Women's Awareness of Risk of DVT During Pregnancy and Puerperium: A Cross Sectional Study in Jeddah

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Abstract

Background: Venous thromboembolism (VTE) is considered a significant leading cause of mortality and morbidity during pregnancy and puerperium. Therefore, women should be aware of their own risks of developing VTE.

Objectives: To explore the level of awareness among women about the risk of DVT during pregnancy and puerperium.

Methods: This was a cross-sectional study using a self-administered web-based survey of 223 Saudi women aged 22 to 65 years from Jeddah. Participants were selected using a convenient sampling technique from August to September 2019. The questionnaire included demographic, socioeconomic, obstetrics and gynecological data as well as 14 disease-specific questions. A total score was calculated.

Results: Women were generally aware of deep venous thrombosis definition (85%), symptoms (96%), diagnosis (68%), prevention (84.2%), and treatment (74.3%). However, 47.7% of them were unaware of possible pulmonary complications. Many did not recognize gender (31.1%), obesity (15.3%), pregnancy (35.6%), and labour (41%) as risk factors. Their median awareness score was 10 (66.7%) with a significant positive correlation with their socioeconomic level (R=0.184, P=0.006). (21.6%) of the participants were unaware of VTE risk (scored <60%) and were found to have a significantly lower education (p=0.002) and socioeconomic level 0.008 compared to those with better awareness.

Conclusion: Adult Saudi women from Jeddah are aware of VTE during pregnancy and puerperium but with serious defects in their knowledge concerning the risk factors and the possible pulmonary complications. The awareness is positively related to their socioeconomic level. A well constructed epidemiological studies are recommended to further address the topic and help in planning better education for Saudi women.

Key words: Saudi, awareness, deep venous thrombosis, DVT, Venous thromboembolism, VTE, pregnancy, puerperium.

Introduction

Venous thromboembolism (VTE) is considered a significant leading cause of mortality and morbidity during pregnancy and puerperium[1]. Naturally, pregnancy is associated with modifications in two systems, coagulation, and fibrinolysis. These changes include an increase in a number of clotting factors, a decrease in protein S levels, and a significant fall in the activity of activated protein C [2]. Estimation was done which suggested that VTE holds a 10-fold increase in the risk of VTE in pregnant women (due to their hypercoagulable status) compared with non-pregnant women of the same age [3]. Deep venous thrombosis (DVT) comprises (85%) of all pregnancy-related symptomatic cases, with approximately 66% of all DVT cases that took place in the prepartum period while half of these cases occurred before the third trimester [4]. Interestingly, Pulmonary Embolism (PE) is moderately less eventful during pregnancy. However, it may occur more frequently than DVT in puerperium [5]. Women are at high risk due to their previous history of VTE, Thrombophilia, Antiphospholipid Syndrome, immobilization, recurrent miscarriages, and previous surgical history [4,6]. Additionally, more risk factors contributed to increasing the risk of VTE which included: morbid obesity, the use of external estrogen, and multi-parity[7,8]. For Saudi women, the VTE risk is considered high in the view of the prevalent high parity, obesity, advanced maternal age, repeated cesarean section and consanguinity marriages with the risk of inherited thrombophilia. Their incidence of VTE was reported to be 1.25 per 1000 deliveries[9]with a mortality rate of 0.025 cases per 1,000 deliveries. One Saudi study reported an incidence of 9% post-delivery[10]. Despite the importance of VTE among pregnant women, there is a relative global lack of public awareness[11,12,13]. Most published previous work in Saudi Arabia stressed on physician adherence to VTE guidelines of screening and prophylaxis in obstetric cases[9,14] helped by the Saudi Center for Evidence-Based Healthcare (EBHC) Department with few reports addressed the women awareness [15] despite the known high prevalence of pregnancy rate. Therefore, the objective of this study was to explore the level of awareness among women about the risk of VTE during pregnancy and puerperium.

Methodology

This was a cross-sectional study using a self-administered one-time web-based survey of Saudi women. This survey was conducted from August to September 2019. The study was approved by the Ethical Committee at Ibn Sina National College for Medical Studies in Jeddah. The study included Saudi adult females living in Jeddah with any marital status who have access to social media. Participants were selected using a convenient sample with consecutive techniques. Exclusion criteria included healthcare workers and women with incomplete data, previous VTE conditions, bleeding tendency or chronic autoimmune diseases, or were on oral anticoagulant therapy for any reason. The questionnaire was constructed in Arabic by an expert. A pilot study of 50 cases was performed to test the reliability of the questionnaire.

The participants were asked about their consent to participate at the start of the questionnaire and were reassured about the confidentiality of their data. The questionnaire included demographic, socioeconomic, obstetrics and gynecology data as well as 14 questions about their knowledge of the disease including definition, symptomatology, diagnosis, treatment, risk factors, complications and prevention. A separate score for socioeconomic level (SEL) was calculated including the education, monthly income, occupation, and type of residence (rented or owned houses) with a total of 14 points scale. Individuals scored 5 or less, from 6-10 and more than 10 were considered low, intermediate, and high SEL respectively.

For the VTE awareness questions, a wrong answer scored zero and right answer scored 1 and a total score out of 15 was calculated for each participant. We considered awareness if 60% of responses were right. Therefore, the participants were divided into 2 groups using the total score (<=9 unawareness and >9 awareness groups).

Statistical analysis: The Statistical Package for Social Sciences version 21 (SPSS Inc., Chicago, IL, USA) was used for data analysis and construction of figures. Descriptive statistics were carried out for all variables using median or mean according to the studies variable. Comparison between the 2 groups was performed using independent Student-Test. Correlation was tested using Pearson correlation coefficient. For all statistics, a two-sided p-value <0.05 was considered statistically significant.

Results

This study included 223 Saudi women from Jeddah, aged 22 to 65(median age 31) years, 72 of them (32.4%) were employed. Their median SEL score was 10 ranging from 6 to 14 which corresponded to the intermediate level. Some had chronic illnesses especially diabetes 13 (5.9%) and hypertension 14 (6.3%) and 38 (17.1%) were on oral contraceptives [Table 1].

Concerning their Obstetric and Gynecological history, 55 (24.8%) were single, 24 (10.8%) had PCOD, 157 (70.4%) had history of pregnancy while 11 of them had twin pregnancy (7%), 69 had an abortion (30.9%) and 99 delivered vaginally (44.6%) [Table 2].

Women were aware of DVT definition (85%), symptoms (96%), methods of diagnosis: blood test (15.8%), x-ray (16.2%) or both (68%) and treatment (74.3%). However, the frequency of wrong answers in their DVT awareness was in the definition (14.9%), possible pulmonary complications (52.3%) and (14%) were unaware of any DVT complications [Table 3].

Women were aware of the methods of prevention of DVT especially the exercise (58.1%) and walking (26.1%). However, some did not recognize gender (31.1%), obesity (15.3%), pregnancy (35.6%), or labor (41%) as risk factors for DVT. On the other hand, they considered factors such as diabetes (52.7%), asthma (14%), and TB (27.5%) as risk factors [Table 4].

The median total score was 10 ranging from 5 to 14 and correspond to accepted DVT awareness among participants. The awareness score was significantly correlated with the socioeconomic level of the participants [Figure 1]. The awareness group included 174 (78.4%) participants and the other group of unawareness included 48 (21.6%) participants. The group of awareness was significantly younger (p=0.049), with higher education (p=0.002) and socioeconomic level (p=0.008), but a lower number of births (p=0.035). They could better recognize the main VTE risk factors (p=0.000), the emergency (p=0.015) and the pulmonary complications of VTE (p=0.030) compared to the unawareness group [Table 5].

Table 1: Demographic characteristics of the participants (n=223) Saudis from Jeddah

Variables		N	%
Age: median(min-max): years		31(22-65)	
Occupation status	Housewife	83	37.4
	Employed	72	32.4
	Student	48	21.6
	Retired	19	8.6
Education	Elementary school	2	.9
	Middle school	4	1.8
	High school	45	20.3
	College graduates	171	77.0
Monthly income	<1000SR	23	10.4
	1000-5000SR	55	24.8
	>5000-10000SR	105	47.3
	>10000SR	39	17.6
Type of residence	Rented	79	35.6
	Owned	143	64.4
Socioeconomic level: median (min-max)		10 (6-14)	
Number of family members: median(min-max)		5(1-12)	
Socioeconomic level: median (min-max)		8 (5-10)	
Chronic illness	Diabetes	13	5.9
	Hypertension	14	6.3
Medication	OCP	38	17.1
	Diuretic	2	.9
	Others	8	

Table 2: Obstetric and gynecological characteristics of the participants (n=223)

		n	%
Age of menarche: mean ±SD		12.8±1.52	
Diagnosed with PCOD	Yes	24	10.8
Marital status	Single	55	24.8
	Married	159	71.6
	Divorced	8	3.6
Pregnancy		157	70.4
History of twin pregnancy		11	7.0
History of Abortion		69	30.9
Number of births		88	39.4
Type of childbirth delivery	SVD	99	44.6
	CS	26	11.7
	Both	28	12.6
Type of feeding	Breast	71	32.0
	Artificial	27	12.2
	Both	55	25.0

Table 3: Women's awareness about VTE and its complications

		N	%
Definition	Blood clot formation	189	85.1
	Cannot form a clot	33	14.9
Symptoms	Leg swelling	152	68.5
	Leg redness	17	7.7
	Leg pain	44	19.8
	Skin abrasion	7	3.2
Diagnosis	Bloodtest	35	15.8
	X-ray	36	16.2
	Both	151	68.0
Treatment	Not an emergency	53	23.9
	Go to ER	165	74.3
	Take pain killers	4	1.8
Complications	Lung complications	116	52.3
	Limping	75	33.8
	No complications	31	14.0

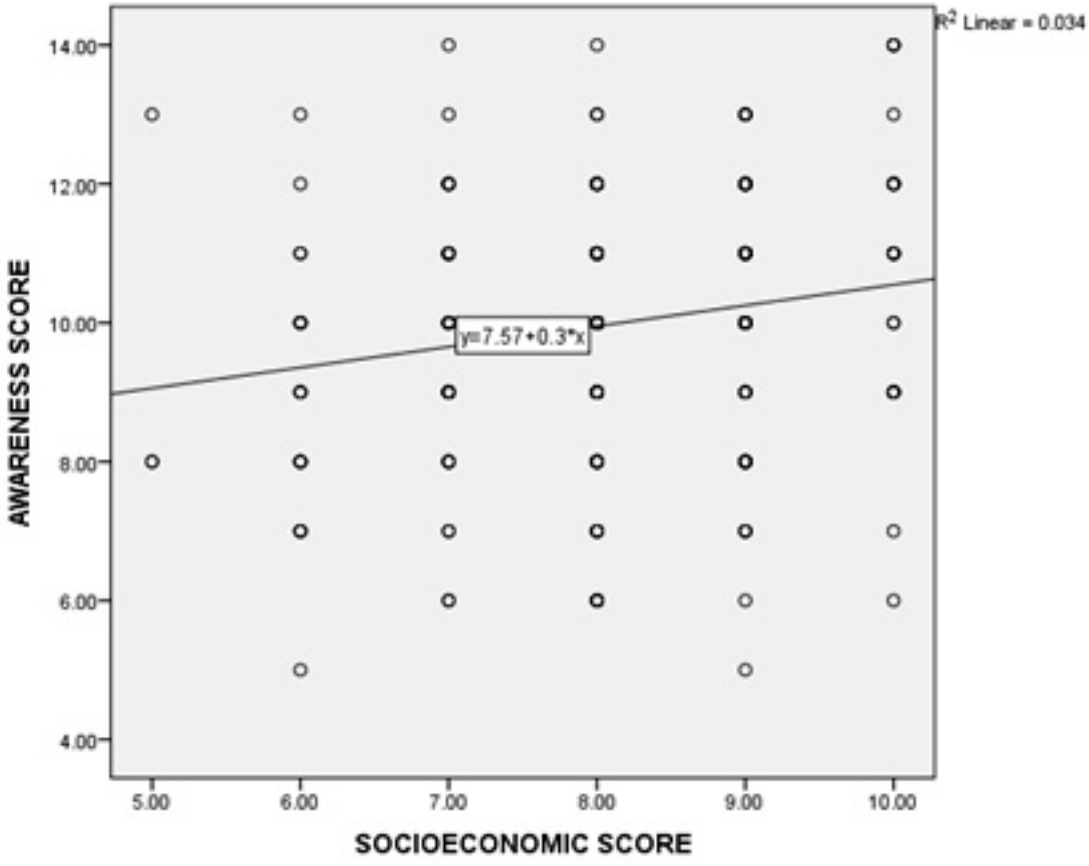
Table 4: Women's awareness of the risk factors and prevention of DVT

			N	%
Risk factors	**Females in the childbearing period**	Yes	153	68.9
		No	69	31.1
	Pregnancy	Yes	142	64.0
		No	79	35.6
	Oral contraceptive pills	Yes	162	73.0
		No	60	27.0
	Puerperium	Yes	130	58.6
		No	91	41.0
	Obesity	Yes	188	84.7
		No	34	15.3
Wrong risk factors	**TB**	Yes	61	27.5
	Diabetes	Yes	117	52.7
	Asthma	Yes	31	14.0
Prevention	**Exercise/walking**		129	84.2
	Drinking water		22	9.9
	Painkillers		3	1.4
	Stocking		10	4.5

Table 5: Comparison between both groups of awareness

		Poor awareness group	Awareness Group	P
Age		37.04±12.88	33.19±11.68	0.049
Socioeconomic level		10 (6-14)	10.5 (6-14)	0.008
Number of births		2.5 (0-11)	2 (0-8)	0.035
College graduate		56.3%	82.8%	0.002
Definition of VTE		75.0%	87.9%	0.038
Identification of VTE risk factors	Females	35.4%	78.2%	0.000
	Pregnancy	22.9%	75.5%	0.000
	Puerperium	18.8%	69.5%	0.000
	Contraceptive pills	47.9%	79.9%	0.000
	Obesity	56.3%	92.5%	0.000
Identifications of complications	VTE is an emergency	58.3%	78.7%	0.015
	Pulmonary complications	37.5%	56.9%	0.030

Figure 1: Correlation between socioeconomic level and awareness (r=0.184, p=0.006)



Discussion

We found an overall good awareness among adult Saudi women living in Jeddah about VTE definition (85%), symptoms (96%), diagnosis (68%), and preventability (84.2%). However, there were serious defects in their knowledge mainly in the consideration of the VTE as a non-emergency situation (23.9%), with no complication (14%), with only (52.3%) of them who considered the possible pulmonary complications. Not all women considered oral contraceptive pills (73%) or the puerperium period (53.6%) as a risk factor. Moreover, they considered other unrelated risk factors like asthma, diabetes, and tuberculosis as important risk factors. Women with poor awareness constituted less than a quarter of the participants (21.6%) and were characterized by being older (p=0.049), with lower socioeconomic levels (p=0.008); mainly education (p=0.002) and more parity (p=0.035) compared to women with good awareness.

In our study, the overall good level of awareness conflicts with the explored serious defects and could be reflected in how deep women's education should be during their childbearing period.

Surprisingly, a substantial number of our participating women had previous exposure to pregnancy (70.4%), labor (39.4%) and abortion (30.9%), so at some time they were counseled and educated about their risk and prevention of VTE.

The overall global public awareness of VTE is reported to be lower than expected despite the serious condition with known morbidity and mortality [11]. Similar to our results, the global poor awareness lay mainly in identifying the major risk factors for VTE including estrogen-containing drugs and in lack of concern of the emergency situation [11]. Our results were much better than another Saudi study [15] which explored the knowledge of 340 pregnant and postpartum patients and found poor knowledge of almost all aspects of the disease, especially preventable factors. Similar to our findings, the same study reported on the positive effect of educational level on awareness.

There are few published data about VTE awareness among Saudi women. Therefore, large epidemiological studies are recommended to further address this important highly preventable topic in other areas in the kingdom especially those areas with advanced maternal age, high parity, low education, and socioeconomic level. Pending the completion of data, there is a tremendous need to improve the health education of Saudi women about childbearing period associated VTE probably through constructing public educational campaigns aiming to improve awareness in order to reduce the burden from this largely preventable disorder. Meanwhile, physicians should pay great attention to educate their pregnant patients about their risk of VTE.

Conclusion

Saudi women from Jeddah aged 22 to 65 demonstrated an acceptable level of awareness about VTE during pregnancy and puerperium with a positive correlation to their socioeconomic level. However, there were serious knowledge deficits and crucial areas in the lack of awareness. Therefore, this study raises the importance to address the topic of VTE among Saudi women with more depth stressing on weak points especially the emergency, the great risk of OCP, puerperium period and lung complications.

More epidemiological data are needed on a national level to support and complete our conclusion. Meanwhile, there should be a national plan for improving the education program for pregnant as well as non-pregnant women. We recommend launching a national VTE Day campaign in Jeddah focusing on pregnancy and puerperium and emphasizing to the public its major risk factors, emergency nature, and preventability. Physicians also should pay more effort to educate their patients during the childbearing period to ensure the delivery of safe and high-quality patient care.

The main limitation of this study was the potentially leading nature of the closed-ended questions of the survey. The second limitation was the non-randomized online sampling technique of participants that could limit the generalization of our results to all Saudi women. Moreover, women with online access are expected to have a higher level of education that could simply explain the overall satisfaction level of their awareness in this study.

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References

1. Chang J, Elam-Evans LD, Berg CJ, et al. Pregnancy-related mortality surveillance--UnitedStates,1991-1999. MMWR Surveill. Summ. 2003;52(2):1-8. [PubMed]
2. RobertsonL, WuO, Langhorne P, et al. Thrombophilia in pregnancy: a systematic review. British Journal of Haematology.2006;132(2):171–196. [PubMed]
3. Jacobsen AF, Skjeldestad FE, Sandset PM. Incidence and risk patterns of venous thromboembolism in pregnancy and puerperium—a register-based case-control study. American Journal of Obstetrics and Gynecology 2008;198:233.e1-233.e7. https://www.ajog.org/article/S0002-9378(07)01026-5/fulltext
4. Ray J.G., Chan W.S. Deep vein thrombosis during pregnancy and the puerperium: a meta-analysis of the period of risk and the leg of presentation. Obstet. Gynecol. Surv. 1999;54(4):265–271 [PubMed]

5. Gherman R.B., Goodwin T.M., Leung B., et al. Incidence, clinical characteristics, and timing of objectively diagnosed venous thromboembolism during pregnancy. Obstet. Gynecol. 1999;94(5Pt1):730–734 [PubMed]
6. Ray J.G., Langman L.J., Vermeulen M.J., Evrovski J., Yeo E.L., Cole D.E. Genetics University of Toronto Thrombophilia Study in Women (GUTTSI): genetic and other risk factors for venous thromboembolism in women. Curr. Control. Trials Cardiovasc. Med. 2001;2(3):141–149.[PubMed]
7. Eichinger S, Hron G, Bialonczyk C, et al. Overweight, obesity, and the risk of recurrent venous thromboembolism. Arch Intern Med2008;168(15):1678-83. [PubMed]
8. Cushman M., Kuller L.H., Prentice R., et al. Estrogen plus progestin and risk of venous thrombosis. JAMA. 2004;292(13):1573–1580. [PubMed]
9. Arab H, Abduljabbar H, Sabr Y, Bondogji N, Mosali F, Alhazmi J, Bajouh O, Nasrat H and Wahbah E. Venous thrombo prophylaxis in Pregnancy and Puerperium: the Saudi algorithm. Journal of Gynecolgy and Women's Health, 2 (3) (2017), p. 555590). https://pdfs.semanticscholar.org/4c27/d0c858372f1c734c70cb9a66937f07906fc8.pdf
10. Ahmed M.M., Akbar D.H., Al sheik A. Deep venous thrombosis at King Abdul Aziz University Hospital. Saudi Med J. 2000;21(8):763 [GoogleScholar]
11. Wendelboe AM, McCumber M, Hylek EM, Buller H, Weitz JI, Raskob G, ISTH Steering Committee for World Thrombosis Day . Global public awareness of venous thromboembolism. Journal of thrombosis and haemostasis: JTH. 2015;13:1365–71. [PubMed]
12. Gaston S, White S. Venous thromboembolism (VTE) risk assessment: rural nurses' knowledge and use in a rural acute care hospital. Int J Nurs Pract 2013; 19: 60– 4. [PubMed]
13. Beckman MG, Hooper WC, Critchley SE, Ortel TL. Venous thromboembolism: a public health concern. Am J Prev Med 2010; 38: S495– 501 [PubMed]
14. Zaher GF. Underutilization of pharmacological thromboprophylaxis in obstetrics and gynaecology patients in the absence of a risk assessment tool. J Taibah Univ Med Sc 2018;13(1):10e15. [PubMed]
15. Pregnant and the Postpartum Women's Knowledge and Awareness of Venous Thromboembolism. Razan Ahmed, Lama Alfehaid and Hind Almodaimegh. International Journal of Medical Research & Health Sciences, 2019, 8(7): 15-21 https://www.ijmrhs.com/medical-research/pregnant-and-the-postpartum-womens-knowledge-and-awareness-of-venous-thromboembolism.pdf