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Awareness, knowledge and attitude toward venous thromboembolism among Tabuk, Saudi Arabia: A cross-sectional study

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ABSTRACT

Introduction: Although DVT is a significant source of morbidity and mortality, it can be avoided by avoiding risk factors and putting an emphasis on primary prevention. *Aims:* Our objective is to assess knowledge of VTE causes, risk factors, symptoms, prevention, and treatment choices among the population of Tabuk, Saudi Arabia. *Methodology:* A cross-sectional survey of the population of the Tabuk region was conducted, from January 2, 2023 to February 2, 2023. *Results:* Most of the participants were female, single, between the ages of 18 and 39 and most held bachelor's degrees; the majority of them had good expertise. The prevalence of venous thrombosis was low in the Tabuk region; there was no clear role for demographic factors at the level of consciousness in contrast to the medical history. *Conclusion:* The continuity of educational programs and awareness campaigns via the Internet, the media, health centers and public places.

Keywords: Tabuk, Awareness, Knowledge, Attitude, Saudi Arabia, Thromboembolism, Venous, A deep vein thrombosis/leg clot (VTE), A pulmonary embolism (PE).

1. INTRODUCTION

Deep venous thrombosis (DVT), one of the most significant recurrent cardiovascular disorders (Aranda-Lara et al., 2012; Dong et al., 2015), is one of the leading causes of morbidity and mortality worldwide (Okuhara et al., 2014). However, DVT can be prevented by adopting the necessary

precautions and interventions (Geerts et al., 2008), such as leading a healthy lifestyle (Goldhaber, 2010) and putting preventive measures into practice (Spyropoulos et al., 2012; Brenner et al., 2019). In addition to avoiding the deep vein thrombosis risk factors. Numerous factors have been shown to be significantly linked to the development of DVT, including high blood pressure (Huang et al., 2019; Ageno et al., 2008), aging, prolonged immobility, a history of DVT, infection, pregnancy or postpartum, use of birth control pills, cancer, congestive heart failure, varicose veins, rheumatic disease and nephrotic syndrome (Awolesi et al., 2016; Anderson and Spencer, 2003). Additionally, to the part played by obesity (Ageno et al., 2008).

The post-phlebitis syndrome, pulmonary embolism, persistent thromboembolic pulmonary hypertension and even death is just a few of the problems linked to DVT that are caused by all of these causes (Kahn and Ginsberg, 2004). An emphasis on primary DVT prevention is crucial due to the challenge of identifying suspected DVT cases that may be disregarded, the significant financial burden and the major problems brought on by the development of DVT (Awolesi et al., 2016; Anand et al., 1998).

This study was therefore conducted to determine the prevalence of venous thromboembolism in one of the Saudi societies and investigate their level of awareness, knowledge and attitudes toward venous thromboembolism. Our research will be useful in determining the need for education campaigns and in addressing the current knowledge gap regarding DVT and its complications as well as prevention. In addition to examining the effect of demographic factors and the medical history of venous thromboembolism on the awareness level of participants, in the Tabuk region.

2. MATERIALS AND METHODS

Study design

After approval by the local Ethical Committee Approved No (001-TU-07-HAP), a questionnaire-based cross-sectional survey with a total of 37 online questions distributed via social media was done among residents of Tabuk District, Saudi Arabia, January 2, 2023 to February 2, 2023.

Sampling and Sample size

The Qualtrics calculator was used to estimate the sample size, which were 384 with a 95% confidence level. To produce a representative survey sample with less bias, an additional 30% was included. 506 of the 574 individuals from the Tabuk region participated after some were excluded (based on exclusion criteria).

Inclusion criteria

All Tabuk, Kingdom of Saudi Arabia, residents, of all sexes and nationalities and who are at least 18 years old, with their consent to participate. Participants those under the age of 18, those living elsewhere and those who decline to participate are all excluded.

Preparing the study instrument

Following a thorough literature analysis, the researchers produced a 34-item questionnaire. The purpose of the survey was to gauge participants' opinions toward venous thromboembolism in terms of knowledge and awareness. Age, gender, degree of education, occupation and marital status were among the demographic details that researchers gathered from participants. Self-administered and taking 4 to 8 minutes to complete, the questionnaire. The questionnaire contained a set of questions to gauge Tabuk residents' level of knowledge regarding the medical conditions linked to the most prevalent venous thromboembolism, including pulmonary embolism (PE), deep vein thrombosis (DVT), stroke, high blood pressure (HTN), heart attack and cancer. A 1–5 Likert scale is used to rate how serious people are concerned about breast cancer, thrombosis, AIDS and prostate cancer. When responding to a Likert item, participants rate a sequence of assertions on a symmetric scale from worried to unworried. In this way, the range encapsulates the degree of their concern for a particular issue. In addition, a series of questions were added to the questionnaire to gauge general concerns regarding the likelihood of VTE in people under the age of 40, the likelihood of VTE prevention in the future, the likelihood of VTE progression to PE and the likelihood that VTE will one day result in death. A set of questions were included in the questionnaire about symptoms, indications, risk factors and the best treatments for PE and VTE, to measure the extent to which Tabuk residents were informed about these topics. A set of questions was included in the questionnaire to find out the prevalence of venous thromboembolism in the Tabuk region.

Statistical analyses

Version 22 of the IBM SPSS statistical program was used for all descriptive and statistical analyses (SPSS, Inc. Chicago, IL). Each right response was given one point for the awareness and knowledge questions and separate scores were computed for each

question. If a participant's score was less than 7 out of 13, they are deemed to have a poor awareness. And they are deemed to have a high level of awareness if they receive 7 or more points. Distributions of frequency and percentage were used to describe each variable. The data were statistically analyzed using two-tailed tests. A 0.05 p-value was deemed statistically significant. All data are presented in tables, graphs and pie charts.

3. RESULTS

506 people from the Saudi Arabian region of Tabuk responded to the survey. January 2, 2023 to February 2, 2023. When investigating the socio-demographic data of the participants, it was noted that the majority of the study participants were unmarried, aged between 18 and 39, with a bachelor's degree, some of whom were employees and some of whom were students (Table 1). We looked at how each participant responded to inquiries about venous and pulmonary thrombosis awareness and knowledge. Next, based on their responses, the participants' level of awareness and knowledge was assessed. It was then investigated whether there was an association between the participants' level of awareness and their socio-demographic characteristics. Whereas the outcomes demonstrated that there was no significant association between each participant's level of awareness and (age, gender, marital status, education level and occupation). More specifically, the conclusions are as follows:

Table 1 Selected characteristics of the sample and the association with the awareness and knowledge level regarding venous thrombosis and pulmonary thrombosis in Tabuk region, Saudi Arabia

The Socio-demographic characteristics				*Awareness and Knowledge Level*				
Characteristics		*N=506*	*%*	*Good*		*Poor*		*P*
Age	18-39 years old	421	(83.2)	254	(50.2)	167	(33)	.479
	40-65 years old	79	(15.6)	46	(9.1)	33	(6.5)	
	More than 65 years old	6	(1.2)	5	(1)	1	(.2)	
Gender	Male	175	(34.6)	106	(20.9)	69	(13.6)	.922
	Female	331	(65.4)	199	(39.3)	132	(26.1)	
Marital status	Married	134	(26.5)	78	(15.4)	56	(11.1)	.196
	Unmarried	355	(70.2)	220	(43.5)	135	(26.7)	
	Divorced/Windowed	17	(3.4)	7	(1.4)	10	(2)	
Education	Primary education	5	(1.0)	5	(1)	0	(0)	.273
	Middle education	11	(2.2)	4	(.8)	7	(1.4)	
	Secondary education	93	(18.4)	54	(10.7)	39	(7.7)	
	College degree	373	(73.7)	227	(44.9)	146	(28.9)	
	Postgraduate degree	22	(4.3)	14	(2.8)	8	(1.6)	
	Uneducated	2	(.4)	1	(.2)	1	(.2)	
Occupation	Employed	127	(25.1)	82	(16.2)	45	(8.9)	.703
	Unemployed	47	(9.3)	26	(5.1)	21	(4.2)	
	Student	294	(58.1)	173	(34.2)	121	(23.9)	
	Retired	14	(2.8)	8	(1.6)	6	(1.2)	
	Housewife	24	(4.7)	16	(3.2)	8	(1.6)	
Medical history of (VTE)	The participants themselves	13	(.8)	10	(2)	3	(0.6)	.000
	A family member	52	(3.1)	37	(7.3)	15	(3)	*

*: Significant.
All associations were examined with $\chi 2$ analyses

In accordance with the distribution of the participants' level of awareness as indicated by their responses to the questionnaire, (305 or 60.3%) of the participants had a good level of awareness, making up more than half of the total, while (201 or 39.7%) of the participants had a poor level of awareness (Figure 1).

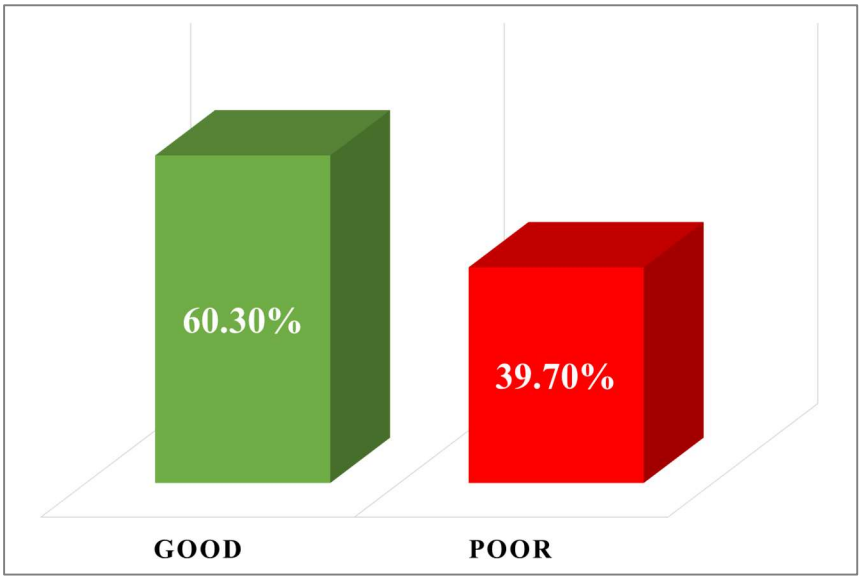
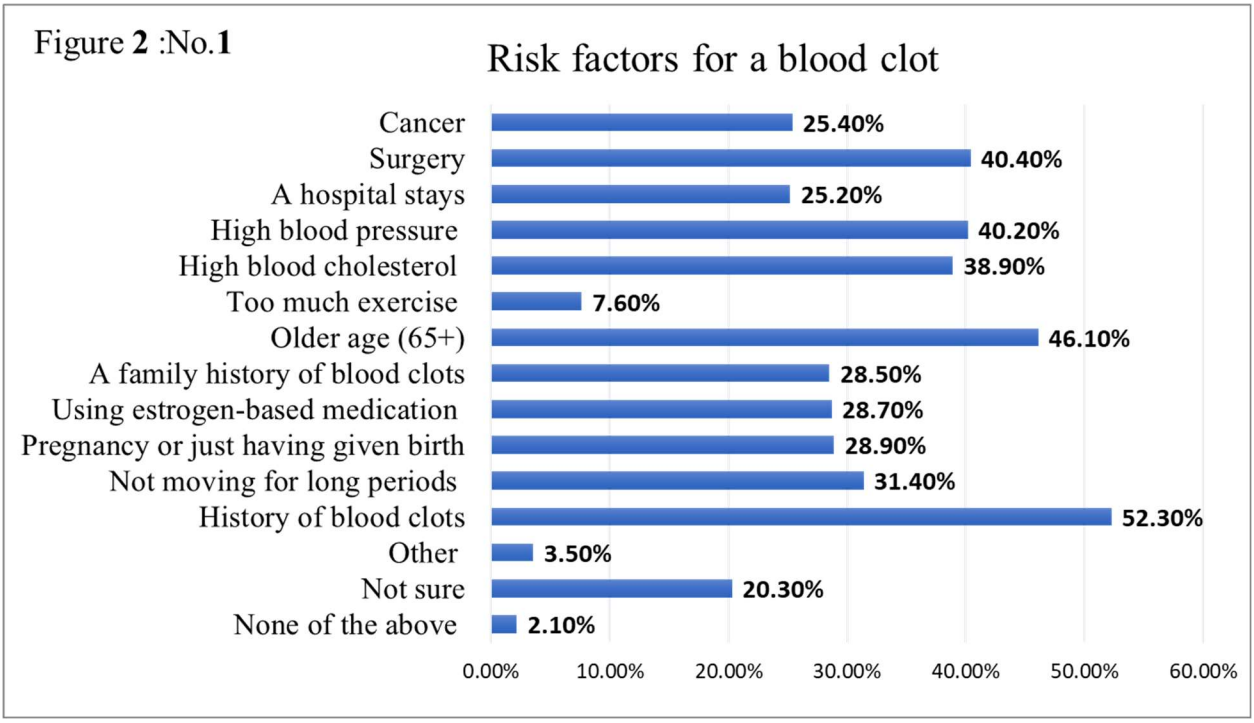


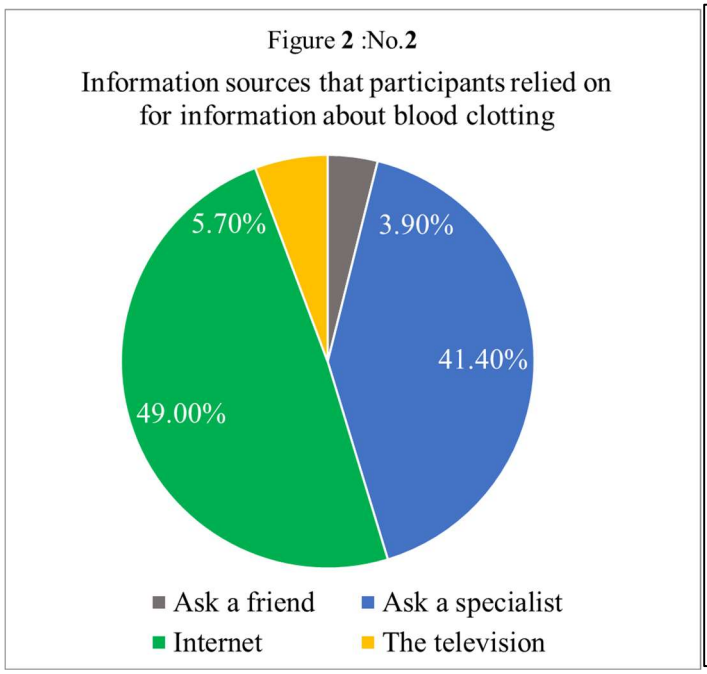
Figure 1 Level of awareness and knowledge of participants about venous thrombosis (VTE) and pulmonary embolism (PE)

Table 2 Participants reported concern about each of these medical conditions on a scale of 1 to 5, with 1 indicating they were not at all concerned and 5 indicating they were very concerned about these medical conditions as hazards to their health

Worries	*Likert scale*					*N*	*Mean*
	1.00	2.00	3.00	4.00	5.00		
prostate cancer (males)	82 (16.2)	32 (6.3)	32 (6.3)	20 (4)	9 (1.8)	175	2.0971
breast cancer (Females)	89 (17.6)	53 (10.5)	108 (21.3)	35 (6.9)	46 (9.1)	331	2.69
Heart attack	145 (28.7)	83 (16.4)	130 (25.7)	75 (14.8)	73 (14.4)	506	2.6996
Thrombosis (blood clot)	175 (34.6)	104 (20.6)	114 (22.5)	57 (11.3)	56 (11.1)	506	2.4368
Deep vein thrombosis	197 (38.9)	103 (20.4)	94 (18.6)	60 (11.9)	52 (10.3)	506	2.3419
Stroke	184 (36.4)	82 (16.2)	106 (20.9	50 (9.9)	84 (16.6)	506	2.5415
AIDS	314 (62.1)	53 (10.5)	55 (10.9)	29 (5.7)	55 (10.9)	506	1.9289
pulmonary embolism	226 (44.7)	94 (18.6)	82 (16.2)	46 (9.1)	58 (11.5)	506	2.2411
High blood pressure	127 (25.1)	89 (17.6)	107 (21.2)	99 (19.6)	84 (16.6)	506	2.8498

The questions that were used to measure participants' awareness and knowledge of venous thrombosis and pulmonary thrombosis are listed (Table 3).





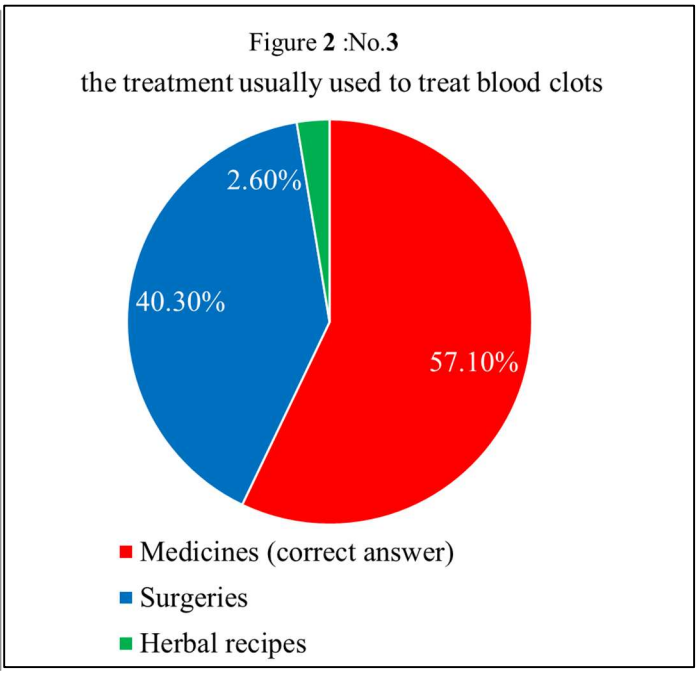


Figure 2 Participants' responses toward venous thrombosis and pulmonary embolism

Table 3 Participants' awareness and knowledge of venous thrombosis and pulmonary thrombosis

Awareness and Knowledge about symptoms, signs and risk factors of VTE		N	%
Do you know what a blood clot in the leg (deep vein thrombosis) (VTE)?	Yes	258	51.0
	No	248	49.0
Do you know what a deep vein thrombosis (leg clot) feels like?	Yes	175	34.6
	No	331	65.4
Which of the following phrases best describes the underlying cause of a deep vein thrombosis?	A blood clot in a vein (correct answer)	256	50.6
	A tumor in a vein	16	3.2
	Lack of oxygen in a vein	80	15.8
	None of the above	15	3.0
	Not sure	139	27.5

Please indicate the signs or symptoms of a blood clot in the leg (VTE)?	A Swelling of the leg (correct answer)	217	52.9
	Itching of the leg	93	18.2
	Pain or tenderness in the leg (correct answer)	257	50.2
	Noticeable changes in the skin color of the leg (correct answer)	226	44.1
	The leg feels warm to the touch (correct answer)	145	28.3
	Leg paralysis	89	17.4
	None of the above	9	1.8
	Not sure	131	25.6
Anyone under the age of 40 should be concerned about the possibility (VTE)?	Yes	209	41.3
	No (correct answer)	297	58.7
Most blood clots cannot be prevented?	Yes	231	45.7
	No (correct answer)	275	54.3
It is not likely that a blood clot in the leg left untreated can travel to the lungs?	Yes (correct answer)	426	84.2
	No	80	15.8
Is a blood clot considering an emergency?	Yes (correct answer)	439	86.8
	No	67	13.2
Blood clots can cause death?	Yes (correct answer)	435	86.0
	No	71	14.0
Knowledge and awareness about symptoms, signs and risk factors of PE		N	%
Do you know what a blood clot in the lung (pulmonary embolism) (PE)?	Yes	243	48.0
	No	263	52.0
Do you know what a pulmonary embolism (PE) feels like?	Yes	175	34.6
	No	331	65.4
Please indicate the signs or symptoms of a blood clot in the lung (pulmonary embolism) (PE)?	Shortness of breath (correct answer)	356	69.5
	Slow, shallow breathing	232	45.3
	Chest pain (correct answer)	320	62.5
	Rapid heart rate (correct answer)	214	41.8
	Lightheadedness or passing out (correct answer)	123	24
	Pain radiating down your arm	114	22.3
	Cough up blood (correct answer)	143	27.9
	Frequent headaches	56	10.9
	None of the above	60	11.7

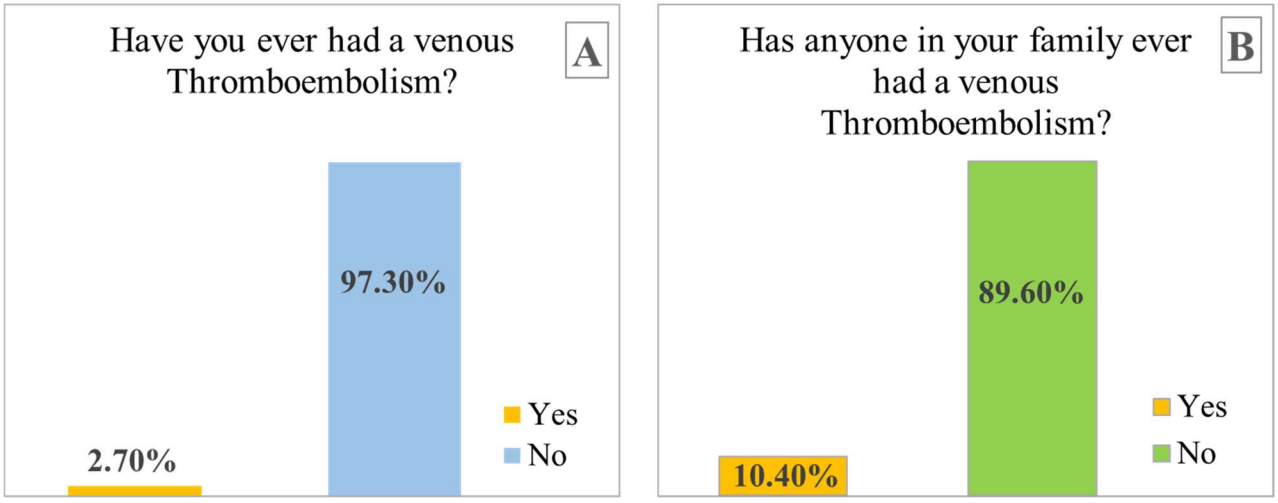


Figure 3 Graph showing the past medical history of the participant and their family: A) Represents the participants' responses to themselves, B) Represents their responses about their families. Participants' responses show a lower prevalence of venous thromboembolism in the Tabuk region, Saudi Arabia

4. DISCUSSION

The study set out to evaluate the Tabuk community's attitudes, knowledge and level of awareness concerning venous thrombosis, Due to its critical importance. 506 people from the Tabuk region's general population were polled for their opinions and they ranged in age from 18 years and older for adult males and females. The demographic characteristics in our sample, particularly the age distribution, were comparable to a cross-sectional study conducted on the general perception of venous thromboembolism in Saudi Arabia in 2020 (Ahmed et al., 2021), but they were different from those of Elkhadir et al., (2018), where the average age of respondents in their study was 56 years and Almodaimegh et al., (2017), where the age range of respondents was between 51 and 70 years. Both studies were conducted on patients and not the general public.

Nearly half of the participants exhibited good awareness and knowledge of PE and DVT, but socio-demographic variables had no effect on the participants' awareness levels, according to the study. The results of a study conducted in King Abdulaziz Medical City, Riyadh, Saudi Arabia, which found that people with a personal or family history of VTE were significantly more aware of DVT or pulmonary embolism (Elkhadir et al., 2018), support the finding that there is a significant association between participants' awareness level and their medical history or family history. In contrast, a prior global survey revealed that little is known about thrombotic diseases in general and VTE in particular among the general public (Wendelboe et al., 2015). As it is anticipated that a potential increase in the degree of awareness may coincide with the passing of time, it is probable that the difference between the level of awareness and knowledge regarding PE and DVT in this survey and the last worldwide survey can be explained by the time difference. Similar to how our findings differed from those of a prior survey conducted in Asir Al-Bshabshe et al., (2021), found that Asir residents were significantly less knowledgeable of DVT's symptoms and risk factors than we were. A global survey on public understanding of VTE's causes, symptoms, indications and prevention were also carried out in seven countries in 2014. It was found that there is little knowledge among the general public concerning thrombosis in general and VTE in particular. The United Kingdom had the highest awareness of DVT (86%) compared to Japan (13%) and the Netherlands (20%), which had the lowest awareness rates (Wendelboe et al., 2015).

Consistent with previous studies (Elkhadir et al., 2018; Al-Bshabshe et al., 2021; Xu et al., 2019), participants' anxiety about the illnesses mentioned above was significantly high. Along with other inquiries gauging the public's concerns about venous thrombosis in people under the age of 40, the possibility of preventing venous thrombosis, the possibility of venous thrombosis developing into pulmonary thrombosis and the idea that venous thrombosis constitutes a medical emergency, moreover the idea that blood clots have potential to be fatal. Similarly, half of the participants in our study gained significant knowledge about the most effective technique to treat VTE (medications). These promising results may be a reflection of how simple and quick it is to access knowledge through the Internet and television, as well as how simple it is to communicate with professionals, as evidenced by our results. Our findings revealed that 41.4% of participants got their information about venous thrombosis from doctors and specialists and 50% of participants got it from the Internet. This finding may point to the significance and role of social media and healthcare providers in educating the general public of all ages and genders. This certainly explains the significant correlation between the participants' medical history and their level of awareness and knowledge of DVT and PE, highlighting the fact that most people learn about health problems from doctors and health professionals, typically when they or their family members or friends suffer from a particular condition (0.000*).

In terms of the prevalence of venous thrombosis in the Tabuk community, 2.7% of the people reported having the condition, while 97.3% reported having it not. 10.4% of people reported having a family medical history when asked about it, compared to 89.6% who said they had none. This conflict with the finding of a Jeddah research indicating Saudi Arabia had a significantly higher infection rate than the rest of the world, at 15.7% (Wendelboe et al., 2015).

The prevalence of venous and pulmonary thrombosis was combined in this study and it also examined the study population's degree of knowledge as well as demographic characteristics that may have an impact on it. This study increased the required sample size by 30% in order to make the findings more generalizable, however, have significant drawbacks. First, even though the study's target population ranged in age from 18 and up as well as educational attainment, reaching those who would represent older ages, lesser levels of education and people who do not utilize social media sites was insufficient. The depth of awareness may therefore be overestimated by our findings, it was noted in the results of our study a good level of awareness and knowledge among the participants, besides that the role of both the Internet and healthcare providers in reaching this level of awareness was praised. This article emphasizes the significance of the need for continuity of education and awareness in order to maintain or raise the level of awareness.

5. CONCLUSION

The majority of the study population had a good degree of awareness, despite some participants having unfavorable level of awareness. Participants also highlighted the importance of the Internet and healthcare professionals in their quest for knowledge and education. This necessitates bringing to light the ongoing activation of educational programs and awareness campaigns for various age groups via the Internet and mass media alongside one another in health centers and public spaces.

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Author Contributions

Dr Hyder Osman Mirghani designed the main idea of the research, revised and proof edited the paper. Abdulaziz Abdulkhaliq A Alwakeel and Sarah Ali H Abu Sabir contributed in proposal writing and ethical approval obtaining. Sarah Majed A Alquayr, Ibrahim Ahmed J Albalawi and Omniyyah Mohammed S Alatawi collected data of participants after explaining the idea of research to contributors. Raghad Faraih A Albalawi and Sultan Abdulrahman S Alamrani helped in data analysis. Muruj Mohammed Hassan Bahar with all authors helped in manuscript writing and revision. All authors helped each other during conducting the research paper.

Ethical approval

The study was approved by the Medical Ethics Committee of University of Tabuk (Ethical approval code: UT-238-82-2023).

Informed consent

Written & Oral informed consent was obtained from all individual participants included in the study. Additional informed consent was obtained from all individual participants for whom identifying information is included in this manuscript.

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Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

REFERENCES AND NOTES

1. Ageno W, Becattini C, Brighton T, Selby R, Kamphuisen PW. Cardiovascular risk factors and venous thromboembolism: A meta-analysis. Circulation 2008; 117 (1):93-102.
2. Ahmed H, Alzahrani RM, Alshardi IA, Aboulkhair AA, Alzahrani AB. Public perception to the knowledge of venous thromboembolism among Saudi Arabia 2020: A cross-sectional study. Med Sci 2021; 25:710-5.
3. Al-Bshabshe A, Mousa WF, Alshehri MS, Alshahrani MMS, Alamri OM, Alshehri FS, Al-Flan MA, Alshehri AS. Awareness, knowledge and attitude toward venous thromboembolism among Aseer Population, Saudi Arabia. J Family Med Prim Care 2021; 10(6):2411.
4. Almodaimegh H, Alfehaid L, Alsuhebany N, Bustami R, Alharbi S, Alkatheri A, Albekairy A. Awareness of venous thromboembolism and thromboprophylaxis among hospitalized patients: A cross-sectional study. Thromb J 2017; 15(1):1–8.
5. Anand SS, Wells PS, Hunt D, Brill-Edwards P, Cook D, Ginsberg JS. Does this patient have deep vein thrombosis? JAMA 1998; 279(14):1094-9. doi: 10.1001/jama.279.14.1094
6. Anderson FA Jr, Spencer FA. Risk factors for venous thromboembolism. Circulation 2003; 107(23 suppl 1):I9-16. doi: 10.1161/01.CIR.0000078469.07362.E6
7. Aranda-Lara P, Martínez-Esteban MD, Muñoz JJ, Hernández-Marrero D. Renal sympathetic denervation: A new treatment strategy in the management of refractory arterial hypertension. Nefrología 2012; 32(5):555-7. doi: 10.3265/Nefrologia.pre2012.Jul.11572
8. Awolesi D, Naidoo M, Cassimjee MH. The profile and frequency of known risk factors or comorbidities for deep

vein thrombosis in an urban district hospital in KwaZulu-Natal. South Afr J HIV Med 2016; 17(1):425.
9. Brenner B, Arya R, Beyer-Westendorf J, Douketis J, Hull R, Elalamy I, Imberti D, Zhai Z. Evaluation of unmet clinical needs in prophylaxis and treatment of venous thromboembolism in at-risk patient groups: Pregnancy, elderly and obese patients. Thromb J 2019; 17(1):1-5. doi: 10.1186/s12959-019-0214-8
10. Dong T, Cheng YW, Yang F, Sun PW, Zhu CJ, Zhu L, Zhang GX. Chronic stress facilitates the development of deep venous thrombosis. Oxid Med Cell Longev 2015; 2015:384535. doi: 10.1155/2015/384535
11. Elkhadir A, Wazzan M, Abduljabbar A, Badwi NM, Hendi FM, Al-Shomrani KM, Almalawi AA. Research Article Prevalence of Deep Venous Thrombosis (DVT) in Jeddah. Int J Med Sci Clin Invent 2018; 5(10):4089-4091.
12. Geerts WH, Bergqvist D, Pineo GF, Heit JA, Samama CM, Lassen MR, Colwell CW. Prevention of venous thromboembolism: American College of Chest Physicians evidence-based clinical practice guidelines. Chest 2008; 133 (6):381S-453S.
13. Goldhaber SZ. Risk factors for venous thromboembolism. J Am Coll Cardiol 2010; 56(1):1-7.
14. Huang L, Li J, Jiang Y. Association between hypertension and deep vein thrombosis after orthopedic surgery: A meta-analysis. Eur J Med Res 2016; 21(1):1-7.
15. Kahn SR, Ginsberg JS. Relationship between deep venous thrombosis and the post thrombotic syndrome. Arch Intern Med 2004; 164(1):17-26.
16. Okuhara A, Navarro TP, Procópio RJ, Bernardes RD, Oliveira LD, Nishiyama MP. Incidence of deep vein thrombosis and quality of venous thromboembolism prophylaxis. Rev Col Bras Cir 2014; 41:02-6.
17. Spyropoulos AC, Mc-Ginn T, Khorana AA. The use of weighted and scored risk assessment models for venous thromboembolism. Thromb Haemost 2012; 108(12):1072-6.
18. Wendelboe AM, Mc-Cumber M, Hylek EM, Buller H, Weitz JI, Raskob G; ISTH Steering Committee for World Thrombosis Day. Global public awareness of venous thromboembolism. J Thromb Haemost 2015; 13(8):1365–71.
19. Xu Y, Wang W, Zhao J, Wang J, Zhao T. Knowledge, attitude and practice of healthcare professionals toward clinically applying graduated compression stockings: Results of a Chinese web-based survey. J Thromb Thrombolysis 2019; 47(1):102–8.