

Impact of Pregnancy-Related Venous Thromboembolism on Quality of Patients' Lives

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Abstract

Background: During pregnancy, the risk of venous thrombo-embolism (VTE) is increased at least five times compared with non-pregnant women of the same age, while the relative risk in the postpartum period can be as high as sixty times. The aim of the study was to explore the impact of pregnancy-related VTE on patients' mental, professional, social and personal life. **Methods and Materials:** Cross-sectional study at Jordan University Hospital's Obstetrics Department. **Results:** There were 112 women. Forty-six (41.1%) had a postpartum VTE. Twenty-eight of the patients (25%) had comorbidity. Eleven (9.9%) had a previous episode of VTE. Thirty-nine (35%) of the women reported three or more hospital visits over the past six months. Twenty-one (19.6%) of the women answered that their leg or chest pain has impeded their social activities. Anxiety/Depression was reported by 96.43% while Pain/Discomfort by 73.21%. A significant reduction of time spent on their work (correlation = 0.663, significant at <0.01) and accomplishing less work (correlation = 0.787, this was significant at <0.01) was found; 57.14% of patients indicated that VTE affecting their future pregnancies; 58.9% of patients were receiving anti-coagulants with the most commonly used drug was aspirin. Twenty-four (36.4%) of the women were on multiple anticoagulant therapies. Twenty-five of the patients receiving medications do not monitor their medications and 20 patients said that monitoring the drug level was a bother to them. **Conclusions:** Pregnancy-related VTE had a significant adverse impact on physical, mental and professional life of women. It also had negative effects on future pregnancy plans.

Keywords

pregnancy, quality of life, venous thromboembolism, mental, physical, health

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Introduction

Venous thromboembolism (VTE) is one of the few complications that may arise during pregnancy and/or postpartum. Pregnancy increases the risk of VTE at least 5 times compared with nonpregnant women of the same age, while the relative risk in the postpartum period can be as high as 60 times.¹ VTE indicated by deep vein thrombosis (DVT) and/or pulmonary embolism (PE).

The risk of thrombosis during pregnancy is attributed to physiological homeostatic changes. During normal pregnancy, the concentrations of the clotting factors fibrinogen, VII, VIII, von Willebrand factor, IX, X, and XII are all increased, resulting in a hyper-coagulation state, which exposes pregnant women to an increased risk of thrombosis.² This mechanism of a hyper-coagulation state of pregnancy is meant to protect

women from excessive bleeding during miscarriage and delivery. In developing nations, antepartum hemorrhage is the leading cause of maternal death.³ Paradoxically, failed safe mechanism is one of the major causes of maternal death and mortality in western countries.^{4,5}

Moreover, venous stasis that results from a hormonally induced decrease in venous tone and obstruction of venous flow by the enlarging uterus further increases the incidence of VTE in pregnant women. A reduction of venous flow velocity

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of ~50% occurs in the legs by weeks 25 to 29 of gestation. This lasts until approximately 6 weeks postpartum, at which time normal venous velocities return.⁶

Women with a history of VTE have a 3 to 4 times a higher risk of a recurrent VTE during a subsequent pregnancy compared with their risk in their nonpregnant periods.⁷ Approximately 30% of isolated episodes of PE are associated with asymptomatic DVT and in patients presenting with symptoms of DVT, the incidence of a silent PE ranges from 40% to 50%.⁴ Just like most outcomes of pregnancy age plays an important role in which women who are over the age of 35 are at higher risk of developing a VTE. Other independent factors include nulliparity, multiple gestations, obesity, and immobility; these increase the risk by 1.5 to 2-fold.⁷

Pregnancy-related VTE is very stressful complication and one of the most important causes of maternal mortality.⁸

In a systematic review and metaanalysis by Kourlaba et al,⁹ the pooled VTE case fatality rate was 0.68% with a recurrence rate of 4.27%. In total, 1.05% pooled risk of major bleeding. Postthrombotic syndrome seemed to have a negative effect on quality of life. No study was found that investigated the economic burden of pregnancy-related VTE.

In cancer patients, a systematic review by Kourlaba et al¹⁰ found that compared with patients without VTE, the annual average total cost of cancer patients with VTE was almost 50% higher and inpatient care costs accounted for >60% of total cost. ****Significant health and economic consequences of cancer-related VTE was shown in that review. In patients with lung cancer, LMWH therapy represents 18.6% of the total costs.¹¹ VTE is a common cause of morbidity and mortality in patients with cancer.^{12,13} It was also found to be the second leading cause of death in patients with cancer.¹⁴

In a systematic review of the literature on the global disease burden because of VTE in low-, middle-, and high-income countries, a major burden of disease was found across low-, middle-, and high-income countries. More detailed data on the global burden of VTE should be obtained to inform policy and resource allocation in health systems and to evaluate whether improved use of preventive measures will reduce the burden.¹⁵

Residual vein obstruction had been proposed as a predictor of recurrent thrombosis and postthrombotic syndrome (PTS) could be a disabling and costly consequence of DVT with limited options for prevention and treatment.¹⁶ Strategies for prevention and treatment of chronic complications still seek for such a landmark change. Impaired thrombus resolution is the common denominator behind VTE complications, which are PTS and chronic thromboembolic pulmonary hypertension (CTEPH) and both are associated with substantial morbidity and high healthcare expenses.¹⁷

It was the lack of studies in the literature that specifically addressed the consequences of VTE on the quality of life in patients with pregnancy-related VTE that promoted us to conduct such a study.

The objective of this study was to assess the quality of life of women in Jordan who suffered a VTE attack during or after their pregnancy. The study was centered on the impact it had on mothers' professional work life, social life, home life and responsibilities towards their kids. The overall toll it took on their mental health, outlook on subsequent pregnancies, and the obstacles they might have faced in prophylaxis against a recurrent event were also studied.

Materials and Methods

Women who were 18 years or more with confirmed diagnosis of VTE (PE and/or VTE) were recruited from the obstetrics and gynecology department at Jordan hospital, Amman, Jordan, between November first 2020 and January 31, 2021 by retrospectively reviewing their medical records. We identified those patients who, according to their medical records, had confirmed diagnosis of pregnancy-related VTE. We traced the hospital data over 8 years. After that, we tried to contact those patients. Patients gave their verbal consent to participate over the phone and were free not to answer the survey. Age, educational level, medical history, concomitant medications and symptoms (physical, mental, emotional, and pain) were evaluated for the past 6 months of filling the survey. Medication, compliance and barrier to monitoring medication were noted ... The aim was to recruit 100 female patients with verified VTE during pregnancy or postpartum. Sample size was calculated to be 100 subjects with a 90% power and 0.05 alpha.

Study Population

The database was searched by the medical students and double checked by the consultants looking for all patients who were diagnosed with pregnancy-related VTE. We identified 700 patients with diagnosis of VTE from Jordan university hospital, obstetrics and gynecology department's database. These patients were diagnosed over the last 8 years.

Inclusion criteria were; pregnancy related event, confirmed diagnosis by an objective diagnostic tool (Duplex ultrasonography, CT pulmonary angiography, spiral CT scan or ventilation perfusion scan), consent (acceptance) to participate was obtained and alive patients. Patients were excluded due to different reasons (currently pregnant, death, an objective diagnostic tool could not be found to confirm the diagnosis, their event was not related to pregnancy and refusal to participate). The patients' names and contact details were obtained from the database and we started contacting them. The recruitment period ran from November first 2020 to January 31, 2021. In total, 583 patients were invited to participate. In total, 341 invited patients did not respond to the survey, 13 declined to participate, 117 could not be reached at all. The questionnaire was related the quality of life in the last 6 months before completing it. Thus, the final study population who fulfilled the inclusion criteria comprised 112 patients (Figure 1).

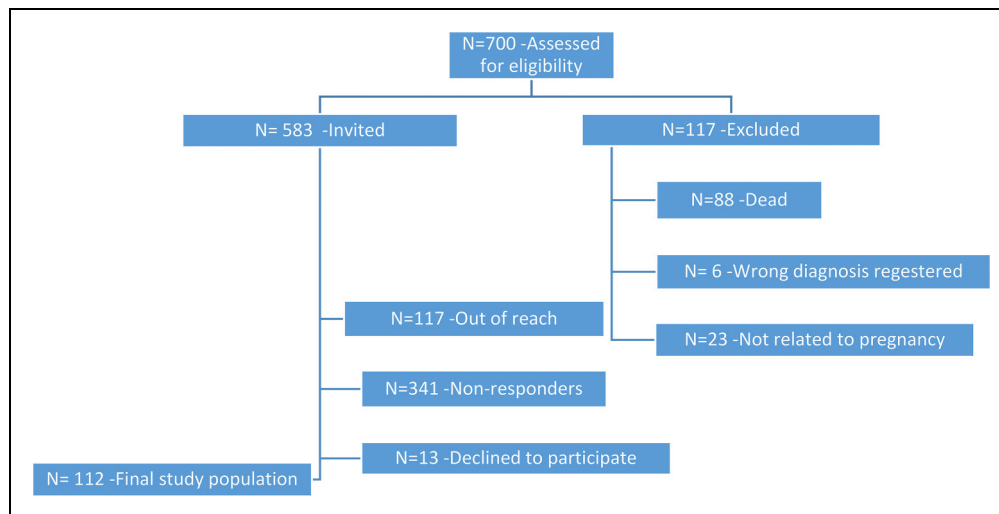


Figure 1. Distribution of patients with diagnosis of venous thromboembolism (VTE).

Item Generation for the Survey Used in our Research

We retrieved women's contact data from the hospital. Women were contacted and told about the study and the purposes behind that. They were also told that participation was totally voluntary and they were reassured that decline to participate had no negative consequences at all. They were requested to fill in the questionnaire.

All discussions, online survey, and phone interviews were done in Arabic in Jordanian population. Individual questions from the VEINES-QOL/Sym questionnaire^{18–20} questionnaire and Short Form Health Survey (SF-36), which was developed by Rand Corporation, were included in the online survey. Several questionnaires were reviewed on the bases of previous publications regarding medication compliance, side effect, commitment and concerns regarding follow-up visits.^{21,22} After doing intensive research on the quality of life pertaining to VTE and quality of life of other patients after other diseases, it was deduced that the best questionnaire in our opinion were VEINES-QOL and the SF-36, but it was not completely applicable to our society in terms of their comprehension of the questions in the aforementioned surveys, the difference in the social construct of the community surrounding the women in their day to day activities and responsibilities. Due to these factors and many more we have decided to take some criteria from both surveys, with the permission of their creators, and incorporated into a survey that we believed to be best suited for our sample size and then translated it to Arabic to eliminate the language barrier.

We then developed our own questionnaire that was used in our study. All patients completed an online 32-question format questionnaire (Appendix A, English version, Appendix B, Arabic version). The variables in the questionnaire were; age, level of education, employment status and whether or not her job was lost because of the VTE, her age when she first experienced VTE and the stage (month or week) of her

pregnancy or postpartum period, whether the VTE affected the pregnancy outcome, hospital stay or future pregnancies, whether there was any VTE before pregnancy, frequency of hospital visits in the last 6 months, whether she described her health as excellent, very good, good, fair or poor. Women were also asked in details regarding the frequency of and severity of leg pain, swelling, hotness, burning, itching and tingling (as a sequelae of persistent DVT or post-thrombotic syndrome). Also they were asked about difficulty climbing stairs, difficulty kneeling, bending or squatting, breathlessness at rest or with walking (distance was defined) or in dressing or washing, whether they were afraid to exert themselves or stay alone. They were also asked about whether their leg or chest symptoms limit several activities including professional and social ones and the extent of such limitation. They were also asked that compared to 1 year ago, how would you rate your health in general now? Several questions about how they felt and how things had been with them during the past 6 months. For each question, they were asked to give the 1 answer that came closest to the way they have been feeling (ranging from all the time to none of the time). Some true or false statements regarding their health were also included. There were questions regarding their current medications, if they were aware of their side effects, the source of their knowledge of these side effects, whether they stopped medications or not and why, availability of these medications and were they anxious that they might need them for lifelong. Regarding their medications, many aspects were covered including pricing, compliance, troubles obtaining them, special arrangements at home made to obtain them, what they did when the medications were not available, whether or not they used to monitor the medications (anticoagulants), and if they had troubles monitoring them. They were also asked about how much they experienced the side effects (bruising, bleeding, headache, fatigue and gastrointestinal symptoms) in the past 6 months?

Quality of life is defined by assessing several variables including frequency of hospital visits, how she described her overall health (excellent, very good, good, fair or poor), mobility, anxiety, pain, limitations of her physical (walking, climbing, dressing, washing, etc), social and leisure activities. The volunteers answered questions regarding the previously mentioned categories in accordance to a scale that included the frequency of disruption of daily activities and we tallied up and counted the patients that answered that it frequently impairs them constantly.

We explored whether they used to monitor their therapeutic anticoagulants with blood tests and whether that monitoring was inconvenient to them and bothered them.

Data Management

Patient consent was taken over a phone call. Patients completed the online questionnaires, using their phones or laptops. For compliance with study regimens, a link to the online google questionnaire was sent directly after contacting the patients through the phone. Medical information and clinical data were self-reported by the patients. Online questionnaires are accepted and desirable as a collection method in medical research.^{23,24} It was well accepted among our patients.

Item Reduction

Items with the following characteristics were considered for removal: (1) Semantically identical or very similar items (2) items that showed low correlation (R value $< .5$). Before items were removed, the clinical importance as judged by the researchers was taken into consideration as well.

Statistical Methods

Categorical variables were expressed as frequencies and proportions, while continuous variables were expressed by as mean and standard deviation (Std) when normally distributed. Pearson's correlation was also used to test the interscale correlations of our questionnaire. On the basis of previous experience, strong correlations were considered to be above 0.60. The significance level was $P < .05$. All statistical analyses were made using IBM SPSS Statistics 26 software. The data quality was excellent in the present study since there were no missing data for any item on the quality of life questionnaires in the study.

Ethical Approval

Ethical approval to report this study was obtained from the Institutional review board (IRB) at Jordan University Hospital, decision number 279/2020, dated 17th November 2020.

The study was also registered with ClinicalTrials.gov with a unique identifier: NCT04936373.

Results

There were 112 participants who developed pregnancy-related VTE in the last 8 years. We studied their life's quality over 6 months prior to completing the questionnaire. 50.9% of the patients were between the ages of 28 to 37 years of age. Forty-six (41.1%) women had a VTE attack postpartum defined as immediately after delivery up to 6 weeks thereafter, while the rest presented antepartum. Twenty-eight of the patients (25%) presented have a comorbidity(s). Eleven (9.9%) had a previous episode of VTE confirmed in the medical records (Table 1).

The patients were asked about co-existing diseases (morbidities). They were asked to answer questions about the quality of life independently of these diseases. Therefore, the possible effects of these comorbidities were excluded. These comorbidities were not related to the VTE events.

Descriptive Statistics of Patients in the Previous 6 Months Prior to the Survey

Thirty-nine (35%) of the women reported ≥ 3 hospital visits over the past 6 months. In leg pain over the past 6 months the outcome of "very severe" was combined with the outcome of "severe." Twenty-one (19.6%) of the women answered that their leg or chest pain has impeded their social activities. Only 15% indicated that their current health status was excellent. Around one-third of participants indicated that their leg pain was severe (Table 2).

Answers to questions related to patients' mobility, anxiety and depression, pain and discomfort and daily and social activity were shown in Table 3. 73.21% of patients reported that they had pain and discomfort and that they suffered that at least

Table 1. Baseline of socio-demographic and clinical characteristics.

Variable	Study sample (N = 112) N (%)
Demographics	
Age (28-37 years)	57 (50.9)
Level of education (bachelors)	59 (52.7)
Unemployed	73 (65.2)
Incidence age (28-37 years)	50 (44.6)
Postpartum	46 (41.1)
Previous episodes of VTE	11 (9.9)
Co-morbidities	
Heart failure and arrhythmias	2 (1.9)
Hypertension	7 (8.3)
Diabetes mellitus	3 (2.7)
Thyroid disorders	7 (6.3)
Hypercoagulability disorders	3 (2.7)
Others	6 (5.4)
Frequency of hospital visits (last 6 months)	
None	47 (42)
Only once	17 (15)
2 times	9 (8)
>3 times	39 (35)

Abbreviations: N, number; VTE, venous thromboembolism.

Table 2. Patient responses over the past 6 months regarding current health status, frequency of hospital visits and leg pain.

Variable	Study sample (n = 112) number (%)
Current health status	
Excellent	17 (15)
Very good	25 (22)
Fair	40 (36)
Poor	7 (6)
Frequency of hospital visits	
None	47 (42)
Only once	17 (15)
2 times	9 (8)
>3 times	39 (35)
Leg pain	
Severe	34 (30.4)
Moderate	26 (23.2)
Mild	18 (16.1)
Very mild	23 (20.5)
None	11 (9.8)

several times a week. With anxiety, patients responded that they have felt afraid of being alone or overexerting themselves or that they have not felt happy. Mobility was addressed in terms of the inability to climb stairs or walking long distances at least several times a week that was reported by 67.86% of patients. Social activity and daily activities were also limited (Table 3).

Limited mobility was regarded as a complaint that was experienced daily or at least several times per week. Patients with chest pain/ discomfort indicated those who complained every day or several times a week. Regarding daily/social activities, any patient reported any limitation was counted for. There were specific questions regarding these aspects of the patients' lives (Appendix A).

A Pearson correlation was done in patients who reported a difficulty performing work and the correlation with them spending a decreased amount of time on their work ($r=0.663$, $\text{sig}<0.01$) and accomplishing less work ($r=0.787$, $\text{sig}<.01$) (Table 4).

Patients were divided into 2 categories; those who had an antepartum ($n=66$) and those who had a postpartum ($n=46$) VTE. These patients answered questions regarding how their attack has affected them in whether or not they needed a longer hospital stay, or whether or not it affected a future pregnancy. Fifty-eight of the antepartum patients (87.9%) answered that they had a prolonged hospital stay due to the VTE event. A total of 63 (57.14%) patients answered yes to the VTE affecting

their future pregnancies, with 41(62.1%) patients having the event during pregnancy (Table 5).

When asked on what they did when their medication was not available at the hospital, 81 (72.3%) of patient answered that they obtain their medication at their own expense. On the other hand, 15 patients (13.4%) indicated that they just waited and missed a couple of doses (Table 6).

66 (58.9%) patients answered that they were taking anticoagulants. Twenty-four (36.4%) women were on multiple anticoagulant therapies. While 34 patients (51.5%) stopped their anticoagulants after the first 2 years of the diagnosis and they continued on aspirin as a long term prophylactic measure. In total, 44 patients said that they did not have any anticoagulants medications after 5 years of the initial diagnosis. Twenty-five patients who were taking medication did not monitor their medications and twenty patients said that monitoring the drug level was a bother to them.

Discussion

The quality of life of the 112 women, who had a previous VTE attack that was related to their pregnancy in the Jordan University Hospital, was assessed in this study. To our knowledge, no study was done on the quality of life of the women who had been affected. Forty-seven (42%) of the women has defined their health status in over the past month as "Fair" or "Poor" of which only twenty (42.6%) of them answered that they have visited the hospital >3 times over the past 6 previous months due to their VTE. Similarly, the development of VTE in cancer patients was found to be related to increases in morbidity, mortality, and medical costs.²⁵

Overall, more than 67% of patients reported having a complaint of one or more of the following: mobility, pain and discomfort level, impairment in their daily/social activities, and a constant feeling of anxiety/ depression. Out of all, the anxiety and depression seemed to be the most common. In literature, lack of energy and fatigue has been expressed as the most common complaint of the aftermath of an acute PE attack, and depression spells, although the physical symptoms such as dyspnea and pain has disappeared.²⁶ Our research has confirmed this finding. Notably, when patients were asked about feelings of anxiety and depression, 96.43% answered they felt anxious or down in several occasions. Some even answered that they were afraid of being left alone in fear of another attack happening. This can be explained by the constant fear of anticipating having another attack of VTE. Other

Table 3. Quality of life variables.

	Patient's with complains N (%)	Mean \pm Std.Dev.	95% Confidence interval	P-value
Limited mobility	76 (67.86%)	1.66 \pm 1.95	1.30 \pm 2.02	<.001
Anxiety/depression	108 (96.43%)	3.27 \pm 3.02	2.72 \pm 3.83	<.001
Pain/discomfort	82 (73.21%)	4.13 \pm 3.66	4.06 \pm 5.43	<.001
Limited daily/social activities	99 (88.39%)	2.39 \pm 1.54	2.11 \pm 2.68	<.001

Abbreviations: N, number; Std.Dev., standard deviation.

Table 4. Difficulty performing work and breathing and correlation to performance.

	Correlations		
		Decrease in amount of time on activities	Accomplished less work
Difficulty in performing work	Pearson Correlation	0.663**	0.787**
	Sig. (2-tailed)	0.000	0.000
	N	112	112
	Correlations		
Difficulty in breathing		Less than 100 mm	
	Pearson correlation	0.723**	
	Sig. (2-tailed)	0.000	
	N	112	

**Correlation is significant at the .01 level (2-tailed).

explanations to increased incidence of anxiety was found in a research that was done by Utne et al²⁷ in 2016 in which some patients receiving anticoagulants felt anxious and afraid due to fear of bleeding.

Thirty-four (30.4%) of the women complained of severe leg pain in the past 6 months, with 21 (19.6%) of them complaining of the leg pain impeding their social activity over that time period. Our findings were consistent with those of Bartholomew JR²⁸ where VTE was associated with significant morbidity ranging from painful leg swelling, chest pain, shortness of breath, and even death.

The incidence of PE during the first 6 weeks postpartum is nearly 15-fold higher compared to the incidence in pregnancy²⁹ and the risk in pregnancy or in the postpartum period is a four-fold to five-fold that nonpregnancy state.³⁰ When asked about the outcome of pregnancy, whether or not they were forced to prolong their stay at the hospital due to their VTE, and the effect on future pregnancies; the women who had an attack during pregnancy were more likely to have a longer hospital stay. These may be due to a lack of adequate evidence-based data where therapeutic strategies for pregnancy-related VTE are extrapolated from observational studies and from recommendations for nonpregnant patients, and, adding that lactating women need possibly an overlapping switch from LMWH to warfarin.³¹ Anticoagulation should be continued for at least 6 weeks postpartum or for a minimum period of 3 months.³¹

Eighty-one (72.3%) of the women have sought out to obtain their own medication in light of the lack of medication in the

hospital. With 24 (36.4%) of the women on a combination therapy of which 6 answered that their medication is a financial burden on them. The most common used drugs among the women was aspirin ($n = 34$), warfarin ($n = 30$), and enoxaparin ($n = 25$); the price of aspirin and warfarin are usually sold under Jordan Dinars (JOD) 5.00 (around US\$ 7.08), but with enoxaparin the price is reaching up to 12 JDs per 2 injections. Enoxaparin is the drug of choice in the prevention of a VTE attack in patients with no contraindications³² With a prophylactic dosing every 12 h and dose change throughout pregnancy,³³ causing budgetary restrictions in women who cannot obtain them through insurance or if it is not available in their providing hospital. In a setting with a sizable Muslim population, low molecular weight heparin was the thromboprophylaxis of choice in more than two-third of the patients.³⁴ The extended hospitalization in our practice was mostly defensive medical practice and fear of litigations. This increased risk continues for up to 6 to 12 weeks postpartum.³⁵ A previous personal history of VTE is a major risk factor for recurrence and VTE prophylaxis in at-risk populations remains a major area of uncertainty.³⁶ This could have contributed significantly to the prolonged hospitalization. Regarding drugs with narrow therapeutic index, a constant visit to the lab is required to maintain a prophylactic protection. Twenty-five of the patients on drugs do not monitor their medications and twenty patients said that monitoring the drug level is a bother to them. Our study was conducted during Covid-19 pandemic and frequent nationwide curfews which might have contributed to difficulty

Table 5. Time of occurrence of VTE and correlation to hospital stay and future pregnancy.

		During pregnancy		Postpartum		Total	
		Count	Column valid, number (N)%	Count	Column valid, N%	Count	Column valid N%
Prolonged hospital stay	No	8	12.1%	17	37.0%	25	22.3%
	Yes	58	87.9%	29	63.0%	87	77.7%
	Total	66	100.0%	46	100.0%	112	100.0%
Future pregnancies	No	25	37.9%	24	52.2%	49	43.8%
	Yes	41	62.1%	22	47.8%	63	56.3%
	Total	66	100.0%	46	100.0%	112	100.0%

Table 6. Patients' responses when their medication was not available at the hospital.

		Frequency	Percent	Valid percent	Cumulative percent
Valid	I buy it from a different place at my own expense	81	72.3	72.3	72.3
	I just wait and miss a couple of doses	15	13.4	13.4	85.7
	I take an alternative with the consult of my doctor	13	11.6	11.6	97.3
	I take an alternative without the consult of my doctor	3	2.7	2.7	100.0
	Total	112	100.0	100.0	

monitoring their anticoagulation therapy. Moreover, the economic consequences of this pandemic should not be forgotten. The ongoing care of patients receiving oral anticoagulation with warfarin was likely to be compromised amid this unprecedented crisis.³⁷ In a cross-sectional study during the pandemic, about 46% of respondents preferred drive-up INR testing and 59.3% of respondents wanted this service to continue indefinitely.³⁸ The fact that childcare being a factor that impairs the mother's ability to go the hospital or laboratory when needed did not play a role due to the fact that most families live close to relatives, or have older children who do not need care or may take care of their younger siblings. More than half of the subjects were unemployed which could have an important influence on the quality of life and in particular on the anxiety / depression data and especially since the patients reported fear of being left alone or overworking. This data could also affect the ability to access drugs.

Limitations

- The use of individual items from VEINES-QOL/Sym questionnaire has not been validated.
- Only individual items were used from VEINES-QOL/Sym questionnaire; therefore, VEINES-QOL/Sym scoring system was not applicable.
- Only individual items were used from the SF-36 survey; therefore, SF-36 scoring system was not applicable.
- COVID-19 pandemic has affected patients' ability to go to the hospital for medication re-fill and monitor their medication which was a major reason for patients' noncompliance.
- Our study had a small sample size. Moreover, due to the different systems that were used in hospitals across Jordan, data from other hospitals were hard to obtain.
- Another obstacle was the fact that there was no control to compare the results with. Lastly, due to COVID-19 pandemic, questions regarding medications, monitoring and hospital visits have been affected.
- The share of unemployed patients with preexisting depressive / anxiety syndrome represented a potential bias considering that the study evaluated the patients' quality of life.

In view of our results, we recommend a national and possibly regional registry for these patients. This will facilitate 1

platform for clinical review, management, follow up and provision of medications. Moreover, this patients' registry will help provide support groups, psychological and work support and advice. We also recommend that these patients are seen and evaluated at a designated clinic at each hospital.

Conclusion

Pregnancy related VTE had a significant adverse impact on physical, mental and professional life of women. It also had negative effects on future pregnancy plans.

Acknowledgments

The authors thank all women who participated in this study for their time and effort and wish them well.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethical Approval

Ethical approval to report this study was obtained from the Institutional review board (IRB) at Jordan University Hospital, decision number 279/2020, date: November 17, 2020.


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Informed Consent

Informed consent was obtained from every patient to agree to be sent the questionnaire and to fill it. All participants were reassured that confidentiality was to be maintained all through the study.

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