw'amaraso ni ndwara y'utubumbe tw'amaraso tuba mumitsi	Yego	
17. Abantu bafite ibiro byinshi n'ubunini bukabije bashobora kurwara indwara yo kuvura kw'amaraso	Yego	
18. Kunywa ibisindisha byinshi bikabije bishobora gutera indwara yo kuvura kw'amaraso	Yego	
19. Nuramuka utangiye guhumeka nabi, ugomba kureba muganga	Yego	
20. Guhumeka nabi nikimwe mubimenyetso by'indwara yo kuvura kw'amaraso	Yego	