


**KNOWLEDGE, PRACTICE AND COMPLICATIONS ABOUT THROMBOSIS AND ITS  
ASSOCIATED RISKS AND PREVENTION IN DIFFERENT AGE GROUP OF PEOPLE**Maria Ayub<sup>\*</sup>, Erum Naz, Fatima Ahmed and Syeda Saghira

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**ABSTRACT:** Thrombosis is the formation of blood clot which causes obstruction in the blood flow through circulatory system. when thrombus become too large so causes hypoxia because it blocked the large arteries and after that also blocked the small arteries which causing less supply of the oxygen to the tissues so causes hypoxia, and also the accumulation of lactic acid is start in different organs of our body. Recent studies shows that thrombosis cause death and disabilities and many of the people affected with thrombosis complications. Our objective for this survey is to find out the main cause of thrombosis and why it become worst or severe, our main aim is to spread the awareness to the people about the thrombosis that “what is thrombosis” and guide both normal and suffering individuals about thrombosis, its severity and prevention. To study about thrombosis, its causes, risks and its complication, about 60 people were asked to share their knowledge about the thrombosis by answering the questionnaire this study took duration of about 1 month and then the data was arranged and studied. It was observed that the knowledge about thrombosis in the affected people about 85%, in non-affected people about 56.66% and the unaware pupil among affected is just 15% while in the non-affected it is about 43.33%. Our result shows that the knowledge about thrombosis in the affected people about 85%, in non-affected people about 56.66% and the un aware people among affected is just 15% while in the non-affected it is about 43.33% which means that there is a still a chance to get and better so we should arrange awareness programs and workshops so that level of awareness increases and the occurrence of thrombosis decreases.

**Key words:** Thrombosis; Anticoagulant; Antiplatelet; Thrombolytic

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**INTRODUCTION**

Thrombosis is a medical term which is defined as “Formation of clot in blood, causes obstruction or blockage in blood flow”. However when clot or thrombus is became too large so it causes obstruction or blockage in blood flow and hypoxia (oxygen deficiency) can occur and the metabolic products like lactic acid can also accumulate in different regions of the body or in extreme condition it causes infarction and tissue death. Many of the organs in our body are affected by the thrombus formation (Furie B, et al. 2008). Especially small systemic arteries of brain and kidneys. Now a days, it has become a major cause of disability and death of growing population, according to the recent researches 600,000 people die per year and 15% population is hospitalized due to severe complications of thrombosis (Tapson VF, et al. 2007). Approximately one out of every two patients undergoing orthopedic procedures without the thromboprophylaxis so it leads towards thrombosis (Geerts WH, et al. 2008).

In Europe, it is estimated that the death rate each year by thrombosis is too high as compared to cancer and HIV (Fitzmauric DA, et al. 2007). Haemostasis is a very important mechanism which controls the normal body function and maintains them in order. Normally blood clotting is done after injury and damage vessels are covered by coagulation factors and prevent the body from harm or injury and prevent excessive loss of blood. An abnormal and excessive clot formation is a pathological condition, is leading to cause disability and death (Colman RW, et al. 2006). It may be caused due to hypercoagulability also called thrombophilia, high level of coagulation factors in blood which increases the susceptibility to thrombosis. This is usually because of hereditary and immune system (Defense mechanism) disorders, it may also be caused when epithelial cell injury occurs on the vessel's wall after any trauma, surgery, and infection can possibly leads to thrombosis. Thrombosis may also be occurs due to abnormal blood flow like venous stasis following heart failure, or long time sedentary life pattern can also leads towards thrombosis.

Other causes of thrombosis include atrial fibrillation and cancer. Thrombosis may be categorized as venous thrombosis and arterial thrombosis (Handin RI, et al. 2011). The symptoms of thrombosis include pain, swelling, tenderness to touch, redness, bluish discoloration of the affected area (Andra H, et al. 2008). Complications of thrombosis include hypoxia because obstruction of artery and vein, the result is that majority of the blood vessels are blocked and reduced supply of blood to the tissues and cause production of lactic acid, other complications includes thromboembolism, pulmonary embolism, heart attack, strokes, myocardial infarction, and pulmonary thromboembolism (Handin RI, et al. 2011).

Risk factors of thrombosis includes hereditary factors, general factors (diabetes mellitus, stress, malignant diseases, chronic inflammation, cancer, inherited blood clotting diseases) other factors include overweight, diet with more cholesterol, smoking, bed rest for long time (paralysis or long hospital stay), pregnancy, birth control pills, hormone replacement therapy (Boisseaw MR, et al. 1984). Treatment of thrombosis includes anticoagulants like low molecular weight Heparin (parenterally), Warfarin (orally) (Walter JB, et al. 2004). Unfractionated Heparin (UFH), Antiplatelet include (Aspirin), Vitamin k antagonists (VKA) (Alikhan R, et al. 2009). We can prevent the thrombosis by exercise, by avoiding smoking, by taking proper diet with low saturated fats and cholesterol, by taking vegetables and fruits to maintain good health, thrombosis suffering people can prevent the further complications by taking proper prescribed medications (Sean O, et al. 2008). Our objective is to find out the main causes of thrombosis prevalence, and why it becomes severe, and how can we prevent the suffering individuals from its life threatening complications and its devastating impact on life, and also to give awareness to the normal people about thrombosis, its symptoms, risks, causes, treatment and its prevention.

## METHODOLOGY

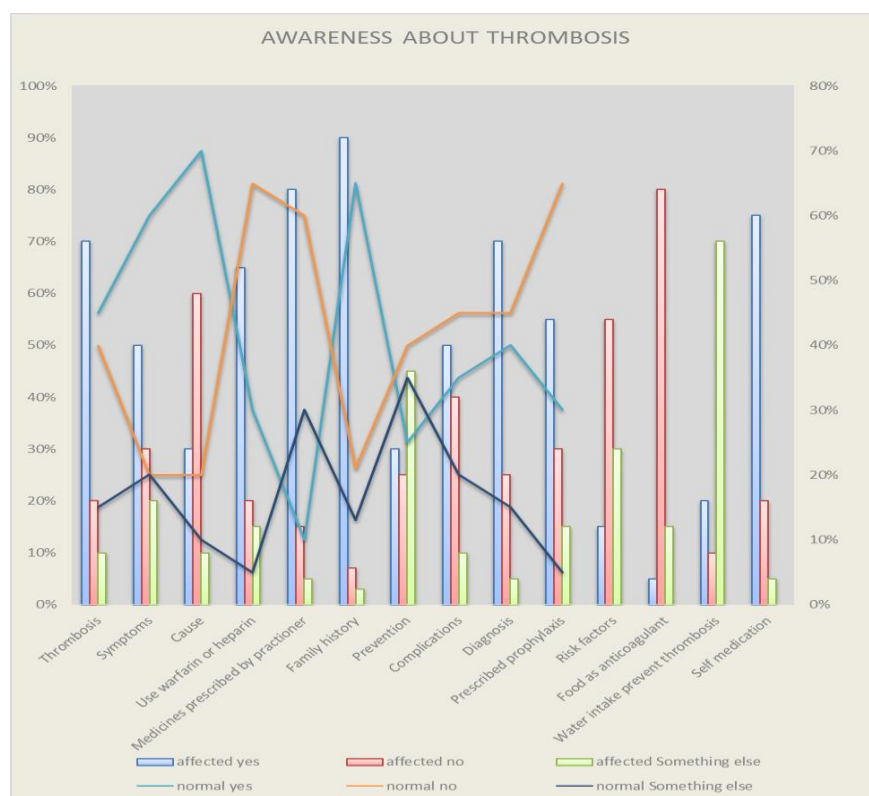
To study the thrombosis, its causes, symptoms, complications, prevention and to check the level of awareness of thrombosis by people, we design 2 questionnaires separately one for controlled testing who deserve the awareness about thrombosis complications, and another questionnaire for suffering individuals to prevent from further complications of thrombosis. The survey is conducted on hospitals, colleges, schools, universities. Our questionnaire is composed of **12** questions for controlled testing and **21** questions for suffering individuals. The questionnaire is distributed and requested all of the people to answer the questions according to their opinion. This study took 1 month approximately and after that data was arranged and studied. It was observed that almost most of the people were unable to answer the questions which may be due to lack of knowledge and lack of awareness while the doctors, pharmacists, universities students and some affected people answered very well about the thrombosis. In this study **60** people involved who include **30** normal peoples, students and health care professionals and **30** were suffering individuals.

## RESULTS

After cooperation of the people the data was collected and arranged. It was observed that the knowledge about thrombosis in the affected people about 85%, in non-affected people about 56.66% and the unaware pupil among affected is just 15% while in the non-affected it is about 43.33%. Following Tables 1, 2, 3 and 4 shows awareness among the affected and non-affected persons (Figure 1).

**Table 1: shows awareness about thrombosis among the affected and non-affected persons.**

	Affected			Non-affected			
	Yes	No	Something else		Yes	No	Something else
Thrombosis	70%	20%	10%	Thrombosis	45%	40%	15%
Symptoms	50%	30%	20%	-	-	-	-
Cause	30%	60%	10%	Causes of thrombosis	30%	65%	5%
Use warfarin or heparin	65%	20%	15%	Bleeding disorders	70%	20%	10%
Medicines prescribed by practioner	80%	15%	5%	Surgical procedures	10%	60%	30%
Family history	90%	7%	3%	Family history	60%	20%	20%
Prevention	30%	25%	45%	Prevention	35%	45%	20%
Complications	50%	40%	10%	-	-	-	-
Diagnosis	70%	25%	5%	-	-	-	-
Prescribed 553015%				Thrombosis 254035%			
prophylaxis	%	%		prophylaxis	%	%	
Risk factors	15%	55%	30%	Risk factors	40%	45%	15%
Food as anticoagulant	5%	80%	15%	Attributed deaths	30%	65%	5%
Water intake prevent thrombosis	20%	10%	70%	-	-	-	-
Self-medication	75%	20%	5%	Use of medications	65%	21%	13%



**Figure 1: Shows awareness about thrombosis among affected and non-affected persons.**

**Table 2: Shows the level of Awared and Unawared pupil among the affected and the non-affected persons.**

AFFECTED		NONAFFECTED					
Awared	85%	HEALTH CARE PROFESSIONAL		LAY MAN		STUDENTS	
Unawared	15%	Awared	90%	Awared	30%	Awared	50%
		Unawared	10%	Unawared	70%	Unawared	50%

**Table 3: Shows the mean of Awared and Unawared pupil in the non-affected persons.**

NON-AFFECTED PERSONS	
Mean of Awared	$90\%+30\%+50\%/3= 56.66\%$
Mean of Unawared	$10\%+70\%+50\%/3= 43.33\%$

**Table 4: Shows the comparative analysis of the level of awareness and unawareness among the affected and non-affected persons.**

Level of awareness among the affected and non-affected persons		Level of unawareness among the affected and non-affected persons	
Awareness in non-affected persons	85%	Unawareness in affected persons	15%
Awareness in affected persons	56.66%	Unawareness in non-affected persons	43.33%

**DISCUSSION**

Thrombus is the clot formation at the site of activation of coagulation system may be due to abnormalities that occur in vessel wall (atheroma), vessel damage/injury or inflammation. These abnormalities or barriers occur in the flowing of blood which may be due to stagnation and turbulence. Abnormality occurs in blood components may be due to smoking, alcohol, contraceptive post-partum. These causes restriction, obstruction in blood flow thus proper amount of blood not transport to tissues, organs, so that the oxygen deficiency leads to ischemia, nutritional deficiency leads to tissue death and as a result ischemia, hypoxia, infarction, edema and inflammation occurs which may lodge the clot to brain, lung, heart, kidney and additional impact occurs in the form of stroke, heart failure, renal damage, disability, paralysis, or even death. According to new researches the majority of growing population is already have been developed or going to develop clots in their bodies and almost 600,000 pupils died due to thrombosis.

The causes of thrombosis are very simplest but not focus by individual or none of people because they are very common; smoking, NSAIDS, sedentary life style, obesity, lack of exercise, less intake of water and etc. These are very common causes which are not associated with any pathological condition but these innocent causes can cause very devastating pathologies. For example; less intake of water not only the one cause of dehydration and thrombosis but also the one important cause of renal damage (Ten Cate H, et al., 2004). The symptoms is associated with clot formation, swelling, pain, discomfort, skin changes, redness of the area (seizures, irregular heartbeat, cough, SOB, edema). The risk of thrombosis is increased by some factors such as age, immobility, surgeries (orthopedic, appendix, etc.), during pregnancy, using hormone replacement therapies, burns, cancers, alcohol, Crohn’s disease. Below the table is showing the diseases and drugs that are the risk factors of thrombosis.

DISEASES	DRUGS
Hypertension	Delayed onset of heparin
Diabetes mellitus (Male>Female)	Chemotherapeutic agents
Hypercholesterolemia	Drug purpura
Obesity	
Smoking	
AGE (Male > 45) (Female >55)	
Family History of heart Disease	

Two Common Cause of Death:

- 1) A huge population is unaware about the disease, sign, and symptoms.
- 2) People who aware about the blood clotting or thrombosis and its severity or complications but in thrombosis there are not clear symptoms appear prominently.

We can stop it:

- 1) Stop the increase of clot size
- 2) Stop the breakage and movement of clot into other body parts. Our result demonstrate us the level of awareness in which 3 tables are used for elaboration.

In order to promote prevention health care professionals must starts offering or sharing information to patients that transfer knowledge about disease and make them aware to support the understanding of prevention of disease condition and to prescribe the certain medications to the patient according to the disease condition. Following are the medications which are used in the treatment of thrombosis.

Following are the some points which are necessary for awareness:

To educate the individual about self-administration of injection and try to eliminate the fear of injection and demonstrate about use of technique and take return demonstration that how much they successfully understand, Fear of medication will increase the tendency to breed fear often occur due to side effects or due to misinformation. So the information should be written in simple words, native language. The safety of patient also requires special medic alert bracelet, Educate them about the follow up on regular basis and aware them about follow up importance. Try to remove the fear regarding anti thrombic agents and educate them about drug to drug and drug to food interactions.

Educate them to maintain record in a file having all test reports and prescriptions to avoid loss of data which causes difficulty in the treatment. The higher prices of medicine create hindrance in treatment and so the health care professionals and pharmaceutical assistance should try to overcome it. Give proper instruction about the use of mechanical stocking and instruct about use and filling stock according to body requirement. Facilitate the patient by providing video, audio aids, by channel programs and also inform about some agent, in food which contain anti thrombic agent. Give them a prepared chart which contain why the drug use, dosing, strength or potential, side effects, poisoning or toxicity symptoms and inform them about storage of medicine and guide them not to use herbal products which causes coagulation and clotting of blood or which increases the risk of bleeding and increase the effect of warfarin. Educate them about proper discard and disposal of syringes and about self-care, Insist them to stop smoking and teach them to avoid cross setting legs and not to stay in a same position for a long time and not to stay in a standing position for a long time (Tracy RP, 2003). Patient should be aware about it: Be active, not to be immobilized. Maintain body posture and maintain weight. Take proper diet, Should know about family history, and should aware about risk factor, Aware about such diseases which can promote coagulation. If patient's symptoms persist then do not to seeking attention so the individual can be prevented from complications of disease (Libby P, et al. 2001).

## CONCLUSION

Our result shows that the knowledge about thrombosis in the affected people about 85%, in non-affected people about 56.66% and the un aware people among affected is just 15% while in the non-affected it is about 43.33% which means that there is a still a chance to get and better so we should arrange awareness programs and workshops so that level of awareness increases and the occurrence of thrombosis decreases. Pharmacist should aware the people about the about to take proper diet, increases the physical activity, if any people suffered from thrombosis so take proper medication according to their condition. If these knowledge is spread among the people so there is a great chance to reduce the thrombosis in our society and all over the world.

## REFERENCES

- Furie B, Furie BC (2008). Mechanisms of thrombus formation. *N Engl J Med* 359: 938-949.
- Tapson VF, Decovsus H, Pini M, Chong BH, Froehlich JB, (2007). Venous thromboembolism prophylaxis in acutely ill hospitalized medical patient finding from the internal medical prevention registry on venous thromboembolism. *Chest journal* 132: 936-945.
- Geerts WH, Bargaust D, Pineo G, Heit JA, Samama CM, (2008). Prevention of venous thromboembolism. American college of chest physician and evidence based clinical practice guideline. *Chest journal* 133: 3815-4535.

- Fitzmaurice DA, Murray E (2007). Thromboprophylaxis for adults in hospital. *BMJ* 334: 1017-1018.
- Colman RW, Clowes AW, George JN (2006). Overview of hemostasis and thrombosis. *Basic principles and clinical practice*, Philadelphia, Lippincott, Williams and Wilkins: 1-16.
- Handin RI, Kasper DL, Braunwald E, Fauci AS (2011). Bleeding and thrombosis. *Harrison's Principles of Internal Medicine* (16th Ed.). New York, NY: McGraw-Hill.
- Andra H, James MD, Thomas L, Ortel MD (2008). Victor TF Deep vein thrombosis and pulmonary embolism. 100 questions and answers, Jones and Bartlett publisher: 12.
- Boisseau MR, Bricaud H (1984). Clotting system in prethrombotic state. *Adv Exp Med Biol* 164: 19-29.
- Walter JB, Talbot IC (2004). *General pathology* 7: 677-706.
- Alikhan R, Cohen AT (2009). Heparin for the prevention of venous thromboembolism in general medical patients (excluding stroke and myocardial infarction). *Cochrane Database Syst Rev* 8: CD003747.
- Sean O, Stitham, David C, Dugdale III, David Zieve (2008). Embolism update. *Medline Plus*.
- Ten Cate H, Henri MH Spronk, Danielle van der Voort (2004). Lessons from Venous Thrombosis and Disseminated Intravascular Coagulation: A Synthesis of Pathophysiological Mechanisms of Prothrombotic States 2: 12.
- Tracy RP (2003). Thrombin, inflammation, and cardiovascular disease: an epidemiologic perspective. *Chest* 124: 49S-57S.
- Libby P, Simon DI (2001) Inflammation and thrombosis: the clot thickens. *Circulation* 103: 1718-1720.

ISSN : 0976-4550

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