

Knowledge, Practices and Attitudes of Pregnant Women regarding Deep Venous Thrombosis

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Abstract

Background: The prevalence of deep venous thrombosis is significantly higher in pregnant women than in non-pregnant women. **Aim of the study:** Was to assess knowledge, practices and attitudes of pregnant women regarding deep venous thrombosis. **The setting of the study research:** Was conducted at obstetrics and gynecological outpatient clinic in Benha University Hospital. **Research design:** A descriptive was utilized. **Sample:** A purposive sample of 100 pregnant women were selected according to inclusion criteria. **Tools of data collection:** Consisted of three tools: **Tool I:** A structured interviewing questionnaire which included four parts: Demographic characteristic, obstetrics and gynecology history, medical data and pregnant women's knowledge regarding deep venous thrombosis. **Tool II:** Pregnant women self-reported practices regarding deep venous thrombosis. **Tool III:** Modified Likert scale for pregnant women's attitudes toward deep venous thrombosis. **Results:** Less than one quarter of studied pregnant women had good knowledge regarding deep venous thrombosis. More than one third of studied pregnant women had satisfactory self reported practices regarding deep venous thrombosis. One thirds of studied pregnant women had positive attitude toward deep venous thrombosis. **Conclusion:** There was a highly significant positive correlation between total knowledge, self reported practices, and attitudes scores of studied pregnant women regarding deep venous thrombosis($p>0.001$). **Recommendations:** Application of awareness program to improve pregnant women's knowledge, improve practices and acquired positive attitude regarding deep venous thrombosis.

Keywords: Deep venous thrombosis, knowledge, practices, attitudes, pregnant women

Introduction

Normal pregnancy is characterized by changes in the blood composition that result in a hypercoagulable state. There is a marked increase in procoagulant activity as well as in venous stasis of the lower extremities due to progesterone-induced venous dilatation and due to mechanical compression of the inferior vena cava and pelvic veins by the enlarging uterus (**Hart et al., 2020**).

Pregnant women hold attitudes towards safety practices that may influence

of outcomes. These attitudes are referred to as safety attitudes and relate to an individual's beliefs, perceptions, feelings or thinking towards safety practices, procedures and policies. When individual have positive safety attitudes, a strong safety culture develops (**Leifer, 2022**).

Risk factors of DVT is stem from the physiologic and anatomic changes that take place during pregnancy, such as: hypercoagulability, progesterone induced venous stasis, compression of the inferior vena cava and pelvic veins owing to an

enlarged uterus, and decreased mobility, other risk factors for DVT are prior history of DVT, inherited or acquired thrombophilia (**Zhang and Sun, 2020**)).

Deep venous thrombosis become a major health concern worldwide. It is well recognized that pregnancy increases the risk of thromboembolism owing to conditions involving hypercoagulability, decreased mobility, and the compression of the inferior vena cava and pelvic veins. In recent decades, venous thromboembolism has become a leading cause of sudden death (**Zhao et al., 2021**).

Deep Venous Thrombosis (DVT) is one of the most serious conditions associated with pregnant women, DVT occurs when a thrombosis is developed with-in the deep veins of the pelvis or lower limbs. Blood clot formation from vessel endothelium injury causes sluggish blood flow and reduces venous blood flow. DVT in pregnant women usually occurs at the ileo-femoral vein and may be found at the popliteal and femoral vein (**García et al., 2022; Edebiri and Áinle, 2022**).

Deep Venous Thrombosis symptoms may include; sudden swelling of one extremity, redness or discoloration of the skin, warmth of the affected area, low grade fever, tachycardia and rapid discomfort in the calf muscles (**García et al., 2022**). Deep vein thrombosis can cause potentially life-threatening complications as pulmonary embolism (PE) in which woman feel dyspnea which may appear with exercise but not disappear with rest, other chronic complications include; the post thrombotic syndrome and recurrent DVT (**Benn, 2022**).

Management of DVT is an essential and effective method for decreasing maternal

mortality and morbidity. Proper management can improve the quality of life and reduce the rehabilitation period by means of a regimen based on a balance between efficacy and safety (**Edebiri and Áinle, 2022**).

Active and passive exercises of muscles are essential for maintaining muscles tone and prevention of complications. Moreover, exercises are designed to decrease venous stasis, improve blood flow velocity and increase level of circulating fibrinolysins. There has been refocused attention on physiological exercises performed in bed as, unassisted active movement of ankle, which increases femoral venous flow by more than 75% (**Alsheef et al., 2020**).

Nurses can play a major role in DVT prevention, if well-educated and empowered to increase the level of knowledge and practice among pregnant women through practicing leg exercises continuously. Prevention approach of DVT is an effective approach to reduce the mortality and morbidity rate from DVT complications among pregnant women (**Wei & Tan, 2019**).

As the first-line health care providers, nurse play important role in educating pregnant women about risks of DVT and how to deal with it through wearing graduated elastic compression stockings on the affected leg to reduce pain and swelling, encouraging women to elevate leg, taking adequate fluid through day educating pregnant women to avoid injury and encouraging pregnant women to do foot and leg exercises by themselves or relatives help if unable to do (**Yee et al., 2022**).

Significance of study:

Venous thrombosis is a reproductive health risk for women as during pregnancy, the risk increases.

Venous thromboembolism is the third most common cause of death globally after myocardial infarctions and strokes, according to the World Health Organization. The most of thromboembolic diseases in pregnant women are deep venous thrombosis (Bitsadze et al., 2022; Zhang and Sun, 2020). As a worldwide annual incidence of venous thromboembolism is estimated to be 0.75–2.69 per 1000 women (Wendelboe et al., 2022). DVT is a major cause of morbidity and mortality and one of the leading causes of maternal mortality in the western world. The prevalence of DVT in Africans varied between 380 and 448 per 100,000 births per year in pregnant and postpartum women (Zhao et al., 2022).

Aim of the Study

The aim of this study was to assess knowledge, practices and attitudes of pregnant women regarding deep venous thrombosis.

Research questions:

- What is the knowledge level of pregnant women regarding deep venous thrombosis?
- What is the self-reported practices level of pregnant women regarding deep venous thrombosis?
- What is attitude the level of pregnant women toward deep venous thrombosis?

Subjects and method

Study design:

A descriptive study design was utilized to conduct the current study. A descriptive study as the name implies describes the

distributions of disease, injury or health in a population, outlining the burden of disease (Thompson, 2021).

Study setting:

This study was conducted at obstetrics and gynecological outpatient clinic at Benha University Hospital, The hospital is located in Benha city and serves the population at Qalubia and surrounding government, This clinic is located at the ground floor of the outpatient build which include only one room divided into diagnostic and examination areas. As well as, waiting area for women admission where the researcher interviewed the recruited women. This clinic provides services of obstetrics and gynecological care and follow up, family planning counseling and any outpatient procedures. It started from 9 am to 2 pm.

Sampling:

Sample type: A purposive sample was used in this study .

Sample size:

A total of (100) pregnant women who attended to previous setting for a period of six months and met the following inclusion criteria:

- Pregnant women who medically diagnosed by deep venous thrombosis.
- Free from any other health problems
- Agree to be participate in the study.

Tools of data collection:

Three tool was utilized in the current study:

Tool I: A structured interviewing questionnaire: This tool was designed after reviewing of related literatures (Al Aseri et

al., 2022; Yee et al., 2022; Dybowska et al., 2021) and included four parts as following

First part: Demographic characteristics of studied women: which included (age, educational level, residence and occupation).

Second Part: Obstetrics and gynecology history: which included (gravity, number of previous births, type of previous birth, number of abortions, current gestational age and follow up during pregnancy).

Third part: Medical data of deep vein thrombosis during pregnancy: which included 6 items.

Part (IV): Knowledge of pregnant women's regarding deep venous Thrombosis, to assess knowledge of pregnant women regarding deep venous thrombosis as (meaning of deep vein thrombosis, causes of deep vein thrombosis during pregnancy, symptoms associated with deep vein thrombosis during pregnancy, complications of deep vein thrombosis during pregnancy.....etc).

Knowledge scoring system:

The scoring system for knowledge was calculated as follows (3) score for complete correct answer, while (2) score for incomplete correct answer and (1) for don't know answer. These scores were summed and converted into a percent score, total knowledge score was ranged from 1 to 45 which classified into three categories:

- Good knowledge $\geq 75\%$ (34- 45 points)
- Average knowledge 50- $<75\%$ (27- 33 points)
- Poor knowledge $<50\%$ (15- 26 points)

Tool (II): Pregnant women's self-reported practices regarding deep venous thrombosis:

It was adapted from Parveen et al., (2021) and was translated into Arabic

language by the researcher, to assess self reported practices of pregnant women's regarding deep venous thrombosis and composed of 20 items.

Practice scoring system:

Each items of the practices was scored as (3) for always, score (2) for sometimes and score (1) for never. These scores was summed and converted into a percent score, total Practice Score was ranged from 1 to 60 points which classified into two categories: Satisfactory practices $\geq 60\%$ (36 – 60 Points). Unsatisfactory practices $< 60\%$ (20 – 35 Points)

Tool (III): Modified Likert scale for pregnant women's attitude toward deep venous thrombosis:

It was adapted from Hebeshy., (2018) and translated into Arabic language by the researcher, to assess pregnant women's attitudes toward deep venous thrombosis and composed of 18 items.

Attitude scoring system:

Each item was rated according to three point likart scale. A score (3)for agree, sometimes was scored as (2) and disagree was scored as (1). The total attitude score was ranged from 19- 54. These scores were converted into a percent score, total attitude score was classified into two categories: Positive attitude $\geq 60.0\%$ (37 –54 Points). Negative attitude $< 60.0\%$ (19 – 36 Points)

Tool validity:

The content validity of the tools was reviewed by a panel of three jury experts in the field of Obstetrics and Gynecology nursing at faculty of nursing Benha University, there is no modification needed.

Tool reliability:

The reliability of the tools was done by using Cronbach's alpha coefficient test, which revealed that the internal consistency of knowledge was 0.91, internal consistency of pregnant women's self reported practices

was 0.85 and internal consistency of attitude was 0.87.

Ethical considerations:

The study approval was obtained from Scientific Research Ethical Committee of the Faculty of Nursing at Benha University to the fulfillment this study. The aim of the study was explained to each woman before applying the tools to gain confidence and cooperation. An oral consent was obtained from each woman who was participate in the study.

The study had no physical, social or psychological risks on the women. All tools of data collection were burned after statistically analysis to promote confidentiality of the study. The study didn't touch participant's dignity, culture, traditional and religious aspects and didn't cause any harm for any participant during data collection. Also didn't include any immoral statements and respect human rights. Each woman was informed about time throughout the study. The women were free to withdraw from study at any time.

Administrative design:

An official permission was issued from Dean of The Faculty of Nursing to the Director of Benha University Hospital for taking their permission to conduct the study after explanation the aim of the study.

Pilot study:

The pilot study was conducted on 10% of the total period of data collection about (3weeks) which included 13 pregnant women to evaluate clarity and applicability of tools used for data collection as well as estimation of the time needed to fill the questionnaire. The women in pilot was included in the study as no modifications were done.

Field work:

Data was collected at a period of 6 months which started from the beginning of February2022 to end of July 2022; the study was conducted in Obstetrics and the

Gynecology Outpatient Clinics at Benha University Hospital. The researcher visited previous mentioned setting 3 days/week (Saturday, Monday and Wednesday) from 9:00 am to1:00 pm. At the beginning of interview, the researcher greeted the pregnant women, and introduced herself. The researcher explained the purpose and importance of the study briefly to each women to attain women cooperation. Then oral consent was obtained from each woman to participant in the study.

A structured interviewing questionnaire used to collect general characteristic of pregnant women as, history of obstetrics and gynecology, medical data of deep vein thrombosis. Knowledge regarding deep venous thrombosis was assessed. This took about 20-25 minutes. Then assessed pregnant women self-reported practices regarding deep venous thrombosis by using tool II: Pregnant women's self-reported practices regarding deep venous thrombosis. This phase took about 15-20 minutes. Then the researcher assessed attitude of pregnant women regarding deep venous thrombosis by using tool III: Modified Likert scale for pregnant women's attitude toward deep venous thrombosis. This phase took about 15-20 minutes. The questionnaire were filled by studied pregnant women in most items. Total time of data collection for each woman was (40-50) minute depending upon pregnant women understanding and response. The researcher interviewed about (1-2) women per day according to admitted cases and response to interview. Finally the collected data was analyzed by the researcher to a chive the aim of the study and answered the research question.

Statistical analysis:

Data entry and statistical analysis were done using the statistical package for social science (SPSS version 25.0).

Descriptive statistics included frequencies and percentages, means and standard deviations. Inferential statistics as (Chi-square test, Fisher Exact Test) and Pearson correlation coefficient were used. For all of the statistical tests done, $p\text{-value} > 0.05$ indicated no statistical significant difference, $p\text{-value} \leq 0.05$ indicated a statistical significant difference, and $p\text{-value} P \leq 0.001$ indicated a highly statistically significant difference.

Limitation of the study

One of the problems that the researchers faced in this study were overcrowding and noise in outpatient clinics, which caused interruption during sessions.

Results:

Table (1) shows that 50.0% of the pregnant women were in age group 20- <30 years old with the mean age of 31.00 ± 6.16 years. Also 48.0% of the studied pregnant women had secondary education. As regarding residence, 76.0% of the pregnant women were living in rural area and 68.0% of the studied pregnant women were working and 66.2% nature of work require sitting for long period.

Figure (1) illustrate that 62.0% of studied pregnant women have poor knowledge. Also, 24.0% of studied pregnant women have good knowledge regarding deep venous thrombosis.

Figure (2) reveals that 63.0% of studied pregnant women have unsatisfactory self reported practices. Also, 37.0% of studied pregnant women have satisfactory self reported practices regarding deep venous thrombosis.

Figure (3) shows that 67.0% of studied pregnant women have negative attitude and 33.0% of studied pregnant women have positive attitude toward deep venous thrombosis.

Table (2) illustrates that there was a highly significant positive correlation between total knowledge, self-reported practices and attitudes scores of studied pregnant women regarding deep venous thrombosis ($p < 0.001$).

Table (1): Distribution of the studied pregnant women regarding to general characteristics (n=100)

General characteristics	No.	%
Age (in year)		
<20	2	2.0
20-<30	50	50.0
30 - <40	44	44.0
≥ 40	4	4.0
Mean ±SD	31.00±6.16	
Educational level		
Read and write	6	6.0
Primary education	28	28.0
Secondary education	48	48.0
University education	18	18.0
Residence		
Rural	76	76.0
Urban	24	24.0
Occupation		
Working	68	68.0
House wife	32	32.0
Nature of work (n= 68)		
Long period of sitting	45	66.2
Long period of standing	23	33.0

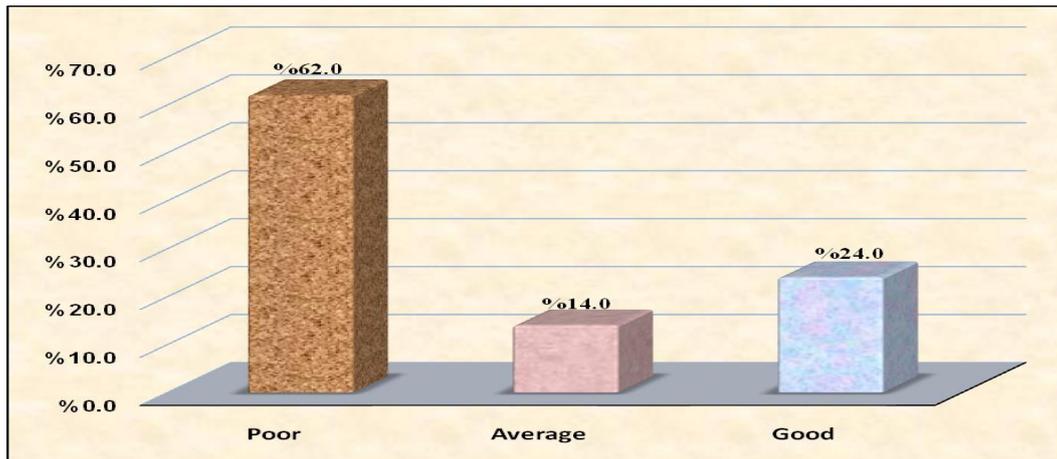


Figure (1): Percentage distribution of studied pregnant women' level of total knowledge regarding deep venous thrombosis (n=100)

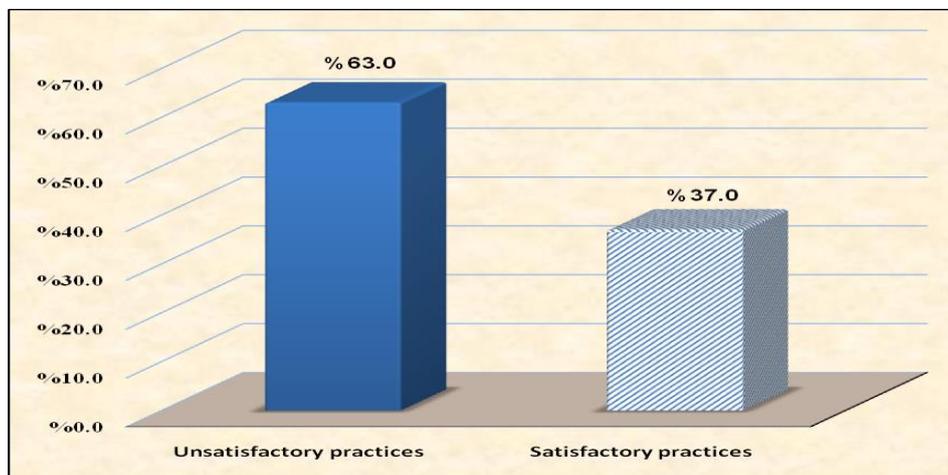


Figure (2): Percentage distribution of studied pregnant women level of total self reported practices regarding deep venous thrombosis (n=100)

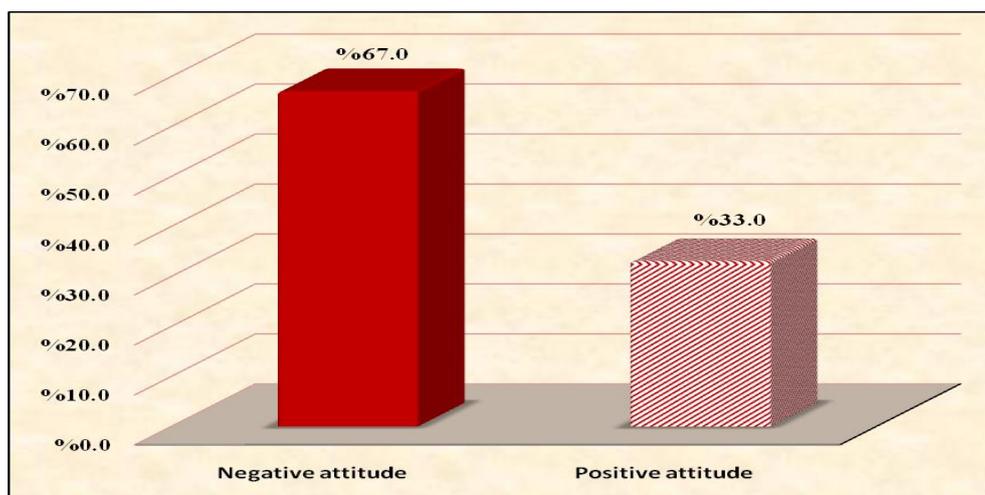


Figure (3): Percentage distribution of studied pregnant women level total attitude regarding deep venous thrombosis (n=100)

Table (2): Correlation between total knowledge, self-reported practices and attitude scores among studied pregnant women regarding deep venous thrombosis(n=100)

Variables		Total attitude score	Total self reported practices score
Total knowledge score	r	0.971	0.986
	p-value	0.000**	0.000**
Total attitude score	r		0.988
	p-value		0.000**

****A Highly statistical significant $p \leq 0.001$**

Discussion:

Regarding general characteristics of studied pregnant women, the current study reported that half of the studied women were in age group 20 - <30 years old with the mean age of 31.00±6.16 years. This result in the same line with **Hafiz et al.,(2020)**who studied “ Risk factors for deep vein thrombosis in pregnancy and puerperium at a tertiary care hospital in Muzaffarabad” and found that more than half of pregnant women aged between 20 years to 30 years.

While this result inconsistent with **Huang et al., (2019)**who studied “Risk of venous thromboembolism in Chinese pregnant women: Hong Kong venous thromboembolism study” who found that three quarters of pregnant women aged between 30 years to 40 years. This result may be due to fertility is more in this age group.

The present study revealed that less than half of the studied pregnant women had secondary education, this finding agree with **Mousa et al.,(2022)**who conducted a study “Evaluate risk factors for deep venous thrombosis among patients admitted to vascular unit in Egypt” who found that more than one quarter of studied had high qualification. This result may be due to the most women preferred to stay at home to take care of their husband and children rather than complete their education.

The current study reported that more than three quarters of the studied pregnant women were living in rural area. These results are matched with **Mulatu et al., (2020)** who studied “ Deep venous thrombosis recurrence and its predictors at selected tertiary hospitals in Ethiopia” who represented that more than half of the studied group admitted from rural area, this result may be due to insufficient health care services in ruler area.

The current study revealed that more than two thirds of the studied pregnant women were worker. This result is supported with **Romano et al., (2020)** who studied “Gene variants associated with venous thrombosis: a replication study in a Brazilian” and found that majority of the studied women their worked. This result may due to work not require physical exertion and had prolonged sitting for long periods

Regarding knowledge of studied pregnant women about deep venous thrombosis. The present study revealed that less than two thirds of studied pregnant women had poor knowledge. This finding was answered the first research question which stated “What is the knowledge level of pregnant women regarding deep venous thrombosis?”.This result is the same line with **Fen et al., (2022)** who studied “Pregnant women's knowledge of venous thrombo

embolism in Malaysia” said most pregnant women had low knowledge about venous thrombo embolism. This result may be due to unfamiliarity disease with pregnancy and lack of awareness during antenatal care about prevention deep venous thrombosis.

In relation to studied women about self-reported practices regarding deep venous thrombosis. The present study revealed that less than two thirds of studied pregnant women had unsatisfactory practices. This finding was answered the second research question which stated “What is the self-reported practices level of pregnant women regarding deep venous thrombosis?”. This result is in the same line with **Mohamed et al., (2022)** revealed that most of studied women had unsatisfactory practices. These results may be due to have poor knowledge regarding deep venous thrombosis.

Concerning to studied pregnant women attitude toward deep venous thrombosis. The present study revealed that two thirds studied had negative attitude toward deep venous thrombosis. This finding was answered the third research question which stated “What is the level attitudes of pregnant women toward deep venous thrombosis?”. This result supported with **Gao et al., (2021)** Their own study title was. Knowledge, behaviors, and attitudes regarding venous thromboembolism prophylaxis: a survey of clinicians at a tertiary hospital of China, who found that the of the studied low of attitude toward deep venous thrombosis. And contradicted with **Kim and Kim., (2019)** who studied “Knowledge, awareness and risk of occurrence of venous thromboembolism of prenatal women in Korea” who found two thirds studied had positive attitude toward deep venous thrombosis. This result may be related to level education of studied pregnant women.

Regarding to correlation between studied pregnant women’s total knowledge, total practices and total attitude scores regarding deep venous thrombosis. The present study revealed that there was a highly significant positive correlation between total knowledge, self reported practices and attitudes scores of studied pregnant women regarding deep venous thrombosis. These results may be due to poor knowledge lead to unsatisfactory practices, as well as negative attitudes.

Conclusion

The results of the present study concluded that less than two thirds of studied pregnant women had poor knowledge. Hence less than two thirds of studied pregnant women had unsatisfactory self-reported practices regarding deep venous thrombosis. As well as more than two thirds had negative attitudes toward deep venous thrombosis. There was highly positive significant correlation between total knowledge, self-reported practices and attitudes scores of studied pregnant women regarding deep venous thrombosis. Hence, the aim of study was achieved and the research questions were answered.

Recommendation:

- Application of health education program to improve pregnant women knowledge, practice and attitude regarding deep venous thrombosis.
- Design and distribution booklets / brochures about deep venous thrombosis to pregnant women for improving awareness at outpatient clinics.

Further research:

- Replication of the present study on larger probability sample size at different settings to generalize the results.

Knowledge, Practices and Attitudes of Pregnant Women regarding Deep Venous Thrombosis

➤ Factor affect accelerate of deep venous thrombosis among post partum women.

➤ Assessment factor affect accelerate of deep venous thrombosis among post partum women.

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معلومات وممارسات واتجاهات السيدات الحوامل تجاه تجلط الأوردة العميقة

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تجلط الأوردة العميقة أثناء الحمل ناتج عن زيادة مستوى بروتينات تجلط الدم وقد يشمل أيضا عوامل أخرى يمكن أن تسهم في الإصابة بجلطات الأوردة العميقة أثناء الحمل مثل تضخم الرحم، مما يزيد الضغط على الأوردة التي تعيد الدم إلى القلب من الجزء السفلي من الجسم، وكذلك قلة الحركة بسبب الراحة في الفراش. يمكن أن يؤدي إلي تجلط الأوردة العميقة أثناء الحمل و إلى حالة أكثر خطورة تعرف باسم الانسداد الرئوي. لذا هدفت هذه الدراسة الي تقييم معلومات وممارسات واتجاهات السيدات الحوامل تجاه تجلط الأوردة العميقة. تم استخدام الدراسة الوصفية لتحقيق هدف الدراسة الحالية. وقد أجريت هذه الدراسة في عيادة الخارجية للنساء والتوليد بمستشفى بنها الجامعي على عينة هادفة وشملت ١٠٠ امرأة حامل حضرن في المكان المذكور سابقا في وقت جمع البيانات واستنتجت أنه بناء على نتائج الدراسة الحالية ، فإن الدراسة أكثر من ثلاثة أخماس النساء الحوامل اللاتي شملهن الدراسة لديهن معرفة ضعيفة ، وممارسات غير مرضية أبلغت عن نفسها وموقف سلبي فيما يتعلق بالتخثر الوريدي العميق كما كان هناك ارتباط إحصائي إيجابي للغاية بين المعرفة الكلية والممارسات المبلغ عنها ذاتيا والمواقف لدى السيدات الحوامل اللواتي تمت دراستهن فيما يتعلق بتجلط الأوردة العميقة. واوصت الدراسة بتطبيق برنامج التنقيف الصحي لتحسين معرفة النساء الحوامل وممارساتهن ومواقفهن فيما يتعلق بتجلط الأوردة العميقة.