KNOWLEDGE AND PRACTICES ON POSTPARTUM HEMORRHAGIC CARE AMONG NURSES IN SELECTED PRIVATE HOSPITALS IN DAVAO REGION

A Thesis Presented to the Faculty of The Graduate Program of Davao Doctors College, IncDavao City
In Partial Fulfillment of the Requirements for the Degree of Master of Arts in Nursing Major in Clinical Management

JAY LORENE F. MAHUBAY, RN

ABSTRACT

This study aimed to assess nurses' knowledge and practices regarding postpartum hemorrhage care in selected private hospitals in the Davao Region. It employed a quantitative descriptive-correlational research design to assess nurses' knowledge and practices and to determine whether a significant relationship existed between them. The study involved 200 nurses working in selected private hospitals in the Davao Region. Data were analyzed using frequencies and percentages, mean and standard deviation, Spearman's rho correlation coefficient, Kruskal-Wallis H Test, and Multiple Linear Regression Analysis. The findings revealed that nurses demonstrated a moderate level of knowledge on postpartum hemorrhage care, with an overall mean score of 8.59 (SD = 1.821). Most respondents (161; 80.5%) were moderately knowledgeable, while 31 (15.5%) were highly knowledgeable and 8 (4.0%) had low knowledge. In terms of practices, respondents obtained an overall mean of 4.02 (SD = 0.411), interpreted as Often Practiced. The highest-rated practice was maintaining infection prevention and patient safety measures throughout postpartum hemorrhage management, with a mean of 4.17 (SD = 0.749). The lowest-rated practice was accurately documenting assessments, nursing interventions, medications administered, and patient responses, with a mean of 3.65 (SD = 0.837). Furthermore, the findings showed a negligible negative relationship between nurses' knowledge and practices, with a Spearman's rho of -0.043 and a p-value of .547. This indicates that the relationship was not statistically significant at the 0.05 level, suggesting that nurses' knowledge levels were not significantly associated with the frequency of recommended postpartum hemorrhage care practices. However, a statistically significant difference was found in nurses' practices when grouped according to their knowledge levels, $H(2) = 10.246$, $p = .006$, with a significant difference specifically between the low and moderately knowledgeable groups (adjusted $p = .005$). Furthermore, the regression model was statistically significant, $F(2, 197) = 7.096$, $p = .001$, with low knowledge significantly predicting lower practice scores compared with the moderately knowledgeable group. In contrast, the highly knowledgeable group did not differ significantly from the moderate group.

Keywords: *postpartum hemorrhage, postpartum hemorrhage care, descriptive-correlational, Davao Region, Philippines*

CHAPTER 1
INTRODUCTION

Background of the Study

Postpartum hemorrhage (PPH) remains one of the leading causes of maternal morbidity and mortality worldwide and continues to pose a significant challenge to maternal healthcare systems (Blaak et al., 2025). It affects a substantial number of women following childbirth and remains a major public health concern (Almutairi et al., 2026). Friday (2025) reported that approximately 9.97% of women experience postpartum hemorrhage, while 4.52% suffer from severe cases requiring urgent medical intervention. The burden of PPH is particularly evident in low- and middle-income countries where shortages of skilled healthcare personnel, inadequate resources, and limited access to continuing professional development programs hinder the effective management of obstetric emergencies (Abdulrahman et al., 2024).

Studies conducted in various countries have revealed persistent concerns about nurses' knowledge and practices regarding postpartum hemorrhage care. In Kenya, Miller et al. (2026) found that nurses demonstrated inadequate knowledge of clinical protocols for postpartum hemorrhage despite previous training. Likewise, Aimagambetova et al. (2024) reported that 86.7% of nurses in Egypt exhibited poor adherence to postpartum hemorrhage management guidelines, indicating a significant gap between theoretical knowledge and actual clinical performance. Similarly, Hassen and Farouk (2024) found that only 54% of nurses had adequate knowledge of postpartum hemorrhage management, while 59% demonstrated appropriate nursing skills.

In the Philippines, postpartum hemorrhage remains a major contributor to maternal mortality. According to the study of Almutairi et al. (2025), PPH accounts for approximately 53% to 60% of maternal deaths in the country. Despite efforts to improve maternal healthcare services, postpartum hemorrhage continues to threaten maternal survival, particularly in resource-constrained settings. In the Davao Region, postpartum hemorrhage has been identified as one of the leading causes of maternal mortality, with ten maternal deaths recorded from January to April 2025. These statistics highlight the urgent need to strengthen nurses' competence in providing care for postpartum hemorrhage, particularly in assessment, prevention, emergency management, monitoring, and documentation (Farahat et al., 2023).

Although several international studies have examined nurses' knowledge and practices regarding postpartum hemorrhage management, limited evidence exists within the Philippine context, particularly in the Davao Region. Most existing studies have focused primarily on knowledge levels or general competency without comprehensively assessing actual nursing practices related to postpartum hemorrhage care (Dafroyati et al., 2023; Gebretsadik et al., 2025). Moreover, there is a lack of localized research investigating whether nurses' knowledge is reflected in their clinical performance and adherence to recommended postpartum hemorrhage management protocols (Laporte et al., 2024; Ma, 2026).

Review Related Literature

This chapter includes a comprehensive review and discussion of both foreign and local literature and studies pertinent to the present research. The purpose of this chapter is to provide a background and understanding of the variables included in the study. It also highlights prior findings, concepts, and ideas that underscore the significance of the research and establish the gap that the current study aims to address.

Knowledge of Nurses on Postpartum Hemorrhage Care

Knowledge of nurses on postpartum hemorrhagic (PPH) care refers to the cognitive understanding, clinical awareness, and theoretical foundation that nurses possess regarding the causes, risk factors,

early recognition, prevention, and management of excessive postpartum bleeding. It encompasses the ability to integrate scientific principles with clinical judgment to ensure timely and appropriate interventions (Miller et al., 2026). Recent literature emphasizes that adequate knowledge is essential in reducing delays in care and improving maternal outcomes, particularly in obstetric emergencies such as PPH, which remains a leading cause of maternal mortality globally (Dinho et al., 2024). Further, general concepts of postpartum hemorrhagic care refer to nurses' understanding of PPH as a condition characterized by excessive blood loss after childbirth, commonly defined as blood loss exceeding 500 mL after vaginal delivery or 1000 mL after cesarean section (Wang et al., 2022). Also, it includes awareness of its classifications, such as primary and secondary hemorrhage, as well as atonic and traumatic causes. Understanding these concepts is essential because early identification depends on recognizing deviations from normal postpartum physiology (Sadik & Ail, 2025). Recent studies highlight that inadequate knowledge of risk factors leads to delayed identification of high-risk mothers and insufficient preparation for emergency interventions (Weerasingha et al., 2024). In several studies, nurses demonstrated moderate awareness of general PPH concepts but limited depth in their identification of complex risk interactions. For instance, research conducted in Asian healthcare settings found that while nurses could correctly define PPH, fewer were able to classify specific etiological factors (Valderrama, 2025) accurately. Similarly, African studies found gaps in the identification of obstetric risk factors due to limited exposure to obstetric emergency simulations (Yin & Wang, 2022).

Furthermore, global health reports emphasize that inadequate risk assessment knowledge contributes to preventable maternal deaths, particularly in developing countries where antenatal risk screening is inconsistent (Dafroyati et al., 2023). Strengthening nurses' conceptual understanding is therefore essential for early preparedness and the reduction of complications. Furthermore, recognition and assessment in postpartum hemorrhagic care refer to the nurse's ability to identify early signs of excessive bleeding and accurately evaluate maternal condition using clinical indicators such as vital signs, uterine tone, lochia characteristics, and estimated blood loss. Early recognition is critical because PPH can rapidly progress to hypovolemic shock if not detected promptly (Helmy et al., 2022). Recent studies indicate that nurses often struggle to estimate blood loss accurately, relying on visual assessment rather than quantitative measurement, which leads to underestimation of severity (Lindley et al., 2026). This is a significant concern because visual estimation is inaccurate in up to 50% of cases. Standardized tools, such as calibrated drapes and shock index assessments, have been recommended to improve accuracy, but their implementation remains inconsistent across many healthcare settings. In addition, knowledge of early warning signs such as tachycardia, hypotension, pallor, and altered mental status is essential for timely intervention. Studies reveal that nurses with greater exposure to emergency obstetric training programs demonstrate significantly better recognition skills than those without such training (Blaak et al., 2025).

Additionally, prevention of postpartum hemorrhage refers to nursing knowledge on interventions aimed at reducing the risk of excessive bleeding after childbirth. This includes active management of the third stage of labor (AMTSL), administration of uterotonic drugs such as oxytocin, controlled cord traction, and uterine massage. Preventive care is considered the most effective strategy for reducing the incidence of PPH globally (Abd Elsamea Elguoshy Hassanen et al., 2023). Recent studies emphasize that nurses play a central role in ensuring the proper implementation of preventive protocols. However, adherence to AMTSL guidelines remains inconsistent in many healthcare facilities due to workload, lack of training, and resource limitations (Alenazi et al., 2023). Research shows that while nurses are often aware of uterotonic administration protocols, actual practice varies significantly depending on institutional support and staffing levels (Pierre et al., 2024).

Thus, knowledge of preventive strategies includes identifying and managing modifiable risk factors during labor, such as prolonged labor and an overdistended uterus. Studies indicate that nurses with specialized obstetric training are more likely to consistently apply preventive measures than general ward nurses (Berkman & Miller, 2026). Initial management of postpartum hemorrhage refers to the immediate nursing interventions performed once excessive bleeding is identified. It includes uterine massage, securing intravenous access, fluid resuscitation, administration of uterotonic medications, and preparation for possible surgical intervention (Weerasingha et al., 2024). The goal is to stabilize the patient and prevent progression to shock (Rojas-Suarez & Paruk, 2024).

Studies indicate that nurses' knowledge of emergency protocols is critical in reducing response time during PPH events. Research shows that delays in initiating initial management are associated with increased maternal morbidity and mortality (Rattan et al., 2024). Nurses who have undergone simulation-based training demonstrate faster, more accurate responses in emergencies. Knowledge of pharmacological management, particularly the correct dosage and administration of oxytocin and other uterotonics, is also essential (Uddin et al., 2025). Recent literature highlights that medication errors remain a concern in obstetric emergencies due to insufficient training and high workload (Ma, 2026).

Moreover, communication, referral, and documentation in postpartum hemorrhagic care refer to the nurse's knowledge of proper reporting systems, escalation of care, interprofessional communication, and accurate recording of clinical events. Effective communication ensures timely collaboration among healthcare providers, which is essential during obstetric emergencies (Padilla et al., 2023). Studies emphasize that poor communication is a major contributing factor to delays in PPH management. Nurses who are unable to communicate patient deterioration effectively may delay physician intervention, resulting in worse outcomes (Sudaryanti et al., 2024). Structured communication tools such as SBAR (Situation, Background, Assessment, Recommendation) have been shown to improve clarity and efficiency in emergency reporting (Yan et al., 2026).

Referral knowledge includes understanding when and how to escalate care to higher-level facilities. Research indicates that delayed referral is common in rural settings due to a lack of clear protocols and transportation barriers (Dzantor et al., 2023). Nurses with adequate knowledge of referrals are more likely to initiate timely transfers, thereby reducing maternal complications. Documentation is equally important, as it provides legal, clinical, and continuity-of-care records (Zielinski et al., 2024). However, studies reveal inconsistencies in the documentation of estimated blood loss, interventions performed, and patient response during PPH events (Laporte et al., 2024). Incomplete documentation compromises continuity of care and limits quality improvement efforts.

Practices of Nurses on Postpartum Hemorrhagic Care

Postpartum hemorrhagic care practices refer to the systematic, evidence-based nursing interventions aimed at preventing, identifying, managing, and monitoring excessive bleeding following childbirth. These practices include risk assessment, early recognition of abnormal bleeding, evaluation of uterine tone, monitoring of vital signs, administration of uterotonic medications, establishment of intravenous access, accurate estimation of blood loss, preparation of blood products, and timely coordination with the healthcare team for emergency response (Liu et al., 2023). Recent literature emphasizes that effective care for postpartum hemorrhage requires strong clinical competence in early recognition and rapid response. Karasin (2025) found that evidence-based nursing practices significantly improve the prevention and management of postpartum hemorrhage by enhancing nurses' ability to identify risk factors and implement timely interventions. Similarly, Nunes de Sá et al. (2024) reported that the use of standardized nursing protocols improves clinical decision-making, reduces treatment delays, and enhances overall maternal safety outcomes in cases of postpartum hemorrhage.

Nursing education and continuous training are critical components of effective postpartum hemorrhage care practices. Alqaseer et al. (2025) found that simulation-based training and competency-based

education significantly improve nurses' knowledge, confidence, and response time in managing obstetric emergencies such as postpartum hemorrhage. In addition, Widiasih et al. (2022) emphasized that structured nursing training programs enhance adherence to clinical guidelines and improve the accuracy of hemorrhage assessment and intervention procedures. Furthermore, interdisciplinary collaboration is a key feature of effective postpartum hemorrhage management. Zielinski et al. (2024) found that interprofessional teamwork between nurses, midwives, and physicians strengthens early detection, improves communication during emergencies, and ensures timely escalation of care. This collaborative approach enhances coordination in administering medications, arranging blood transfusions, and implementing emergency protocols.

Assessment and recognition practices are the bedside actions nurses perform to identify early signs of postpartum hemorrhage. These include monitoring vital signs, assessing uterine tone, evaluating lochia, estimating blood loss, and observing signs of hypovolemic shock such as tachycardia, hypotension, pallor, and altered level of consciousness. Effective practice in this area is critical because early detection of abnormal bleeding significantly reduces maternal morbidity and mortality (Elsebey et al., 2024). Recent studies show that although nurses may have adequate theoretical understanding, actual assessment practices are often inconsistent. For instance, research conducted in Southeast Asia revealed that nurses frequently rely on visual estimation of blood loss rather than standardized measurement tools such as calibrated drapes or weighing methods, leading to underestimation of hemorrhage severity (Merla & Ezhumalai, 2022). Similarly, Siwik (2026) reported that inadequate use of structured assessment tools contributes to delayed recognition of PPH in hospital settings.

In addition, proper uterine assessment practices, such as palpation for uterine atony, are not always consistently performed due to workload and staffing constraints. Studies emphasize that nurses in high-volume maternity wards may miss early warning signs due to patient overload and insufficient monitoring time (Hennessy,2024). Simulation-based training studies, however, demonstrate that repeated practice significantly improves accuracy in identifying early signs of PPH and reduces response time (Aziz et al., 2025).

Prevention practices in postpartum hemorrhagic care refer to nursing interventions aimed at reducing the risk of excessive bleeding after childbirth. These include the Active Management of the Third Stage of Labor (AMTSL), administration of uterotonic drugs such as oxytocin, uterine massage after delivery, controlled cord traction, and close monitoring of high-risk mothers. Recent literature highlights that prevention practices are highly dependent on adherence to standardized clinical guidelines. However, implementation gaps remain significant in many healthcare settings (Laporte et al., 2024). Studies indicate that while nurses are generally aware of preventive protocols, actual practice is often inconsistent due to resource limitations, workload pressure, and lack of supervision (Noronha et al., 2025). For example, research in African maternity units revealed that uterotonic administration is not always given within the recommended time frame after delivery, which reduces its effectiveness in preventing uterine atony (Dol et al., 2022) found that although nurses knew the importance of uterine massage, only a small proportion consistently performed and documented it as part of routine postpartum care.

Furthermore, compliance with AMTSL guidelines varies depending on institutional policies and the availability of supplies. Studies emphasize that in low-resource settings, prevention practices are often compromised due to medication shortages and a lack of standardized protocols (Friday, 2025). These findings indicate that strengthening preventive nursing practices is essential to reducing the incidence of postpartum hemorrhage. Initial management practices are the immediate nursing actions taken upon identification of postpartum hemorrhage (Maumela, 2023). These include performing uterine massage, establishing intravenous access, administering prescribed uterotonic medications, initiating fluid

resuscitation, closely monitoring vital signs, and preparing the patient for possible surgical or other advanced interventions (Noronha et al., 2025).

Furthermore, recent studies highlight that timely and appropriate initial management is one of the most critical determinants of maternal survival in PPH. Delays in initiating emergency interventions have been associated with increased risk of shock and maternal death (Abdulrahman et al., 2024). Nurses who demonstrate strong emergency response skills are more likely to stabilize patients before their conditions worsen. However, evidence shows variability in actual practice (Pyram et al., 2022). Some nurses delay interventions due to hierarchical communication patterns, waiting for physician orders before initiating life-saving procedures (Miller et al., 2026). This practice gap contradicts emergency nursing protocols that emphasize immediate action.

In addition, studies indicate that incorrect administration of uterotonic medications and inadequate fluid management remain concerns in some clinical settings (Hassen & Farouk, 2024). Simulation training has been shown to improve adherence to correct procedures, including faster initiation of IV therapy and better coordination during emergencies (Aimagambetova et al., 2024). Teamwork, referral, and documentation practices refer to the collaborative actions, communication processes, escalation of care, and recording of clinical interventions performed by nurses during postpartum hemorrhage management (Rattan et al., 2024).

Effective teamwork is essential in managing PPH because it requires coordinated efforts among nurses, physicians, midwives, and other healthcare professionals. Studies emphasize that strong interprofessional collaboration significantly improves response time and patient outcomes during obstetric emergencies (Henry et al., 2022). Nurses who actively participate in team-based care are more efficient in managing critical situations. Referral practices involve recognizing when a patient requires transfer to a higher level of care. Research shows that delayed referral is common in rural and resource-limited settings due to unclear protocols, transportation barriers, and communication delays (Almutairi et al., 2025). Proper referral practice ensures that patients receive advanced care without unnecessary delay. Documentation practices are equally important as they ensure continuity of care, legal accountability, and quality monitoring. However, studies consistently report incomplete or inconsistent documentation of estimated blood loss, interventions performed, and patient responses during PPH episodes (Farahat et al., 2023). Poor documentation practices limit clinical evaluation and hinder quality improvement initiatives.

Relationship between Nurses' Knowledge and Practices on Postpartum Hemorrhagic Care

Knowledge refers to cognitive understanding of PPH concepts, risk factors, recognition, prevention, and management, whereas practices refer to the implementation of evidence-based interventions in clinical settings. Recent studies emphasize that although knowledge is a prerequisite for competent practice, it does not always automatically translate into appropriate clinical performance, particularly in high-stress obstetric emergencies such as postpartum hemorrhage (Chen et al., 2025). Several studies indicate a significant but inconsistent relationship between nurses' knowledge and their clinical practices in PPH care. For instance, Yan et al. (2026) found that although nurses demonstrated moderate to adequate knowledge of postpartum hemorrhage management guidelines, a large proportion still engaged in poor clinical practices, particularly regarding timely intervention and adherence to protocols. This suggests that knowledge alone is insufficient to ensure proper execution of emergency obstetric care. Similarly, Alqaseer et al. (2025) emphasized that nurses may possess an adequate theoretical understanding of PPH but fail to consistently apply this knowledge in clinical practice due to limited hands-on training, inadequate simulation exposure, and workplace constraints, including staffing shortages and workload pressure.

In contrast, other studies have shown that higher levels of knowledge are significantly associated with improved nursing practices. For example, Alsharif et al. (2025) reported that nurses with adequate

knowledge of PPH were more likely to demonstrate appropriate assessment and management skills than those with limited knowledge. This finding supports the notion that knowledge serves as a foundation for developing clinical competence. Likewise, Gebretsadik et al. (2025) reported that nurses who received updated training on postpartum hemorrhage protocols demonstrated greater compliance with clinical guidelines and more timely interventions during obstetric emergencies. These findings suggest that continuous education and training programs strengthen both knowledge retention and practical application (Rojas-Suarez & Paruk, 2024).

Despite this positive association, several studies have highlighted a persistent knowledge-practice gap in postpartum hemorrhage care. Safitri et al. (2023) found that while nurses were knowledgeable about key preventive measures such as uterine massage, only a small proportion consistently implemented and documented these interventions in clinical practice. This indicates that awareness of procedures does not always result in consistent execution (Shields et al., 2024). Similarly, Wayne et al. (2025) reported a mismatch between nurses' understanding of PPH guidelines and their actual adherence to them during clinical care, particularly in emergencies where rapid decision-making is required.

Synthesis

The reviewed literature indicates that postpartum hemorrhage remains a significant concern in maternal healthcare because of its potential to rapidly result in severe complications and maternal death when not recognized and managed promptly. Effective postpartum hemorrhagic care, therefore, requires nurses to possess adequate knowledge of its causes, risk factors, signs and symptoms, assessment procedures, preventive measures, and appropriate emergency interventions. The literature consistently emphasizes that early recognition and immediate action are essential components of safe maternal care.

The literature further shows that nurses play a crucial role in the prevention, identification, and management of postpartum hemorrhage. Their responsibilities include monitoring postpartum mothers, assessing blood loss and vital signs, identifying women at risk, administering prescribed medications, initiating appropriate interventions, maintaining accurate documentation, and promptly coordinating with physicians and other members of the healthcare team. These responsibilities require not only theoretical knowledge but also practical competence and confidence in responding to obstetric emergencies.

The reviewed studies also suggest that knowledge alone does not always translate into appropriate clinical practice. Nurses may demonstrate awareness of postpartum hemorrhage management but encounter difficulties applying appropriate interventions during emergencies. Factors such as limited clinical exposure, workload, availability of equipment and medications, institutional protocols, staffing, communication, and opportunities for continuing professional development may affect the quality and consistency of care. Regular training, simulation exercises, skills demonstrations, and institutional emergency protocols are therefore important in strengthening nurses' preparedness.

Moreover, the literature highlights the importance of standardized postpartum hemorrhage protocols in promoting timely and coordinated responses. Nurses who are familiar with established procedures are better positioned to recognize deterioration, initiate immediate measures, communicate effectively with the healthcare team, and provide appropriate ongoing monitoring. Continuous education and competency-based training are particularly relevant in private hospital settings where nurses may differ in educational preparation, clinical experience, and exposure to obstetric emergencies.

Overall, the literature establishes a strong connection between nurses' knowledge and their practices in providing care for postpartum hemorrhage. Adequate knowledge provides the foundation for appropriate clinical decision-making, while consistent practice demonstrates its application in patient care. However, variations in nurses' knowledge and practices may still exist across healthcare institutions and clinical settings. This highlights the need to examine the current level of knowledge and practices among nurses, specifically in selected private hospitals in the Davao Region. Identifying

these areas can provide a clearer understanding of existing competencies and potential gaps in postpartum hemorrhagic care, serving as a basis for appropriate training, institutional support, and interventions to improve the quality and safety of maternal healthcare.

Theoretical Framework

This study was anchored on two complementary frameworks, namely the Knowledge–Attitude–Practice (KAP) Model as discussed by Kaliyaperumal (2004), and Nola Pender's Health Promotion Model (HPM). These frameworks provide a basis for understanding how nurses' knowledge, attitudes, beliefs, experiences, and behavioral factors may influence their clinical practices in the prevention, recognition, and management of postpartum hemorrhage (PPH).

The Knowledge–Attitude–Practice (KAP) Model provides the primary framework for examining the relationship between what nurses know, how they perceive or respond to PPH management, and how they apply their knowledge in clinical practice. The KAP approach assumes that knowledge provides the cognitive foundation for developing appropriate attitudes, which in turn may influence the adoption of desirable practices. In healthcare, the model is commonly used to assess whether healthcare providers possess adequate knowledge about a health concern and whether such knowledge is reflected in their attitudes and actual practices.

In the context of postpartum hemorrhage (PPH) care, the KAP Model is highly relevant because effective management requires nurses to possess accurate, up-to-date knowledge of PPH risk factors, warning signs, causes, assessment procedures, and appropriate interventions. Knowledge of evidence-based PPH protocols may help nurses promptly recognize excessive bleeding, assess maternal vital signs and clinical status, identify possible causes of hemorrhage, initiate appropriate nursing interventions, administer prescribed medications correctly, and coordinate timely emergency management. However, knowledge alone does not necessarily guarantee appropriate clinical performance. Nurses' attitudes toward emergency care, perceived importance of rapid intervention, confidence in following protocols, and willingness to respond promptly may influence how effectively knowledge is translated into practice.

The KAP Model, therefore, supports the assumption that nurses with adequate knowledge and favorable attitudes toward PPH management are more likely to demonstrate appropriate clinical practices. It also provides a useful basis for identifying gaps between nurses' theoretical understanding and their actual performance. For instance, a nurse may know the recommended steps for managing PPH but fail to implement them promptly due to hesitation, low confidence, or unfavorable perceptions of the procedure. Assessing these dimensions can help determine whether deficiencies in practice are associated with knowledge gaps, attitudinal concerns, or other factors affecting clinical application. Thus, the KAP Model directly supports the assessment of nurses' preparedness and clinical practices in postpartum hemorrhage care.

The study is also anchored on Nola Pender's Health Promotion Model (HPM), which explains how individual characteristics, prior experiences, perceived benefits and barriers, self-efficacy, interpersonal influences, and situational factors affect health-related behaviors. Although originally developed to explain health-promoting behaviors, the model offers a useful perspective on how healthcare professionals' personal and environmental factors influence their engagement in desirable health-related practices.

Applied to postpartum hemorrhage (PPH) care, Pender's model suggests that nurses' clinical behaviors may be influenced by their prior experience managing obstetric emergencies, exposure to PPH-related training, perceived benefits of following established protocols, perceived barriers to timely intervention, and confidence in their ability to perform required nursing actions. Nurses who have received adequate training and repeated clinical exposure may develop stronger self-efficacy and greater confidence in responding to PPH emergencies. Conversely, limited experience, insufficient

training, inadequate resources, or uncertainty about emergency procedures may pose barriers to the consistent implementation of appropriate practices.

The concept of self-efficacy is particularly relevant to PPH management because emergencies require nurses to respond promptly and competently. A nurse who believes in their ability to assess a deteriorating mother, initiate appropriate interventions, communicate with the healthcare team, and follow emergency protocols may be more likely to act decisively. Pender's model also recognizes the influence of interpersonal and situational factors. In the clinical setting, support from physicians, senior nurses, nurse managers, and the healthcare team, along with the availability of equipment, medications, protocols, and emergency resources, may facilitate appropriate PPH management practices.

Conceptual Framework

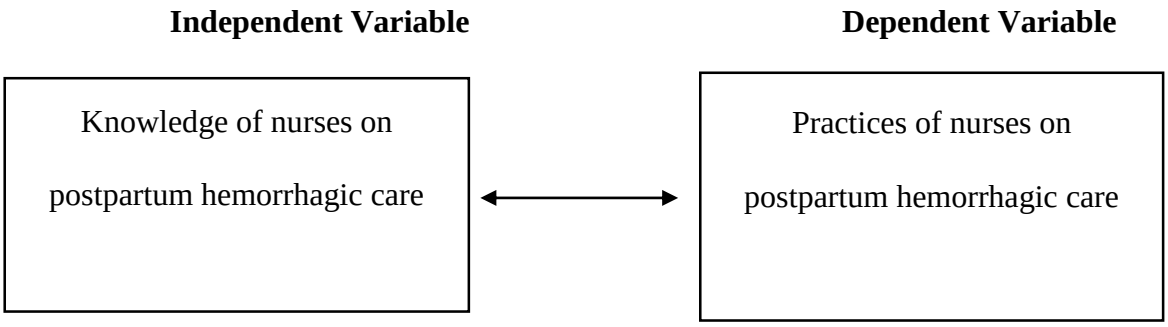


Figure 1: Research Paradigm

As shown in Figure 1, two sets of variables were identified in this study. Firstly, the independent variable is the nurses' knowledge of postpartum hemorrhagic care. On the other hand, the dependent variable is nurses' practices on postpartum hemorrhage care. The framework assumes that nurses' knowledge significantly influences their clinical practices in managing postpartum hemorrhage. Therefore, higher levels of knowledge are expected to contribute to better nursing practices in postpartum hemorrhagic care.

Statement of the Problem

The main purpose of this study was to identify the Nurses' Knowledge and Practices on Postpartum Hemorrhagic Care in selected hospitals in Davao Region (XI).

Specifically, this study sought answers to the following questions:

1.What is the level of knowledge of nurses on postpartum hemorrhagic care?

2.What is the level of practice of nurses on postpartum hemorrhagic care?

3.Is there a significant relationship between nurses' knowledge and practices on postpartum hemorrhagic care?

4.Is there a significant difference in nurses' practices when grouped according to their levels of knowledge?

5.Does the nurses' level of knowledge significantly predict their practices?

Hypotheses

After the problem statement was determined, the researcher formulated null hypotheses at the 0.05 level of significance. Furthermore, stated the following:

H_{01}: There is no significant relationship between the nurses' knowledge and practices on postpartum hemorrhagic care.

H_{02}: There is no significant difference in nurses' practices when grouped according to their levels of knowledge.

H_{03}: Nurses' level of knowledge does not significantly predict their practices.

Definition of Terms

For better understanding and interpretation of this study, the following terms were operationally defined.

Nurses' Knowledge of Postpartum Hemorrhagic Care. This refers to nurses' cognitive understanding of postpartum hemorrhage, including general concepts and risk factors; recognition and assessment; prevention strategies; initial management; and communication, referral, and documentation. In this study, knowledge is measured by how well nurses understand evidence-based guidelines and clinical protocols for managing postpartum hemorrhage.

Nurses' Practices on Postpartum Hemorrhagic Care. This refers to the clinical actions nurses perform to manage postpartum hemorrhage. This includes assessment and recognition practices, prevention practices, initial management practices, and teamwork, referral, and documentation practices. It reflects how nurses apply their knowledge in real clinical settings.

Postpartum Hemorrhage Care. This refers to the comprehensive nursing care provided to prevent, identify, and manage excessive bleeding after childbirth. This includes early assessment, preventive interventions, emergency management, and care coordination to reduce maternal morbidity and mortality.

Significance of the Study

The study is intended for audiences who may provide guidance for further improvement and who, at the same time, may benefit from the results applicable to specific individuals, groups of people, or any organization that can read the results and derive from them. This may include the following:

Nurses. This study is significant for nurses in the Davao Region, as it helps assess their knowledge and practices regarding the management of postpartum hemorrhage (PPH). The findings may increase awareness of areas that need improvement and support their professional growth through targeted training and continuing education. Ultimately, this study may enhance nurses' competencies, improve clinical decision-making, and promote better maternal outcomes in healthcare settings.

Nursing Services Administrators. The findings of this study may help nursing services administrators identify the strengths and weaknesses in nurses' knowledge and practices regarding postpartum hemorrhage (PPH) care. The results may serve as a basis for developing training programs, clinical guidelines, and continuing education activities to improve nurses' competencies and the quality of maternal healthcare services.

Hospital Administrators. This study may provide hospital administrators with valuable information regarding the current status of nurses' knowledge and practices in postpartum hemorrhage care. The findings may guide hospital management in strengthening policies, allocating resources, and supporting staff development programs to enhance patient safety and reduce maternal complications related to postpartum hemorrhage**.**

Future Researchers. This study may serve as a guide for future researchers conducting more in-depth and comprehensive investigations into the importance of evidence-based nursing interventions among nurses, particularly regarding their knowledge and practices regarding postpartum hemorrhage prevention. The findings of this study may provide baseline data and insights to support further exploration of the topic. Moreover, it may contribute to the development of improved strategies, innovations, and recommendations that could enhance nursing practice and further advance research on postpartum hemorrhage prevention.

CHAPTER 2

METHODS

This chapter outlines the methods used in this study, detailing the research design, setting, participants, measures, ethical considerations, procedures, data analysis, and the research's scope and limitations.

Design

This study employed a quantitative descriptive-correlational research design to assess nurses' knowledge and practices regarding postpartum hemorrhagic care in selected private hospitals in the Davao Region. The descriptive component of the study was used to assess nurses' knowledge and practices regarding postpartum hemorrhagic care. In contrast, the correlational component determined the relationship between nurses' knowledge and their clinical practices in managing postpartum hemorrhage.

The study was appropriate for the present research because it allowed the researcher to systematically gather numerical data and analyze the association between the identified variables without manipulating the study environment. Specifically, the study aimed to evaluate nurses' knowledge of general concepts and risk factors; recognition and assessment; prevention of postpartum hemorrhage; initial management; and communication, referral, and documentation. Furthermore, it sought to assess nurses' practices in assessment and recognition, prevention, initial management, and teamwork, referral, and documentation.

Setting

This study was conducted in the Davao Region (Region XI), located in the southern part of Mindanao, Philippines. The Davao Region comprises five provinces: Davao de Oro, Davao del Norte, Davao del Sur, Davao Oriental, and Davao Occidental. It is one of the fastest-growing regions in the country and has a wide network of healthcare facilities. According to recent data, the region has over 50 licensed hospitals, including both government and private institutions, offering services ranging from primary to tertiary care. Furthermore, this study specifically selected a private hospital in Davao Region due to the relevance of maternal health issues as a significant concern affecting maternal outcomes and enhancing the quality of hospital services regarding the provision of care for postpartum hemorrhage. The study primarily focused on staff nurses actively involved in managing postpartum hemorrhage cases, ensuring that the data collected were relevant, accurate, and reflective of current maternal health practices in the region.

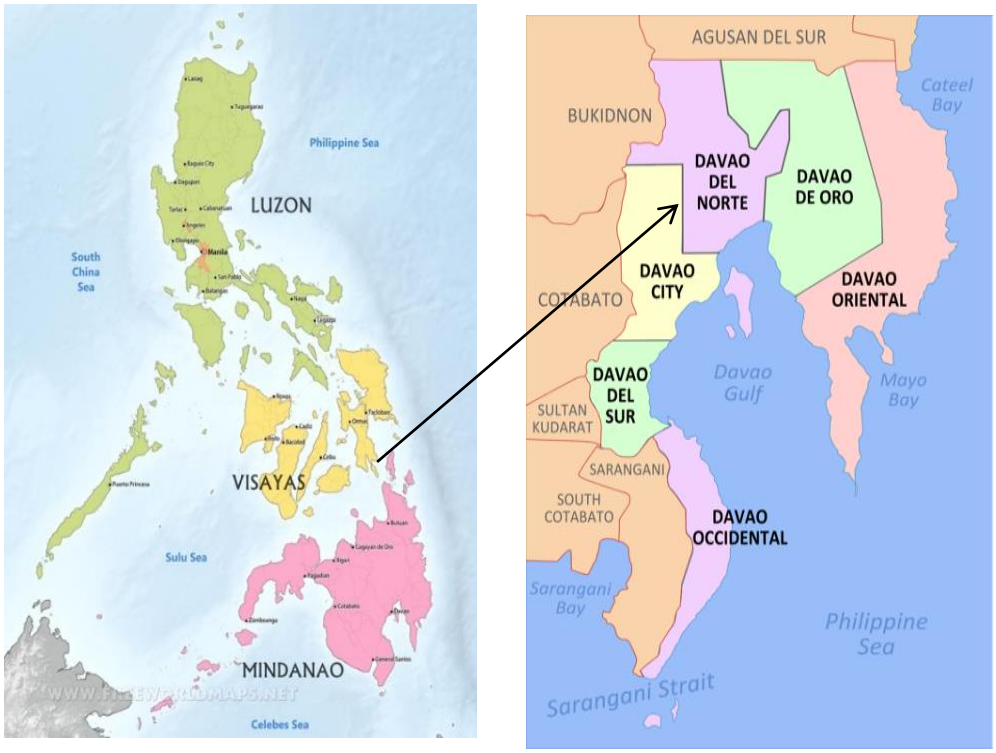


Figure 2. Site Map
(Source: Google Map, 2026)

Participants

The respondents in this study comprised 200 nurses working in selected hospitals within the Davao Region. The required sample size was determined using G*Power analysis to ensure that the study had sufficient statistical power to detect a relationship between the variables under investigation. The sample size computation considered the appropriate statistical test, anticipated effect size, level of significance, and desired statistical power. After determining the required sample size, the researchers employed simple random sampling to select eligible nurse respondents from the identified hospitals. Through this sampling technique, each eligible nurse had an equal opportunity to be selected, thereby minimizing selection bias and promoting a more representative sample of the target population.

The study's inclusion criteria required that respondents be Registered Nurses (RNs) currently employed in hospital settings within the Davao Region. They must be within the age range of 24 to 55 years old and must have at least one (1) year of clinical experience in postpartum care. This requirement ensured that participants had sufficient exposure to maternal and obstetric nursing responsibilities, particularly in the care and management of postpartum hemorrhage, thereby making their responses more valid and relevant to the study.

The exclusion criteria eliminated nurses who had less than one (1) year of experience in postpartum or maternal care, as they may not have adequate clinical exposure to postpartum hemorrhage management. Nurses who had already resigned, were in the process of resignation, or were serving their resignation notice were also excluded, as their limited engagement in clinical duties may affect the consistency and reliability of their responses. In addition, other healthcare professionals who are not Registered Nurses or who were not directly involved in postpartum hemorrhage care were excluded from the study.

Measure

This study used a researcher-developed survey questionnaire as the primary research instrument to assess nurses' knowledge and practices regarding postpartum hemorrhagic care in selected private hospitals in the Davao Region. The questionnaire was developed based on an extensive review of related literature, current evidence-based clinical guidelines, and standards of maternal nursing practice

concerning postpartum hemorrhage. The instrument was designed to measure two unidimensional variables: knowledge of postpartum hemorrhagic care and practices of postpartum hemorrhagic care.

The questionnaire consisted of two parts. The questionnaire consisted of two parts. Part I assessed the nurses' knowledge of postpartum hemorrhagic care. This section contains 15 researcher-made statements covering essential knowledge related to the recognition, causes, assessment, and management of postpartum hemorrhage. The respondents indicated whether each statement is TRUE or FALSE**.**

Part II measured the nurses' practices on postpartum hemorrhagic care. This section likewise consisted of 15 researcher-made statements that determine the frequency with which nurses perform recommended postpartum hemorrhage care in their clinical practice. The respondents answered each statement using a five-point Likert scale ranging from 1 (Never) to 5 (Always).

Since the instrument was researcher-developed, it underwent content validation by a panel of experts comprising specialists in maternal and child nursing, obstetric care, nursing research, and instrument development. The experts evaluated each questionnaire item in terms of relevance, clarity, simplicity, and representativeness. The instrument's validity was established using the Content Validity Index (CVI), specifically the Item-Level Content Validity Index (I-CVI) and the Scale-Level Content Validity Index (S-CVI). Necessary revisions were made based on the validators' comments and recommendations to improve the instrument's overall quality.

Following the content validation process, the revised questionnaire underwent pilot testing with 25 registered nurses from private hospitals who had characteristics similar to those of the target respondents but were not included in the actual study. The pilot test assessed the instrument's clarity, comprehensibility, and internal consistency. The reliability of the questionnaire was assessed using Cronbach's alpha, which was 0.885. Appropriate revisions were incorporated before the final administration of the questionnaire.

For the knowledge scale, the scores of all 15 items were summed to obtain the respondents' total knowledge score. Similarly, for the practices scale, the scores of all 15 items were summed to obtain the respondents' total practice score.

The following scale was used in interpreting the mean scores of the respondents:

Mean Range	Knowledge	Practices
4.21-5.00	Highly Knowledgeable	Always Practiced
3.41-4.20	Knowledgeable	Often Practiced
2.62-3.30	Moderately Knowledgeable	Sometimes Practiced
1.81-2.60	Slightly Knowledgeable	Rarely Practiced
1.00-1.80	Not Knowledgeable	Never Practiced

Prior to the correlational analysis, a normality test was conducted to assess the distribution of the practice scores. The Kolmogorov-Smirnov test yielded a significance value of less than .001, while the Shapiro-Wilk test yielded a significance value of .010. Both results were statistically significant at the 0.05 level, indicating that the practice scores were not normally distributed. Therefore, a nonparametric statistical test, specifically Spearman's rho, was used to determine the relationship between nurses' knowledge and practices regarding postpartum hemorrhage care.

Procedure

To ensure a systematic and organized data collection process, the researcher established a logical flow of action.

1. The researcher obtained permission from the Program Chair of the Master of Arts in Nursing (MAN) program to conduct the study.

2.The researcher utilized a researcher-made survey questionnaire to assess the knowledge and practices of nurses regarding postpartum hemorrhagic care.
3.The questionnaire underwent expert validation and pilot testing to establish its content validity, clarity, and reliability before its administration to the actual respondents.
4.The research proposal was submitted to the Research Ethics Committee (REC) for ethical review and approval prior to the conduct of the study.
5.Upon obtaining ethical clearance, the researcher coordinated with the administrators and Human Resources (HR) departments of the selected hospitals in the Davao Region to identify eligible nursing personnel who met the established inclusion criteria.
6.The researcher employed simple random sampling to select the required number of respondents from the list of eligible nurses, ensuring that each qualified participant had an equal chance of being included in the study.
7.Prior to data collection, the researcher provided the respondents with a comprehensive orientation regarding the purpose, objectives, significance, procedures, and nature of the study. The participants were also informed about their roles and responsibilities as respondents, the contents of the survey questionnaire, and the estimated time required to complete the instrument.
8.The respondents were given sufficient opportunity to ask questions and seek clarification regarding any aspect of the study. Thereafter, informed consent was obtained from each participant to confirm their voluntary participation in the study.
9.Following the signing of the informed consent form, the survey questionnaires were distributed to the qualified respondents. Adequate time was provided for them to complete the instrument. Upon completion, the completed questionnaires were collected and reviewed by the researcher to ensure completeness of responses.
10. All collected data were treated with strict confidentiality. The completed questionnaires and electronic files were securely stored in password-protected devices and folders accessible only to the researcher. To protect participants' identities, all identifying information was removed and replaced with codes or pseudonyms.
11. The collected data were retained for a period of five (5) years after the completion of the study in accordance with institutional research policies and ethical guidelines. After the retention period, all electronic records were permanently deleted, and all printed documents were securely destroyed.
12. The gathered data were encoded, tabulated, analyzed, and interpreted using appropriate statistical tools. The results of the analysis served as the basis for the study's findings, conclusions, implications, and recommendations. After the study's completion and the required retention period, all collected data, including completed questionnaires, encoded files, and other research records containing participants' information, were securely disposed of to protect respondents' confidentiality and privacy. Physical copies were shredded, while electronic files were permanently deleted from storage devices and other digital locations, ensuring that the data could no longer be accessed or retrieved.

Ethical Consideration

To protect respondents' rights, ethical considerations were carefully observed throughout the study.

Social Value. In this study, findings were expected to improve nurses' knowledge and practices in selected private hospitals in the Davao Region. This helped ensure timely and effective management of postpartum hemorrhage, leading to better maternal health outcomes, reduced complications, and enhanced quality of care for postpartum mothers and their newborns. The results may also guide the development of targeted training programs and evidence-based protocols for nurses in the region.

Vulnerability of the Participants. Nurses who may be considered vulnerable due to their employment relationship within the hospital. They may feel pressured to participate or fear that their responses could

affect their professional standing. To address this, participation was voluntary, confidentiality was maintained, and respondents could withdraw from the study at any time without consequences.

Informed Consent. The researcher was held accountable and responsible for the respondents in this study. Before proceeding with the research study, the researcher informed the research participants firsthand about the entire procedure and their individual rights to help them understand the implications of participation. Complete consent from the participants was obtained prior to the study without any pressure or coercion. A consent form was given to each respondent. Moreover, the participants had the right to withdraw if they wished.

Justice. The researcher selected respondents without bias, provided the individual was eligible to participate in the study. The researchers must ensure that the given criteria are strictly observed during the selection and distribution of respondents to eliminate any bias in the study. It was also guaranteed that every survey participant fully contributed to the study. The researcher ensured that participants' time and effort would not be wasted and that the data gathered from them would be used to draw valuable inferences.

Transparency. Throughout the study, the researchers aimed to ensure transparency and full honesty. The participants were given adequate information about the study, particularly its objective. This was to ensure that the participants were well informed and well guided throughout the study.

Declaration of Artificial Intelligence (AI) use. (AI) tools were utilized to assists in enhancing the grammar, clarity, and organization of the research manuscript. All AI-assigned content was carefully reviewed, verified, and revised by the researcher to ensure accuracy, originality, and consistency with the study. The researcher assume full responsibility for the final content, analysis, interpretation and conclusions presented in this manuscript

Privacy and Confidentiality. Since the data were collected online, the researcher ensured that the rules, grounded in the Data Privacy Act of 2012, regarding online access were strictly followed.

Qualification of the Researcher. The researcher recognized their full accountability in conducting this study. The topic was aligned with their selected course; thus, the researcher was able to carry out the study. Besides, the proponent was guided by the research adviser throughout the study.

Adequacy of Facilities. The primary facility that was used in this study was online. This was because we were facing a pandemic. Data should be collected via an online survey, and the proponents need to secure a Wi-Fi connection to ensure that the data and information generated and required are transmitted appropriately.

Data Analysis

For in-depth data analysis, the following statistical methods and techniques were applied. This section provided a detailed description of the researcher's process of analyzing the collected data.

Frequency and Percentage. These determined the number of respondents and the corresponding percentage distribution for each category.

Mean and Standard Deviation. These measured the level of nurses' knowledge and practices on postpartum hemorrhagic care.

Spearman's rho coefficient. This determined the significant relationship between nurses' knowledge and practices regarding postpartum hemorrhagic care and indicated its strength and direction.

Kruskal-Wallis H Test. This test assessed whether there was a significant difference in nurses' practices across knowledge levels. This nonparametric test was used because the practice scores do not meet the assumption of normality.

Multiple Linear Regression Analysis. This determined whether nurses' level of knowledge significantly predicts their practices on postpartum hemorrhage care. The analysis examined the contribution of the knowledge-level categories to practice scores and determined the statistical significance and magnitude of their predictive relationships.

Scope and Limitation of the Study

This study primarily focused on nurses' knowledge and practices regarding postpartum hemorrhagic care. It specifically aimed to determine the level of nurses' knowledge and practices in managing postpartum hemorrhage and to identify the relationship between these variables. The study was conducted in selected private hospitals in the Davao Region. The study respondents were registered nurses currently assigned to maternal, obstetric, or delivery care units. The study employed a quantitative descriptive-correlational research design, using a validated survey questionnaire to gather data from respondents. Statistical tools such as percentage, mean, standard deviation, Spearman's rho coefficient, Kruskal-Wallis H Test, and Multiple Linear Regression Analysis were used to analyze and interpret the collected data. The study was limited only to the assessment of nurses' knowledge and practices on postpartum hemorrhagic care and does not include other healthcare professionals or other maternal health conditions. Furthermore, the study's findings depended solely on the honesty and accuracy of the respondents' answers to the questionnaire.

CHAPTER 3

RESULTS AND DISCUSSION

This chapter presented the study's results and discussion. The results were presented in tabular form.

SOP1: What is the level of knowledge of nurses on postpartum hemorrhagic care?

Table 1. Level of Knowledge of Nurses on Postpartum Hemorrhagic

No	Statement	Correct		Incorrect	
		Frequency	Percentage	Frequency	Percentage
1	Postpartum hemorrhage involves excessive bleeding occurring after childbirth that may result in maternal hypovolemia and requires prompt assessment and management.	160	80.0	40	20.0
2	The major causes of postpartum hemorrhage include Tone, Trauma, Tissue, and Thrombin.	168	84.0	32	16.0
3	Uterine atony, or failure of the uterus to contract effectively after delivery, is one of the major causes of postpartum hemorrhage.	176	88.0	24	12.0
4	Retained placental tissue is classified under **Trauma** in the Four Ts of postpartum hemorrhage.	54	27.0	146	73.0
5	Maternal vital signs, uterine tone, and vaginal bleeding warrant close monitoring when postpartum hemorrhage is suspected.	168	84.0	32	16.0
6	Visual estimation of blood loss alone is always accurate and sufficient for detecting postpartum hemorrhage.	62	31.0	138	69.0

7	Uterine massage can be performed when uterine atony is suspected.	176	88.0	24	12.0
8	Uterotonic medications can be used in the management of postpartum hemorrhage.	160	80.0	40	20.0
9	Once postpartum hemorrhage is suspected, nursing interventions can be delayed until the exact cause of bleeding has been completely identified.	72	36.0	128	64.0
10	Rapid assessment and timely intervention are less important in preventing severe complications associated with postpartum hemorrhage.	56	28.0	144	72.0
11	D5LR is used as part of fluid resuscitation for a woman experiencing significant blood loss from postpartum hemorrhage.	47	23.5	153	76.5
12	Postpartum hemorrhage caused by genital tract lacerations should be classified under Trauma in the Four Ts.	160	80.0	40	20.0
13	Timely communication, referral, and collaboration among healthcare professionals are less important in managing postpartum hemorrhage.	55	27.5	145	72.5
14	Accurate documentation of the patient's response plays an essential role in the management of postpartum hemorrhage.	152	76.0	48	24.0
15	A woman who has delivered by cesarean section cannot develop postpartum hemorrhage because the placenta is removed during the procedure.	53	26.5	147	73.5

Note: Mean Score: Low (1.00-5.00), Moderate (5.01-10), High (10.1-15)

Table 1 presents nurses' knowledge levels regarding postpartum hemorrhage (PPH) care. The findings revealed that the respondents had an overall moderate level of knowledge, as indicated by the total mean score of 8.59 (SD = 1.821). Among the 200 nurses, 161 (80.5%) were moderately knowledgeable, 31 (15.5%) were highly knowledgeable, and 8 (4.0%) had low knowledge. This distribution indicates that the majority of nurses possessed a moderate level of knowledge regarding PPH care, while only a small proportion demonstrated a high level of knowledge. The overall result suggests that the respondents have a foundational understanding of PPH but may still require further strengthening of their knowledge in specific areas of assessment and clinical management.

The moderate level of knowledge means that the nurses generally possess the essential concepts needed to recognize and respond to postpartum hemorrhage. However, their knowledge may not be equally developed across all aspects of PPH care. In nursing practice, this is important because nurses play a

critical role in the early recognition of excessive bleeding, assessment of the mother's condition, monitoring of vital signs and uterine tone, implementation of appropriate interventions, administration of prescribed medications, and coordination with other healthcare professionals. Thus, the overall finding suggests that the nurses have a basic foundation in PPH management, but further development is needed to ensure this knowledge can be consistently applied in obstetric emergencies. K

The highest finding was observed in the recognition of uterine atony as a major cause of postpartum hemorrhage and the use of uterine massage when uterine atony is suspected. Both statements were correctly answered by 176 nurses (88.0%). This finding indicates that the respondents demonstrated relatively strong knowledge of uterine atony and its immediate management. It suggests that most nurses recognize inadequate uterine contraction as an important contributor to PPH and are familiar with appropriate initial interventions when uterine atony is suspected. This is an important area of knowledge because early recognition and response to uterine atony can contribute to the prompt management of bleeding and help prevent further maternal blood loss. This is consistent with Farahat et al. (2023), who emphasized the importance of training nurses to prevent and control intrapartum hemorrhage and to develop competencies for timely clinical responses. Similarly, Almutairi et al. (2025) demonstrated the value of simulation training in improving nurses' preparedness for hemorrhage management, highlighting the importance of translating knowledge into appropriate emergency actions. Aimagambetova et al. (2024) likewise emphasized that effective PPH management requires timely recognition and appropriate intervention, particularly in settings where available resources may influence emergency care.

The high proportion of correct responses in this area has significance for nursing practice and patient safety. Since uterine atony is an important cause of postpartum hemorrhage, nurses' ability to recognize changes in uterine tone and respond promptly is essential in preventing the progression of bleeding. The finding demonstrates an area of relative strength among the respondents. However, this strength should be considered alongside the overall moderate level of knowledge, as familiarity with common causes and immediate interventions does not necessarily mean that nurses have comprehensive knowledge of all aspects of PPH management.

In contrast, the lowest finding was observed in the item concerning fluid resuscitation. Only 47 nurses (23.5%) correctly answered the statement regarding D5LR as part of fluid resuscitation for a woman experiencing significant blood loss from postpartum hemorrhage. This result represents the weakest area of knowledge among the items assessed. It suggests a substantial gap in the respondents' understanding of fluid management in the context of significant maternal blood loss. The finding indicates that although nurses demonstrated stronger knowledge of uterine atony, they may have less confidence or understanding of the specific clinical management measures required when PPH results in substantial blood loss.

This knowledge gap is significant in nursing practice because postpartum hemorrhage can rapidly lead to hypovolemia and hemodynamic instability. Nurses caring for women with PPH need to understand the principles of fluid resuscitation and follow appropriate evidence-based and institutional protocols when managing significant blood loss. Insufficient knowledge in this area may affect the nurse's ability to participate effectively in emergency management and may delay appropriate interventions. Therefore, the finding highlights the need for continuing education and skills-based training that address the management of severe PPH, particularly fluid management and other emergency interventions.

The findings are consistent with Henry et al. (2022), who emphasized the importance of healthcare providers' knowledge of clinical protocols in postpartum hemorrhage care. Adequate knowledge of standardized clinical procedures is essential for the timely recognition and management of PPH. The

moderate overall knowledge found in the present study similarly indicates that while nurses possess foundational knowledge, specific areas of clinical management may require further reinforcement.

The result is also supported by Hassen and Farouk (2024), who highlighted the value of applying WHO guidelines in improving nurses' knowledge regarding the prevention and management of postpartum hemorrhage. Evidence-based guidelines and structured clinical education can strengthen nurses' understanding of appropriate interventions and promote more consistent responses to obstetric emergencies. In the present study, the high proportion of correct responses regarding uterine atony and uterine massage may reflect familiarity with commonly emphasized PPH concepts. In contrast, the low proportion of correct responses regarding fluid resuscitation indicates an area that requires more focused instruction.

The findings are further supported by Begum et al. (2025), who emphasized the importance of accurate assessment of postpartum blood loss for the early detection of PPH. This reinforces the need for nurses to develop comprehensive knowledge that extends beyond identifying PPH to include appropriate assessment and clinical management. Farahat et al. (2023) likewise demonstrated the value of structured training in improving nurses' competencies in preventing and controlling obstetric hemorrhage. In addition, Blaak et al. (2025) reported that simulation involving standardized patients can support knowledge acquisition, retention, and self-efficacy. These findings suggest that continuing professional development, simulation-based learning, and protocol-focused training may help address the knowledge gaps identified in the present study.

SOP2: What is the level of practice of nurses on postpartum hemorrhagic care?

Table 2. Level Nurses' Practices on Postpartum Hemorrhagic Care

No	Statement	Mean	SD	Description
1	I assess postpartum mothers for early signs and symptoms of postpartum hemorrhage immediately after delivery.	4.11	0.794	Often
2	I monitor maternal vital signs regularly during the postpartum period to detect possible hemorrhage.	4.03	0.856	Often
3	I accurately assess and document the amount of postpartum blood loss.	4.07	0.809	Often
4	I perform uterine massage promptly when uterine atony is suspected.	4.11	0.797	Often
5	I anticipate prescribed uterotonic medications according to established clinical protocols.	4.01	0.698	Often
6	I maintain intravenous access and initiate fluid replacement promptly when postpartum hemorrhage occurs.	4.14	0.831	Often
7	I notify the attending physician or obstetric emergency team	4.06	0.858	Often

	immediately upon recognizing postpartum hemorrhage.			
8	I continuously monitor the mother's response to interventions during postpartum hemorrhage management.	4.08	0.926	Often
9	I accurately document all assessments, nursing interventions, medications administered, and patient responses.	3.65	0.837	Often
10	I collaborate effectively with other members of the healthcare team during postpartum hemorrhage emergencies.	4.12	0.708	Often
11	I prepare emergency equipment and supplies needed for postpartum hemorrhage management.	4.01	0.821	Often
12	I provide emotional support and appropriate explanations to the mother and her family during postpartum hemorrhage management.	3.87	0.972	Often
13	I follow established hospital protocols and clinical guidelines in managing postpartum hemorrhage.	4.11	0.760	Often
14	I participate in continuous monitoring of maternal condition until the patient is stabilized following postpartum hemorrhage.	3.81	0.921	Often
15	I maintain infection-prevention and patient-safety measures throughout the management of postpartum hemorrhage.	4.17	0.749	Often
	Overall	**4.02**	**0.411**	**Often**

Mean Range: 1.00-1.80 – Never Practiced (Very Low), 1.81- 2.60- rarely (Low), 2.61-3.40- Sometimes (Moderate), 3.41-4.20- Often (high), 4.21-5.00- Always (Very High)

Table 2 presents the level of nurses' practices regarding postpartum hemorrhage (PPH) care. The findings revealed that PPH-related practices were commonly practiced, with a mean of 4.02 (SD = 0.411). This indicates that the nurses generally perform the required practices for the recognition, assessment, intervention, monitoring, and management of postpartum hemorrhage. The relatively low standard deviation also indicates that the respondents' practice ratings were relatively consistent.

Overall, the findings suggest that PPH-related nursing practices are generally incorporated into the respondents' clinical activities.

The overall mean of 4.02 indicates that nurses frequently perform appropriate actions when caring for women at risk of or experiencing postpartum hemorrhage. In the context of nursing practice, this suggests that the respondents generally translate their clinical responsibilities into actual PPH care practices. Regular assessment, timely intervention, patient safety, monitoring, and coordination with the healthcare team are important because PPH can progress rapidly and requires immediate clinical attention. However, the rating of "often" rather than "always" also suggests that these practices may not be performed consistently in all clinical situations. Thus, while the respondents demonstrate generally appropriate PPH-related practices, there remains an opportunity to strengthen consistency and adherence to recommended standards of care.

The highest-rated practice was the statement, *"I maintain infection prevention and patient safety measures throughout postpartum hemorrhage management,"* which obtained a mean of 4.17 (SD = 0.749) and was described as often practiced. This finding indicates that maintaining patient safety and infection prevention is a strong component of the respondents' PPH care practices. It suggests that nurses generally recognize the importance of protecting patients from preventable risks during emergency interventions and ongoing care.

This finding is significant to nursing practice because PPH management often involves multiple urgent procedures, including intravenous access, medication administration, monitoring, and other interventions that require careful attention to safety. Maintaining infection prevention measures and patient safety practices can help minimize additional complications while ensuring that emergency care is delivered appropriately. The finding, therefore, reflects an important strength in the respondents' clinical practice. However, since the practice was rated "often" rather than "always," continued reinforcement of standard precautions, patient safety protocols, and evidence-based PPH procedures remains important.

The lowest-rated practice was the statement, "*I document all assessments, nursing interventions, medications administered, and patient responses accurately,"* which obtained a mean of 3.65 (SD = 0.837) and was still interpreted as often practiced. Although the result remains within the high practice range, it was the least frequently practiced behavior among the assessed practices. This finding suggests that comprehensive documentation may be performed less consistently than other PPH-related nursing activities.

The lower rating of documentation has important implications for nursing practice and patient safety. Accurate documentation is essential for communicating the patient's condition, recording interventions and medications, monitoring treatment response, and ensuring continuity of care among healthcare professionals. During a PPH emergency, nurses may need to prioritize immediate assessment and stabilization, which may make complete and timely documentation more challenging. Nevertheless, incomplete documentation may affect communication and continuity of care, particularly when multiple healthcare professionals are involved in managing the patient.

The findings are supported by Helmy et al. (2022), who emphasized the importance of prompt nursing interventions during obstetrical emergencies. The overall "often practiced" result in the present study indicates that nurses generally perform important clinical actions in response to PPH, which is consistent with the need for timely nursing responses during maternal emergencies.

The findings also support Hassen and Farouk (2024), who highlighted the importance of WHO guidelines in strengthening nurses' knowledge and management of postpartum hemorrhage. The generally high practice rating observed in the present study may indicate that adherence to established clinical guidelines and protocols contributes to the consistent performance of appropriate PPH-related nursing practices. Similarly, Henry et al. (2022) emphasized the importance of healthcare providers'

familiarity with standardized clinical protocols for PPH care, supporting the value of protocol-based practice in promoting consistent management.

The finding regarding documentation is also relevant to Hennessy (2024), who emphasized the development and implementation of a nurse leader-directed protocol for blood volume and blood loss estimation in a labor and delivery setting. Accurate recording of assessments and interventions is important in maintaining a clear clinical record and supporting continuity of care. In the present study, the comparatively lower mean for comprehensive documentation suggests that this aspect of PPH care may require additional attention, even though it remains frequently practiced.

The results are further consistent with Liu et al. (2023), who highlighted the complexity of managing severe or refractory postpartum hemorrhage and the importance of timely and appropriate therapeutic approaches. The overall high practice level in the present study suggests that nurses generally engage in appropriate clinical actions when managing PPH. However, the lower rating for comprehensive documentation indicates that effective PPH care should encompass not only immediate clinical interventions but also accurate recording and communication of care provided.

SOP3: Is there a significant relationship between nurses' knowledge and practices on postpartum hemorrhagic care?

Table 3. Relationship Between Nurses' Knowledge and Practices on Postpartum Hemorrhagic Care

Variable Pair	Spearman's rho (rs)	p-value	Decision	Interpretation
Knowledge and Practice	-0.043	.547	Accept H_0	Not Significant

Note: N = 200; significance level = 0.05.

Table 3 presents the results of the test of the relationship between nurses' knowledge and practices regarding postpartum hemorrhagic care. The results revealed a very weak negative relationship between knowledge and practice, as indicated by a Spearman's rho of -0.043. However, the obtained p-value of .547 was greater than the 0.05 level of significance, indicating that the relationship was not statistically significant. Thus, the null hypothesis was not rejected. This finding indicates that nurses' knowledge of postpartum hemorrhagic care was not significantly associated with the frequency of the identified nursing practices. In practical terms, nurses who obtained higher knowledge scores did not necessarily demonstrate higher practice scores, while those with lower knowledge scores did not necessarily demonstrate poorer practices. This finding is consistent with the broader evidence-based practice perspective of Osuchukwu and Ezeruigbo (2023), who emphasized that knowledge and beliefs alone do not fully determine the implementation of evidence-based nursing practices, as organizational culture and the clinical environment also influence practice. Similarly, Weerasingha et al. (2024) demonstrated through direct observation that evidence-based intrapartum care involves the actual application of recommended practices within the clinical setting, highlighting the distinction between knowing appropriate care and consistently performing it.

The absence of a significant relationship suggests that knowledge alone may not fully explain how nurses provide postpartum hemorrhagic care in clinical settings. Although knowledge provides an essential foundation for recognizing complications and understanding appropriate interventions, translating knowledge into practice may depend on other conditions in the clinical environment. These may include the availability of equipment and supplies, institutional protocols, workload, clinical supervision, teamwork, prior emergency experience, confidence, and opportunities for hands-on training. This interpretation is consistent with Osuchukwu and Ezeruigbo (2023), who emphasized that evidence-based nursing practice involves not only beliefs and knowledge but also the actual implementation of evidence within the clinical environment and the organizational culture that supports such implementation.

The finding may also be understood in relation to the emergency nature of postpartum hemorrhage, where nurses are expected to respond promptly and systematically according to established procedures. Pyram et al. (2022) demonstrated the value of an obstetric hemorrhage patient safety bundle in reducing postpartum hemorrhage, suggesting that structured systems and standardized responses can strengthen the management of obstetric emergencies. Similarly, Shields et al. (2024) emphasized systematic recognition, prevention, and treatment of maternal emergencies through organized emergency response approaches. Aimagambetova et al. (2024) likewise highlighted the need for updated approaches to PPH management that account for available resources and emergency care capacity. These findings support the view that effective management of postpartum hemorrhage depends not only on what nurses know but also on the availability of appropriate systems, protocols, resources, and coordinated responses during emergencies. Therefore, nurses may demonstrate appropriate practices because these actions are embedded in institutional protocols and emergency procedures, even when individual knowledge levels differ.

The result is further supported by studies emphasizing simulation and interprofessional collaboration in developing clinical competence. Sudaryanti et al. (2024) reported that capacity-building for maternal emergency services through low-tech, high-fidelity simulation and interprofessional collaboration can strengthen healthcare workers' preparedness for maternal emergencies. Likewise, Widiasih et al. (2022) found that nursing simulation can enhance nursing students' knowledge and skills, satisfaction, and self-confidence. More specifically, Almutairi et al. (2025) highlighted the efficacy of simulation training in hemorrhage management among nurses, reinforcing the importance of experiential learning in preparing nurses for emergencies. These findings indicate that competency development requires opportunities to translate theoretical understanding into actual or simulated clinical performance. Therefore, even when nurses possess knowledge of postpartum hemorrhage care, their actual practices may be shaped by repeated exposure to emergencies, practical training, confidence, and collaboration with other healthcare professionals.

The non-significant relationship may likewise reflect the role of evidence-based clinical guidelines and institutional systems in shaping nursing performance. Weerasingha et al. (2024) highlighted the importance of evidence-based intrapartum care through direct observation of clinical practices, while Nunes de Sá et al. (2024) demonstrated how technology can support nursing care in maternal intensive care settings. Hennessy (2024) further emphasized the development of a nurse leader-directed protocol for estimating blood volume and blood loss in a labor and delivery setting, illustrating how standardized systems can guide nursing actions in maternal care. Rojas-Suarez and Paruk (2024) also discussed the importance of organized maternal high-care and intensive-care services, particularly in settings where timely management of critically ill obstetric patients is essential. These studies suggest that clinical practice is influenced by more than individual knowledge alone; it is also embedded in procedures, technological support, organizational expectations, and available resources.

SOP4: Is there a significant difference in nurses' practices when grouped according to their levels of knowledge?

Table 4. Kruskal-Wallis Test and Pairwise Comparisons of Nurses' Practice by Knowledge Level (N=200)

Knowledge Level Comparison	Kruskal-Wallis *H*	*df*	Overall Asymp. *p*-value	Pairwise Test Statistic	Adjusted *p*-value (Bonferroni)	Interpretation
Overall Model	**10.246**	**2**	**.006***	—	—	**Significant Difference**
Pairwise Comparisons:						
Low vs. Moderately Knowledgeable	—	—	—	-65.329	**.005***	Significant
Low vs. Highly Knowledgeable	—	—	—	-54.258	0.054	Not Significant
Highly vs. Moderately Knowledgeable	—	—	—	11.071	0.986	Not Significant

Note: *Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is at alpha .05. Significance values have been adjusted by the Bonferroni correction for multiple tests.*

A nonparametric independent-samples Kruskal-Wallis test was performed to examine whether nurses' professional attitudes differed significantly across three tiers of clinical knowledge (N = 200). The omnibus test demonstrated a statistically significant overall difference in attitude distributions among the groups, H (2) = 10.246, p = .006). This allows for the rejection of the null hypothesis, confirming that a nurse's level of knowledge significantly affects their professional attitude.

To isolate the exact source of variance, post hoc pairwise comparisons were conducted using the Bonferroni correction to control for Type I error inflation. The adjusted pairwise statistics revealed that a statistically significant difference in attitude exists exclusively between the Low Level of Knowledge and the Moderately Knowledgeable cohorts (Test Statistic = -65.329, adjusted p = .005).

Conversely, no statistically significant variations in attitude were observed when comparing the Low Level of Knowledge group directly against the Highly Knowledgeable group (Test Statistic = -54.258, adjusted p = .054), nor when comparing the Highly Knowledgeable group against the Moderately Knowledgeable group (Test Statistic = 11.071, adjusted p = .986).

The significant difference in nurses' practices across knowledge levels may be explained by the importance of adequate clinical knowledge in guiding appropriate responses to postpartum hemorrhage. Aimagambetova et al. (2024) emphasized that effective management of postpartum hemorrhage requires healthcare providers to promptly recognize the condition and implement appropriate interventions based on available resources and clinical circumstances. Similarly, Henry et al. (2022) found that healthcare providers' knowledge of clinical protocols for postpartum hemorrhage care is an important component of appropriate emergency management. Hassen and Farouk (2024) likewise emphasized the importance of strengthening nurses' knowledge regarding the prevention and management of postpartum hemorrhage through guideline-based education. These findings support the present result, as differences in knowledge levels may be accompanied by differences in nurses' ability to perform recommended PPH care practices consistently.

Furthermore, Farahat et al. (2023) reported that a training program improved nurses' competencies in preventing and controlling intrapartum hemorrhage, demonstrating the value of targeted education in

developing appropriate clinical responses. Almutairi et al. (2025) similarly highlighted simulation training as an effective approach to improving nurses' preparedness for hemorrhage management, particularly by providing opportunities to practice emergency responses. Sudaryanti et al. (2024) further emphasized the contributions of simulation and interprofessional collaboration to capacity building in maternal emergency services. Taken together, these findings suggest that nurses with greater exposure to relevant knowledge and training may be better equipped to translate recommended procedures into clinical practice, which may help explain the significant practice difference identified between the low and moderately knowledgeable groups.

However, the absence of significant differences between the low- and highly knowledgeable groups and between the highly and moderately knowledgeable groups indicates that practice does not necessarily increase in proportion to knowledge level. This finding is consistent with Osuchukwu and Ezeruigbo (2023), who emphasized that the implementation of evidence-based nursing practice is shaped not only by individual knowledge but also by organizational culture and the clinical environment. Weerasingha et al. (2024) likewise showed that evidence-based intrapartum care entails the implementation of recommended practices in clinical settings, while Pyram et al. (2022) demonstrated the value of standardized obstetric hemorrhage safety bundles in strengthening PPH management. Aimagambetova et al. (2024) further noted that resources, system capacity, and contextual circumstances can affect the delivery of timely PPH care.

SOP5: Does the nurses' level of knowledge significantly predict their practices?

Table 5. Predictors of Practices of Nurses

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
Model	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
(Constant)	4.051	.031		128.840	<.001	3.989	4.113		
Knowledge: Low Level of Knowledge	-.543	.145	-.260	-3.757	<.001	-.828	-.258	.992	1.008
Knowledge: Highly Knowledgeable	-.047	.078	-.042	-.601	.548	-.201	.107	.992	1.008

Note: a: Dependent Variable: Practice; b: Predictors in the Model: (Constant), Knowledge = Highly Knowledgeable, Knowledge = Low Level of Knowledge; R=.259; R^2=.067; Adjusted R^2=.058; F-change [7.096 (2,197), p=.001]; Durbin-Watson=2.358.

A multiple linear regression analysis was conducted to evaluate the predictive power of nurses' knowledge levels for their clinical practices (N = 200). The overall regression model was statistically significant (F (2, 197) = 7.096, p = .001), explaining approximately 6.7% of the variance in practice scores (R^2 = .067), adjusted (R^2 = .058). Using the 'Moderately Knowledgeable' group as the baseline reference, the regression coefficients revealed that a Low Level of Knowledge is a statistically significant negative predictor of nurse practice, B = -.543, t (-3.757), p < .001, 95% CI [-0.828, -0.258]. This indicates that nurses with low knowledge levels score significantly lower in their clinical practices by 0.543 units compared to moderately knowledgeable nurses. Conversely, being Highly Knowledgeable did not statistically predict a significant difference in practice scores when compared

to the moderate baseline reference (B = -.047, t (-.601), p = .548, 95% CI [-0.201, 0.107]. This implies that once nurses reach a moderate threshold of knowledge, higher categorization does not automatically yield statistically distinct practice outcomes within this sample.

The finding that nurses with low knowledge had significantly lower practice scores than moderately knowledgeable nurses is supported by the literature emphasizing the importance of adequate knowledge in performing appropriate postpartum hemorrhage (PPH) interventions. Henry et al. (2022) reported that healthcare providers' knowledge of clinical protocols for PPH care is important in ensuring appropriate emergency responses, particularly in recognizing hemorrhage and initiating recommended interventions. Similarly, Hassen and Farouk (2024) found that guideline-based education significantly improved nurses' knowledge of PPH prevention and management, highlighting the value of strengthening nurses' understanding of evidence-based care. Farahat et al. (2023) likewise demonstrated that a structured training program improved nurses' competencies in preventing and controlling intrapartum hemorrhage. These findings support the present result that inadequate knowledge may be reflected in lower levels of clinical practice, particularly when nurses are required to recognize and respond promptly to obstetric emergencies.

The significant contribution of the low-knowledge category may also be explained by the need for nurses to possess sufficient knowledge to apply appropriate emergency interventions consistently. Aimagambetova et al. (2024) emphasized that effective PPH management requires timely recognition and appropriate intervention, while also considering available resources and clinical circumstances. Alenazi et al. (2023) further highlighted the importance of nurses' understanding of emergency response protocols and coordinated roles among healthcare professionals in maternal care. In addition, Almutairi et al. (2025) found that simulation training enhanced nurses' preparedness for hemorrhage management, demonstrating that knowledge becomes more clinically useful when reinforced through realistic practice and emergency response training. Taken together, these studies suggest that nurses with insufficient knowledge may have difficulty consistently translating PPH principles and protocols into appropriate clinical actions.

However, the nonsignificant difference between highly and moderately knowledgeable nurses suggests that increasing knowledge beyond a moderate level does not necessarily result in a statistically distinct level of practice. This finding is consistent with Osuchukwu and Ezeruigbo (2023), who emphasized that evidence-based nursing practice involves not only knowledge but also implementation and organizational culture within clinical settings. Weerasingha et al. (2024) similarly demonstrated that evidence-based intrapartum care depends on the implementation of recommended practices in clinical settings rather than on knowledge alone. Pyram et al. (2022) showed that standardized obstetric hemorrhage safety bundles can strengthen PPH management by providing structured systems that guide clinical responses.

Chapter 4

SUMMARY, CONCLUSION, AND RECOMMENDATION

This chapter contains the summary of findings, conclusions, and recommendations of the research study.

Summary

The study aimed to determine nurses' knowledge and practices regarding postpartum hemorrhagic care and to examine whether a significant relationship exists between their knowledge and practices. The study employed a quantitative descriptive-correlational research design. The descriptive component was used to assess nurses' knowledge and practices regarding postpartum hemorrhagic care, while the correlational component was used to examine the relationship between the two variables. Data were gathered using a researcher-developed questionnaire consisting of 15 statements assessing knowledge and 15 assessing practices in postpartum hemorrhagic care. The knowledge statements were answered using a true-or-false format, while the practice statements were rated using a five-point Likert scale ranging from Never to Always. The collected data were analyzed using frequencies and percentages, means and standard deviations, and Spearman's rho.

Summary of Findings

Based on the gathered data, the findings are interpreted as follows.

1.The findings revealed that nurses generally demonstrated a moderate level of knowledge on postpartum hemorrhagic care, as reflected by the overall mean score of 8.59 (SD = 1.821). Most nurses were classified as moderately knowledgeable, with 161 respondents in this category and a mean score of 8.22 (SD = 1.273). Meanwhile, 31 nurses were classified as highly knowledgeable, with a mean score of 11.48 (SD = 0.724), while 8 nurses were categorized as having a low level of knowledge, with a mean score of 5.00 (SD = 0.000). These findings indicate that although the majority of nurses possess a satisfactory understanding of postpartum hemorrhagic care, a relatively smaller proportion demonstrate a highly comprehensive level of knowledge. The results suggest the need for continued reinforcement of essential concepts related to the recognition, causes, assessment, prevention, immediate management, and appropriate coordination of care for postpartum hemorrhage.

2.The findings revealed that nurses often practiced recommended postpartum hemorrhage care, as reflected by the overall mean score of 4.02 (SD = 0.411), interpreted as Often Practiced. The highest-rated practice was maintaining infection prevention and patient safety measures throughout the management of postpartum hemorrhage, with a mean score of 4.17 (SD = 0.749). This was followed by maintaining intravenous access and promptly initiating fluid replacement when postpartum hemorrhage occurs, with a mean of 4.14 (SD = 0.831), and by collaborating effectively with other members of the healthcare team during postpartum hemorrhage emergencies, with a mean of 4.12 (SD = 0.708). Early assessment of postpartum mothers, prompt uterine massage when uterine atony is suspected, and adherence to established hospital protocols and clinical guidelines also obtained high mean scores of 4.11. These findings indicate that nurses frequently perform critical interventions related to patient safety, emergency response, collaboration, and adherence to established procedures.

On the other hand, the lowest-rated practice, accurately documenting all assessments, nursing interventions, medications administered, and patient responses, received a mean score of 3.65 (SD = 0.837). However, it remained within the often practiced level. This was followed by continuous monitoring of the maternal condition until stabilization, with a mean score of 3.81 (SD = 0.921), and

providing emotional support and appropriate explanations to the mother and her family during postpartum hemorrhage management, with a mean score of 3.87 (SD = 0.972). The findings suggest that while nurses frequently perform immediate clinical interventions during postpartum hemorrhage, documentation, continued monitoring, and family-centered communication may require further reinforcement to ensure comprehensive and continuous nursing care.

3.The findings revealed that there was no statistically significant relationship between nurses' knowledge and practices on postpartum hemorrhagic care. The relationship was very weak and negative, indicating that differences in nurses' knowledge scores did not correspond meaningfully to differences in their reported practices. This suggests that nurses with higher levels of knowledge did not necessarily report more frequent postpartum hemorrhage care practices. In comparison, nurses with lower levels of knowledge did not necessarily exhibit less frequent practices. The finding indicates that knowledge alone may not determine nurses' actual performance in managing postpartum hemorrhage. Other factors, such as clinical experience, institutional protocols, resource availability, workload, supervision, confidence, teamwork, emergency exposure, and practical training, may influence how nurses apply their knowledge in clinical situations.

4.The findings demonstrate that there is a statistically significant difference in nurses' practices when grouped according to their levels of knowledge, as indicated by the Kruskal-Wallis test, $H(2) = 10.246$, $p = .006$. However, the Bonferroni-adjusted pairwise comparisons showed that the significant difference was specifically observed between nurses with low and moderate levels of knowledge (adjusted $p = .005$). No statistically significant difference was found between the low and highly knowledgeable groups (adjusted $p = .054$) or between the highly and moderately knowledgeable groups (adjusted $p = .986$).

5. The findings further demonstrate that nurses' level of knowledge significantly predicts their practices when knowledge categories are considered relative to the moderately knowledgeable group. The overall regression model was statistically significant, $F(2, 197) = 7.096$, $p = .001$, and explained 6.7% of the variance in practice scores ($R^2 = .067$; adjusted $R^2 = .058$). Nurses with a low level of knowledge had significantly lower practice scores than moderately knowledgeable nurses ($B = -.543$, $p < .001$), whereas highly knowledgeable nurses did not differ significantly from the moderately knowledgeable group ($B = -.047$, $p = .548$).

Conclusions

Overall, the findings of the study provide a comprehensive understanding of the relationships among knowledge and practices on postpartum hemorrhagic care among nurses. They illustrate how these variables interact to shape both knowledge and skills, offering a clear foundation for interpreting the results and their broader implications.

1.The findings demonstrate that nurses possess a generally moderate level of knowledge on postpartum hemorrhagic care. While most nurses have an adequate foundation in recognizing and managing postpartum hemorrhage, the presence of nurses with lower levels of knowledge indicates the need for continuous professional development and reinforcement of essential obstetric emergency concepts. Strengthening knowledge is particularly important because timely recognition and appropriate intervention are critical in preventing severe maternal complications.

2.The results further demonstrate that nurses frequently perform recommended practices related to postpartum hemorrhagic care. Their strongest practices are associated with infection prevention and patient safety, fluid replacement, interprofessional collaboration, early assessment, uterine massage, and adherence to established clinical protocols. However, documentation, continuous monitoring until stabilization, and communication with mothers and their families appear to be areas that can still be

strengthened to ensure that postpartum hemorrhage care remains comprehensive beyond the immediate emergency response.

3.The findings also establish that nurses' knowledge and practices on postpartum hemorrhagic care are not significantly related. This indicates that possessing greater knowledge does not automatically lead to more frequent adherence to recommended practices. Nursing practice in postpartum hemorrhage management is likely influenced by a combination of individual competence and contextual factors within the clinical environment. Thus, improving nursing care requires more than merely increasing theoretical knowledge; it should also include practical training, supportive supervision, accessible resources, standardized protocols, teamwork, and opportunities for hands-on emergency preparedness.

4. The findings demonstrate a statistically significant difference in nurses' practices when grouped according to their levels of knowledge. The Bonferroni-adjusted pairwise comparisons revealed a significant difference only between nurses with low and moderate knowledge levels. No significant differences were found between the low and highly knowledgeable groups or between the highly and moderately knowledgeable groups. This suggests that differences in practice were most evident between nurses with low and moderate levels of knowledge.

5. The findings further demonstrate that nurses' knowledge level significantly predicts their practices, with the overall regression model explaining 6.7% of the variance in practice scores. Nurses with low knowledge had significantly lower practice scores than moderately knowledgeable nurses, whereas highly knowledgeable nurses did not differ significantly from the moderate group. These findings indicate that insufficient knowledge may be associated with lower practice levels, whereas higher knowledge alone does not necessarily lead to substantially different practice outcomes.

Recommendations

Based on the conclusion of the study, the following recommendations are made:

Nurses. Assigned to the Obstetrics and Gynecology (OB) unit and those regularly handling maternal and postpartum cases are encouraged to continuously strengthen their knowledge and clinical competence in postpartum hemorrhage care. Since the findings showed that most nurses had a moderate level of knowledge, continuing professional education, skills-enhancement activities, simulation exercises, case discussions, and obstetric emergency drills should be conducted regularly. Particular attention should be given to nurses with lower levels of knowledge, as they demonstrated significantly lower practice scores than moderately knowledgeable nurses. Nurses should also regularly review current clinical guidelines and institutional protocols to maintain readiness for postpartum emergencies.

Hospital administrators. Encouraged to strengthen systems that support safe, consistent, and coordinated postpartum hemorrhage care among nurses assigned to OB units and those handling maternal cases. Clear emergency protocols, effective referral mechanisms, adequate staffing, interdisciplinary coordination, and supportive clinical supervision should be maintained. Since the study identified weaker practices in documentation, continuous maternal monitoring, and communication with mothers and their families, these areas should be reinforced through regular monitoring, feedback, and clinical supervision.

Hospital management. Provide regular competency-based programs for nurses assigned to OB units and those involved in maternal care, particularly in the recognition, prevention, and management of postpartum hemorrhage. Simulation-based activities, emergency drills, case discussions, and return demonstrations should be incorporated to strengthen the translation of knowledge into clinical practice. Management should also ensure the availability of essential equipment, medications, intravenous supplies, emergency materials, and other resources needed for the timely management of postpartum hemorrhage.

Future researchers. May conduct similar studies involving larger and more diverse groups of nurses assigned to OB units or handling maternal and postpartum cases across different hospitals and regions.

Future studies may also examine other factors associated with nursing practices, such as clinical experience, workload, resource availability, institutional support, confidence, training exposure, supervision, teamwork, and adherence to clinical protocols. Qualitative or mixed-methods research may further explore why nurses' knowledge does not always translate directly into their reported clinical practices.

REFERENCES

- Abd Elsamea Elguoshy Hassanen, E., EL-Sayed Hassan, R., Mustafa Abu Samra, O., R El-Refaay, E., & Gamal Badawy, G. (2023). Evaluating the Effect of a Neuro-protective Care Bundle for Neonatal Nurses on the Rate of Seriousness of Intraventricular Hemorrhage among Preterm Infants. *Egyptian Journal of Health Care*, *14*(4), 976–991.
- Abdulrahman, N. B., Ahmed, S. B., Kareem, N. T., & Abdullah, S. M. (2024). Knowledge and practice of nurses and midwives regarding immediate care after birth at two tertiary centers in the Kurdistan Region. *Erbil Journal of Nursing and Midwifery*, *7*(1), 80–91.
- Aimagambetova, G., Bapayeva, G., Sakhipova, G., & Terzic, M. (2024). Management of postpartum hemorrhage in low- and middle-income countries: an emergency need for an updated approach due to specific circumstances, resources, and availability. *Journal of Clinical Medicine*, *13*(23), 7387.
- Alenazi, N. M., Alenezi, A. N. M., Alhazmi, M. M. F., Kawbal, N. A. M., Maqpulah, A. F., Alruwaili, W. M., ... & falah Alruwail, H. (2023). Understanding the Emergency Response Protocols in Maternal Care Contributions of Nurses, Midwives, and Lab Technicians. *Journal of International Crisis and Risk Communication Research*, *6*(S4), 62.
- Almutairi, W. M., Almutaraiy, S. M., Al-Zahrani, A., Alsharif, F., Faheem, W. A., Abunar, A., & Thabet, H. A. (2025, March). Transforming postpartum care: the efficacy of simulation training in hemorrhage management among nurses. *In Healthcare (*Vol. 13, No. 5, p. 549). MDPI.
- Alqaseer, K., Falah, M. A., Al-Hamoodi, A. A. N., & Al-Abbas, W. D. S. (2025). Nurses' Knowledge about Dengue Fever at Al-Najaf Hospitals. *The Malaysian Journal of Nursing (MJN)*, *17*(Supplementary 1), 1–11.
- Alqaseer, K., Falah, M. A., Al-Hamoodi, A. A. N., & Al-Abbas, W. D. S. (2025). Nurses' Knowledge about Dengue Fever at Al-Najaf Hospitals. *The Malaysian Journal of Nursing (MJN)*, *17*(Supplementary 1), 1–11.
- Alsharif, Z. M., Jawhari, A. M., Al-halabi, S. K., Alsharif, S. K., & KAASH, T. (2023). Changing trends in Rheumatic heart disease: A retrospective tertiary care hospital-based study in the western region of Saudi Arabia—*Middle East Journal of Family Medicine*, *7*(10).
- Aziz, M. F., Hasan, M. B., & Al-Fahham, A. A. (2025). Effectiveness of an Educational Program on Nurses' Knowledge toward Massage Therapy of an Infant with Colic Pain. *Wiadomości Lekarskie*, *2025*(12), 2604–2610.
- Begum, F., Nieto-Calvache, A. J., Schlembach, D., Hofmyer, J., Palacios-Jaraquemada, J., Bhardwaj, A., ... & FIGO Committee on Childbirth and PPH. (2025). FIGO recommendations on objective measurement of blood loss after birth for early detection of postpartum hemorrhage. *International Journal of Gynecology & Obstetrics*, *171*(3), 933–950.
- Berkman, J. M., & Miller, E. C. (2026). Interventions at the Community, Patient, and Provider Level to Improve Timely Diagnosis and Treatment of Neurovascular Emergencies in the Peripartum Period. *Health Equity*, *10*, 24731242261426629.
- Blaak, H., Lkoul, A., Iziki, H., Arechkik, A., Sbai Idrissi, K., El Hilali, S., ... & Obtel, M. (2025, February). Effectiveness of simulation with a standardized patient on knowledge acquisition,

knowledge retention, and self-efficacy among Moroccan nursing students: a quasi-experimental study. *In Healthcare* (Vol. 13, No. 3, p. 318). MDPI.

- Chen, A., Zhang, C., Dahman, A., Barroco, L., Pickering, A., & Chen, M. (2025, October). The Value of Fine-Tuning a Maternal Health AI Chatbot with Local Country Expertise. In *2025, IEEE Global Humanitarian Technology Conference (GHTC)* (pp. 1–6). IEEE.
- Dinho, A. E., Mårtensson, L. B., Georgsson, M., Laisser, R., & Knutsson, S. (2024). Tanzanian midwives' clinical practices and experiences in caring for women with antepartum hemorrhage: a critical incident technique study. *BMC Pregnancy and Childbirth*, *24*(1), 613.
- Dol, J., Hughes, B., Bonet, M., Dorey, R., Dorling, J., Grant, A., ... & Curran, J. (2022). Timing of maternal mortality and severe morbidity during the postpartum period: a systematic review. *JBI evidence synthesis*, *20*(9), 2119–2194.
- Dzantor, E. K., Serwaa, D., & Abdul-Mumin, A. (2023). Neonatal Jaundice management: improving clinical knowledge of jaundice for improved attitudes and practices to enhance neonatal care. *SAGE Open Nursing*, *9*, 23779608231220257.
- Elsebey, M., Nandlal, V., Litra, F., & Nandlal, V. S. (2024). Hemorrhagic disease of the newborn as a consequence of vitamin K refusal due to a language barrier. *Cureus*, *16*(3).
- Farahat, F. Z., El-Shabory, N. E. H. M. E. S., Abd El-Aty, E. M., & Mohamed Sayed, S. S. (2023). Effect of Training Program on Nurses' Competencies in Preventing and Controlling Intrapartum Hemorrhage. *Assiut Scientific Nursing Journal*, *11*(39), 214–227.
- Friday, H. (2025). *Understanding Anesthesia Providers' Knowledge and Utilization of Tranexamic Acid in the Treatment of Postpartum Hemorrhage* (Doctoral dissertation, The University of North Carolina at Charlotte).
- Gebretsadik, G. G., Kahsay, A. B., Biratu, A. K., Gessessew, A., Lassi, Z. S., & Mulugeta, A. (2025). Preconception care services in Northern Ethiopia: A qualitative exploration of awareness, experiences, challenges, opportunities, and prospects. *PloS one*, *20*(12), e0337548.
- Hassen, M., & Farouk, A. (2024). Effect of the WHO Guideline on Nurses' Knowledge Regarding Prevention and Management of Postpartum Hemorrhage. *Port Said Scientific Journal of Nursing*, *11*(3), 330–353.
- Helmy, A. A. B., Mostafa, M. F., & Ali, R. R. (2022). Clinical Audit for Immediate Nursing Intervention During Obstetrical Emergency. *Assiut Scientific Nursing Journal*, *10*(28), 133–142.
- Hennessy, A. (2024). *Development and Implementation of a Nurse Leader-Directed Protocol for Blood Volume and Loss Estimation in a Labor and Delivery Unit*. Wilmington University (Delaware).
- Henry, J., Clarke-Deelder, E., Han, D., Miller, N., Opondo, K., Oguttu, M., ... & McConnell, M. (2022). Health care providers' knowledge of clinical protocols for postpartum hemorrhage care in Kenya: a cross-sectional study. *BMC pregnancy and childbirth*, *22*(1), 828.
- Karasin, B. (2025). Improving the Confidence and Preparedness of Healthcare Providers in the Detection and Management of Perinatal Preeclampsia and Stroke. *Stroke Clinician*.
- Laporte, V. D., Sanfelice, C. F. D. O., & Dini, A. P. (2024). Validation of an instrument for patient classification to support obstetric nursing care. *Revista Brasileira de Enfermagem*, *77*(2), e20230401.
- Lindley, K. J., Bello, N. A., Berlacher, K. L., Hameed, A. B., Lane, A. D., Mahmoud, Z., ... & Youmans, A. (2026). Optimization of Postpartum Care for Patients With and at Risk for Premature and Long-Term Cardiovascular Disease: 2026 ACC Expert Consensus Decision Pathway: A Report of the American College of Cardiology Solution Set Oversight Committee. *Journal of the American College of Cardiology*.

- Liu, L. Y., Nathan, L., Sheen, J. J., & Goffman, D. (2023). Review of current insights and therapeutic approaches for the treatment of refractory postpartum hemorrhage. *International journal of women's health*, 905–926.
- Maumela, R. (2023). *Knowledge of pregnant women regarding effects of anemia on pregnancy outcomes in Vhembe District, South Africa* (Doctoral dissertation).
- Meng, M. L., Arendt, K. W., Banayan, J. M., Bradley, E. A., Vaught, A. J., Hameed, A. B., ... & American Heart Association Council on Cardiovascular Surgery and Anesthesia; Council on Cardiopulmonary, Critical Care, Perioperative and Resuscitation; and Council on Peripheral Vascular Disease. (2023). Anesthetic care of the pregnant patient with cardiovascular disease: a scientific statement from the American Heart Association. *Circulation*, *147*(11), e657-e673.
- Merla, S., & Ezhumalai, S. (2022). Psychiatric Social Work interventions for Post Partum neurological illness in a Neuro-Casualty and Emergency Setting: A Case Study. *Indian Journal of Health Social Work*, *4*(2), 28.
- Miller, E. C., Bello, N. A., Chen, P. R., Leffert, L., Leppert, M., Madsen, T., ... & American Heart Association Women's Health Science Committee of the Council on Clinical Cardiology and Stroke Council; Council on Cardiovascular and Stroke Nursing; and Council on Lifelong Congenital Heart Disease and Heart Health in the Young. (2026). Prevention and Treatment of Maternal Stroke in Pregnancy and Postpartum: A Scientific Statement From the American Heart Association. *Stroke*.
- Noronha, J. A., Lewis, M. S., & Karkada, S. R. (2025). Incidence and Factors Predisposing to Disseminated Intravascular Coagulation, Treatment Modalities During Pregnancy and Postpartum in a Tertiary Referral Hospital. *Manipal Journal of Nursing & Health Sciences*, *11*(1).
- Nunes de Sá, F., Lourenço Carneiro, J., de Souza Gomes, L. F., Afio Caetano, J., Bezerra Pinheiro, A. K., & de Castro Damasceno, A. K. (2024). Technology for nursing care in a Maternal Intensive Care Unit: a methodological study. *Revista Brasileira de Enfermagem*, *77*(2).
- Osuchukwu, E. C., & Ezeruigbo, C. F. (2023). Validation of short versions of evidence-based practice instruments among nurses in clinical practice: Evidence-based practice beliefs, implementation, and organizational culture. Journal of Integrative Nursing, 5(3), 173 to 178
- Padilla, C. R., Shamshirsaz, A. A., Easter, S. R., Hess, P., Smith, C., El Sharawi, N., & Sandlin, A. T. (2023). Critical care in placenta accreta spectrum disorders—a call to action. *American Journal of Perinatology*, *40*(09), 988–995.
- Pierre, S. D., Ramos, M. C., & Shimizu, H. E. (2024). What are the best practices for nursing care during an earthquake? A scoping review. *International journal of environmental research and public health*, *21*(5), 535.
- Pyram, T., Zabriskie, D. D., & ACUE, W. (2022). Reducing Post-Partum Hemorrhage in a Community Hospital by Utilizing an Obstetric Hemorrhage: Patient Safety Bundle.
- Rattan, J., Richardson, M. B., Toluhi, A. A., Budhwani, H., Shukla, V. V., Travers, C. P., ... & Sinkey, R. (2024). A Tool to Help Nurses Provide Health Education on Adverse Pregnancy Outcomes and Cardiovascular Health. *Nursing for women's health*, *28*(6), 404–409.
- Rojas-Suárez, J., & Paruk, F. (2024). Maternal high-care and intensive care units in low-and middle-income countries. *Best Practice & Research Clinical Obstetrics & Gynecology*, *93*, 102474.
- Sadik, G. M., & Ail, A. M. (2025). Assessment of Risk Factors for Hemorrhagic Stroke Patients in the Intensive Care Unit. *Assiut Scientific Nursing Journal*, *13*(48), 32–42.
- Safitri, R., Saifulaman, M., Sansuwito, T., & Alim, Z. (2023). The Effect of Giving Zinc Tablets as A Companion Fe Tablets on Hemoglobin Levels in Female Adolescents.

- Shields, A., Vidosh, J., Kavanagh, L., Nielsen, P., & Thomson, B. (2024). Obstetric Life Support Manual: Etiology, prevention, and treatment of maternal medical emergencies and cardiopulmonary arrest in pregnant and postpartum patients.
- Siwik, A. B. (2026). *Educating Anesthesia Providers on the Recognition and Management of Amniotic Fluid Embolism* (Doctoral dissertation, The University of Arizona).
- Sudaryanti[1], L., Amalia, R. B., Anis, W., & Muhalla, H. I. (2024). Capacity Building for Maternal Emergency Services Using Low Tech High Fidelity (LTHF) Simulator Method and Interprofessional Collaboration for Health Workers on Bawean Island. *International Journal of Social Science, Humanity & Management Research*, *3*(01).
- Uddin, M. F., Sumi, A. U. H., Saha, A., Latif, M. B., Jamaludin, S. S. S., Alam, N. H., & Chisti, M. J. (2025, October). Perceived Causes of Illness Among Infants and Young Children in Bangladesh: An Exploratory Qualitative Study. In *Healthcare* (Vol. 13, No. 20, p. 2627). MDPI.
- Valderrama, A. A. (2025). Obstetrics hemorrhage and hypovolemic shock. In *Bleeding Disorders During Pregnancy* (pp. 13–25). Academic Press.
- Wang, C., Lin, Y., Zhang, H., Yang, G., Tang, K., Tian, X., ... & Xu, T. (2022). Effectiveness of early essential newborn care implementation in four counties of western China. *BMC Health Services Research*, *22*(1), 1185.
- Wayne, C. D., Jacobs, T. H., Alexander, K., Dumbauld, Z., Narayanan, S., Rokayak, O., & Moore, F. O. (2025). On the Move: A Review of Mobile and Military Surgery. *Emergency Care and Medicine*, *2*(3), 40.
- Weerasingha, T. K., Ratnayake, C., Abeyrathne, R. M., & Tennakoon, S. U. (2024). Evidence-based intrapartum care during vaginal births: Direct observations in a tertiary care hospital in Central Sri Lanka. *Heliyon*, *10*(7).
- Widiasih, R., Komariah, M., Pramukti, I., Susanti, R. D., Agustina, H. S., Arifin, H., ... & Nelson, K. (2022). VNursLab 3D simulator: A web-based nursing skills simulation of knowledge of nursing skills, satisfaction, and self-confidence among nursing students: sustainability, *14*(9), 4882.
- Yan, M. R. P., Marcelo, A. D., & Genuino, R. F. (2026). Aligning Continuing Medical Education with National Health Needs: A Qualitative Analysis of UP Med Webinar Topics and Hospital Admission Patterns in the Philippines. *Acta Medica Philippina*, *60*(7), 7.
- Yin, P., & Wang, H. (2022). Evaluation of the nursing effect of pelvic floor rehabilitation training on pelvic organ prolapse in postpartum pregnant women under ultrasound imaging with an artificial intelligence algorithm. *Computational and Mathematical Methods in Medicine*, *2022*(1), 1786994.
- Zielinski, R., Abdelnabi, S., Amankwah, G., Kukula, V. A., Apetorgbor, V., Awini, E., ... & Lori, J. R. (2024). Knowledge, Acceptance, and Uptake of Family Planning: A Cluster Randomized Controlled Trial of Group Antenatal Care in Ghana. *International Journal of Environmental Research and Public Health*, *21*(8), 1025.

Copyright & License:

© Authors retain the copyright of this article. This work is published under the Creative Commons Attribution 4.0 International License (CC BY 4.0), permitting unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.