

Venous Thromboembolism Awareness among Saudis Risk Group at Primary Health Care Centers in Riyadh

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Abstract

Developing specialized health programs for the at-risk public begins with an assessment of knowledge. There is a lack of local research regarding at-risk groups' knowledge about venous thromboembolism. Our goal is to identify gaps in knowledge about VTE among communities at risk.

Methods: Quantitative cross-sectional study design was used. A questionnaire was administered to patients who were followed up in primary health care centers under Riyadh Second Health Cluster, and who were conveniently selected. Descriptive statistics were presented by using the Package for Social Sciences version 24 for statistical analysis.

Results: The results showed a total of 823 participants; 30% of them have lack of knowledge about DVT. Also, the majority of participants not aware about causes of a leg clot. More than half of the participants are not aware of PE and they did not report that chest pain, cough with blood, the heart rate becomes rapid as signs of PE. However, few of participants were worried about VTE and they agree that clots may result in death. Finally, the participants agreed that untreated blood clots in the leg cannot travel to the lungs.

Conclusion: To achieve the current Saudi Health Council evidence-based clinical practice guidelines, primary health care centers need to activate the role of health care providers. Future research should include a healthy Saudi general population. Educational programs regarding VTE could also be evaluated through interventional studies. The health care providers' perceptions of VTE and their role in raising awareness about VTE need to be assessed in practice.

Key words: Venous thromboembolism, awareness, risk groups, Saudi Arabia

Introduction

Venous thromboembolism (VTE) mainly relates to deep vein thrombosis (DVT) and pulmonary embolism (PE) which causes considerable morbidity and mortality. It strongly contributes to the global disease burden and negative consequences [1]. VTE is an outcome from an inequity of hemostasis and thrombosis [2]. In 2016, VTE was identified in over 1.2 million individuals in the United States (US) and 60% were diagnosed as DVT alone while 40% presented as pulmonary embolism with or without DVT [3].

It is important to note that VTE is a disease of complex nature that occurs within families. Genetic as well as acquired risk factors play an important role in its occurrence. It is important to recognize and manage high-risk individuals appropriately [4]. VTE risk assessment and prophylaxis constitute part of the preventive tools that can be utilized at health care providers' level. Therefore, reviewing whether VTE risk status has been established and administering approved VTE prophylaxis are accepted to be the central healthcare provider role [5]. Healthcare practitioners ought to identify patients at risk of developing VTE and select the appropriate therapy, thus reducing its incidence. In addition, to PE risk of death, DVT frequently results in a post-thrombotic syndrome that lowers quality of life [6]. Therefore, VTE prevention is an area that could be targeted to promote health and safety not only in healthcare settings, but also in the community. A population-based strategy would raise awareness of VTE and work to reduce lifestyle risk factors across the board through advocacy, policy changes, and environmental improvements [7].

In Malaysia, a deficit of knowledge regarding venous thromboembolism was reported among pregnant women's knowledge of venous thromboembolism [8]. In Nigeria, awareness and knowledge of the symptoms and risk factors of VTE was assessed among the general population. The majority of respondents correctly described DVT as a blood clot in the vein, but only few correctly described PE. Hospital stays, surgery, cancer, pregnancy, and old age were all known risk factors for VTE [9].

In the Saudi Arabia context, a study conducted to assess level of awareness among hospitalized patients in Saudi Arabia demonstrated lack of awareness of VTE, DVT, and PE among hospitalized patients [10]. Another study analyzed the awareness of VTE among Saudi Arabian adults by self-administered electronic questionnaire translated into Arabic. Around a third of the Saudi general population were unaware of DVT and PE [11]. However, about 60% of the respondents were aware of the symptoms of DVT and PE, indicating a positive attitude towards the knowledge of DVT and PE among the general public [11].

In Aseer, awareness of causes, risk factors, signs, symptoms, prevention, and treatment options toward VTE among the population was assessed [12]. Public awareness and knowledge regarding VTE is lacking,

and it is important to improve this awareness and knowledge in order to achieve better prevention of VTE [12]. Moreover, another study evaluated Saudi females' awareness of VTE symptoms and signs and their level of knowledge about the risk of VTE associated with oral contraceptive pills [13]. Female populations with diverse education levels, socioeconomic status, and background characteristics were asked to complete a structured online questionnaire. Among the 1,173 participants, 726 used or had previously used OCPs. Only 329 respondents (45%) and 303 respondents (41%) were aware of deep vein thrombosis (DVT) and pulmonary embolism (PE) as medical conditions, respectively, while 312 respondents (43%) were aware of the association between OCP use and DVT risk. There were 297 women who reported leg swelling as the primary symptom of DVT (40%), while 331 women reported shortness of breath as the primary symptom of PE (46%) [13].

In Makkah, Saudi Arabia, a study investigated hospitalized patients' awareness and perceptions of VTE and associated thromboprophylaxis. Between September and November 2021, 301 patients were recruited to participate in a descriptive cross-sectional study conducted at the Al-Noor Hospital's surgical ward. It was found that hospitalized patients were unaware of VTE, its clinical presentation, and its risk factors [14]. Furthermore, a related study surveyed 1,661 Saudis to evaluate the knowledge about DVT among western region residents [15]. There was prior awareness of DVT among approximately 45.5% of participants. A well-known risk factor is being overweight and traveling for long periods of time. In most of the participants (60%) who knew about DVT, pain and discomfort (97.8%) and leg pain (73.8%) were the most frequent clinical manifestations. Additionally, 45.3% of the participants were aware that DVT can be fatal, 36.4% were aware of more than one pulmonary embolism characteristic, 35% were aware of post-coagulation syndrome, and 12.6% were aware that pulmonary embolism is a serious condition. There were 12% who had a better understanding of DVT while 79% had a poor understanding [15].

Recently, a study investigated Saudi Arabians' knowledge and awareness of VTE [16]. 1226 Saudi adults (aged over 18 years) from the general population were asked to complete a validated online questionnaire. Most participants were unaware of VTE and were not concerned about it. However, there was a greater awareness of other medical conditions, such as hypertension [16]. A number of risk factors for VTE have been identified, including immobility and old age. Most participants correctly identified leg pain and tenderness as symptoms of deep venous thrombosis, despite less than half being aware of the association between thrombosis and VTE [16]. As symptoms of pulmonary embolism, most participants reported chest pain and breathlessness. The most commonly identified symptoms of VTE are leg paralysis and slow, shallow breathing. There was considerable disagreement among respondents regarding the statement "having a blood clot is not considered a medical emergency" [16].

This study aimed to assess VTE awareness among Saudi at risk groups at Primary Health Care Centers in Riyadh. While there is no local program exclusively for public health promotion addressing VTE prevention in Primary Health Care Centers with many known risk factors increasing in society such as cancer, immobility and obesity, VTE has a major impact on increasing public health problems which need to be focused on to avoid provoked VTE or recurrent VTE, through raising patient awareness of risk and symptoms, lifestyle counseling, and possibly statins or direct oral anticoagulants [7].

Furthermore, assessment of knowledge is a starting point to extract the needs of the public who are at risk and direct attention towards establishing specialized health programs for this group. If we can find gaps in knowledge of communities at risk regarding VTE, we can better educate them before they actually become patients. Also, it could help alleviate the economic burden on the health system of this common preventable condition. Nevertheless, there is lack of local investigation regarding knowledge and attitude of at-risk groups in primary health care settings.

Methodology

A quantitative cross-sectional study design was used. A questionnaire including 35 quotations was used to assess the public's awareness level about venous thromboembolism after obtaining permission [12].

This study was conducted in Primary Health Care Centers under Riyadh Second Health Cluster. There are five sectors under Cluster 2 and under each sector has 8 primary health care centers. Three sectors were selected randomly and a total of 13 primary health care centers were selected randomly from these sectors.

Populations and sampling were patient follow up in primary health care centers under Riyadh Second Health Cluster. A convenience sampling was applied and every patient visiting maternity and chronic disease clinics had a chance to participate in the study. The inclusion criteria were all patients and their family members visiting maternity and chronic disease clinic primary health care centers. Exclusion criteria were patients under 18 years old and patients who were followed up in the dental or emergency clinic. Descriptive statistics were presented by using The Statistical Package for Social Science version 24 for statistical analysis. IRB approval was obtained from King Fahad Medical City Log # (22-337E).

Results

A total of 823 participants participated in this study. Half of the participants were between 18 -39 years old and female. Regarding the educational level 38.9 held a university degree. The majority of the participants had medical conditions such as asthma, obesity, colon and anemia. In addition, more than half had diabetic and hypertension conditions. Also, the majority of females were pregnant (Table 1).

The results showed that more than one third of the participants were not aware about DVT. On the other hand, more than half of participants had awareness about heart attack, thrombosis, stroke, and the majority were aware about elevated blood pressure (Table 2). More than half of the participants did not know what a leg clot and its causes were. Moreover, the majority didn't perceive that a tumor in a vein, lack of oxygen in the vein, blood stasis in vein are causes of DVT. Additionally, the majority of participants reported that leg pain, a noticeable change in the color of your leg, fever in the leg, leg paralysis, swelling in your leg are not signs of DVT (Table 3).

Regarding awareness of PE more than half of the participants are not aware of PE. Additionally, they did not report that chest pain, cough with blood, the heart rate becomes rapid are signs of PE. However, only (58.1%) indicated that slow, shallow breathing and (49%) headache are signs of PE (Table 4). Also, the majority did not indicate that high blood pressure, blood donation, having a family member with history, being over 65 years of age, cancer, being immobile for a long period of time, pregnancy or after childbirth, a hospital stay and surgeries are risks for developing blood clot but they agreed that this health problem can be treated by medications. However, more than half of the participants don't rely on health care providers as a source of information about VTE. However, relying on other sources such as the internet, television or friends was lower than depending on specialists as a source of information (Table 5).

Only less than half of participants were worried about coagulation, brain attack, leg embolism (deep vein thrombosis), pulmonary artery embolism (lung embolism) and more than half were worried about heart attack and hypertension (Figure 1). Finally, there is a disagreement among participants that untreated blood clots in the leg cannot travel to the lungs and a blood clot is not considered an emergency. Moreover, they agree that clots may result in death (Figure 2).

Characteristics		Frequency	%
Age	18-39 years	406	49.3
	40-65 years	317	38.5
	More than 65 years	100	12.2
Gender	Male	350	42.5
	Female	473	57.5
Educational Level	Primary	52	6.3
	Intermediate	84	10.2
	Secondary	236	28.7
	University	320	38.9
	Master	14	1.7
	Uneducated	117	14.2
Health Status	High blood pressure	477	58.0
	Diabetes	478	58.1
	Asthma	674	81.9
	Obesity	822	99.9
	Colon	822	99.9
	Anemia	821	99.8
	Pregnant	791	96.1

Table 2: Awareness of DVT

	NO		YES	
	Frequency	%	Frequency	%
Do you know or have you ever heard about Heart attack?	86	10.7	716	89.3
Do you know or have you ever heard about Thrombosis?	183	22.8	619	77.2
Do you know or have you ever heard about Stroke?	240	29.9	562	70.1
Do you know or have you ever heard about Leg stroke (deep vein thrombosis)?	381	47.5	421	52.5
Do you know or have you ever heard about Pulmonary embolism?	380	47.4	422	52.6
Do you know or have you ever heard about High blood pressure?	36	4.5	766	95.5

Table 3: Awareness of DVT Causes and Symptoms

Items	NO		YES	
	Frequency	%	Frequency	%
Do you know what is the meaning of a clot in the leg and how do you feel if you get it?	501	62.5	301	37.5
Which of the following statements do you think describes the cause of deep vein thrombosis (leg thrombosis):				
Tumor in a vein	680	84.8	122	15.2
Lack of oxygen in the vein.	653	81.4	149	18.6
Blood stopped in vein	515	64.2	287	35.8
I'm not sure	435	54.2	367	45.8
Identify the signs and symptoms of a blood clot in your leg (deep vein thrombosis):				
Leg pain	507	63.2	295	36.8
A noticeable change in the color of your leg	669	83.4	133	16.6
Fever in the leg	681	84.9	121	15.1
Leg paralysis	690	86.0	112	14.0
Swelling in your leg	490	61.1	312	38.9

Table 4: Awareness of PE

Statements	NO		YES	
	Frequency	%	Frequency	%
Do you know what is the meaning of a blood clot in the lung (pulmonary embolism), and how you would feel if you had one?	548	68.3	254	31.7
Identify signs and symptoms of a blood clot in your lung (pulmonary embolism).				
Pain spreading to the arm	691	86.2	111	13.8
Frequent headaches *	753	93.9	49	6.1
Chest pain	413	51.5	389	48.5
Cough with blood	727	90.6	75	9.4
The heart rate becomes rapid	675	84.2	127	15.8
Slow, shallow breathing *	336	41.9	466	58.1
Shortness of breathing	370	45	453	55

* Incorrect answer

Table 5: Awareness of Blood Clot

Which of the following could increase your risk of blood clots?	NO		YES	
	Frequency	%	Frequency	%
High blood pressure	696	86.8	106	13.2
High cholesterol *	802	100.0	0	0
Donate blood	802	100.0	0	0
Having a family member	741	92.4	61	7.6
Being over 65 years of age	657	81.9	145	18.1
Excessive exercise *	799	99.6	3	.4
Cancer	778	97.0	24	3.0
Being immobile for a long period of time	630	78.6	172	21.4
Pregnancy or after childbirth	742	92.5	60	7.5
A hospital stay	734	91.5	68	8.5
Surgeries	700	87.3	102	12.7
In your opinion, what is the treatment usually used to treat blood clots?				
Medications	244	30.4	558	69.6
Surgeries	584	72.8	218	27.2
Herbal Therapy	776	96.8	26	3.2
What source of information do you rely on for information about coagulation?				
Specialist	454	56.6	348	43.4
Internet	507	63.2	295	36.8
Television	701	87.4	101	12.6
A friend	744	92.8	58	7.2

* Incorrect answer

Figure 1: How concerned are you about each of these health conditions

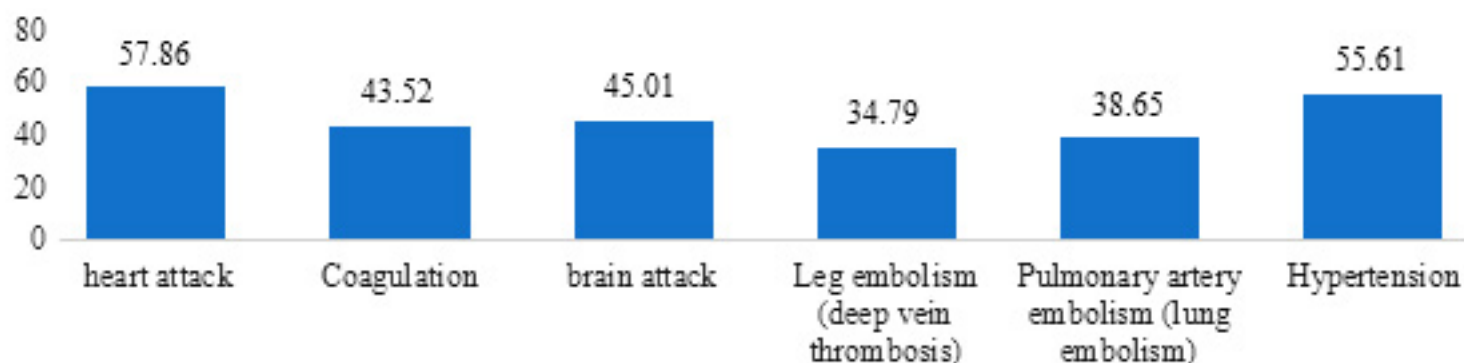
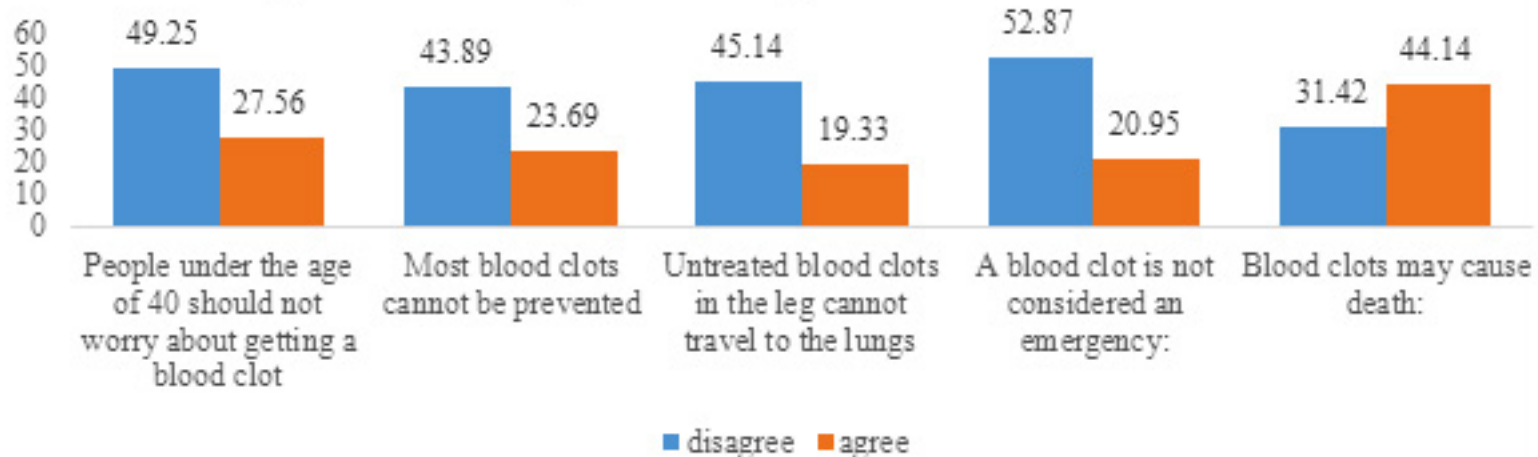


Figure 2: Participants Perception related to blood clots



Discussion

Results of the current study indicated that the risk group population were not aware about DVT. On the other hand, they were aware about medical conditions such as; heart attack, thrombosis, stroke, and the majority were aware about elevated blood pressure. This goes consistently with a study in Riyadh where DVT was known by 18% of participants only [17]. On the other hand, the majority of patients and caregivers reported awareness about DVT among the population in the Aseer Region [12]. Additionally, it was reported that 45% of the general population living in the Western region of Saudi Arabia were aware of DVT [15]. However, there was a greater awareness regarding medical conditions such as elevated blood pressure [16].

The current study reported that the risk group participants did not know what a leg clot and its causes were. Moreover, the majority didn't perceive that tumor in a vein, lack of oxygen in the vein, blood stasis in vein are causes for DVT. The most frequently defined risk factors were immobility or bed rest for longer than 3 days, trauma, long airline travel, cancer and being overweight [12][15].

Additionally, the majority of participants in the current study reported that leg pain, a noticeable change in the color of your leg, fever in the leg, leg paralysis, swelling in your leg are not signs of DVT. Other studies reported that calf pain, swelling, redness, and discomfort of the legs, skin color changes and fever were the most known signs [12][15]. On the other hand, leg paralysis and itching were indicated as signs of DVT [17]. Regarding awareness of PE, participants in the current study were not aware of PE. This result is consistent with studies indicating that only 38.7% and 12.6% were aware of pulmonary embolism [17] [15].

Additionally, the risk group participants indicated that slow, shallow breathing is a sign of PE. On the other hand, the majority did not indicate the risks for developing blood clot but they agreed that this health problem can be treated by medications. Shortness of breath and chest pain were the most recognized symptoms of PE [17]. However, in another study, 36.4% of participants identified more than one sign of PE, though 45.8% did not know any sign[15].

Also, the majority did not indicate that high blood pressure, high cholesterol, blood donation, having a family member with a history, being over 65 years of age, excessive exercise, cancer, being immobile for a long period of time, pregnancy or after childbirth, a hospital stay and surgeries are risks for developing blood clot but they agreed that this health problem can be treated by medications. By contrast, hospital stays, surgery, cancer, pregnancy, and old age, obesity, traveling and immobile were indicated as risk factors [8][15][16]. Moreover, it was reported that women were aware of the relationship between OCP and DVT [13].

In this study, most participants indicated that they don't rely on health care providers as a source of information about VTE. However, relying on other sources such as the internet, television or friends was lower than depending on specialists as a source of information. A relevant study reported, 38.1% rely on sources such as social media, the internet, scientific books, and study in gaining knowledge regarding DVT [15]. An important aspect of primary health care center's activities is educational programs and awareness promotion campaigns. On the other hand, the health information regarding VTE is most commonly obtained from doctors or healthcare professionals [11]. Moreover, since VTE accounts for a significant healthcare burden with many cases being undetected, it is critical to raise awareness about its symptoms and associated clinical presentations among the general public so that it can be diagnosed early and managed appropriately [18].

Finally, there is a disagreement among participants that untreated blood clots in the leg cannot travel to the lungs and a blood clot is not considered an emergency. Moreover, they agree that clots may result in death which is consistent with the result that more than one third indicated that DVT led to mortality and a few considered pulmonary embolism a serious condition [15].

Implications

For community health it will be valuable to activate the health awareness programs about VTE among the public in general and those who are at risk in particular since there is a health initiative to enhance awareness during the month of March every year.

For future research, it is recommended to expand the sample to involve a healthy general population in Saudi Arabia. Also, interventional studies could be conducted to determine the effect of educational programs regarding VTE.

For practice, there is a need to assess the health care providers' perceptions regarding VTE and identify patients who are at risk and their role in enhancing awareness.

Limitations

The main limitation in this study is the research design because bias can occur in cross sectional surveys. Another limitation was that the population and sample size in primary health care centers is difficult to be accurate because of a lack of data and source of data.

Conclusion

VTE awareness is underestimated and there is a need to enhance awareness among people who are at risk. Additionally, there is a need to activate the role of health care providers in primary health care centers to apply the current evidence based clinical practice guidelines that were developed by the Saudi Health Council.

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