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Awareness and Attitudes toward Venous Thromboembolism among Nurses and Midwives in Obstetric Wards in Bethlehem and East Jerusalem

Rania Aodeh Ali-Al-Halabiah

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Awareness and Attitudes toward Venous Thromboembolism among Nurses and Midwives in Obstetric Wards in Bethlehem and East Jerusalem

**Prepared by:
Rania Aodeh Ali Al-Halabiah**

B.Sc. Nursing-Al-Quds University\Palestine

Supervisor: Dr. Maha Nahal

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Thesis Approval

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Prepared by: Rania Aodeh Al-Halabiah
Registration No: 23210620

Supervisor: Dr. Maha Nahal

Master's thesis submitted and approved date: 15/12/2025

The names and signatures of the examining committee members are as follows:

1. Head of Committee: Dr. Maha Nahal	Signature:	
2. Internal examiner: Dr. Farid Ghrayeb	Signature:	
3. External examiner: Dr. Imad Abu Khader	Signature:	

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Dedication

With all my love and gratitude, I dedicate this achievement to everyone who, after God, has supported and encouraged me. To the one who deserves it most, to the one without whose prayers I would not have succeeded in my educational career, to my first teacher and the refuge of my hopes, to my mother, who has never stopped supporting me in my academic journey. To my father, who instilled the confidence in me to keep moving forward. To my husband and three daughters, who have endured me and been a source of my patience and strength. To my sister, entire family, and friends. To my thesis supervisor, Dr. Maha Nahal, and to all the faculty members in the Nursing Department at Al-Quds University. To all nurses worldwide, especially in Palestine and Gaza, and to everyone who participated in this mission and achievement, helped prepare, and contributed to its completion. To those whose dreams were shattered and whose future was destroyed by occupation, my suffering people and wounded homeland, Gaza and its children. To all of you, I dedicate my success and the effort behind it. Thank you sincerely.

Rania Odeh Al-Halabiah

Declaration

I certify that this thesis, which is submitted for the degree of master, is the result of my research, except where otherwise acknowledged, and that this study (or any part of the same) has not been submitted for a higher degree to any other university or institution.

Signature:

A handwritten signature in blue ink, reading "Rania Halabiah", with a large, stylized loop at the end.

Name: **Rania Aodeh Ali Al-Halabiah**

Date: 15/12/2025

Acknowledgment

In the name of Allah, the Most Gracious, the Most Merciful. After thanking Allah for His grace in enabling me to complete this work and for its success, I must also thank the unseen hands that contributed to and played a role in bringing this work to a successful completion.

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Rania Odeh Al-Halabiah

Abstract

Introduction: Venous thromboembolism is a preventable complication commonly seen in hospitalized patients. Its effective management requires coordinated efforts among different healthcare professionals. Nurses and midwives play a crucial role by recognizing patients at risk and implementing suitable preventive interventions, thereby greatly enhancing VTE prevention in clinical settings.

Aim: To assess nurses' and midwives' awareness and attitudes regarding venous thromboembolism among women in obstetric wards at Bethlehem Governorate and East Jerusalem hospitals.

Methodology: A quantitative, descriptive cross-sectional study was conducted in three private hospitals and one government hospital in Bethlehem and East Jerusalem. The sample included 140 nurses and midwives working in antenatal, labor, and postnatal wards. Data were collected using validated questionnaires. Ethical approval was obtained from the Al-Quds University Ethics Committee, along with permissions from the Palestinian Ministry of Health, nursing directors, and ward midwives. Verbal informed consent was obtained and documented on the first page of the questionnaire. The study was carried out from November 2024 to November 2025, and data were analyzed using SPSS version 27.

Result: The findings show that 71.3% of nurses and midwives had a high level of overall VTE awareness. Awareness was highest in Domain 1 (VTE definition and pathophysiology) at 73.1% and Domain 2 (risk factors) at 75.4%, while 66.4% demonstrated high awareness in Domain 3 (prophylaxis measures). Most participants (96.7%) also reported a positive attitude toward VTE. Overall awareness was significantly associated with workplace, availability of protocols, and prior VTE training ($p = 0.026$, 0.002 , and <0.001 , respectively). Attitudes were significantly associated with education level, profession, and prior training ($p = 0.018$, 0.027 , and 0.003). A strong positive correlation was observed between awareness and attitudes ($p < 0.001$).

Conclusion: The findings highlight the need for ongoing education, standardized protocols, and adequate resources to strengthen nurses' and midwives' awareness and attitudes toward VTE and its prevention. Enhancing these areas may improve clinical performance, support early detection of VTE, and contribute to better maternal outcomes and higher-quality care in Palestine. Key recommendations include implementing regular VTE-focused training programs, ensuring the availability of standardized VTE prophylaxis protocols across all hospital departments, and integrating comprehensive VTE prevention and management modules into midwifery education programs.

Keywords: Nurses, midwives, awareness, attitude, venous thromboembolism, obstetric ward, Bethlehem, East Jerusalem, hospitals.

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List of Abbreviations

Abbreviation	Full ward
VTE	Venous Thromboembolism
DVT	Deep Vein Thrombosis
PE	Pulmonary Embolism
CDC	Centers for Disease Control and Prevention
WHO	World Health Organization
UNICEF	United Nations Children’s Fund
PMOH	Palestinian Ministry of Health
PCBS	Palestinian Central Bureau of Statistics
UFH	Unfractionated Heparin
LMWH	Low Molecular Weight Heparin
VKA	Vitamin K Antagonist
RCOG	Royal College of Obstetricians and Gynaecologists
ACOG	American College of Obstetricians and Gynecologists
ACCP	American College of Chest Physicians
SOGC	Society of Obstetricians and Gynecologists of Canada
GECS	Graduated Elastic Compression Stockings
MMR	Maternal Mortality Rate
PA-VTE	Pregnancy-Associated Venous Thromboembolism
C/S	Cesarean Section
BMI	Body Mass Index
BSc	Bachelor of Science
MSc	Master of Science
ICU	Intensive Care Unit
NICU	Neonatal Intensive Care Unit
Fig.	Figure
SPSS	Statistical Package for the Social Sciences
N	Number
%	Percentage
SD	Standard Deviation
min-max	Minimum – Maximum
SA	Strongly Agree
A	Agree
N	Neutral
D	Disagree
SD	Strongly Disagree
D1	Domain 1
D2	Domain 2
D3	Domain 3
H	Kruskal–Wallis H statistic
p	Probability value
U	Mann–Whitney U statistic
ρ (rho)	Spearman’s correlation coefficient

Chapter One

Introduction

1.1 Background

Venous thromboembolism (VTE) occurs when a clot, known as an embolus, forms in a vein within a blood vessel and travels through the bloodstream to another part of the body, resulting in a blockage (Beckman et al., 2010). VTE can lead to two serious complications, depending on where blood clots form in the body. Deep Vein Thrombosis (DVT) occurs when VTE develops in the deep veins, typically in the lower extremities. In contrast, a pulmonary embolism (PE) occurs when the blockage travels to the lungs, which can be life-threatening (Nimia Reyes, 2023). As a result, VTE is commonly referred to in conjunction with both PE and DVT.

Various factors can influence VTE formation, including inherited risk factors such as genetic polymorphisms, prolonged immobility, and other diseases such as anti-phospholipid syndrome and COVID-19 (Pastori et al., 2023). Trauma, fractures, and major orthopedic and abdominal surgeries are all considerable risk factors for VTE (Pastori et al., 2023). In addition, the risk of VTE increases during pregnancy due to specific triggers, such as hypercoagulability, venous stasis, and endothelial injury that are related to physiological changes during pregnancy (Varrias et al., 2023).

Maternal VTE is a significant concern, affecting nearly 1 in every 1,000 pregnancies worldwide (Raia-Barjat et al., 2022). It is a leading cause of maternal mortality, contributing to nearly 3 % of global maternal deaths (UNICEF, 2024). In the context of public health, venous embolism is a challenge that extends beyond the individual to the entire health system, as its occurrence is linked to the efficiency of the health infrastructure, the availability of protocols, and the culture of institutional training. Modern health policies are showing increasing interest in integrating VTE prevention into quality and patient safety programs, due to its impact on reducing health costs and improving treatment outcomes (Bakhsh, 2023).

Nurses' and midwives' awareness of maternal VTE is crucial for implementing effective risk-reduction measures (Hu et al., 2025). This involves evaluating preventable triggers and ensuring timely interventions. Such an approach helps mitigate potential complications, ultimately enhancing maternal outcomes and improving the quality of life for expectant mothers. To further promote maternal health and safeguard women's lives during pregnancy and the postpartum period, it is essential to address and prioritize critical knowledge gaps in this area. This awareness of maternal venous thromboembolism (VTE) among nurses and midwives is essential for the successful implementation of risk-reduction measures (Hu et al., 2025).

This study primarily aims to assess nurses' and midwives' awareness and attitudes toward VTE among women in obstetric wards at Bethlehem governorate and East Jerusalem hospitals. Their awareness and attitudes are crucial, as they significantly influence the quality of nursing practices related to VTE prophylaxis (Boka Dugassa Tolera & Ketema Bizuwork Gebremedhin, 2024), specifically focusing on its risk factors, challenges, and preventative measures.

1.2 Problem statement

Thromboembolic diseases, including VTE, have become a leading cause of death, accounting for one in four deaths globally (Al-Mugheed & Bayraktar, 2023). Approximately one in every 1,000 pregnant women is at risk of developing VTE, which encompasses both DVT and pulmonary embolism PE (Raia-Barjat et al., 2022). While the overall incidence of VTE has decreased in developed countries, it continues to rise in developing nations, such as Palestine (Wendelboe & Raskob, 2016). A report from the World Health Organization (WHO) attributes the increase in maternal deaths during pregnancy and childbirth in developing countries to several factors. These include inadequate health systems characterized by poor quality of care, a shortage of healthcare personnel, and insufficient basic supplies. In addition, poverty and inequality play a large role in increasing risks. The report also pointed to several social determinants, such as income, education, gender, and ethnic discrimination, as well as conflicts and disasters that increase the fragility of health systems. Moreover, the lack of reproductive health services, including contraception and safe abortion, contributes to high mortality rates. Finally, pregnancy-related diseases, such as bleeding, infections, and preeclampsia, along with harmful cultural norms and gender discrimination, are major reasons that hinder women's access to appropriate care.

In Palestine, the maternal mortality ratio for 2022 was 21.9 per 100,000 live births, VTE is one of the major preventable direct causes of maternal death in this year (United Nations Population Fund, 2022). The high incidence rate of VTE emphasizes the need to encourage healthcare providers, particularly nurses and midwives, to recognize its risks and implement preventive measures during pregnancy and the postpartum period. Nurses and midwives who have a strong awareness and understanding of VTE are more likely to engage in proactive prevention and early detection, which can lead to improved maternal outcomes. However, gaps in knowledge

may still exist, especially regarding new evidence-based practices, which underscores the necessity for ongoing education and training on VTE.

Despite an extensive search of existing literature, no studies in Palestine have explored nurses' knowledge and practices regarding VTE prevention. To improve patient outcomes in Palestinian hospitals, reduce VTE incidence, and enhance the quality of care, this study aims to address these knowledge and practice gaps, identify contributing factors, and assess the current state of VTE prevention among ICU nurses in Southern Palestinian hospitals. Given the crucial role of nurses in preventing VTE, understanding their awareness, practices, and influencing factors is essential for developing effective prevention strategies and improving patient care in the region.

1.3 Significance of the study (Justifications)

This study is significant because it has the potential to enhance VTE prevention practices in Southern West Bank hospitals by addressing gaps in nurses' knowledge and perceptions. Assessing nurses' current understanding and practices will offer insights into the effectiveness of existing protocols and highlight areas needing improvement. By identifying the factors that influence these practices, the study aims to guide targeted educational programs and policy interventions. Strengthening nurses' competence and confidence in VTE prevention can improve patient outcomes, reduce VTE incidence, and elevate the overall quality of care in these healthcare settings.

Main Aim

The purpose of this study is to assess nurses' and midwives' awareness and attitudes regarding venous thromboembolism among women in obstetric wards at Bethlehem Governorate and East Jerusalem hospitals.

1.5 Specific Objectives

This study aims to achieve the following specific objectives:

1. To assess the nurses' and midwives' awareness regarding venous thromboembolism in obstetric wards at Bethlehem Governorate and East Jerusalem hospitals.
2. To assess the nurses' and midwives' attitudes regarding venous thromboembolism in obstetric wards at Bethlehem Governorate and East Jerusalem hospitals.
3. To compare the nurses' and midwives' awareness and attitude regarding venous thromboembolism by demographic variables.
4. Examine the socio-demographic and professional factors that are associated with awareness and attitudes regarding VTE among nurses and midwives.

5. Investigate the relationship between nurses' and midwives' attitudes and awareness regarding VTE.

1.6 Research Questions

1. What is the nurses and midwives' level of awareness regarding venous thromboembolism in obstetric wards at Bethlehem Governorate and East Jerusalem hospitals?
2. What is the nurses and midwives' level of attitude regarding venous thromboembolism in obstetric wards at Bethlehem Governorate and East Jerusalem hospitals?
3. Is there a significant difference in the awareness and attitudes scores among nurses and midwives based on socio-demographic and professional factors?
4. Is the nurses' and midwives' awareness and attitude significantly associated with socio-demographic and professional factors?
5. Is there a significant correlation between the awareness and attitudes of nurses and midwives regarding VTE?

1.7 Null Hypotheses

1. There are no statistically significant differences in the nurses' and midwives' awareness and attitude towards VTE based on socio-demographic and professional factors.
2. There is no statistically significant association between nurses' and midwives' awareness and attitude towards VTE and socio-demographic factors.
3. There is no statistically significant relationship between nurses' and midwives' awareness and attitude towards VTE

1.8 Definitions of Terms

1. **Venous Thromboembolism (VTE):** is a condition in which a blood clot (thrombus) forms in a vein, potentially causing obstructions, which can lead to serious complications depending on where the obstruction occurs. The most common types of thromboembolism include Deep Vein Thrombosis (DVT) and Pulmonary Embolism (PE) (Nimia Reyes, 2023).
2. **Awareness:** "Knowledge that something exists, or understanding of a situation or subject at present based on information or experience". (Cambridge University Press, n.d.)
3. **Attitude :** Refers to a complex combination of beliefs, feelings, and behavioral tendencies that reflect how one behaves and interacts in a specific situation (Pickens, 2005).
4. **Nurses:** the person who provides comprehensive health care to the sick person inside or outside the hospital. The name nurse is given to someone who has completed a generalized basic nursing education program and is licensed by the appropriate regulatory authority to practice nursing in his or her country. This individual must be prepared and certified to perform their professional duty by promoting health, preventing disease, and caring for the

physically and mentally ill and those with disabilities of all ages and in all settings (Potter et al., 2021).

5. **Midwives:** A midwife is a “person who has completed a midwifery education program based on the ICM Essential Competencies for Midwifery Practice and the framework of the ICM Global Standards for Midwifery Education, recognized in the country where it is located; who has acquired the requisite qualifications to be registered and/or legally licensed to practice midwifery and use the title ‘midwife,’ and who demonstrates competency in the practice of midwifery”. (International Confederation of Midwives, 2017, p. 1)

1.7 Context of the Study

1.7.1 Geography and Population:

Palestine is located in southwest Asia, on the southern part of the eastern coast of the Mediterranean Sea. The area of Palestine is 27,027 square kilometers, including Lakes Tiberius and Hula, and half the area of the Dead Sea. After the occupation, the area of the current State of Palestine reached 6019.6 km², representing 22.27% of the area of historical Palestine, as follows: The area of the West Bank is 5654.6 km², constituting 21.9% of the total area of historical Palestine, and include East Jerusalem which located on the eastern side of the Jerusalem city and counted about 70 square kilometers from West Bank area, but has been under the Israeli occupation control. The area of the Gaza Strip is 365 km², constituting 1.35% of the total area of the historic land of Palestine (Ministry of Foreign Affairs and Expatriates, 2019). Bethlehem is a city in the Israeli-occupied West Bank of the State of Palestine, covering about 575 square kilometers of area and located in the south of Jerusalem in the West Bank (Palestinian Central Bureau of Statistics [PCBS], 2019). The Palestinian National Authority governed the West Bank through 11 governorates: Jenin, Tubas, Tulkarm, Nablus, Qalqilya, Salfit, Ramallah and Al-Bireh, Jericho, Jerusalem, Bethlehem, and Hebron.

The population density is considered very high 910 persons/km² in Palestine, with a total population of 5, 48 million individuals in WB and GS (3,25 in WB and 2.23 in GS) before the war. The total fertility rate in the year 2023 is 3.10 births per woman in the state of Palestine (Gaza and West Bank) (PCBS, 2023). Due to the blockade of the GS and restriction of movement and trade, a significant increase in poverty rates occurred in GS and West Bank.

1.7.2 Health care system:

The health sectors in the Palestinian territories are divided into 4 sectors: the government health sector (Palestinian Ministry of Health (PMOH)), the United Nations Relief and Works Agency for Refugees (UNRWA), non-governmental organizations (NGOs), and the private sector. The public sector, represented by the Palestinian Ministry of Health, provides health services

through financing foreign aid and taxes. As for the NGOs that contribute to the health care sector, providing various services in the West Bank and Gaza, which are used by about 11.7% of Palestinians. Finally, the private sector is experiencing significant growth with the emergence of private hospitals, pharmacies, and rehabilitation centers (PCBS, 2023).

Primary health care: The number of registered Primary Health Care (PHC) centers in Palestine reached 767 in 2022, with 608 located in the West Bank (WB) and 159 in the Gaza Strip (GS) before the war. This results in a population of 6,576 individuals per center. The Palestinian Ministry of Health (MoH) operates 493 PHC centers, making up 64.3% of the total. Non-governmental organizations manage 192 centers, accounting for 25% of all PHC facilities. The United Nations Relief and Works Agency (UNRWA) operates 65 centers, which constitute 8.5% of the total, while military medical centers number 17, representing 2.2% (MoH, 2022).

Hospitals: In 2022, Palestine had 93 hospitals in total, with 35 situated in the Gaza Strip (GS) and 58 in the West Bank. There were 6,900 hospital beds overall, which translates to a rate of 12.9 beds per 100,000 population. The Ministry of Health (MoH) managed 31 hospitals, offering a combined total of 3,909 beds; of these, 18 were governmental hospitals in the West Bank, providing 1,898 beds. Maternity hospitals, which specialize in obstetrics and gynecology, represented about 3.5% of all hospital beds in Palestine. Furthermore, there were 22 hospitals operated by non-governmental organizations (NGOs), 1 hospital run by UNRWA, and 17 private hospitals (MoH, 2022).

Chapter Two

Conceptual framework and Literature Review

2.1 Conceptual Framework

2.1.1 Introduction:

The conceptual framework was developed after a literature review of previous studies related to the same topic. The text consists of two sections: the first section presents conceptual definitions for the variables, while the second section provides operational definitions for these variables. The researcher offers the conceptual framework to assist the reader in understanding the relationships among the study variables (Varpio et al., 2020). The framework of this study contains two basic components: the first one is nurses' awareness and nurses' attitude regarding VTE, which are considered the dependent variables in this study. The second component contains the socio-demographic data, which are the independent variables in this study. The researcher will provide conceptual and operational definitions for each of them. Also, the researcher will present a mind map that describes the relationship between variables within the conceptual framework, as shown in fig. (2.1).

2.1.2 Conceptual definition of the independent variables:

Socio-demographic and professional characteristics: Are the social, demographic, and professional characteristics of individuals or groups that are studied in scientific research and that may have an impact on the practices, knowledge, and attitudes of individuals or an impact on the occurrence of a particular phenomenon (Vo et al., 2023). The conceptual framework of the study was based on the results of literature reviews that indicate some demographic and professional factors (Age, experience, level of education, profession, workplace, VTE protocol availability in workplace, VTE-related training) that influence awareness and attitude regarding VTE (Feng et al., 2021; Kiflie et al., 2022; Tolera & Gebremedhin, 2024; Yee et al., 2022). Identifying these variables and their impact is important for understanding the phenomenon and its

causes and trying to intervene to improve public health.

2.1.3 Conceptual definition of dependent variables:

1. **Nurses and midwives' Awareness:** knowledge that something exists regarding a patient's health condition or the surrounding environment, and understanding of the patient's situation at the present time based on information or experience. (Cambridge University Press, n.d.)
2. **Nurses and midwives' Attitude:** In nursing, "attitude" refers to a complex combination of beliefs, feelings, and behavioral tendencies that reflect how one behaves and interacts in a specific situation with patients. (Pickens, 2005)
- 3.

2.1.4 Operational definitions of the independent variables:

Socio-demographic and professional characteristics: This study will identify the following demographic characteristics of the nurses and midwives (Age, profession type, level of education, experience, hospital facility VTE preventing policy, Hospital Type):

1. **Age:** The participant's age was determined by the question in the first part of the questionnaire; the participant was asked to fill in their age by using an open-ended question. After that, it was categorized by four age-groups (20-29, 30-39, 40-49, and 50 or more), and then examined whether it affects the awareness and attitude or not.
2. **Experience:** This factor relates to the years of experience in nursing or midwifery profession, and was determined by asked to fill by using an open-ended question. After that, it was categorized by three choices (less than 5 years, 5- 15 years, or more than 15 years). Then, it was examined whether it affects awareness and attitude or not.
3. **Level of education:** the education level was determined by asking the participant to choose one from three categories (Diploma, Bachelor's, or Higher Studies Degree), then examining whether it affects the awareness and attitude.
4. **Profession:** The participant's profession was categorized into two categories, by asking them to choose one type of profession within two options: nursing or midwifery. Then, it was examined whether it affects the awareness and attitude or not.
5. **Workplace:** This factor determines the type of hospital in which the participant works. Participants were asked to choose one of two choices: a governmental hospital or a private hospital. Then, they examined whether it affects awareness and attitude.
6. **Hospital facility VTE preventing protocol:** This factor determines if the hospital in which the participant was working has a protocol related to VTE prevention or not. The participant was asked in the questionnaire to choose one of two choices: yes or no. After that, it was examined whether it affects the awareness and attitude or not.
7. **Training:** This factor determines if the participant received training related to VTE prevention and management. The participant was asked in the questionnaire to choose one of two

choices: yes or no, and then examined whether it affects awareness and attitude.

2.1.5 Operational definitions of the dependent variables:

1. **Awareness:** This study measures the extent to which nurses and midwives have proper knowledge and practice regarding VTE, which both reflect their awareness. This was measured by a table of questions containing three domains, and each domain contains nine items. The first domain aimed to measure the level of nurses and midwives' awareness toward VTE definition, pathophysiology, the second domain aimed to measure the level of nurses and midwives' awareness toward VTE risk factors, and the third domain aimed to measure the level of nurses and midwives' awareness toward VTE prophylaxis measures.
2. **Attitude:** This study measured the level of nurses' attitude regarding VTE by questions about their beliefs and feelings, which affect their behavior in specific situations related to VTE prevention, risk assessment, healthcare provider training and education, multidisciplinary care, current practices, and anticoagulants used among women in the obstetric wards at Bethlehem governorate and East Jerusalem hospitals. The information related to this part was collected by questions in the last table in the questionnaire about participant beliefs.

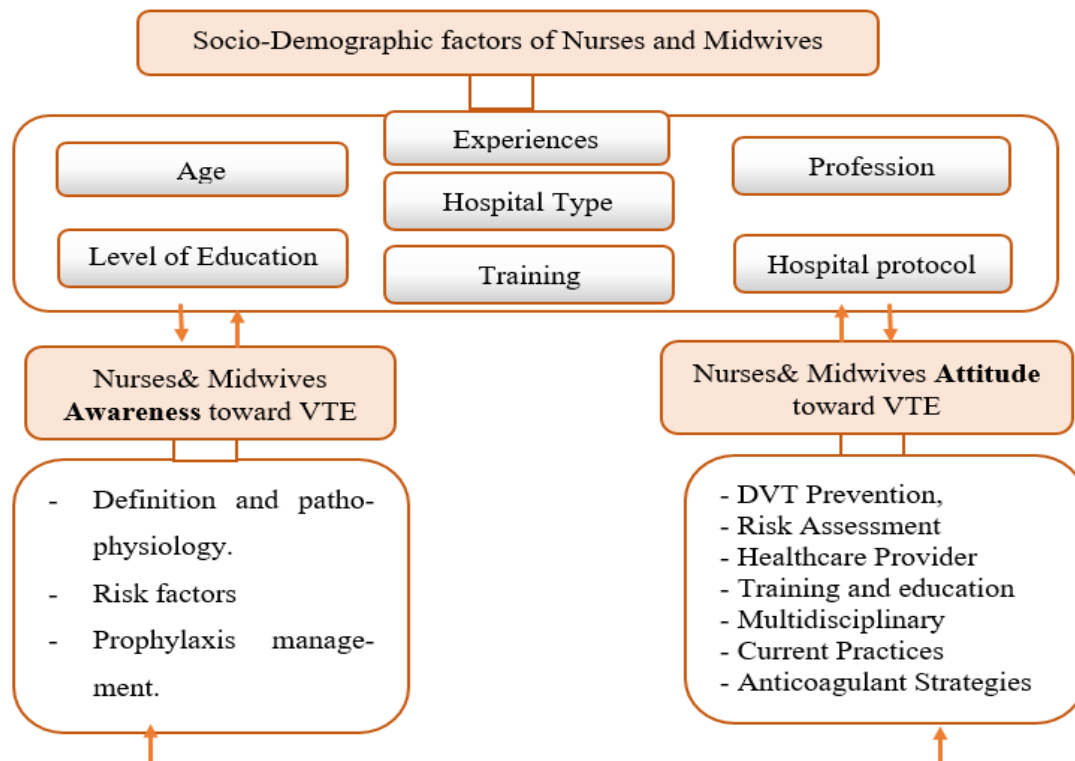


Figure 1: Conceptual framework Diagram.

2.2 Literature Review

2.2.1 Introduction

In this chapter, the researcher provides a summary of previous studies on various aspects of VTE. This includes definitions of VTE, its epidemiology, the etiology, signs and symptoms, and risk factors associated with it. Additionally, the chapter addresses the maternal mortality rate related to VTE, prevention measures, therapeutic management, and VTE prophylaxis protocols. It also studies nurses' and midwives' awareness and attitudes about VTE, both globally and in Palestine, and the factors that affect them. Finally, the chapter identifies research gaps and concludes with a summary.

2.2.2 Search Strategy

The researcher conducted a comprehensive literature review of international and local studies, utilizing reliable electronic resources to examine previous literature, including PubMed, EPOC, Research4Life, and reports from the websites of the PMOH, PCBS, WHO, UNICEF, CDC, and Medscape. Additionally, the results from studies in developed and developing countries are compared with those from Palestinian studies. A total of 55 studies and report were identified in the literature, published between 2017 and 2025, addressing The keywords used in this review are VTE, nurses and midwives' awareness, attitude regarding VTE, and antenatal and postnatal periods.

2.2.3 Venous Thromboembolism

Venous thromboembolism (VTE) is recognized as a significant and preventable health burden, affecting nearly 10 million people annually worldwide (Khan et al., 2021). According to the Centers for Disease Control and Prevention (CDC) (2024), VTE refers to blood clots that form in veins and can manifest as deep vein thrombosis (DVT) or pulmonary embolism (PE). DVT occurs when a blood clot develops in a deep vein, typically in the pelvis, thigh, or lower leg. In contrast, when a portion of the clot dislodges and travels to the lungs, it is classified as PE, which can be life-threatening. Both PE and DVT are significant medical conditions that are often preventable yet frequently underdiagnosed.

Palo (2024) describes venous thromboembolism as a medical condition encompassing two interrelated scenarios: deep venous thrombosis (DVT) and pulmonary embolism (PE). A thrombus is a solid mass composed of platelets and fibrin, along with enclosed red and white blood cells (WBC) that forms within a blood vessel. The condition known as hypercoagulability leads to the formation of a thrombus in the deep veins of the limbs, pelvis, or arms. PE occurs when blood circulation to one or more lung arteries is obstructed by a thrombus lodged in a pulmonary vessel.

The signs and symptoms of VTE vary based on the location and severity of the clot, as well as the specific characteristics of PE and DVT, which collectively constitute venous thromboembolism (CDC, 2025). Common signs of DVT include redness, warmth, pain, and swelling in the affected arm or leg. However, early diagnosis can be challenging, as many individuals may not show symptoms (CDC, 2025). Conversely, PE can occur without prior symptoms of DVT. Symptoms of PE include sudden shortness of breath, chest pain that worsens with deep breathing or coughing, an irregular or rapid heartbeat, and occasionally coughing up blood. Additionally, significantly low blood pressure may cause dizziness, lightheadedness, or even fainting (Alhassan et al., 2017; CDC, 2025).

2.2.4 Epidemiology

Worldwide, thromboembolism is considered a leading cause of maternal mortality and mobility. Pregnant women are 5 times more likely to develop VTE than non-pregnant women and also have a higher risk of developing VTE during the 3 months after delivery (CDC, 2024).

In developed countries, one of the most common causes of maternal mortality in the USA is pulmonary embolism, and 9.2% of maternal deaths are related to VTE (CDC, 2024; Park et al., 2021). Another study from developed countries done in Korea, aimed to inspect trend changes in the incidence rate of pregnancy-associated VTE (PA-VTE) during the study period (2014–2018) compared with that reported in a previous study (2006–2010), by using a cohort retrospective study design, report that the incidence in PA-VTE incidence was increased to 2.62 per 10,000 deliveries, which 3.2 times more likely than in the previous study (Hwang et al., 2023).

In Arab countries, venous thromboembolism (VTE) during pregnancy remains a significant concern, as various studies show that the incidence of VTE associated with pregnancy is still considered high. A study conducted at Omdurman Maternity Hospital in Sudan used a cross-sectional descriptive study design, aimed to “determine the rate, clinical features, and mortality of venous thromboembolism (VTE) at Omdurman Maternity Teaching Hospital, Khartoum, Sudan”, reported that a VTE rate was 7 per 1000 pregnancies (Fazari et al., 2016). The result indicated that 88.8% of cases were DVT and 11.2% were PE; the majority of cases developed during the postpartum period (Fazari et al., 2016). Another study from Saudi Arabia, published in 2022 in Biomed Research International Journal, aimed to “elucidate the circumstances surrounding pregnancy-induced deep vein thrombosis (DVT) and pulmonary embolism (PE) and to assess recurrence rate and mortality for VTE in pregnant Saudi women” (Alsheef et al., 2020). This study used a retrospective chart review design. It concluded that 22.5% of VTE cases were pregnancy-induced VTE, with 75% of these cases developing DVT, 16.7% of patients developed PE, and 8.3% developed DVT that progressed to PE. Also, this study concludes that the risk of VTE during the postnatal period is greater than in the antenatal period (60% vs. 40%, respectively) (Alsheef et al., 2020).

Another study conducted in Egypt between 2018 and 2019 used a prospective study design, including women in the maternity period who attended the hospital at risk of venous thromboembolism (VTE) according to RCOG guidelines and received prophylaxis (Hosny et al., 2020). The findings indicated that the incidence of VTE was 0.55 per 1,000 women, with a higher risk noted during the postpartum period compared to the pregnancy period (Hosny et al., 2020).

In Palestine, a study carried out in the Gaza Strip in 2023 included women who underwent cesarean sections (C/S) and were recruited consecutively to evaluate the rates and limitations of adherence to VTE prophylaxis. The study reported that 74.02% of the participating women were at moderate risk for VTE (Aldabbour et al., 2024).). No research has been conducted in the West Bank to report the incidence or prevalence of VTE during the maternity period. However, the absolute risk of VTE during pregnancy worldwide is 1 per 1,000 pregnancies (Varrias et al., 2023).

2.2.5 Risk Factors of VTE

The venous thromboembolism risk factors in the general population are different from the risk factors in pregnancy and the postpartum period. In the general population, VTE risk factors can be classified into various categories, including those related to vein injury, slow blood flow, increased estrogen, chronic medical disease, or other factors. Vein injury-related factors include fractures, severe muscle injury, and major surgery, especially in the abdomen, pelvis, hip, or legs. Factors related to slow blood flow include confinement to bed, limited movement, sitting for a long time, especially with crossed legs, and Paralysis. Factors related to increased estrogen include estrogen-containing contraceptives and hormone replacement therapy, sometimes used after menopause. Factors related to certain chronic medical illnesses include heart disease, lung disease, cancer and its treatment, and inflammatory bowel disease (Crohn's disease or ulcerative colitis). Other risk factors include previous DVT or PE, an inherited clotting disorder, a family history of DVT or PE, age (risk increases as age increases), overweight or obesity, and a catheter located in a central vein (Pastori et al., 2023).

In pregnancy and the postpartum period, the risk factors include cesarean delivery, assisted reproductive technology, stillbirth, preterm birth, preeclampsia, obstetric hemorrhage, postpartum infection, preexisting diabetes mellitus, inflammatory bowel disease, Systemic lupus erythematosus (lupus), and sickle cell disease (Maughan et al., 2022). In addition, in the postpartum period, VTE occurs at higher rates in obese mothers or with concurrent immobilization (Maughan et al., 2022).

2.2.6 Maternal Mortality Rate (MMR)

Worldwide, maternal mortality refers to the number of deaths caused by complications related to pregnancy. This includes any death that occurs during pregnancy and within 42 days following the termination of the pregnancy (WHO, 2024). According to WHO (2024), the global maternal mortality rate in 2020 was 223 per 100,000 live births. One of the leading causes of maternal death globally is VTE, accounting for 3% of maternal deaths (UNICEF, 2023), with 95% of these deaths occurring in lower-middle-income countries (WHO, 2024). In the United States (U.S.), 700 women die each year as a result of pregnancy or pregnancy-related complications. Embolism was reported as one of the underlying causes of maternal death (CDC, 2018). According to the National Perinatal Epidemiology Unit (NPEU) (2024), there were 296 maternal deaths recorded between 2020 and 2022, resulting in a rate of 13.56 per 100,000 maternities. This rate represents an increase from the previous year, when it was 11.66 per 100,000 maternities in 2019. Furthermore, the NPEU identified venous thromboembolism as the most common leading cause of maternal death from 2020 to 2022.

In Palestine, according to the Palestinian National Maternal Mortality Report (2020), 31% of maternal deaths were attributed to pulmonary embolism. In 2022, the maternal mortality rate (MMR) was 21.9 per 100,000 women, 25.1 in the West Bank, and 17.4 in the Gaza Strip. 46% of the direct leading cause for maternal death in Palestine was VTE, which is considered a preventable cause of death (Sroor & Masri, 2022)

2.2.7 Prevention Measures of VTE (Prophylaxis)

Venous thromboembolism prophylaxis is a group of measures applied to individuals who have risk factors for VTE and aims to prevent these risk factors from developing into a disease (Lutsey & Zakai, 2023). According to a study conducted in the United States, prophylaxis reduces the incidence of VTE by 75% (Durinka et al., 2016). Prevention is divided into primary prevention, which involves interventions aimed at preventing venous thromboembolism (VTE) in healthy individuals who have risk factors for developing the condition, and secondary prevention, which refers to interventions designed to protect individuals with a history of VTE from experiencing recurrent incidents (Lutsey & Zakai, 2023).

Prevention is also divided into two types according to the prevention measures used: either pharmacological, by using anticoagulant medication like UFH, LMWH, selective factor Xa inhibitors, and VKA, or non-pharmacological, such as compression stockings, ambulation, vena cava filters, leg elevation, and intermittent pneumatic compression (Henke et al., 2020). The type of preventive measures is chosen based on the assessment of the patient's health status and follows the American Heart Association recommendations (Henke et al., 2020).

A study done in Pakistan in 2023, aimed to examine the relationship between VTE prevention and the prevalence of VTE by using a retrospective cross-sectional study design in 200 individuals with risk for VTE. The study result showed that there was a strongly significant relationship between pharmacological VTE prophylaxis and VTE incidence. Patients who received pharmacological prophylaxis have a lower risk for VTE than those who did not received ($P = .001$) (Ghulam et al., 2024). These results showed a significant relationship between non-pharmacological VTE prophylaxis and VTE incidence; patients who received non-pharmacological prophylaxis like stocking, have a lower risk for VTE than those who did not receive ($P = .004$) (Ghulam et al., 2024).

In addition, a cross-section study based on survey done in 2019 in China, including 100 women diagnosed with VTE (DVT or PE) during pregnancy and the postpartum period, this study aimed to identify the missed opportunities for VTE prophylaxis in hospitals that provide maternal healthcare in mainland China, and the result concluded that 75% of cases did not receive appropriate VTE prophylaxis measures during hospitalization, which mean that there was gap in prophylactic measure applied in these hospitals (Zhao et al., 2021).

In Palestine, a study from the West Bank aimed to evaluate the current adherence to VTE prophylaxis practice to the established guidelines at a Palestinian teaching hospital by using a retrospective cross-sectional study, which concluded that more than half of hospitalized medically ill patients (60.3%) received inappropriate prophylaxis (Abukhalil et al., 2022). Another study from the Gaza Strip conducted by Aldabbour et al. (2023), used a descriptive cross-sectional study design and aimed to evaluate the rates and limitations of women's adherence to VTE prophylaxis at the obstetrics and gynecology hospitals, they concluded that the rate of adherent to VTE prophylaxis was low in this study (51.96%), cause of non-adherent was related to poor consultation and communication for mother about prophylaxis by health care provider and the cost of pharmacological VTE prophylaxis.

2.2.8 Therapeutic Management of VTE

Decisions about therapeutic procedures are made after a thorough assessment of the patient's condition, taking into account the available evidence and personal values. Based on this assessment, the specialist selects the appropriate treatment method to follow. Several specialized major organizations provide recommendations and guidance regarding the management and treatment of VTE in pregnancy (Bates et al., 2012; Chan et al., 2014; Federspiel et al., 2021). According to the 2014 Society of Obstetricians and Gynecologists of Canada (SOGC), 2011 American College of Obstetricians and Gynecologists (ACOG), and 2012 American College of Chest Physicians (ACCP) guidelines and recommendation for VTE management during pregnancy, VTE diagnosis should be confirmed by objective testing (such as ultrasound or CT scan) after clinical suspicion of deep venous thrombosis or pulmonary embolism. Ultrasound imaging is preferred for the diagnosis of deep venous thrombosis (Chan et al., 2014). If the initial results

are negative, it is recommended to retest within 7 days. Ventilation and perfusion scans (V/Q scans) are preferred rather than computed tomography (CT) to diagnose pulmonary embolism during pregnancy (Chan et al., 2014).

After a confirmed diagnosis of acute VTE for pregnant women, she should be hospitalized and start Low Molecular Weight Heparin (LMWH) with the dose determined according to the patient's current weight (Bates et al., 2012; Chan et al., 2014; Federspiel et al., 2021), and the treatment requires therapeutic anticoagulation for at least 3 months, and the dose can subsequently be reduced to a prophylactic or intermediate level during the remainder of the pregnancy and 6 weeks after delivery (Bates et al., 2012; Chan et al., 2014; Federspiel et al., 2021). In cases where anticoagulants are contraindicated, the recommended use of inferior vena cava filters as a treatment, and the use of compression stockings may reduce DVT symptoms in the led (Bates et al., 2012; Chan et al., 2014; Federspiel et al., 2021).

2.2.9 Venous Thromboembolism Prophylaxis Protocols

Worldwide, many international organizations issue guidelines on venous thromboembolism, all highlighting the importance of assessing risk factors that could expose pregnant women to thrombosis during pregnancy or postpartum for all pregnant women. Regarding prophylaxis management, the Royal College of Obstetricians and Gynecologists (RCOG) recommends using low-molecular-weight heparin (LMWH) during pregnancy and for six weeks after delivery for women with four or more risk factors. Meanwhile, the Society of Obstetricians and Gynecologists of Canada (ACOG) recommends giving prophylaxis to pregnant mothers with three or more risk factors, although they do not specify the duration of prophylaxis after delivery (Ephraums et al., 2025). Similarly, according to American College of Chest Physicians (SOGC) guidelines, women with three or more risk factors should also receive LMWH during pregnancy and for six weeks after delivery (Ephraums et al., 2025). All of these organizations emphasized the importance of using non-pharmacologic prophylaxis management with pharmacologic management, like graduated compression stockings (GCS), early movement after delivery, and intermittent compression devices (Ephraums et al., 2025).

In Palestine, the Ministry of Health recommendation emphasized the importance of using a risk assessment tool to assess all pregnant women for risk factors during the antenatal or postnatal period and assessing the transient risk factors, like immobility. In addition, according to PMOH guidelines, the assessment should be done four times: in the first visit during the first trimester, in the hospital admission visit, after delivery, and on discharge day (MoH, 2024). For the prophylaxis management in the PMOH guidelines, there were two types: Pharmacological measures, the first line medication is LMWH, and the alternative medication if the LMWH is not available is unfractionated heparin (UFH). Warfarin is contraindicated during pregnancy,

and it is safe during the postpartum period (not contraindicated with breastfeeding). Non-pharmaceutical measures, including mobility, hydration, compression stockings, and intermittent compression devices (MoH, 2024).

According to PMOH guidelines, the type of venous thromboembolism (VTE) prophylaxis is determined according to the woman's level of risk. For the low-risk Level (one risk factor), it is recommended to maintain good movement and avoid dehydration. For the moderate-risk level (three risk factors), it is recommended to start LMWH during pregnancy and for at least 10 days after delivery. In addition, recommended to start LMWH during pregnancy and for 6 weeks after delivery at a high-risk level, when the mother has four or more risk factors (MoH, 2024).

2.2.10 Nurses and Midwives' Knowledge and Attitude regarding VTE

Globally, nursing and midwifery professionals play a pivotal role in the prevention, early detection, and management of VTE. Several previous studies aimed to explore the level of nurses' and midwives' knowledge, awareness, and attitude regarding VTE. For instance, A systematic review study done on previous studies related to nurses' knowledge, risk assessment practices, self-efficacy, attitudes, and behaviors toward VTE involved 14 studies from several countries in the world (Al-Mugheed & Bayraktar, 2023), nine of these studies specifically aimed to assess general VTE knowledge. Despite awareness and recommendations related to VTE prophylaxis, this study concluded that just five out of nine studies found that most nurses demonstrated good knowledge in these countries. In addition, 6 of these studies aimed to assess nurses' knowledge related to VTE risk assessment, and three out of six studies found that the nurses have a low level of knowledge regarding VTE risk assessment (Al-Mugheed & Bayraktar, 2023).

In addition, research done by Tolera & Gebremedhin (2024), including 339 nurses working at tertiary hospitals in Ethiopia, aimed to assess nurses' knowledge, practice, and associated factors regarding venous-thromboembolism by using a cross-sectional study design, reported that only 51.63% of nurses have good knowledge, and 45.4% demonstrated good practices. Another study in Ethiopia assessed knowledge, attitudes, practices, and associated factors towards VTE prophylaxis among health professionals for adult hospitalized patients, by using a cross-sectional study design including 404 health care professionals, found that only 42.76% of nurses and 26.66% of midwives have good knowledge regarding VTE prophylaxis (Kiflie et al., 2022).

The majority of nurses in Iraqi hospitals have inadequate knowledge and negative attitudes regarding VTE, according to a study aimed to assess the relationship between the nurses' socio-demographic data and their knowledge about and attitudes toward deep vein thrombosis (Dawood et al., 2023). This study used a cross-sectional design and included 100 nurses, and found that 2% of nurses had good awareness of deep vein thrombosis, 22% of nurses had intermediate knowledge and 76% had inadequate knowledge of the condition. Also, this study found

that the majority have negative attitudes toward deep vein thrombosis (83%). This result reflects that the level of knowledge and awareness among nurses regarding DVT in Al-Basrah, Iraq, was very low (Dawood et al., 2023). Otherwise, in Saudi Arabia, the majority of nurses have a high level of knowledge and attitude regarding DVT prevention, according to a study done by Alyousef et al. (2022), this study aimed to assess studied nurses' knowledge and practice regarding DVT and DVT prevention by using a cross-sectional study design and the result found that most of nurses in this study have demonstrated a high total knowledge score regarding the DVT.

Despite the pregnancy and postpartum period consider a risk period for VTE incidence and the crucial role of nurses and midwives in delivering quality healthcare and ensuring mother safety, studies that specifically assess the nurse's and midwife's knowledge and awareness in the obstetric department regarding VTE remain scarce. Among the few studies available on this topic, one focuses on assessing nurses' knowledge and awareness regarding VTE for high-risk antenatal and postnatal Mothers in Malaysia, using a cross-sectional study design and included 170 nurses, the results found that 95.3% of nurses have good knowledge and 94.7% have good awareness (Yee et al., 2022). In Palestine, no studies found focused on nurses' awareness or knowledge and attitude regarding VTE in obstetric departments that provide antenatal, child-birth, and postnatal care.

2.2.11 Factors affecting midwives' and nurses' knowledge and attitude.

Based on the results of previous studies, there are factors that have an impact on the level of awareness, knowledge, and attitude of nurses and midwives towards VTE. These factors include experience, educational level, hospital policy or guidelines, hospital type, training, and profession type (Feng et al., 2021; Kiflie et al., 2022; Tolera & Gebremedhin, 2024; Yee et al., 2022).

Experience

A study by Kiflie et al. (2022), aimed to assess knowledge, Attitude, practices, and associated factors toward VTE prophylaxis among health professionals, found that there was a significant relationship between health professional experience and knowledge toward VTE prophylaxis, health professionals whose years of experience >11 years were 5 times more likely to have satisfactory knowledge towards VTE prophylaxis as compared to professionals who had less than 5 years of experience. This result aligned with Feng et al. (2021), and Tolera & Gebremedhin (2024) studies. This contrasts with Yee et al.'s (2022) study, which found no correlation between a nurse's level of knowledge and experience.

Hospital policy or guidelines

The health professionals who have had a VTE-preventing policy in the hospital where they work were nearly 2 times more likely to have satisfactory knowledge about VTE prophylaxis than professionals who didn't have a VTE-preventing policy (Kiflie et al., 2022).

Educational level

The level of nurses' knowledge has a relationship with nurses' educational level, the nurses with higher education levels have more correct answers related to VTE with $P < .001$ (Feng et al., 2021). These results aligned with Tolera & Gebremedhin's (2024) finding, which found a relationship between nurses' knowledge of VTE prevention and educational level with $P = .048$.

Profession, training, and hospital type

A study by Almarshad et.al (2024), aimed to evaluate knowledge, attitude, and practice toward using thromboprophylaxis by health professionals in Saudi Arabia, used a cross-sectional study design and included 2019. This study found that 74% had satisfactory knowledge, and 79.9% had a positive attitude. This study identified several factors associated with professionals' knowledge and attitude, from this factor; the profession type (found that nurses have a higher level of knowledge and positive attitude regarding VTE prophylaxes than other health), hospital type (found that professionals who work in private hospitals demonstrate a higher level of knowledge and practices than who work in private hospitals), educational level and experiences (found that the professionals who have a higher level of education and more years of experience are more likely to have a higher level of knowledge and positive attitude), and policy available and training (professionals who received training regarding VTE and worked in hospitals have VTE management policies have higher level of knowledge and positive attitude(Almarshad et al., 2024). This study aligns with previous research findings that have a similarly topic (Alyousef et al., 2022; Zhou et al., 2023).

2.2.12 Gap in the Research

The literature review showed that despite all recommendations to elevate awareness regarding VTE and the importance of prophylaxis to reduce the VTE mortality and morbidity, the recent study showed that nurses' awareness and attitude are still not at a good and satisfactory level. Also, despite the VTE being considered one of the leading causes of maternal mortality globally, there was a lack of studies to assess nurses and midwives' knowledge who work in the obstetric department, which was the first point of contact in providing care and support to mothers. Most of the previous studies recommended doing training and continuous education aimed at elevating nurses' and midwives' knowledge. In Palestine, there is also a clear gap due to the scarcity of research that focuses on assessing nurses and midwives' knowledge and attitude toward VTE,

especially in the obstetric department there no study has been found in Palestine related to this topic.

2.2.13 Summary

Venous thromboembolism considered one of the leading causes of maternal death worldwide, as the risk of VTE increases during pregnancy and the postpartum period. Nursing awareness and attitude are crucial for the early detection of VTE through correct assessment, providing timely appropriate prophylactic interventions, and effective therapeutic management. This plays an important role in reducing VTE mortality and morbidity, ultimately improving the quality of life for affected or at-risk mothers.

Chapter Three

Research Methodology

3.1 Introduction

This chapter aims to define and clarify the plan for implementing the methodology in this research, which aims to assess midwives' and nurses' awareness and attitudes regarding VTE of women in the obstetric ward at Bethlehem governorate and East Jerusalem Hospitals in Palestine. This chapter described the study design, sampling methods, sample size, population, setting, data collection protocol, data collection tool, analysis plan, and ethical considerations. In addition, this section will mention the exclusion and inclusion criteria for the sample population, how the instrument was selected, and verify its reliability and validity.

3.2 Study Design

This study employed a quantitative descriptive cross-sectional design, collecting information from participants at a single point in time. According to Pandis (2014), the cross-sectional design is an observational study in which the exposure and the outcome are determined at the same time point for each study participant.

3.3 Setting

This study was conducted at four hospitals in Bethlehem governorate and East Jerusalem, including governmental and private hospitals in different places in Bethlehem governorate and East Jerusalem, and provide maternal health care services during antenatal and postnatal periods. The Bethlehem governorate hospital are Al-Hussein (Beit-Jala) and Holy Family Hospitals, and East Jerusalem hospitals are Saint Joseph and the Red Crescent Society Hospitals.

3.3.1. Government Hospitals:

3.3.1.1. Al-Hussein (Beit-Jala) Hospital:

Al-Hussein Hospital is also known as Beit-Jala Hospital. Al-Hussein Governmental Hospital, located in Bait Jalal, Bethlehem governorate, was established in 1955. It operates under the Palestinian Ministry of Health and is a significant healthcare provider in the West Bank. The hospital has a capacity of 131 beds and employs around 363 staff members. The Maternity ward at Al-Hussein Hospital had 8 beds in the labor room and 30 beds in the post-natal wards. The number of Nurses and midwives working at Al-Hussein Hospital in antenatal and postnatal wards was 19 (MoH, 2021).

3.3.2. Private Hospitals:

3.3.2.1. Holy Family Hospital:

Holy Family Hospital, which is called French Hospital, is one of the most important private hospitals in Bethlehem governorate. The Obstetrics department has a total capacity of 45 beds, including a 6-bed day care unit. The state-of-the-art labor ward is equipped with 7 delivery rooms, a 2-bed recovery/ICU, and an emergency cesarean section operating room. The department also has 2 other elective surgery operating rooms. The number of Nurses and midwives in the obstetric department is 56 (42 midwives and 14 nurses).

3.3.2.2. Saint Joseph Hospital:

Saint Joseph Hospital which is called Mar Yousef Hospital, is one of the most important hospitals in East Jerusalem. The Obstetrics department was established in 2015 with antenatal, labor, and postnatal. Has a total capacity of 49 beds including 5 beds in the antenatal care unit. The labor ward is equipped with 5 delivery rooms and a 2-bed recovery/ICU. Postnatal capacity was 36 beds and one isolated room. The total number of nurses and midwives in the obstetric department is 40 (36 midwives and 4 nurses).

3.3.2.3. The Red Crescent Society Hospital:

The Red Crescent Society Hospital was established in 1951 and is considered one of the most important hospitals in East Jerusalem. Has a total capacity of 40 beds in the antenatal care unit, labor, and Postnatal. The total number of nurses and midwives in the obstetric department is 52 (36 midwives and 16 nurses).

3.4 Study Population

The target group of this study included the nurses and midwives working in antenatal, labor, and postnatal wards at the selected hospitals in Bethlehem governorate and East Jerusalem, Palestine, within the period of the study that started in October 2024 to Dec. 2025. The total population was 167 nurses and midwives distributed among the four selected hospitals in Bethlehem governorate and East Jerusalem.

3.5 Sample Methods

The researcher gathered the number of nurses and midwives from each hospital during scheduled meetings with the nursing administrators of the selected hospitals. Non-probability convenience sampling methods were employed. This sampling approach was chosen to select participating nurses and midwives due to the ease of accessing participants and collecting information, particularly in the context of political barriers and mobility challenges. However, according to Andrade (2021), points out that findings from studies utilizing convenience sampling can only be generalized to the specific sample and not extrapolated to the wider population. Therefore, the results of this study are anticipated to reflect the views of those nurses and midwives who voluntarily expressed interest in participating. As a result, the researchers have limited control over the number of participants included in the study, as illustrated in Table (4.1).

Table 3.1: Shows the distribution of the nurses and midwives in each hospital.

Hospital Type/ Strata	Hospital Name	Midwives No	Nurses No	Total
Governmental	Al-Hussein Hospital	19	0	19
Non- Governmental	Holy Family Hospital	42	14	56
	The Red Crescent Society Hospital	36	16	52
	Saint Joseph Hospital	36	4	40
Total	4 hospital	153	34	167

3.6 Sample size

The target population size, according to data gathered from nursing administrators, is 167. By using online sample size calculators (Raosoft, 2024), to have a confidence level of 95% that the real value is within ± 5 percentage points of the measured/surveyed value, the final calculated initial sample size should be 117 Nurses and midwives, according to this statistical equation. However, to enhance the response rate and improve the robustness of the study, the sample size was increased to 140 (initial sample size *1.2).

3.7 Eligibility Criteria

3.7.1. Inclusion criteria: The inclusion criteria in the study depended on the availability of the nurses and midwives who agreed to provide their informed consent and to participate in the study. These nurses and midwives should be:

- Registered Nurses and midwives with a diploma, bachelor's degree, or higher education.
- All Nurses and midwives who work in the antenatal clinic, labor, and postnatal ward in the three selected hospitals during the period of the study.

3.7.2. Exclusion Criteria:

- Volunteer Nurses and Midwives.
- Nurses and midwives who do not work in antenatal, labor, and postnatal wards.
- Nurses and midwives who refused to participate in this study.

3.8 Instruments of the Study

The data collection tool used for this research is a self-administered questionnaire, which was adapted from previous studies (Kiflie et al., 2022; Yee et al., 2022). The questions were modified, and additional items were included to better align with the research objectives. Subsequently, the researcher assessed the validity and reliability of the questionnaire prior to data collection. The questionnaire contains three sections:

The first section contained socio-demographic and professional characteristics questions (age, profession, level of education, experience, hospital VTE prevention protocol, training, and hospital type (governmental or Non-governmental)).

The second section contained three domains with 27 questions related to the nurses and midwives' knowledge and awareness about: 1. VTE definition and pathophysiology, 2. risk factors, 3. Prophylaxis management. Participant responses in this section were two choices: Yes or No. Yes was considered the correct answer, and No was considered the incorrect answer. Each correct answer would indicate one mark, and a wrong answer indicates zero. Based on Yee et al. (2022) study, the total awareness scores are categorized as: 'high awareness' (19-27 scores); 'moderate awareness' (10-18 scores); and 'low awareness' (0-9 scores). Also, as shown in Table 3.3, in each domain the level was categorized into 3 levels: low (0-3), moderate (4-6) and high (7-9). The level of awareness checklist in this section was taken from a study by Yee et al. (2022) and modified.

Table 3.2: Awareness level according to cut-off point scores.

Awareness Domains	Item No.	Low level	Moderate level	High level
Domain 1 cut-off point	9	0-3	4-6	7-9
Domain 2 cut-off point	9	0-3	4-6	7-9
Domain 3 cut-off point	9	0-3	4-6	7-9
Total awareness cut-off point	27	0-9	10-18	19-27

The third section: The table contains questions related to nurses' and midwives' attitudes regarding VTE. The attitude table contained ten items, each item has a 5-point Likert scale ranging from strongly disagree [1] to strongly agree [5] was used to assess nurses and midwives' knowledge and attitudes towards VTE. Each item was scored, and the final attitude score ranged between 10 and 50. The attitudes of Nurses and midwives were categorized into two levels (positive or negative), based on the original study that developed the questionnaire. Attitudes were considered positive when the total score was equal to or above 60% and negative when it was below 60% of the attitude item. This section of the question was taken and modified from a study conducted by Kiflie et al (2022), who took the questionnaire from a modification of the nurses' and physicians' knowledge, attitude, and practice assessment tool.

3.9 Validity of the Study Questionnaire

3.9.1. External Validity:

To authenticate its validity, experts in the field including Dr. Maha Nahal from Al-Quds University and midwife Fatima Qassas, head nurse of the obstetric ward at Saint Joseph hospital, reviewed the questions in questionnaires and modified them upon their comments.

3.9.2. Internal Validity:

Internal consistency was assessed by examining the corrected item-total using Pearson's correlation coefficient between each item score and the total score of its respective axis. Statistical significance was considered at $p < 0.05$. Correlation coefficients (r) of 0.30 or higher and p -values of 0.05 or less were considered acceptable. As shown in Table 3.4), for awareness questions and Table 3.5 for attitude questions, the p -value for all items was less than 0.05, and person-total (r) was more than 0.30, so the domains are sufficiently related to support the validity of the questionnaire.

Table 3.3: Pearson's correlation coefficients for measuring the validity of the questionnaire's internal consistency for the three domains of the nurses and midwives' awareness of VTE.

Item	r (Person-Total)	p-value	Item	r (Person-Total)	p-value
Domain 1			Q5	0.634	<0.001
Q1	0.419	<0.001	Q6	0.558	<0.001
Q2	0.417	<0.001	Q7	0.460	<0.001
Q3	0.512	<0.001	Q8	0.471	<0.001
Q4	0.655	<0.001	Q9	0.562	<0.001
Q5	0.545	<0.001	Domain 3		
Q6	0.583	<0.001	Q1	0.479	<0.001
Q7	0.381	<0.001	Q2	0.401	<0.001
Q8	0.704	<0.001	Q3	0.441	<0.001
Q9	0.515	<0.001	Q4	0.579	<0.001
Domain 2			Q5	0.610	<0.001
Q1	0.615	<0.001	Q6	0.505	<0.001
Q2	0.539	<0.001	Q7	0.632	<0.001
Q3	0.422	<0.001	Q8	0.588	<0.001
Q4	0.541	<0.001	Q9	0.661	<0.001

Table 3.4: Pearson's correlation coefficients for measuring the validity of the questionnaire's internal consistency for the nurses and midwives' attitudes toward VTE

Item	r (Pearson)	p-value	Item	r (Pearson)	p-value
Q1	0.663	<0.001	Q6	0.798	<0.001
Q2	0.738	<0.001	Q7	0.707	<0.001
Q3	0.792	<0.001	Q8	0.858	<0.001
Q4	0.746	<0.001	Q9	0.895	<0.001
Q5	0.760	<0.001	Q10	0.837	<0.001

3.9.3. Pilot study:

A pilot study was applied to a group of 20 nurses and midwives who met the criteria and who were not included in the main study sample, to confirm the validity of the tool before starting the data collection. The pilot study aimed to ensure the clarity of the questionnaire, indicate the clarity of the wording of the questions, determine the actual time that participants need to fill out the questionnaire, ensure the suitability of the questionnaire to the objectives of the study, and avoid any ambiguity in the questions. Minor modifications were made based on participants' feedback, including rewording some items and adjusting the layout. The time required to complete the questionnaire was approximately 5 to 10 minutes.

3.10 Reliability of the Study Questionnaire

The reliability of the questionnaire was assessed by examining Cronbach's alpha on the Pilot study for all domain questions and checking if the alpha exceeded 0.6, so the tool was considered reliable. The result of the alpha test is shown in Table (3.6), indicating that the overall awareness scale consisting of 27 items achieved an acceptable internal consistency ($\alpha = 0.80$). In addition to the attitude scale, it is also considered good to excellent internal consistency ($\alpha = 0.800$).

Table 3.5: Cronbach's Alpha for awareness and attitude questions of the questionnaire.

No.	Domain	N of Items	Cronbach's Alpha
1	Awareness items	27	0.800
2	Attitude Items	10	0.893

3.11 Ethical Considerations

Before the beginning of the research study, ethical approval was obtained from the Ethical Committee at Al-Quds University, Ref No: 515/REC/2025, and also obtained from the Subcommittee of Faculty of Health Professions, RESC/2025-22. After that, permission to conduct the study at the government hospitals was obtained from the Ministry of Health. And permission was also taken from the nursing directors at the private hospitals. Informed consent was taken from participants, which is the first sheet in the questionnaire. It contains information about the objectives of the study, information about the researchers, and how the study would benefit the nursing and midwifery field and public health. Confidentiality of the data and the identity of participants was strictly maintained throughout the study. All collected data was anonymized, ensuring that no identifying information was recorded or linked to individual participants. Surveys were stored securely in password-protected electronic files, and any physical documents were kept in a locked cabinet accessible only to the researcher. During dissemination, only aggregated data and general findings were reported, without any personal identifiers. Participants were informed about these confidentiality measures before providing their consent to participate.

3.12 Data Collection

The researcher visits hospital directors and head nurses in the maternity units to inform them that they have received approval to conduct the study in their wards. Then, the researcher asks them to inform all nurses and midwives about the study's purpose and to obtain permission to collect data. Two midwives assist in data collection at Saint Joseph and the Red Crescent Society Hospital. To reduce the chance of questionnaire content being shared among participants, all nurses and midwives who meet the inclusion criteria receive the questionnaire and are given a

limited period to complete it individually. The questionnaires are filled out in the presence of the researcher or helper midwives. They are collected immediately after completion to ensure independent responses and minimize potential bias. Additionally, data collection was conducted twice weekly, specifically on Mondays and Thursdays, throughout the study period.

3.13 Data Analysis

In the data analysis process, the data were entered into the statistical analysis program SPSS version 27. The factors were given codes, and the data were entered in the form of numeric data so that SPSS could analyze them. For example, the answer “yes” will take (1), and the answer “no” will take (2). Descriptive statistics were used to determine the frequency and percentage of participants’ responses on awareness and attitude items. The data did not meet the normality assumption based on the Shapiro–Wilk and Kolmogorov–Smirnov test, a non-parametric alternative to the T-test was used. The Mann-Whitney U test (for independent variables with 2 factors) and Kruskal-Wallis H test (for independent variables with 3 or more factors) were used to identify the differences in the mean rank based on demographic characteristics. Spearman's rho correlation was used to examine the strength and direction of association between awareness scores and attitude scores, and also used to examine the association of socio-demographic and professional characteristics with awareness and attitude scores. The results were presented by using text, tables, and graphs.

3.14 Summary

This chapter provides a summary of the research methodology that the researcher followed in this study, which primarily aimed at assessing the awareness and attitude of nurses and midwives regarding VTE in obstetric wards at Bethlehem governorate and East Jerusalem hospitals.

Chapter Four

Result

4.1 Introduction

This chapter presents the results of a study on nurses and midwives' awareness and attitudes toward VTE among those working in maternity wards in Bethlehem and Jerusalem hospitals. In this section, we discuss two types of analysis: descriptive and inferential analysis. Firstly, the descriptive analysis aims to describe the sample; the initial part summarizes the participants' socio-demographic and professional characteristics, including age, years of experience, education level, profession, workplace, presence of a VTE protocol at the workplace, and prior VTE training. The second part of the descriptive analysis described the awareness and attitude of participants, and reported the levels of awareness and attitudes of the participants. Following this, the inferential analysis was conducted to assess the difference in awareness and attitude based on socio-demographic and professional factors, and then examine the correlations between these factors and awareness and attitude scores. The results will be detailed in subsequent sections using descriptive statistics, tables, and charts to offer a clear overview of the data.

4.2 Descriptive Analysis

4.2.1. Characteristics of participants:

Out of a total of 140 nurses and midwives invited to participate, 140 questionnaires were distributed to 140 nurses and midwives. However, only 122 completed all the items in the questionnaire; 18 questionnaires were incomplete and excluded from the study. The analysis was conducted on 122 completed questionnaires, resulting in an 87% response rate. The participants' ages ranged from 22 to 60 years. Participants were divided into four age groups, with the largest groups being 20–29 years and 30–39 years, each comprising 48 participants (39.3%). The 40–49 years group included 11 participants (9.0%), while those over 40 years made up 15 participants (12.3%), as shown in Table 4.1.

In addition, their years of professional experience ranged from zero to 30 years, and were categorized into three groups: less than 5 years, 5–15 years, and more than 15 years. The results showed that the largest group of participants had 5–15 years of experience, representing 44.3% (n = 54) of the total participants, followed by those with less than five years of experience at 33.6% (n = 41), and those with more than 15 years at 22.1% (n = 27). For the education level, 74.6% (n = 91) of participants had a Bachelor's, and 25.4% (n = 31) had a higher degree of education. Furthermore, 90 out of 122 participants (73.8%) were midwives, and 26.2% (n=32) were nurses, as shown in Table 4.1.

Regarding the workplace, the vast majority of participants worked at a private hospital, accounting for 106 (86.9%), while 13.1% (n=16) worked at a governmental hospital. Concerning VTE-related protocols, nearly half of the participants, 48.4% (n=59) reported that the VTE protocol was available at their workplace, whereas 51.6% (n=63) said it was not. Additionally, only 23.8% (n=29) received training related to VTE previously, while 76.2% (n=93) had not received any VTE training, as shown in Table (4.1).

Table 4.1: Frequency and percent of socio-demographic and professional characteristics of nurses and midwives (N = 122).

Characteristics	Categories	Frequency	Percentage
Age-group	20 -29 years	48	39.3%
	30- 39 years	48	39.3%
	40– 49 years	11	9%
	>49 years	15	12.3%
Experience-Level	< 5 years	41	33.6%
	5 – 15 years	54	44.3%
	> 15 years	27	22.1%
Education level	Bachelor's Degree	91	74.6%
	Higher Degree	31	25.4%
Profession	Midwife	90	73.8%
	Nurse	32	26.2%
Workplace	Government Hospital	16	13.1%
	Private Hospital	106	86.9%
Protocol available in the workplace	Yes	59	48.4%
	No	63	51.6%
Received training before	Yes	26	23.8%
	No	93	76.2%

4.2.2. Awareness regarding VTE among Nurses and Midwives:

This section presents a description of participants' awareness scores regarding VTE across three domains: definition and pathophysiology (D1), risk factors (D2), and prophylaxis measures (D3), as well as the total awareness score. Table (4.2) presents the frequency and percentage of correct and incorrect responses of participants on the first domain questions (Definition and pathophysiology), which consisted of nine items. Out of the total responses, 79.2% of responses were answered correctly, while 20.7 answered incorrectly. Participants demonstrated the highest awareness regarding DVT as a definition, with 94.3% responding correctly. In contrast, the lowest correct response was observed for item 6, which pertained to the most common hereditary cause of DVT, with only 54.9% of responses being correct.

Table 4.2: Nurses and midwives' responses on awareness questions about VTE definition & pathophysiology (N= 122).

VTE Definition and Pathophysiology	Correct Response (Yes)	Incorrect Response (No)	Total Response
	n (%)	n (%)	n (%)
1. The formation of clots in the blood vessels is called deep vein thrombosis (DVT).	115 (94.3)	7 (5.7)	122 (100)
2. A blood clot in the deep veins may lead to pulmonary embolism (PE) if it travels to the lungs.	108 (88.5)	14 (11.5)	122 (100)
3. Diagnosing VTE during pregnancy can be complicated due to pregnancy-related physiological changes.	91 (74.6)	31 (25.4)	122 (100)
4. Deep vein thrombosis occurs due to increased venous stasis in the left leg as a result of pressure.	91 (74.6)	31 (25.4)	122 (100)
5. During pregnancy and the postpartum period, DVT is often associated with venous stasis caused by physiological changes of pregnancy.	107 (87.7)	15 (12.3)	122 (100)
6. Antithrombin deficiency is the most common hereditary cause of DVT.	67 (54.9)	55 (45.1)	122 (100)
7. Shortness of breath is the most common symptom of pulmonary embolism (PE).	100 (82.0)	22 (18.0)	122 (100)
8. DVT symptoms in women may appear as pain in the lower abdomen or leg.	82 (67.2)	40 (32.8)	122 (100)
9. Redness and skin discoloration are signs and symptoms of DVT, whereas chest pain and palpitations are symptoms of pulmonary embolism (PE).	109 (89.3)	13 (10.7)	122 (100)
Total Response	870 (79.2)	228 (20.8)	1098 (100)

Note: n = number of participants, % = percentage of participants.

For the Risk Factors domain, which consisted of nine items. As shown in the Table (4.3), out of the total responses, 79.4% of responses were answered correctly, while 20.6% answered incorrectly. The highest correct response was observed for item seven, which addresses the most common acquired VTE risk factors, while the lowest correct responses were observed for items 1 and 4, regarding kidney failure and cancer as risk factors for VTE, with 61.5% correct response.

Table 4.3: Nurses and Midwives' Responses on Awareness questions about VTE Risk Factor (N= 122).

VTE Risk Factors	Correct Response (Yes)	Incorrect Response (No)	Total Response
	n (%)	n (%)	n
1. Kidney failure is considered a contributing factor to an increased risk of DVT or PE.	75 (61.5)	47 (38.5)	122 (100)
2. The risk of VTE after cesarean delivery is approximately twice as high as compared to vaginal delivery.	99 (81.1)	23 (18.9)	122 (100)
3. Postpartum mothers should be assessed according to risk factors and provided with prophylactic treatment against thrombosis.	111 (91.0)	11 (9.0)	122 (100)
4. The risk is highest during the first few months after starting combined oral contraceptives.	76 (62.3)	46 (37.7)	122 (100)
5. Patients with cancer are more susceptible to VTE and its recurrence.	75 (61.5)	47 (38.5)	122 (100)
6. Pregnancy complications such as preeclampsia and intrauterine growth restriction (IUGR) increase the risk of VTE.	95 (77.9)	27 (22.1)	122 (100)
7. Prolonged hospitalization, immobility, and obesity are among the most common acquired risk factors.	116 (95.1)	6 (4.9)	122 (100)
8. Older women (over 35 years) may have a higher risk of developing VTE compared to younger women.	112 (91.8)	10 (8.2)	122 (100)
9. A family history of thrombosis or VTE increases the likelihood of developing the condition.	113 (92.6)	9 (7.4)	122 (100)
Total Response (n, %)	872 (79.4)	226 (20.6)	1098 (100)

Note: n = number of participants, % = percentage of participants.

In terms of VTE prophylaxis management domain, which consisted of nine items, out of the total responses, 77.7% of responses were answered correctly, while 22.3% answered incorrectly. Participants showed the highest correct answer in item two, which is about women receiving prophylactic heparin at the onset of labor, with 90.2% correct response, while the lowest correct response was in the item related to the time of prophylactic dose of LMWH after cesarean delivery, with 52.5% correct, as shown in Table (4.4).

Table 4.4: Nurses and Midwives' responses on awareness Questions about VTE Prophylaxis measures (N= 122).

Prophylaxis Measures	Correct Response (Yes)	Incorrect Response (No)	Total Response
	n (%)	n (%)	n (%)
1. A prophylactic dose of low molecular weight heparin (LMWH) should be given 3–6 hours after cesarean delivery.	64 (52.5)	58 (47.5)	122 (100)
2. Women receiving prophylactic heparin should be advised to discontinue injections at the onset of labor.	110 (90.2)	12 (9.8)	122 (100)
3. Anticoagulation should be continued during pregnancy and for at least 6 weeks postpartum.	88 (72.1)	34 (27.9)	122 (100)
4. In obese women, the heparin dose should be adjusted based on actual weight to reduce the risk of VTE recurrence.	104 (85.2)	18 (14.8)	122 (100)
5. In cases of suspected DVT or PE, heparin should be started until the diagnosis is ruled out.	97 (79.5)	25 (20.5)	122 (100)
6. Use of graduated elastic compression stockings (GECS) is a non-pharmacological prophylactic measure.	108 (88.5)	14 (11.5)	122 (100)
7. Aspirin and a prophylactic dose of LMWH are preferred for women with a history of preeclampsia or IUGR.	92 (75.4)	30 (24.6)	122 (100)
8. Before starting heparin therapy, blood tests for PT, APTT, and INR should be obtained to determine baseline values.	108 (88.5)	14 (11.5)	122 (100)
9. LMWH is safer than warfarin during pregnancy due to the teratogenic effects of warfarin.	82 (67.2)	40 (32.8)	122 (100)
Total Response (n, %)	853 (77.7)	245 (22.3)	1098 (100%)

Note: n = number of participants, % = percentage of participants.

To provide a clear description, the individual item scores were summed to obtain the total score for each domain, and the scores were used to classify participants' awareness into three levels: low (scores 0-3), moderate (scores 4-6), and high (scores 7-9). As shown in Table (4.5), the analysis further examined the awareness levels across the three domains: definition and pathophysiology, risk factors, and prophylaxis management, to identify specific areas of strength and weakness. For the first domain (definition and pathophysiology), most participants (71.3%) had a high awareness level, 22.1% had a moderate awareness level, and 6.6% had a low awareness level. For the VTE risk factor domain, 75.4% had a high level of awareness, 26% had a moderate level of awareness, and 3.3% had a low level of awareness.

Similarly, for the prophylaxis measures domain, the majority had high awareness (66.4%), 26.2% had moderate awareness, and 7.4% had low awareness. Although 66.4% of participants in this domain demonstrated a high awareness level and only 7.4% had a low level, the proportion of high awareness was relatively lower compared to other domains, as shown in Table (4.5).

Table 4.5: Nurses' and midwives' awareness levels toward VTE across three domains (N = 122).

Awareness Toward VTE	Low Level Scores (0 - 3)	Moderate Level Scores (4 - 6)	High Level Scores (7 - 9)
	n (%)	n (%)	n (%)
Definition & Pathophysiology (D1)	8 (6.6)	27 (22.1)	87 (71.3)
Risk Factors (D2)	4 (3.3)	26 (21.3)	92 (75.4)
Prophylaxis measures (D3)	9 (7.4)	32 (26.2)	81 (66.4)

Note: n= number of participants, % = percentage of participants. D1 = domain 1, D2 = domain 2, D3 = domain 3. The Awareness level categories: low level (score = 0 – 3), moderate level (score = 4-6), high level (score = 7-9).

Based on the sum of scores from the three domains in VTE awareness domains, the total awareness score was assessed and then the participants were classified into three levels of total awareness according to their total awareness scores; low awareness level (score = 0 -9), moderate awareness level (score = 10 -18), and high awareness level (score = 20 -27), according to the evaluated criteria defined before. The vast majority (n = 88, % = 72.1 %) of nurses and midwives had a high level of awareness, 31 of the participants (25.4%) had a moderate level of awareness, and 3 participants (2.5%) had a low level of awareness, as shown in Fig. (4.1).

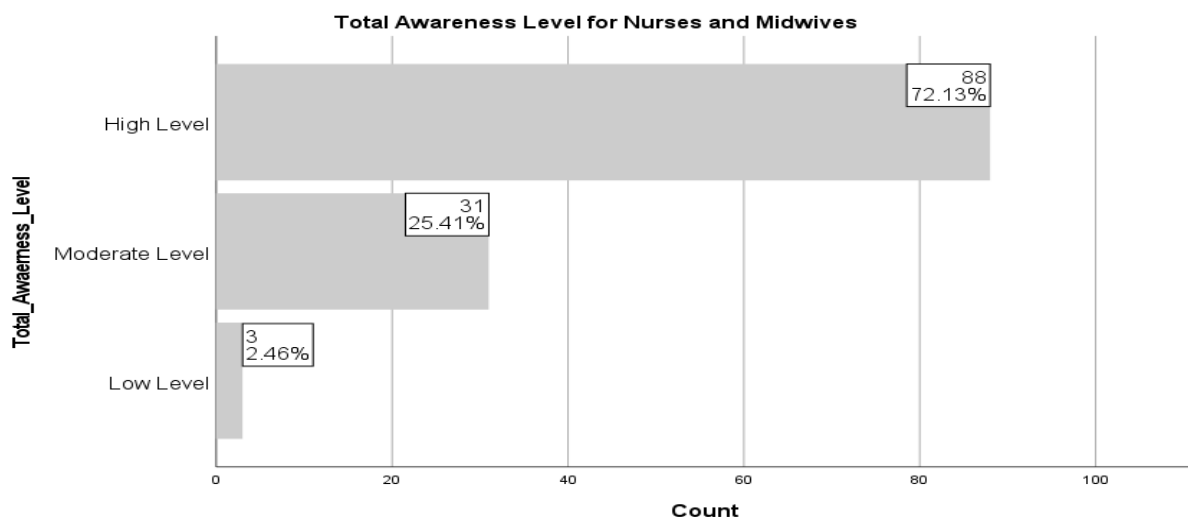


Figure 4.1: The frequency and percentage of the total awareness level regarding VTE among nurses and midwives (N= 122).

4.2.3. Attitude toward VTE among Nurses and Midwives:

As previously described, participants' attitudes were measured using 5-point Likert scale questions, and participants' responses were converted into numeric scores ranging from 10 to 50. Table (4.6) provide a detailed overview of participants' responses in the attitude domain. A consistently high level of agreement with no disagreement was observed across three items (1, 2, and 4). These items highlighted the importance of using DVT preventive measures among hospitalized patients (95% agreement and 5% neutral), assessing deep venous thrombosis (DVT) risk factors before surgery (96.7% agreement and 3.3% neutral), and educating patients about DVT preventive measures (91.8% agreement and 8.2% neutral). Although all items showed high agreement, some had lower rates compared to others. For example, in item 7, only 62.3% of participants agreed that current anticoagulant strategies are not being properly implemented, reflecting comparatively lower agreement, with 10.6% disagreement and 27% neutral responses.

For the remaining items (3, 5, 6, 8, 9, and 10), agreement ranged from 81.9% to 91.8%. Item 3 evaluated beliefs about the necessity of DVT prophylaxis before surgery (81.9% agreed, 13.9% neutral, 4.1% disagreed), while item 5 focused on the need for healthcare providers to receive training in DVT prevention methods (85.2% agreed, 11.5% neutral, 3.3% disagreed).

Additionally, item 6 assessed perceptions of how effective current anticoagulant strategies are for preventing VTE in hospitalized patients (89.4% agreed, 9.0% neutral, 1.6% disagreed). Furthermore, items 8 and 9 evaluated attitudes toward the importance of VTE risk assessment and the potential for prophylaxis to improve quality of care (91.8% and 90.1% agreed, respectively;

6.6% and 8.2% neutral; 2% disagreed). Finally, item 10 examined the belief that a multidisciplinary team should provide therapy for patients with VTE (87.7% agreed, 10% neutral, 5% disagreed).

Table 4.6: Frequency and percentage of nurses and midwives' responses on the attitude assessment tool (N =122).

Attitude Items Content	SA n (%)	A n (%)	N n (%)	D n (%)	SD n (%)
1. I believe that using DVT preventive measures among hospitalized patients is beneficial	63 (51.6)	53 (43.4)	6 (4.9)	0	0
2. I believe that an assessment of deep venous thrombosis (DVT) risk factors is necessary prior to surgery	62 (50.8)	56 (45.9)	4 (3.3)	0	0
3. I believe that the prevention/prophylaxis of DVT is necessary prior to surgery	56 (45.9)	44 (36.1)	17 (13.9)	3 (2.5)	2 (1.6)
4. I believe that educating patients regarding preventive measures of DVT is necessary	58 (47.5)	54 (44.3)	10 (8.2)	0	0
5. I believe that health care providers require training in methods to prevent DVT	60 (49.2)	44 (36.0)	14 (11.5)	3 (2.5)	1 (0.8)
6. I believe that the currently used anticoagulant strategies for the prevention of VTE in hospitalized patients are effective	59 (48.4)	50 (41.0)	11 (9.0)	2 (1.6)	0
7. I believe that current anticoagulant strategies are under- or over-utilized	47 (38.5)	29 (23.8)	33 (27.0)	11 (9.0)	2 (1.6)
8. I believe that VTE risk must be assessed in hospitalized patients	56 (45.9)	56 (45.9)	8 (6.6)	2 (1.6)	0
9. I believe that VTE prophylaxis can improve the quality of medical care	58 (47.5)	52 (42.6)	10 (8.2)	2 (1.6)	0
10. I believe that a multidisciplinary team must provide therapy to patients with VTE	57 (46.7)	50 (41.0)	10 (8.2)	4 (3.3)	1 (0.8)
Total Responses	576 (47.2)	488 (40)	123 (10)	27 (2.2)	8 (0.6)

Note. SA = Strongly Agree, A = Agree, N = Neutral, D = Disagree, SD = Strongly Disagree.

*n = number, % =percentages.

To provide a clearer interpretation, the scores were categorized into two levels: positive and negative attitude, based on a cut point 60%. As shown in Table 4.7, the vast majority of participants (n = 118, % = 96.7%) have a positive attitude towards VTE, and only 4 participants (3.3%) have a negative attitude.

Table 4.7: Attitude Levels toward VTE among Nurses and Midwives (N =122).

Attitude Level	Positive attitude	Negative attitude
	n (%)	n (%)
	118 (96.7%)	4 (3.3%)

*n = number, % =percentages.

4.3 Inferential Analysis

This section aimed to do a comparison of awareness and attitude scores across participants' demographic and professional characteristics by examining the differences in mean rank of awareness in each domain and total awareness score, and differences in mean rank of attitude score. A non-parametric alternative to the T-test was used in the analysis. Mann-Whitney U test used for independent variables with two factors (Education level, Profession, workplace, protocol availability, and previous training), and Kruskal-Wallis H test for independent variables with three factors or more (Age group and experience years groups). Additionally, Spearman's correlation was conducted to explore the strength and direction of the correlation between awareness scores and demographic characteristics, attitude scores and demographic characteristics, as well as between awareness scores and attitude scores.

4.3.1. Nurses and midwives' Awareness across Socio-Demographic and Professional Characteristics:

4.3.1.2. Age Group of Nurses and Midwives:

The Kruskal-Wallis H test revealed that the age groups of nurses and midwives were not significantly associated with total awareness scores or with any domains for awareness scores. Across three domains — definition and pathophysiology, Risk factors, and Prophylaxis management — the H test and p-values were (H = 3.692, p = 0.297) (H = 2.289, p = 0.515), and (H = 1.258, p = 0.739), respectively, and for total awareness scores, the Kruskal–Wallis H yielded a H = 1.433 and p = 0.698, as shown in Tables (4.8 A and 4.8 B). This result revealed that no significant differences in the mean rank of nurses' and midwives' awareness based on age group.

Table 4.8-A: The differences in mean rank of awareness scores based on nurses and midwives age group (N = 122).

Awareness regarding VTE	Age group	Mean Rank	Df	H- Test	p-value
Definition & Pathophysiology (D1)	20–29	64.39	3	3.692	0.297
	30–39	64.79			
	40–49	52.32			
	Above 49	48.47			

Table 4.8-B: The differences in mean rank of awareness scores based on nurses' and midwives' age group (N = 122).

Awareness regarding VTE	Age group	Mean Rank	Df	H- Test	p-value
Risk Factors (D2)	20–29	58.45	3	2.289	0.515
	30–39	66.57			
	40–49	63.73			
	Above 49	53.40			
Prophylaxis Management (D3)	20–29	58.32	3	1.258	0.739
	30–39	65.27			
	40–49	64.41			
	Above 49	57.47			
Total Awareness Score	20–29	60.40	3	1.433	0.698
	30–39	65.05			
	40–49	62.50			
	Above 49	52.93			

*(Domain1: D1, domain 2: D2 and domain 3: D3)

*Kruskal-Wallis H test, p-value was reported as significant at the level of ($p \leq 0.05$).

4.3.1.2. Years of Work Experience of Nurses and Midwives:

As shown in Tables 4.9 A and B, the analysis of awareness scores by using the Kruskal–Wallis H test, according to participants' work experience years, revealed that no significant differences in mean rank across three awareness domains, D1, D2, and D3, the H and p-value were ($H = 2.544$, $p = 0.280$), ($H = 0.271$, $p = 0.873$), and ($H = 0.325$, $p = 0.850$), respectively. For the total awareness, also the Kruskal-Wallis H test used ($H = 0.865$, $p = 0.649$), this result indicates that no significant differences in the mean rank of total awareness based on the experience of nurses and midwives.

Table 4.9-A. The differences in mean rank of awareness scores based on work experience years group for nurses and midwives (N =122).

Awareness regarding VTE	Experience Range	Mean Rank	df	H- Test	p-value
Definition & Pathophysiology (D1)	< 5 years	65.59	2	2.544	0.280
	5–15 years	62.94			
	> 15 years	52.41			

Table 4.9-B. The differences in mean rank of awareness scores based on work experience years group for nurses and midwives (N =122).

Awareness regarding VTE	Experience Range	Mean Rank	df	H- Test	p-value
Risk Factors (D2)	< 5 years	63.68	2	0.271	0.873
	5–15 years	59.98			
	> 15 years	61.22			
Prophylaxis Methods (D3)	< 5 years	63.12	2	0.325	0.850
	5–15 years	61.86			
	> 15 years	58.31			
Total Awareness Score	< 5 years	65.33	2	0.865	0.649
	5–15 years	60.57			
	> 15 years	57.54			

*(Domain1: D1, domain 2: D2 and domain 3: D3)

*Kruskal-Wallis H test, p-value was reported as significant at the level of ($p \leq 0.05$).

4.3.1.3. Education Level of Nurses and Midwives:

The Mann-Whitney U test was conducted to examine the difference in the mean ranks of awareness among nurses and midwives based on their education level. As shown in Table (4.10), the U and p –value for each awareness domain – D1, D2, and D3 were ($U = 0.093$, $p = 0.761$), ($U = 0.693$, $p = 0.405$), and ($U = 0.310$, $p = 0.578$), respectively. The result revealed that no significant differences in mean rank of all awareness domains based on educational level. Additionally, no significant differences in the mean rank of the total awareness scores based on educational level ($U = 0.210$, $p = 0.647$).

Table 4.10: The differences in mean rank of awareness scores across education level for nurses and midwives (N=122).

Awareness regarding VTE	Education Level	Mean Rank	U-Test	p-value
Definition & Pathophysiology D1	Bachelor's Degree	62.05	0.093	0.761
	High Degree	59.87		
Risk Factors D2	Bachelor's Degree	59.98	0.693	0.405
	High Degree	65.95		
Prophylaxis Measures D3	Bachelor's Degree	60.48	0.310	0.578
	High Degree	64.48		
Total Awareness Score	Bachelor's Degree	60.65	0.210	0.647
	High Degree	64.00		

*(Domain1: D1, domain 2: D2 and domain 3: D3)

* Mann-Whitney U test, the p-value was reported as significant at the level of ($p \leq 0.05$).

4.3.1.4. Profession of Participants:

The Mann-Whitney U test was used to identify differences in the mean rank of awareness scores based on profession groups (Nurses and Midwives). In the Table (4.11), the results shown that there was a significant difference in the mean rank of awareness scores in the definition and pathophysiology domain (mean rank = 76.31 for nurses, 56.23 for midwives) and in the prophylaxis measures domain (mean rank = 72.77 for nurses, 57.49 for midwives), with $U = 966.0$, $p = 0.005$, and $U = 1079.5$, $p = 0.032$ respectively. In contrast, for the risk factor domain, there was no significant difference between nurses and midwives in mean rank of awareness scores (mean rank = 68.27 for nurses, 59.09 for midwives), with $U = 1223.5$ and $p = 0.196$.

Generally, for total awareness scores, nurses had a higher mean rank (73.97) than midwives (57.07), indicating a significant difference ($U = 1041.0$, $p = 0.020$). These results suggest that nurses have greater awareness of the definition, pathophysiology, and prophylactic measures for VTE than midwives. However, their mean rank for awareness of the risk factors is nearly the same.

Table 4.11: The differences in mean rank of awareness scores based on the profession of participants (N = 122).

Awareness regarding VTE	Profession Type	Mean Rank	U-Test	p-value
Definition & Pathophysiology (D1)	Nurse	76.31	966.0	0.005*
	Midwife	56.23		
Risk Factor (D2)	Nurse	68.27	1223.5	0.196
	Midwife	59.09		
Prophylaxis Measures (D3)	Nurse	72.77	1079.5	0.032*
	Midwife	57.49		
Total Awareness	Nurse	73.97	1041.0	0.020*
	Midwife	57.07		

*(Domain1: D1, domain 2: D2 and domain 3: D3)

*Mann-Whitney U test, p-value was reported as significant at the level of $p \leq 0.05$ and highly significant of $p < 0.001$.

4.3.1.5. Workplace of Nurses and Midwives:

The Mann-Whitney U test showed a significant difference in awareness scores for the first and third domains, as well as in the total awareness scores, across participants' workplaces (Private or governmental). In the definition and pathophysiology domain, the mean rank for nurses and

midwives working in a private hospital (mean rank = 65.49) was higher than those working in a governmental hospital (mean rank = 35.06), with significant differences ($U = 425.0$, $p = 0.001$). Similarly, in the prophylaxis management domain, the private hospital nurses and midwives had a higher mean rank (mean rank = 63.88) than those working in the governmental hospital (mean rank = 45.72), indicating borderline significance differences ($U = 595.5$, $p = 0.05$). However, for the awareness in the Risk factor domain, no significant differences in mean rank were observed ($U = 818.0$, $p = 0.815$); the mean ranks for nurses and midwives working in governmental and private hospitals were almost equal, with mean ranks of 59.63 for governmental workers and 61.78 for private workers, as shown in Table (4.12).

Overall, for total awareness scores, a significant difference was observed between private workers and governmental workers ($U = 655.5$, $p = 0.026$), and the result showed that nurses and midwives in private hospitals had a higher mean rank in total awareness scores (64.00) than nurses and midwives in governmental hospitals (43.22).

Table 4.12: The differences in mean rank of awareness score based on the workplace of nurses and midwives (N = 122).

Awareness Regarding VTE	Work Place	Mean Rank	U-Test	p-value
Definition & Pathophysiology, D1	Government	35.06	425.0	0.001*
	Private	65.49		
Risk Factor, D2	Government	59.63	818.0	0.815
	Private	61.78		
Prophylaxis Measures, D3	Government	45.72	595.5	0.050*
	Private	63.88		
Total Awareness	Government	43.22	655.5	0.026*
	Private	64.00		

*(Domain1: D1, domain 2: D2 and domain 3: D3)

*Mann-Whitney U test, p-value was reported as significant at the level of $p \leq 0.05$, and highly significant at the level of $p < 0.001$.

4.3.1.6. Protocol Availability in the Workplace:

As presented in Table (4.13), the Mann-Whitney U test was used to examine the differences in mean ranks of awareness based on protocol availability. For the definition and pathophysiology

domain, the results showed no significant differences in mean ranks, with 67.43 for nurses and midwives who work with a protocol and 55.94 for those without a protocol ($U = 1508.5$, $p = 0.066$). Similarly, in the Risk factor domain ($U = 1526.0$, $p = 0.081$), the mean rank is 67.14 for workers with a protocol and 56.22 for those without one.

However, in the prophylaxis measures area, a notable difference was found; nurses and midwives working in places with a protocol have a higher mean rank (mean rank = 73.33) compared to those without a protocol (mean rank = 50.42), with a U test of 1160.5 and a p-value of 0.002. Additionally, for the total awareness score, there was a significant difference in the mean rank; the nurses and midwives with protocol related to VTE in their workplace achieved higher mean ranks in total awareness scores (mean rank = 71.48) than those without protocol (mean rank = 52.15), with a U test of 1269.5, and a p-value of 0.002.

Table 4.13: The differences in the mean rank of awareness scores based on the protocol availability in nurses and midwives' workplace (N= 122).

Awareness Domains	Protocol Available	Mean Rank	U-Test	p-value
Definition & Pathophysiology, D1	No	55.94	1508.5	0.066*
	Yes	67.43		
Risk Factor, D2	No	56.22	1526.0	0.081*
	Yes	67.14		
Prophylaxis Measures, D3	No	50.42	1160.5	0.000*
	Yes	73.33		
Total Awareness	No	52.15	1269.5	0.002*
	Yes	71.48		

*Domain1: D1, domain 2: D2, and domain 3: D3.

*Mann-Whitney U test, p-value was reported as significant at the level of $p \leq 0.05$, and highly significant at the level of $p < 0.001$.

4.3.1.7. Previously trained regarding VTE:

The Mann-Whitney U test was used to compare the awareness and attitude scores between nurses and midwives who received VTE-related training and those who did not. Table 4.14 shows A significant difference across all awareness domains; for the definition and pathophysiology domain, the U-test was 0.002 with a p-value of 836.5, indicating that trained nurses and midwives had a higher mean rank (79.17) than those who were not trained (mean rank = 55.99). Similarly, for the risk factor domain and prophylaxis measures domain, both showed a significant difference in mean rank with a ($U=887.5$, $p = 0.004$) and ($U =789.0$, $p = < 0.001$), respectively. Nurses and midwives who had received training before had a higher mean rank in the

risk factor and prophylaxis measures domain (mean ranks = 77.40 and 80.79, respectively) than those who had not received training (mean ranks = 56.54 and 55.48, respectively).

In addition, a highly significant difference was observed in the mean ranks of the total awareness scores. The nurses and midwives who received training had a higher mean rank (mean rank = 82.09) than those who did not (mean rank = 55.08), with a U-test value of 751.5 and a p-value of less than 0.001, as shown in Table (4.14).

Table 4.14: The differences in mean rank of awareness scores for nurses and midwives based on the VTE-related training.

Awareness Domains	VTE-related training	Mean Rank	U-Test	p-value
Definition & Pathophysiology D1	No	55.99	836.5	0.002*
	Yes	79.17		
Risk Factor D2	No	56.54	887.5	0.004*
	Yes	77.40		
Prophylaxis Measures, D3	No	55.48	789.0	0.001*
	Yes	80.79		
Total Awareness	No	55.08	751.5	< 0.001*
	Yes	82.09		

*(Domain1: D1, domain 2: D2 and domain 3: D3)

*Mann-Whitney U test, p-value was reported as significant at the level of $p \leq 0.05$ and highly significant at $p < 0.001$.

4.3.2. Nurses and midwives' Attitude across Socio-Demographic and Professional Characteristics:

The Kruskal-Wallis H test was used to assess the differences in mean rank scores of participants based on age group, work experience years, as shown in Table (4.15). For the age group, there were no significant differences observed between participants in the mean rank scores based on age groups (p -value = 0.884, $H = .655$). Additionally, no significant differences were observed in the mean ranks for nurses' and midwives' attitudes based on years of experience, with ($H = 0.271$, $p = 0.871$). These results indicated that the attitude did not differ according to nurses' and midwives' age or work experience years.

Table 4.15: The differences in mean rank of attitude scores for nurses and midwives based on the age group, work experience years, and educational level (N =122).

Characteristics \ Attitude towered VTE	Categories	Mean Rank	df	H	p-value
Age group	20–29	61.20	3	0.655	0.884
	30–39	62.84			
	40–49	53.86			
	≥ 50	63.77			
Years of experience	< 5 years	62.79	2	0.276	0.871
	5–15 years	62.06			
	> 15 years	58.43			

*Kruskal-Wallis H test, p-value was reported as significant at the level of $p \leq 0.05$ and highly significant of $p < 0.001$.

Additionally, the Mann-Whitney U test used to assess the differences in mean rank based on education level, profession, workplace, protocol availability, and receiving VT-related training before, as shown in Table (4.16). For the educational level, the result of the Mann-Whitney U test revealed that there was a statistical significant difference in the mean rank based on education level groups ($U = 5.588$, $p = 0.018$). Nurses and midwives with a high degree of studies had a higher mean rank (mean rank = 74.39) compared with nurses and midwives with a bachelor's degree (mean rank = 59.11). This result suggests the nurses and midwives' attitudes differ according to education level. Additionally, for the profession, the nurses had a higher mean rank in attitude scores (mean rank = 73.31) than midwives (mean rank = 57.30), with a statistically significant difference ($U = 1062.0$, $p = 0.027$). Additionally, a significant difference was observed in the characteristic related to VTE-related training; the mean rank of nurses and midwives who received VTE-related training was higher (mean rank = 78.33) than those who did not (mean rank = 56.23), with a U-test of 860.5 and p-value of 0.003. This result suggests that profession and VTE-related training make a difference in the nurses and midwives' attitudes towards VTE.

In contrast, no significant differences were observed in the mean ranks of attitude scores based on workplace and protocol availability. Nurses and midwives who work in governmental hospitals and those working in private hospitals ($U = 617.0$, $P\text{-value} = 0.078$) have nearly equal mean ranks (59.32 and 75.94, respectively). Also, the mean rank was almost the same for nurses and midwives working with a protocol (mean rank = 62.64) and those without (mean rank = 60.43), with a U test of 1791.5 and a p-value of 0.728. This finding indicates that the workplace setting and having a protocol did not make a difference in the nurses' and midwives' attitudes toward VTE.

Table 4.16: The differences in mean rank of attitude scores for nurses and midwives based on the profession, workplace, protocol availability, and VTE-related training (N =122).

Characteristics \ Attitude Tow- ered VTE	Categories	Mean Rank	U	p-value
Education level	Bachelor's	57.11	5.588	0.018 *
	Higher degree	74.39		
Workplace	Governmental	75.94	617.0	0.078
	Private	59.32		
Protocol available	No	60.43	1791.0	0.728
	Yes	62.64		
VTE training	No	56.25	860.5	0.003 *
	Yes	78.33		

*Mann-Whitney U test, p-value was reported as significant at the level of $p \leq 0.05$ and highly significant at $p < 0.001$.

4.3.3. Correlation between Total Awareness Scores, Attitude Scores, and Socio-Demographic Characteristics:

4.3.3.1. Correlation of awareness scores with socio-demographic characteristics:

The Spearman's rho correlation test was used to assess the strength and direction of the correlation between socio-demographic characteristics and both overall awareness and attitude scores of nurses and midwives. In Table 4.17, the results showed that age groups, years of experience range, and education level were not significantly associated with total awareness scores; the p-values were 0.841, 0.357, and 0.649, respectively. However, the results found that the profession, workplace protocol availability, and VTE-related training were positively associated with awareness scores. For the profession group, the rho is 0.212 and the p-value is 0.019. According to Cohen's guidelines, this value indicates a weak correlation, suggesting that nurses tended to demonstrate higher awareness levels compared to midwives. Similarly, for the workplace, the rho is 0.203 and the p-value is 0.025; this result indicates a weak positive correlation between workplace and awareness scores, indicating that the private nurses and midwives tended to have higher total awareness scores than the governmental ones, as shown in the table (4.17).

Additionally, regarding protocol availability, the rho is 0.276 and the p-value is 0.002, while for VTE-related training, the rho is 0.328 and the p-values are less than 0.001. These results indicate a weak positive correlation between protocol availability and total awareness scores, as well as a moderate positive correlation between VTE training and total awareness scores. They suggest

that nurses and midwives working in hospitals with VTE protocols and who received VTE-related training have higher awareness scores than others, as shown in Table (4.17).

4.3.3.2. Correlation of attitude scores and socio-demographic characteristics:

The result of Spearman's rho correlation test revealed that there is no significant correlation between attitude scores and age group, experience range, workplace, and protocol availability, with p-values of 0.979, 0.646, 0.078, and 0.729, respectively. As shown in Table (4.17). However, a significant correlation was observed between attitude scores and education level, profession, and VTE-related training. For the education level ($\rho = 0.215$, p-value = 0.0175), indicating a weak positive correlation between education level and attitude scores. Suggesting that nurses and midwives with higher degree studies have a higher level of attitude scores than those with a bachelor's degree. Additionally, a significant correlation was found between profession and attitude scores, with a rho of 0.201 and a p-value of 0.026, indicating a weak positive correlation. This suggests that attitude scores toward VTE increased among nurses relative to midwives.

Furthermore, a significant correlation was found between VTE-related training and attitude scores ($\rho = 0.268$, p-value = 0.003), indicating a weak positive correlation. This result suggests that the nurses and midwives who received VTE-related training have higher attitude scores than those who did not.

Table 4.17: Spearman's rho Correlation test of total awareness and attitude scores with socio-demographic characteristics of nurses and midwives (N =122).

Characteristics	Total Awareness Scores			Attitude Scores		
	P	ρ (rho)	Direction of Correlation	p	ρ (rho)	Direction of Correlation
Age group	0.841	-0.018	None	0.979	-0.002	None
Experience range	0.357	-0.084	None	0.646	-0.042	None
Education level	0.649	0.042	None	0.017	0.215	Positive
Profession	0.019	0.212	Positive	0.026	0.201	Positive
Workplace	0.025	0.203	Positive	0.078	-0.160	None
Protocols Availability	0.002	0.276	Positive	0.729	0.032	None
VTE-related Training	<0.001	0.328	Positive	0.003	0.268	Positive

*p: p-value, ρ (rho): Spearman's correlation coefficient

*p-value was reported as significant at the level of ($p \leq 0.05$) and highly significant at the level of < 0.001 .

4.3.3.3. Correlation between Total Awareness Scores and Attitude Scores:

As shown in Table (4.18), a Spearman's rho test to examine the correlation between total awareness and attitude scores revealed that there was a highly statistically significant association between awareness and attitude, with a rho of 0.505 and a p-value of less than 0.001. This result indicates that nurses and midwives with high awareness scores tended to report more attitude scores (positive attitudes), as presented in Fig. (4.2).

Table 4.18: Spearman's rho correlation test between total awareness and attitude scores for nurses and midwives (N =122).

Variables Compared	ρ (rho)	p-value	95% CI (Lower–Upper)	Significance & Direction
Total Awareness Scores ↔ Attitude Scores	0.505	<0.001	0.355 – 0.630	Significant Positive Correlation

*(p-value: P, Correlation Coefficient: ρ)

*The p-value was reported as a significant correlation at the level of ($p \leq 0.05$), and a highly significant correlation at the level of < 0.001 .

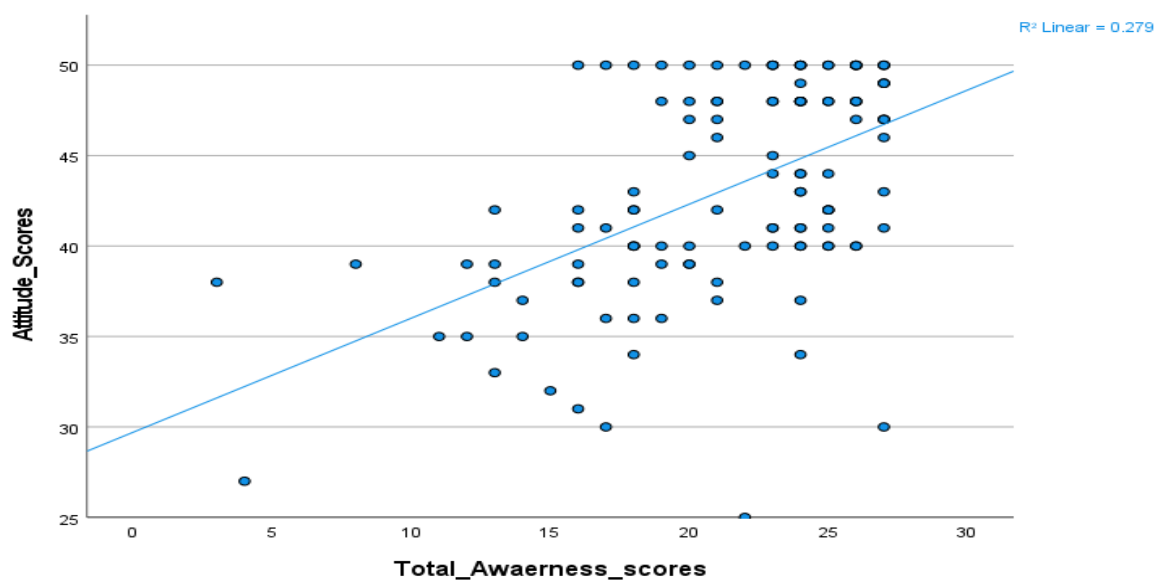


Figure 4.2 Scatter plot of attitude scores by total awareness scores across nurses and midwives (N=122).

Chapter Five

Discussion

5.1 Introduction

In this chapter, the study findings are discussed and interpreted in depth. This study aimed to assess nurses' and midwives' awareness and attitudes regarding venous thromboembolism among women in obstetric wards at Bethlehem governorate and East Jerusalem hospitals. The discussion will focus on several main areas aligned with the research objectives. These include the socio-demographic and professional characteristics of participants, the levels of awareness and attitude, the differences in the awareness and attitude based on socio-demographic factors and their relationship to awareness and attitudes, and the correlation between awareness and attitude towards VTE among nurses and midwives. The discussion compared these findings with existing literature. Additionally, it includes the study's conclusion, strengths and limitations, and recommendations.

5.2 The Socio-demographic characteristics

The response rate for participants was 87%, which is considered satisfactory and indicates the strength and reliability of the results, thereby minimizing the risk of bias from non-response. This rate aligns with a previous similar study in Malaysia that reported an 85% response rate (Yee et al., 2022), supporting the robustness and reliability of the data collection process. Most participants were aged between 20 and 39 years (78.7%), this finding match Yee et al. (2022), where most participants also fell within the 20-39 age group (67.6%), This could reflect the similarity in the typical demographic composition of nurses and midwives in hospitals despite the difference in the regions . Regarding years of experience, nearly half of the participants (44.3%) had between five and 15 years of experience, which is higher than in a similar previous study by Kifle et al. (2022), where the majority (76.1%) of participants had less than 5 years of experience. The higher average years of experience among nurses in this study, compared to

previous studies in other countries, may be due to several factors, including job stability in healthcare institutions and limited recruitment and promotion policies. The diversity of practical experience across different hospital departments may also contribute to greater accumulated experience compared to other countries. Additionally, most participants held a Bachelor's degree (74.6%), similar to a study in Ethiopia where most participants (91.7%) held a bachelor's degree (Tolera & Gebremedhin, 2024). In contrast, a study in Iraq found that the majority of participants held a diploma degree (83%), with only 17% holding a bachelor's degree (Dawood et al., 2023), these differences may reflect the national education requirements for the nursing and midwifery professions in our country compared to other countries.

The majority of participants were midwives (73.8%), which may be due to the nature of employment in Palestine, as maternity departments usually rely more on midwives, while nurses are employed in other departments, such as medical or surgical units. To our knowledge, few, if any, studies have directly compared nurses' and midwives' knowledge regarding VTE in maternity wards. Additionally, regarding workplace distribution, most participants were from private hospitals (86.9%), with only one governmental hospital involved, leading to an unbalanced representation based on workplace type.

Most participants (76.2%) had not received training or education related to VTE, and nearly half (48.4%) reported having a protocol about VTE in their workplace. This aligns with a study from Ethiopia, where the majority of participants (85.1%) had not received VTE training, and only 45% had a VTE policy at their workplace (Kiflie et al., 2022). Whereas, another study in Malaysia reported that the majority of participants (62.4%) attended the courses or continuous nursing education about VTE (Yee et al., 2022).

5.3 Awareness of Nurses and Midwives about VTE

Our study showed that the majority of participants (72.1%) have a high total awareness level. This is lower than the awareness level found in a similar study conducted in Malaysia in 2022, which reported that the vast majority (94.7%) of participants had a good awareness level (Yee et al., 2022). However, our results are better than those from another study on nurses in Iraq (2023), which found that only 2% of participants had a good awareness level, and 22% had a moderate level (Dawood et al., 2023), this variation can be explained by the differences in the demographic characteristics of the participants related to the education level, in Dawood et al. study, the majority of participants (83%) held a diploma, but in this study all participants held a bachelor's degree or higher education. Especially when considering that Dawood et al. and this study found a statistically significant relationship between education level and awareness level.

A similar master's thesis study conducted in 2024 in the southern West Bank and published at the Arab American University assessed nurses' knowledge, perception, and practices regarding

VTE prevention (Rabaei, 2024). The results of Rabaei's study were inconsistent with the findings of this research, as Rabaei's study reported that 84.7% of nurses had a poor level of knowledge about VTE, contrasted with this study, which found that most midwives and nurses had a high level of awareness of VTE. This discrepancy may be due to differences in the questionnaire items and language. This study used the Arabic language, which is the participants' native language, to avoid potential bias from misunderstandings of the questions. However, Rabaei's study used the English language in the questionnaire. In addition, Rabaei (2024) used a Google form in data collection, while in this study, the data collection was done through face-to-face interviews with participants and in the presence of an observer to give participants a chance to ask if they had any questions related to item understanding.

In the First domain (VTE definition and Pathophysiology), the largest percentage of participants had a good awareness level (71.3%). the data shows that the high correct response was in the items related to the definition of VTE, and the complexity of diagnosis for VTE due to pregnancy-related physiological changes. In addition, the lowest correct response (54%) was in the most common hereditary cause of DVT (Antithrombin deficiency); this percentage of correct responses was lower than the participants' responses on this question in a similar study in Malaysia by Yee et al. (2022). This gap may be explained by the rarity of VTE cases with hereditary causes, so the nurses and midwives were less exposed to these cases in their work.

The findings of the present study are inconsistent with those reported by Cui et al. (2025), who found that only 10.5% of nurses have good knowledge about VTE, and the lowest scores were in the VTE definitions, etiology, and prevention management items.

The highest level of awareness was observed in the second domain (risk factors), 75.4% of participants had a good awareness level. High percentages (95.1%) of correct responses were observed in item seven, "Prolonged hospitalization, immobility, and obesity are among the most common acquired risk factors". 92.6% of correct responses were also observed in item nine, "A family history of thrombosis or VTE increases the likelihood of developing the condition", indicating that the nurses and midwives were aware of the major risk factors during pregnancy, and were able to define the high-risk cases. However, only 61.5% of participants were aware that kidney failure was one of the contributing factors to an increased risk of DVT or PE. The reason may be that education and training usually focus on common risk factors rather than chronic diseases such as kidney failure, which might lead to a gap in awareness among nurses and midwives.

The lowest awareness level was observed in domain three, which was about the awareness of VTE prophylaxis measures. Only 66.4% of participants have a good awareness level in the prophylaxis measures domain, which indicates that the participants were less knowledgeable in this area. Our findings are in line with an earlier study from Saudi Arabia, which reported a satisfactory knowledge score of 75% of nurses related to VTE prophylaxis (Almarshad et al.,

2024). Although the participants had the lowest awareness level in the domain about VTE prophylaxis measures, our findings are higher than a study in Ethiopia in 2024, which reported that only 51% of nurses have adequate knowledge about VTE prevention measures (Tolera & Gebremedhin, 2024).

The higher correct answer (90%) was in the item related to the discontinuation of prophylactic heparin at the onset of labor. Only 52% had the correct answer on the item about the time of prophylactic dose of Low Molecular Weight Heparin (LMWH) after cesarean delivery. This response is lower than a study in Malaysia, where 78.8% of participants answered correctly on the same question (Yee et al., 2022). This result may be explained by the differences in the prophylaxis dose protocol in these regions. Additionally, only 67.2% had the correct answer related to the item stating that LMWH is safer than warfarin during pregnancy; this result might be due to the reality of nursing relying on doctors' orders and implementing them without trying to understand the medications and their purposes.

5.4 Attitude towards VTE among Nurses and Midwives

The description of attitude scores shows that nearly all participants (96.7%) had a positive attitude toward VTE. These findings are in agreement with other studies' findings by Hu et al. (2025) and Kilfie et al. (2021), which also reported high percentages of participants with a positive attitude (82.5%, 87.1%, respectively). Although the positive attitude in previous studies was considered high, the level of positive attitude in this present study was even higher compared to most of the previous studies. In contrast, a study done in China reported that only 68.5% of participants had a positive attitude (Yan et al., 2021). In addition, another study in Iraq reported that only 4% of nurses have a positive attitude towards DVT, and in this study, 83% of participants had a diploma degree of study (Dawood et al., 2023). In contrast to our study, 100% of participants had a bachelor's degree or higher. The high level of positive attitude for our study participants may be due to their high educational level.

Nearly all participants believed that using DVT preventive measures among hospitalized patients, the assessment of deep venous thrombosis (DVT) risk factors before surgery, and educating patients regarding preventive measures of DVT are necessary; no participant disagreed with these issues. Only 62.3% of participants believed that current anticoagulant strategies are under- or over-utilized. However, a study conducted in the West Bank on patients admitted to the medical floor reported that only 39.7% of hospitalized patients received appropriate pharmacological prophylaxis. This may indicate a gap between attitude and practices, suggesting the need for further study to assess the nurses and midwives' practices related to VTE prophylaxis measures (Abukhalil et al., 2022).

5.5 Awareness and attitude based on socio-demographic and professional characteristics

One of the objectives of this study is to assess the factors that make a difference or affect the nurses and midwives' awareness and attitude towards VTE. This part discussed the effect of these factors in making a change in awareness and attitude scores, and discussed the result of Pearson correlation to define the strength and direction of the relationship between these factors and scores. Understanding the factors associated with awareness and attitude towards VTE can help improve nurses' practices and improve the health outcomes of women.

5.5.1. Age of nurses and midwives:

In this study, there are no significant differences based on age group in awareness scores ($p = 0.698$) or in attitude scores ($p = 0.884$). Although the mean rank in awareness scores of the age group (20 - 39) was higher than that of other groups, and the mean rank for attitude scores was higher in the age group (age > 49), the differences were not statistically significant. In addition, the result of Spearman's rho correlation revealed no association between age and awareness or attitude scores. This result agrees with a finding for several studies conducted in different countries, such as Iraq, Malaysia, and Ethiopia (Dawood et al., 2023; Yee et al., 2022; Yohannes et al., 2022). However, this study's findings disagreed with Hu et al. (2025) and Kiflie et al. (2022), who conducted their studies in China and Ethiopia.

5.5.2. Work Experience of nurses and midwives:

The participants with fewer years of work experience had a higher mean rank in awareness and attitude scores, but these differences were not statistically significant ($p = 0.649, 0.871$, respectively). In addition, the Spearman correlation result revealed that no correlation between experience years and awareness or attitude scores. This result agrees with the study of Dawood et al. (2023) in Iraq and the study of Yee et al. (2022) in Malaysia. In contrast, our finding disagrees with Hu et al. (2025), who conducted research in China and reported that participants with more work experience had more knowledge and attitude. This disagreement may be explained by the difference in profession for participants in our study and Hue et al.'s study, since most of the participants in our study were midwives, and all participants worked in maternity wards; they may not have acquired more knowledge with increasing years of experience due to their lack of exposure to VTE cases.

5.5.3. Education level of nurses and midwives:

No significant differences in the mean rank of awareness scores were observed based on education level ($p = 0.647$), and no significant statistical relationship was found in the Spearman correlation test between education level and awareness scores. This result aligns with studies by

Kiflie et al. (2022), Hu et al. (2025), and Yee et al. (2022). However, it disagrees with the findings of Dawood et al. (2023) and Yohannes et al. (2022). This inconsistency may be due to the higher educational level of participants in the present study, which includes only bachelors and higher degrees, whereas the other studies have a higher percentage of participants with a diploma, potentially influencing their findings related to knowledge or awareness.

Otherwise, a statistically significant difference was found in the mean rank of attitude based on educational level ($p = 0.018$), and Spearman's rho indicated a positive association between attitude and educational level; participants with higher education levels had higher attitude scores. This result aligns with a study by Hu et al. (2025) and contradicts the study by Kiflie et al. (2022). In summary, education level did not influence the awareness of nurses and midwives but did affect their attitude, leading those with higher education to have a more positive attitude toward VTE.

5.5.4. Profession of participants:

The Mann-Whitney U test revealed that the nurses achieved higher total awareness scores than midwives ($p = 0.026$) and higher attitude scores ($p = 0.020$). Additionally, the result of Spearman correlation indicates that there was a positive association between awareness scores and profession ($\rho = 0.212$, $p = 0.019$), and a positive association between attitude scores and profession ($\rho = 0.201$, $p = 0.026$). This suggests that the professional role affects the awareness and attitudes, and this influence is possibly due to differences in educational material and training during the study period at the university.

These findings agree with another study conducted in Ethiopia (2021), which reported that nurses have a higher knowledge level (42.8% of nurses had good knowledge) than midwives (26.66% had good knowledge), and found that nurses have a more positive attitude toward VTE than midwives ($p = 0.046$) (Kiflie et al., 2022).

5.5.5. Workplace of nurses and midwives:

Although the findings of this study demonstrated that the private hospital participants had a higher mean rank for total awareness scores than the governmental participants, there was a statistically significant difference in the mean rank (p -value = 0.026). While they had nearly equal mean ranks for attitude scores ($p = 0.078$). These results cannot be relied upon to avoid bias due to the small proportion of participants from governmental hospitals, which limits the reliability of this comparison. It should be noted that the low proportion of participants from governmental hospitals is due to the small number of government hospitals in the study setting (only one governmental hospital in Bethlehem and East Jerusalem).

5.5.6. VTE Protocol Availability in nurses' and midwives' workplaces:

The Presence of the VTE-related protocol makes a difference in nurses' and midwives' awareness. The result of the Mann-Whitney U test indicates that nurses and midwives who work with protocol had a higher mean rank of awareness scores (71.48) than those working without protocol (52.15), with a p-value of 0.002. In addition, the Spearman correlation test indicates a positive correlation between protocol availability and awareness level, suggesting that the presence of a protocol is associated with better awareness of VTE among nurses and midwives. The study result is consistent with Kilfie et al. (2021), who report that professionals who had a VTE prevention policy were nearly 2 times more likely to have satisfactory knowledge about VTE prophylaxis than professionals who did not have a VTE prevention policy.

However, this finding disagreed with a study conducted in Ethiopia by Yohannes et al (2022), which reported that no association between protocol viability and knowledge level. The inconsistency in the result with the previous similar study may be explained by a small proportion of participants who have a protocol (33.2%) in the Yohannes et al. (2022) study, compared with this study (48.4% of participants have a protocol in the workplace).

For nurses and midwives' attitudes, no significant difference was observed based on protocol availability. In addition, the Spearman correlation indicates no association, which means that the presence of protocol will not affect the nurse and midwives' attitude towards VTE.

5.5.7. Having VTE-related Training:

In this study, significant differences were observed in the mean rank of awareness scores based on having VTE-related training before ($p = < 0.001$). Also, the Spearman correlation indicated a positive association between nursing and midwives' awareness and having training related to VTE. Nurses and midwives, who received training, had a higher mean rank (82.09) of awareness score than those not trained (55.08). This suggests that VTE training is associated with improved total awareness of nurses and midwives. Additionally, there was an association between VTE-related training and attitude scores, with a significant difference in the mean rank ($p = 0.003$). Nurses and midwives who received training had a higher mean rank of attitude scores (mean rank = 78.3) than those who did not receive training (mean rank = 56.2).

This finding is in agreement with a study conducted on nurses in Malaysia, which reported that there is a significant relationship between attending continuous nursing education and level of awareness, and concluded that nurses who received continuous education had a higher awareness level ($p = 0.0134$) (Yee et al., 2022).

in addition, consistent with a study conducted in Ethiopia, which reported that nurses who attended training on prevention of DVT had a higher knowledge regarding DVT than others ($p =$

0.035)(Yohannes et al., 2022). Another study conducted in China found that there was a statistical association between participation in training of DVT care and nurses' awareness, attitude, and practices, with a p-value less than 0.001 in all domains (Hu et al., 2025).

In summary, the total awareness and attitude score were significantly associated with receiving training regarding VTE, and continuous education and training related to VTE will improve the nurses' and midwives' awareness and attitude toward VTE.

5.6. Correlation Between nurses and midwives' awareness and attitude

The participants with higher awareness scores tended to have a more positive attitude; the result of Spearman correlation indicated a positive correlation between awareness and attitude scores ($\rho = 0.505$, $p = < 0.001$). This finding is consistent with another study on nurses, which also found a strong association between nurses' knowledge and attitude (Hu et al., 2025). This indicates the importance of increasing nurses and midwives' awareness regarding VTE to have a positive impact on their attitude towards VTE.

5.7 Conclusion

In conclusion, this study demonstrates that while nurses and midwives exhibit generally high awareness and overwhelmingly positive attitudes toward VTE, important gaps persist—particularly in pharmacological prophylaxis management. Awareness and attitude of VTE were not associated with age and work experience. Although awareness is not associated with education level, attitude has a positive association with education level. In addition, a significant association was found for socio-demographic and professional characteristics like profession, receiving training related to VTE, and VTE Protocol availability in the workplace, with nurses' and midwives' awareness and attitudes. While the workplace was associated with total awareness scores, it was not associated with attitude. Additionally, the findings established a positive relationship between nurses' and midwives' awareness and attitudes.

The results of this study emphasize the importance of continuous education and training programs, the availability of standardized protocols, and adequate resources to improve nurses and midwives' awareness and attitude towards VTE and its preventive measures. Improving awareness and attitude could improve nursing and midwifery performance. Consequently, enhance early detection and intervention for VTE cases, which leads to positive outcomes on maternal health and ensures high-quality care. Future research should focus on translating awareness and attitudes into consistent clinical practice and identifying barriers to adherence to VTE prophylaxis.

laxis guidelines. They should also examine other factors that influence adherence to these practices. In addition, nurses and midwives should continually update their academic knowledge to stay abreast of the latest evidence-based information regarding VTE prophylaxis.

5.8 Strength of the Study

1. This study is one of the first of its kind in the West Bank, aiming to assess the awareness and attitudes of nurses and midwives toward VTE.
2. This study is concerned with the important issue, which is considered one of the leading causes of maternal mortality in the West Bank; this study could contribute to improving the knowledge and attitudes of nurses and midwives, thus improving performance, which in turn could reduce the incidence rate of VTE and maternal mortality related to VTE.
3. One of the strengths of this study is the data collection mechanism, as the questionnaires were collected for the majority of participants in the presence of the observer. Additionally, the majority of participants participated at the same time during the team's monthly meetings in the hospital, thus reducing the percentage of bias and error that could result from participants sharing with each other to fill out the questionnaire.
4. The response rate is considered high, which is 87%. This enhances the reliability of the results, reduces bias resulting from non-response, and increases the possibility of generalization.
5. The Arabic language was used in the study questionnaire, which was the native language of participants, which reduced the error or bias related to the misunderstanding of questionnaire items.

5.9 Study Limitations

1. This study was conducted in a limited geographical area due to the security nature of the area and the presence of barriers, which reduces the ability to move freely during data collection, which affects the ability to generalize the study.
2. The small sample size may affect the generalization of the results to other nurses and midwives from other regions and hospitals.
3. Used the convenience sampling method to collect data, which may lead to bias, as it is limited to the participation of only those present during data collection. Participants who were available and willing to participate may not be fully representative of the entire population of nurses and midwives, which may lead to difficulty in generalizing the findings to other contexts. However, the use of this method was due to the time limitations and difficulty of access due to practical challenges.

4. The data do not meet the normal distribution assumption. However, the non-parametric test was used in the analysis to reduce biases that could occur if parametric tests were applied.
5. The large disparity in the proportion of nurses and midwives who work in private and governmental hospitals may affect the generalizability of the results. This is due to the small number of government hospitals in the study area, which is limited to one government hospital in the Bethlehem Governorate and East Jerusalem.

5.10 Recommendation

Decision makers and hospital administrators

1. Allocate regular training programs related to VTE, which can keep nurses and midwives informed of the latest evidence-based studies in their fields, enabling them to manage patient care appropriately.
2. Ensuring the availability of the standardized VTE prophylaxis protocol in all departments at all hospitals in the West Bank, and ensuring that nurses and midwives in the departments are aware of the presence of this protocol.
3. Emphasizing the inclusion of detailed modules on the prevention and management of venous thromboembolism (VTE) in the midwifery education programs. This will ensure that midwifery students are well-prepared with the knowledge and skills necessary for effective DVT prevention in their future clinical practice in maternity wards.
4. Nurses and midwives are the best candidates for conducting daily assessments for VTE prophylaxis. Given their primary role as patient advocates, they can effectively detect the signs and symptoms of VTE and perform the required precautions to reduce the consequences, morbidity, and mortality rates related to VTE.

Future Research

1. Future research should be conducted to assess the practices of nurses and midwives regarding VTE in obstetric hospitals, to ensure that the nurses and midwives' knowledge is applied and practiced correctly.
2. In future research, it is recommended to include hospitals from the southern, middle, and northern parts of the West Bank to be more representative and be more inclusive of governmental hospitals.

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Appendix

A. Instrument Used in the Study

بسم الله الرحمن الرحيم
جامعة القدس
كلية الدراسات العليا



تقييم وعي ومواقف الممرضات والقابلات تجاه الانسداد الوريدي الخثاري في محافظة بيت
لحم والقدس الشرقية

عزيزي/عزيزتي المشارك(ة)،

تُجرى هذه الدراسة لاستكمال متطلبات الحصول على درجة الماجستير في صحة الأم والطفل في كلية المهن الصحية – جامعة القدس، فلسطين. ولقد تم اختياركم لتكونوا ضمن عينة الدراسة. لذا نضع بين أيديكم هذه الاستبانة راجيين تقديم المساعدة وذلك بالإجابة على فقرات الاستبانة بدقة وموضوعية لما له أثر كبير في الحصول على نتائج دقيقة، يرجى التكرم بالإجابة على الاستبيان، والذي لن يستغرق أكثر من 15 دقيقة. سيتم التعامل مع جميع المعلومات المقدمة بسرية تامة، وستُستخدم لأغراض البحث العلمي فقط. على الرغم من ترحيبي بمشاركتكم، إلا أن المشاركة في هذه الدراسة اختيارية، ويحق لكم الانسحاب منها في أي وقت دون أي تبعات.

شكراً جزيلاً لكم على وقتكم ومساهماتكم القيمة.

إعداد: رانيا الحلبيّة
إشراف : د. مها نحال

الجزء الأول: البيانات الديموغرافية:

يرجى قراءة الأسئلة ووضع دائرة على الإجابة المناسبة

a. العمر: -----

b. سنوات الخبرة في أقسام الولادة _____

c. المستوى التعليمي:

1. دبلوم
2. بكالوريوس
3. دراسات عليا (ماجستير/دكتوراه)

c. نوع المهنة:

1. تمريض
2. قبالة

d. مكان العمل:

1. مستشفى خاص
2. مستشفى حكومي

f. هل يوجد لديكم أي بروتوكولات مكتوبة عن الانسداد الوريدي الخثاري (VTE) في مكان عملكم؟

1. نعم
2. لا

g. هل سبق لك أن تلقيت تدريباً حول الوقاية من الانسداد الوريدي الخثاري (VTE) وإدارته؟

1. نعم
2. لا

الجزء الثاني (A، B، C): أسئلة لتقييم مستوى الوعي حول الانسداد الوريدي الخثاري (VTE).

➤ في هذا الجزء، يرجى وضع علامة (✓) تحت الاختيار الصحيح.

A			
لا	نعم	قائمة الاسئلة	
		تكوّن الجلطات في الأوعية الدموية يسمى تجلط الأوردة العميقة (DVT)	A1
		الجلطة دموية في الأوردة العميقة قد تؤدي إلى انسداد رئوي (PE) إذا انتقلت إلى الرئتين.	A2
		يمكن أن يكون تشخيص VTE أثناء الحمل معقدًا بسبب التغيرات الفسيولوجية المرتبطة بالحمل.	A3
		يحدث تجلط الأوردة العميقة بسبب زيادة الركود الوريدي في الساق اليسرى نتيجة الضغط	A4
		أثناء الحمل وفترة النفاس مرتبط غالبًا بالركود الوريدي الناتج عن التغيرات الفسيولوجية في الحمل.	A5
		نقص مضاد الثرومبين هو السبب الوراثي الأكثر شيوعًا لـ DVT	A6
		ضيق التنفس هو العرض الأكثر شيوعًا للانسداد الرئوي (PE).	A7
		قد تظهر أعراض الـ DVT لدى النساء على شكل ألم في أسفل البطن أو الساق.	A8
		الاحمرار وتغير لون الجلد من علامات وأعراض الـ DVT، في حين أن آلام الصدر والخفقان من أعراض الانسداد الرئوي (PE).	A9
B			
لا	نعم	قائمة الأسئلة	
		القصور الكلوي يُعد من العوامل المساهمة في زيادة خطر الإصابة بتجلط الأوردة العميقة أو الانسداد الرئوي	B1
		خطر الإصابة بعد الولادة القيصرية أعلى بحوالي الضعف مقارنة بالولادة الطبيعية.	B2
		يجب تقييم الأمهات بعد الولادة وفقًا لعوامل الخطر وتقديم العلاج الوقائي ضد التجلط.	B3
		يكون خطر الإصابة في أعلى مستوياته خلال الأشهر الأولى من بدء تناول حبوب منع الحمل المركبة.	B4

B5	المرضى المصابون بالسرطان أكثر عرضة للإصابة وتكراره.		
B6	مضاعفات الحمل مثل تسمم الحمل وتأخر النمو داخل الرحم (IUGR) تزيد من خطر الإصابة.		
B7	تعد الإقامة الطويلة في المستشفى وقلة الحركة والسمنة من أكثر الأسباب المكتسبة شيوعًا للإصابة.		
B8	النساء الأكبر سنًا (فوق 35 عامًا) قد يكون لديهن خطر أعلى للإصابة مقارنة بالنساء الأصغر سنًا.		
B9	وجود تاريخ عائلي من تخثر الدم أو الإصابة بـ VTE يعتبر من العوامل التي تزيد فرصة الإصابة.		
C			
	قائمة الاسئلة	نعم	لا
C1	يجب إعطاء جرعة وقائية من LMWH بعد الولادة القيصرية بين 3-6 ساعات.		
C2	يجب نصح النساء اللواتي يتلقين علاجًا وقائيًا بالهيبارين بإيقاف الحقن عند بدء المخاض.		
C3	يجب استمرار العلاج المضاد للتخثر أثناء الحمل ولمدة 6 أسابيع على الأقل بعد الولادة.		
C4	في النساء البدنيات، يجب تحديد جرعة الهيبارين وفقًا للوزن الفعلي لتقليل خطر تكرار الإصابة بالانسداد الوريدي الخثاري. (VTE)		
C5	في حالات الاشتباه السريري بتجلط الأوردة العميقة أو الانسداد الرئوي، يجب بدء علاج الهيبارين حتى يتم استبعاد التشخيص.		
C6	استخدام الجوارب الضاغطة المرنة (GECS) هو علاج وقائي غير دوائي.		
C7	يفضل استخدام الأسبرين وجرعة وقائية من LMWH للنساء اللواتي لديهن تاريخ من تسمم الحمل أو تأخر نمو الجنين داخل الرحم. (IUGR)		
C8	قبل بدء علاج الهيبارين، يجب أخذ عينات دم لفحص PT, INR, APTT لتحديد القيم الأساسية.		
C9	أثناء الحمل، يُعتبر LMWH أكثر أمانًا من الوارفارين نظرًا لتأثيراته المشوهة على الجنين.		

الجزء الثالث: الأسئلة لتقييم المواقف تجاه الانسداد الوريدي الخثاري (VTE)
 ➤ في هذا الجزء، يرجى وضع علامة (√) تحت الاختيار الصحيح.

D	قائمة الأسئلة	أوافق بشدة	أوافق	محايد	لا أوافق	لا أوافق بشدة
D1	أعتقد أن استخدام تدابير الوقاية من تجلط الأوردة العميقة (DVT) بين المرضى في المستشفى مفيد.					
D2	أعتقد أنه من الضروري تقييم عوامل خطر الإصابة قبل إجراء الجراحة القيصرية.					
D3	أعتقد أن جميع النساء الحوامل يجب تقييمهن من حيث خطر الإصابة بالانسداد الوريدي الخثاري (VTE) خلال فترة الحمل وبعد الولادة.					
D4	أعتقد أنه من الضروري تثقيف المرضى حول تدابير الوقاية من الإصابة.					
D5	أعتقد أن مقدمي الرعاية الصحية يحتاجون إلى تدريب في طرق الوقاية.					
D6	أعتقد أن الالتزام ببروتوكولات الوقاية من VTE في قسم الأمومة يمكن أن يقلل من مضاعفات الحمل المتعلقة بالتجلط الوريدي.					
D7	أعتقد أن الاستراتيجيات المضادة للتخثر الحالية يتم استخدامها بشكل مفرط أو غير كافٍ.					
D8	أعتقد أنه يجب تضمين التدريب على الوقاية من VTE كجزء أساسي من برامج التعليم والتطوير المهني للممرضات والقابلات في قسم الأمومة.					
D9	أعتقد أن الوقاية من الانسداد الوريدي الخثاري (VTE) يمكن أن تحسن جودة الرعاية الطبية.					
D10	أعتقد أنه يجب أن يقدم فريق متعدد التخصصات العلاج للمرضى الذين يعانون من (VTE).					

B. Permission Letter

State of Palestine
Ministry of Health
Education in Health and Scientific
Research Unit



دولة فلسطين
وزارة الصحة
وحدة التعليم الصحي
والبحث العلمي

Ref.:
Date:.....

الرقم: ٢٠٢٠/٦١٧/١٦٢
التاريخ: ٢٠٢٠/١٢/١٠

الأخ مدير عام الإدارة العامة للمستشفيات المحترم،،،
تحية واحترام،،،

الموضوع: تسهيل مهمة بحث

يرجى تسهيل مهمة الطالبة: رانيا عودة علي الحلبية- ماجستير تمريض الام والطفل/ جامعة القدس، وبإشراف د. مها نحال، في عمل بحث بعنوان:
Nurses and Midwives Awareness and Attitudes Toward Venous
Thromboembolism in Bethlehem and East Jerusalem
من خلال السماح للطالبة بجمع معلومات عن طريق تعبئة استبانة من قبل كادر التمريض في قسم الولادة بعد اخذ موافقتهم، وذلك في:

- - مستشفى بيت جالا

على ان يتم الالتزام بالسياسات و اخلاقيات البحث العلمي، وعدم التعرض للمعلومات التعريفية للمشاركين.
على ان يتم تزويد الوزارة بنسخة PDF من نتائج البحث، التعهد بعدم النشر لحين الحصول على موافقة الوزارة على نتائج البحث.

مع الاحترام،،،

د. عبد الله القواسمي
رئيس وحدة التعليم الصحي والبحث العلمي



نسخة: منسقة برنامج الماجستير/ دائرة التمريض المحترمة/ جامعة القدس



التاريخ : 10/3/2025

حضرة الاستاذ سايا أبو فرحة المحترم / المدير الاداري لمستشفى العائلة المقدسة/ بيت لحم

الموضوع: تسهيل مهمة طالبة ماجستير في جمع بيانات لغرض البحث العلمي

تحية طيبة وبعد،

يرجى من حضرتكم التكرم بتسهيل مهمة طالبة الماجستير "رائيا عودة علي الحلبية"، حاملة الرقم الجامعي (23210621)، كطالبة ماجستير في تريض صحة الأم والطفل / كلية المهن الصحية / جامعة القدس، في جمع بيانات الدراسة الخاصة برسالتها الماجستير بعنوان (تقييم وعي ومواقف الممرضات والقابلات تجاه الانسداد الوريدي الخثاري في محافظة بيت لحم والقدس الشرقية).

على ان يتم جمع البيانات عن طريق توزيع الاستبيان على القابلات والممرضات اللاتي يعملن في قسم الولادة في مستشفى العائلة المقدسة/ بيت لحم. خلال الفترة الممتدة من 15\3\2025 وحتى 21\5\2025 ومن بعد موافقتكم على الكتاب، تحت إشراف دمهنا نحال.

وتفضلوا بقبول فائق الاحترام والتقدير...

منسقة برنامج الماجستير/ دائرة التمريض

د. سلام الخطيب.

المرفقات: نسخة من استبانة الدراسة ، نموذج الموافقة المستنيرة.

التاريخ : 2025/3/10

حضرة الدكتور جميل كوسا المحترم / المدير الإداري لمستشفى مار يوسف/ القدس

الموضوع : تسهيل مهمة طالبة ماجستير في جمع بيانات لغرض البحث العلمي

تحية طيبة وبعد،

يرجى من حضرتكم التكرم بتسهيل مهمة طالبة الماجستير " رانيا عودة علي الحلبية"، حاملة الرقم الجامعي (23210621)، كطالبة ماجستير في تمرير صحة الأم والطفل / كلية المهن الصحية / جامعة القدس، في جمع بيانات الدراسة الخاصة برسالتها الماجستير بعنوان (تقييم وعي ومواقف الممرضات والقبائلات تجاه الانسداد الوريدي الختاري في محافظة بيت لحم والقدس الشرقية).

على ان يتم جمع البيانات عن طريق توزيع الاستبيان على القبائلات والممرضات اللاتي يعملن في قسم الولادة في مستشفى مار يوسف/ القدس. خلال الفترة الممتدة من 15/3/2025 وحتى 21/5/2025 ومن بعد موافقتكم على الكتاب، تحت إشراف د.مها تحال.

وتفضلوا بقبول فائق الاحترام والتقدير...

متسقة يرتامج الماجستير/ دائرة التمريض

د. سلام الخطيب.

المرفقات: نسخة من استبانة الدراسة ، نموذج الموافقة المستنيرة.

التاريخ : 2025/3/10

حضرة الدكتور بسام كوسا المحترم / المدير الإداري لمستشفى مار يوسف/ القدس

الموضوع : تسهيل مهمة طالبة ماجستير في جمع بيانات لغرض البحث العلمي

تحية طيبة وبعد،

يرجى من حضرتكم التكرم بتسهيل مهمة طالبة الماجستير " رانيا عودة علي الحلبية"، حاملة الرقم الجامعي (23210621)، كطالبة ماجستير في تريض صحة الأم والطفل / كلية المهن الصحية / جامعة القدس، في جمع بيانات الدراسة الخاصة برسالتها الماجستير بعنوان (تقييم وعي ومواقف الممرضات والقابلات تجاه الانسداد الوريدي الخثاري في محافظة بيت لحم والقدس الشرقية).

على ان يتم جمع البيانات عن طريق توزيع الاستبيان على القابلات والممرضات اللاتي يعملن في قسم الولادة في مستشفى مار يوسف/ القدس. خلال الفترة الممتدة من 15\3\2025 وحتى 21\5\2025 ومن بعد موافتكم على الكتاب، تحت إشراف د.مها نحال.

وتفضلوا بقبول فائق الاحترام والتقدير...

منسقة برنامج الماجستير/ دائرة التمريض

د. سلام الخطيب.

المرفقات: نسخة من استبانة الدراسة ، نموذج الموافقة المستنيرة.

C. Ethical Approval Letter

1. Research Ethics Subcommittee of Faculty of Health Professions Approval Letter

Al Quds University
Faculty of Health Professions
Jerusalem – Abu Dis



جامعة القدس
كلية المهن الصحية
القدس – أبو ديس

Research Ethics Subcommittee of Faculty of Health Professions
Letter of approval

Feb. 18, 2025
Ref. No.: RESC/2025-22

Dear Applicants, (Dr. Maha Nahal, Ms. Rania Al-Halabiah)

Program: MSc Nursing Department

The Research Ethics subcommittee of the Faculty of Health Professions has recently reviewed your proposal entitled (Nurses and Midwives' Awareness and Attitudes Toward Venous Thromboembolism in Bethlehem and East Jerusalem) submitted by (Dr. Maha Nahal). Your proposal is deemed to meet the requirements of research ethics at Al-Quds University, but further assessment is required by the Central Research Ethics Committee of Al-Quds University. We wish you all best for the conduct of the project.

Hussein ALMasri, PhD

Hussein ALMasri

Associate Professor of Medical Imaging
Research Ethics Subcommittee Chair
Faculty of Health Professions

2. Research Ethics Committee of Al-Quds University Approval Letter

Al-Quds University Jerusalem Deanship of Scientific Research	بسم الله الرحمن الرحيم  جامعة القدس القدس عمادة البحث العلمي
Research Ethics Committee Committee's Decision Letter	
Date: March 3, 2025 Ref No: 515/REC/2025	
Dears Dr. Maha Nahal, Ms. Rania Al-Halabiah,	
research ethics application. After reviewing your submission titled: "Nurses and Midwife's Awareness and Attitudes Toward Venous Thromboembolism in Bethlehem and East Jerusalem", the Research Ethics Committee (REC) at Al-Quds University confirms that your application aligns with our ethics guidelines, which are based on the principles outlined in the Declaration of Helsinki.	
Please note that this approval does not replace other required permissions, such as for sample shipment or data sharing. We also request a copy of your final report or publication when available.	
This approval is valid for two years. If your research extends beyond this period, a renewal request will be necessary. The approval remains valid as long as there are no changes to the research protocol.	
Sincerely,	
Suheir Ereqat, PhD Associate Professor of Molecular Biology  Research Ethics Committee Chair	
Cc. Prof. Imad Abu Kishek - President Cc. Members of the committee Cc. file	
Abu-Dies, Jerusalem P.O.Box 20002 Tel-Fax: #970-02-2791293	أبوديس، القدس ص.ب. 20002 تلفاكس: #970-02-2791293
research@admin.alquds.edu	

الوعي والمواقف تجاه الجلطات الدموية الوريدية بين الممرضات والقابلات في أقسام التوليد في محافظتي بيت لحم والقدس الشرقية.

اعداد: رانيا عودة علي الحلبية

اشراف: د. مها نحال

الملخص

المقدمة: يُعد الخثار الوريدي الصمي (VTE) من المضاعفات القابلة للوقاية والتي تُلاحظ بشكل شائع لدى المرضى المنومين. تتطلب إدارته الفعالة جهودًا منسقة بين مختلف المتخصصين في الرعاية الصحية. يلعب الممرضون والممرضات والقابلات دورًا حيويًا من خلال التعرف على المرضى المعرضين للخطر وتنفيذ التدخلات الوقائية المناسبة، مما يعزز بشكل كبير الوقاية من VTE في البيئات السريرية.

المنهجية: أُجريت هذه الدراسة الكمية الوصفية المقطعية في ثلاثة مستشفيات خاصة ومستشفى حكومي واحد في محافظتي بيت لحم والقدس الشرقية. شملت العينة 140 ممرضة وقابلة يعملون في أقسام الحمل، الولادة، وما بعد الولادة. تم جمع البيانات باستخدام استبيانات تم التحقق من صلاحيتها. تم الحصول على الموافقة الأخلاقية من لجنة أخلاقيات جامعة القدس، إلى جانب تصاريح من وزارة الصحة الفلسطينية، ومديري التمريض، وقابلات الأقسام. تم الحصول على الموافقة المستنيرة الشفهية وتوثيقها في الصفحة الأولى من الاستبيان. أُجريت الدراسة خلال الفترة من نوفمبر 2024 إلى نوفمبر 2025، وتم تحليل البيانات باستخدام برنامج SPSS الإصدار 27.

النتيجة: أظهرت النتائج أن 71.3% من الممرضات والقابلات أبدن مستوى عاليًا من الوعي العام تجاه VTE. وكان أعلى مستوى للوعي في المجال الأول (تعريف VTE والفسيولوجيا المرضية) بنسبة 73.1%،

وفي المجال الثاني (عوامل الخطر) بنسبة 75.4%، بينما أظهر 66.4% مستوى عاليًا من الوعي في المجال الثالث (إجراءات الوقاية). أفاد معظم المشاركين (96.7%) باتجاه إيجابي نحو VTE. وكان الوعي مرتبطًا بشكل كبير بمكان العمل، توفر البروتوكولات، والتدريب السابق على VTE ($p = 0.026, 0.002$) و ($p > 0.001$ على التوالي). كما ارتبطت الاتجاهات بالمستوى التعليمي، المهنة، والتدريب السابق ($p = 0.018, 0.027$ ، و 0.003). ولوحظ ارتباط إيجابي قوي بين مستوى الوعي والاتجاهات ($p < 0.001$).

الخلاصة: تُبرز النتائج الحاجة إلى التعليم المستمر، البروتوكولات الموحدة، والموارد الكافية لتعزيز وعي واتجاهات الممرضات والقابلات تجاه VTE وطرق الوقاية منه. يمكن لتحسين هذه الجوانب أن يحسن الأداء السريري، يدعم الكشف المبكر عن VTE، ويسهم في تحسين نتائج الأمومة وجودة الرعاية الصحية في فلسطين. وتشمل التوصيات الرئيسية تنفيذ برامج تدريبية منتظمة تركز على الوقاية من VTE، وضمان توفر بروتوكولات قياسية للوقاية من VTE في جميع أقسام المستشفيات، ودمج وحدات شاملة للوقاية وإدارة VTE في برامج تعليم القابلات.

الكلمات المفتاحية: الممرضات، القابلات، الوعي، الموقف، الجلطات الدموية الوريدية، جناح التوليد، بيت لحم، القدس الشرقية، المستشفيات.