2023

Factors Contributing to High Rates of Pre-Eclampsia Among African American Women

Tinisia Jordan Boyd
Walden University

Walden University

College of Nursing

This is to certify that the doctoral study by

Tinisia Jordan Boyd

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee
Dr. Donna Bailey, Committee Chairperson, Nursing Faculty
Dr. Mary Rodgers, Committee Member, Nursing Faculty
Dr. Joanne Minnick, University Reviewer, Nursing Faculty

Chief Academic Officer and Provost
Sue Subocz, Ph.D.

Walden University
2023

Abstract

Factors Contributing to High Rates of Pre-Eclampsia Among African American Women

by

Tinisia Jordan Boyd

MSN, Walden University, 2018

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

August 2023

Abstract

Maternal and neonatal deaths remain a significant healthcare concern globally. For instance, 4% of pregnancies in the United States are affected by pre-eclampsia, which is the second leading cause of maternal mortality globally. However, evidence shows that African American women are at higher risk of developing pre-eclampsia during pregnancy, and the population experiences severe maternal outcomes compared to other communities. Therefore, the goal of the project was to assess nurses' level of knowledge working in maternal units on pre-eclampsia and eclampsia and assess the effectiveness of simulation-based training on pre-eclampsia on improving nurse knowledge and self-efficacy. Several models were used to guide this project, Leininger's transcultural nursing model, Orem's self-care model, and the competency-based model. A pre-post-test design was used to assess the project questions. The project was implemented in the labor and delivery ward of a hospital in the southeastern part of the United States. Nurses took the pretest to assess their understanding and participated in the simulation activity, followed by a post-test. The pre-test results showed that nurses had moderate to low knowledge of pre-eclampsia management and practices. Post-test results also showed that simulation-based training on pre-eclampsia was effective in improving nurses' knowledge and self-efficacy in managing pre-eclampsia. The project concluded that simulation-based training is an effective method of constantly training nurses and it should be adopted in nursing education to help improve the health outcomes of African American women suffering from pre-eclampsia. Positive social change can occur when care is evidence-based and culturally appropriate.

Factors Contributing to High Rates of Pre-Eclampsia Among African American Women

by

Tinisia Jordan Boyd

MSN, Walden University, 2018

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

August 2023

Dedication

I want to dedicate this to my husband, Eugene Boyd, and my kids, Shaquala Jordan, Shakira Jordan, Chasity Newsome, Spencer Newsome Jr., Grandchildren Noah Brown, Demari White, Noel Drayton, and Nova Drayton; always remember the sky is the Limit. Also in loving memory to my grandmothers Annie Mae Slater and Elizabeth Edmonds.

Acknowledgments

I want to thank the Walden faculty, Dr. Terrinda Alston, and nursing friends who encouraged me along the way.

Table of Contents

List of Tables

Section 1: Nature of the Project

Neonatal and maternal deaths are still a healthcare concern worldwide. This group is considered vulnerable due to the delicate nature of the unborn child. Studies have shown that hypertensive pregnancy disorders such as pre-eclampsia/eclampsia are among the leading cause of preventable maternal deaths (Shahul et al., 2015). Pre-eclampsia affects nearly 4% of pregnancies in the United States; and it is considered the second leading cause of maternal mortality worldwide (U.S. Preventive Services Task Force, 2017). Moreover, recent data from the World Health Organization suggests that 76,000 maternal morbidity and mortality and nearly 500,000 child deaths are associated with pre-eclampsia worldwide (Ayed & Ibrahim, 2021).

Similarly, Olaoye et al, (2019) pointed out that 40% of expectant mothers experience one or more types of delivery complications during preconception or labor, and 2-10% percent of the women suffer from pre-eclampsia globally. However, it is essential to note that pre-eclampsia is a global public health concern that affects developing nations more than developed nations. The World Health Organization (WHO, 2019) noted that the disease incidences in developing countries are seven times higher than in developed countries (2.8% and 0.4% of live births). However, the problem remains a public health concern for developed and developing countries (Olaoye et al., 2019). The authors further noted that the higher pre-eclampsia rates in developing countries are attributed to missed opportunities in mitigating and preventing hypertension-related disorders because of substandard quality of care. Therefore, assessing nursing knowledge of pre-eclampsia can help identify gaps in health care

service providers that can help prevent or reduce the rates of pre-eclampsia among pregnant women.

Pre-eclampsia is a leading cause of maternal mortality and morbidity around the world. However, Joshi et al. (2020) pointed out that the burden of the condition is more significant in "low-and-middle-income countries (LMICs), where the hypertensive disorders of pregnancy contribute 10-15% of maternal deaths" (p. 625). Joshi et al. (2020) further noted that hypertensive disorders of pregnancy have taken over from hemorrhage as the leading cause of maternal mortality. The condition can result in serious complications such as stroke, organ failure, and eclampsia. Also, the condition can have severe perinatal outcomes for the new-born and fetus, including low birth weight, intrauterine growth restrictions, and stillbirth. The U.S. Preventive Services Task Force (2017) pointed out that many complications resulting from pre-eclampsia lead to cesarean delivery, early induction of labor, and subsequent preterm birth. These complications outline the seriousness of the condition, highlighting the need for effective interventions to reduce the rates of pre-eclampsia and improve the quality of services to pregnant women.

There is a debate on whether pre-eclampsia is a syndrome or a disease. However, Myatt and Roberts (2015) noted that pre-eclampsia is a common hypertensive disorder affecting pregnant women. The condition has multiple subtypes and has serious to fatal health outcomes. It is important to note that pregnant women can have other hypertensive conditions together with pre-eclampsia. Therefore, pre-eclampsia is the onset of hypertension (or worsening hypertension in patients with existing hypertension) after 20

weeks of gestation coupled with either onset of proteinuria or other symptoms and signs involving multiple organ systems (Myatt & Roberts, 2015). Generally, pre-eclampsia results in poor health outcomes in both infants and mothers.

The etiology of pre-eclampsia is unclear, but a host of maternal risk factors are associated with the condition. For instance, a study conducted at a referral hospital found that marital status, maternal age, gravidity, education, and family history of diabetes mellitus and hypertension significantly affected the onset of pre-eclampsia (Sripad et al., 2018). Moreover, the age of the expectant mother was also a significant factor. As outlined by Sripad et al. (2018) that "women ages 30 to 34 and 35 years and older were 3.3 and 4.5 times, respectively, more likely to develop pre-eclampsia than women ages 25 to 29" (p. 1). In addition, a history of hypertension in the family increases the maternal risk of pre-eclampsia by 7.2 times, while women with a history of diabetes mellitus or hypertension in the family were 2.4 times more likely to develop the condition than women with either no history of diabetes mellitus or hypertension in the family. Sripad et al. (2018) further noted that single women were three times more likely to develop pre-eclampsia than their married counterparts. In addition, Johnson and Louis (2022) noted that ethnic and racial minority groups such as American Indians and non-Hispanic Black women are disproportionately affected by pre-eclampsia. Similarly, Fingar et al. (2017) pointed out that the rate of pre-eclampsia is 60% higher in Black women compared to White women, with Black women being at a higher risk of developing severe pre-eclampsia. These factors demonstrate that pre-eclampsia is attributed to social, genetic, and economic factors. Consequently, in this DNP project I aimed to examine the

effectiveness of simulation-based training on neonatal and obstetric in reducing the rates of pre-eclampsia among African American women. Given the social, genetic, and economic factors predisposing women to pre-eclampsia, the positive social implications of improving care for these women are, most importantly, related to the woman and her unborn child. Additionally, families benefit because preventing or mitigating pre-eclampsia can reduce the burden of consequences of the condition that often require additional medical, social, and economic interventions. The potential for positive social change also exists for communities, organizations, and institutions.

Problem Statement

Women with pre-eclampsia have approximately 1.7% higher risk of dying from cardiovascular disease later in (Henderson, et al., 2017). The management of the condition is complicated due to unclear etiology and its existence with other hypertensive conditions. Henderson et al. (2017) noted that pre-eclampsia is thought to entail the abnormal formation of uterine arteries at the time of placental development, resulting in increased oxidative stress and maternal inflammatory responses. Pre-eclampsia is a common condition in pregnancy. It affects 2-8% of pregnancies worldwide and contributes to approximately 9% of maternal deaths in the United States and more than one-third of severe obstetric complications (Henderson, et al., 2017). Pre-eclampsia is associated with maternal complications such as retinal detachment, cerebrovascular bleeding, hemolysis, elevated liver enzyme levels, and low platelet counts (HELLP) syndrome. In addition, Henderson et al. further noted that 1% to 2% of pre-eclampsia leads to eclampsia, which is a severe manifestation of pre-eclampsia and is characterized

by seizures and complications such as aspiration pneumonia, brain damage, pulmonary edema, disseminated coagulopathy, placental abruption, cardiopulmonary arrest, acute renal failure, and coma.

Similarly, the neonatal complications of pre-eclampsia include stillbirths, oligohydramnios, placental abruption, and neonatal death, among other complications (Ming et al., 2020). These complications make the condition severe to the safety of pregnant women and newborns. However, it is essential to note that the condition has a more racial impact on African Americans than on Whites and other communities.

Evidence suggests that African American women are at higher risk of developing pre-eclampsia during pregnancy (Ming et al., 2020). Studies have shown that racial disparities exist in maternal mortality and morbidity associated with pre-eclampsia, among other hypertensive diseases of pregnancies, with Black and Hispanic mothers having a higher risk than white mothers (Miller et al., 2020). Similarly, Ming et al. (2020) pointed out that African American patients with pre-eclampsia had double the number of intrauterine fetal deaths compared to other races. Also, the authors noted that African American mothers with pre-eclampsia had high rates of antepartum hemorrhage, severe hypertension, and increased mortality. The racial disparities in pre-eclampsia may be attributed to genetic differences, but the quality of care and socioeconomic status have also been identified as contributing factors (Miller et al., 2020).

Sahul et al. (2015) noted that African American women with hypertensive disorders have high mortality and complications rates even when socioeconomic differences have been controlled. In this regard, Sahul et al. noted that the high fatality

rates attributed to pre-eclampsia among African American women cause the observed mortality differences. Therefore, the authors hypothesized that African American women with “pre-eclampsia were more likely to suffer higher rates of severe maternal comorbidities and complications including congestive heart failure (CHF), cardiac arrest, stroke, which may then contribute to worsened peripartum maternal and fetal outcomes” (p. 507). Therefore, ascertaining severe maternal comorbidities could aid clinicians in coming up with strategies that can facilitate improvements in fetal and maternal outcomes among African Americans. However, this is negatively affected by the lack of understanding of the condition's etiology, making it hard for nurses to manage and prevent it.

It is important to note that racial disparity exists among African American women. For instance, a report by the American Hearts Association (2021) pointed out that "Black women born in the United States have a higher risk of developing pre-eclampsia compared to Black women who immigrated to the country" (p. 1). However, Johnson and Louis (2020) stated that even though the prevalence of pre-eclampsia has been outlined to be 3% to 5 %, ethnic and racial minority groups like non-Hispanic Black women, Alaskan Native, or American Indian women are reported to be disproportionately affected by the condition. Johnson and Louis further noted that race is considered a social construct that is often self-assigned and differs across settings, and it fails to consider subgroups. Moreover, the authors noted that studies on human population genetic structures highlight more variations within racial groups than among them. As a result, Johnson and Louis argued that studies attempting to assess the role of

ethnicity and race in biomedical research should consider these limitations and avoid race or ethnicity as a biological construct. For instance, Alhusen et al. (2016) noted that racial discrimination is a crucial risk factor for adverse birth outcomes. The author further noted that the general infant mortality rate (IMR) is 5.96 per 1,000 live births, but the infant mortality rate for non-Hispanic Black women is 11.1 deaths per 1,000 live births. This demonstrates that racism plays a significant role in disparate outcomes among Black women.

Nurses and other health care professionals play a significant role in providing care to pregnant women. According to Joho et al. (2020), nurses play a critical role in managing and preventing pre-eclampsia. However, their knowledge of pre-eclampsia has not been evaluated, particularly those working in primary health care settings where opportunities for continuing education are limited. Joho et al. (2020) pointed out a critical knowledge deficiency in managing and preventing pre-eclampsia and eclampsia among nurses working in maternal units of primary health care settings. This pointed to the need for educating nurses on the management and prevention of pre-eclampsia. As a result, the specific local nursing practice problem was a knowledge deficiency in preventing and managing pre-eclampsia among nurses.

The project took place on the labor and delivery floor of a hospital in the southern region of the United States, recruiting nurses from the maternity wing. Forty-one percent of their patient population is African American. As a result, the hospital receives many African American women in the maternity wing and has observed a high rate of pre-eclampsia among African American women. The hospital reported two out of 10 cases of

pre-eclampsia among African Americans, which was high compared to the national average. Therefore, pre-eclampsia among African Americans emerged as a severe issue for the facility. Nurses played a significant role in providing care to pregnant women at the hospital. Therefore, I targeted nurses and aimed to improve their knowledge of the prevention and management of pre-eclampsia among African Americans. This implied that the project was significant to nursing as it contributed to improvements in nursing practice and enhanced their knowledge of pre-eclampsia, which resulted in improved patient care and improvements in the population's health outcomes.

Purpose Statement

According to the WHO most of the deaths attributed to pre-eclampsia and eclampsia could be avoided through effective and timely treatment of women, especially in the prenatal phase (Soggiu-Duta et al., 2019). Similarly, Joshi et al. (2020) noted improved outcomes in pregnancies complicated with pre-eclampsia through timely presentation to healthcare facilities, early identification of symptoms, management with magnesium sulfate and antihypertensive medications, and delivery of the fetus and placenta. It was important to note that the development of pre-eclampsia is a significant risk factor for subsequent pregnancies. Also, Wallis et al. (2013) noted that prenatal education on pre-eclampsia symptoms could improve outcomes. Various studies found that understanding of counselling resulted in high rates of women reporting symptoms and acting. However, this can only be achieved if the frontline healthcare professionals such as nurses are better educated and equipped with knowledge of pre-eclampsia.

Healthcare providers face dynamic challenges such as lower general health literacy and education levels and limited use and access to antenatal care services (Joshi et al., 2020). However, it was essential to note that complex factors impact the timely care of women with pre-eclampsia. According to Joho et al. (2020), "lack of competent frontline (nurses) health care providers' diagnosis and management, especially in the area of maternal and neonatal emergency care may account for high deaths" (p. 4). The authors noted that the lack of competent frontline healthcare providers results in a third delay model for timely and appropriate management of the condition. This was attributed to the fact that,

> If a woman comes to the antenatal clinic (ANC) or labor ward early to receive appropriate care while the nurse receiving the woman does not know how to diagnose and manage the condition, this will put the woman and her unborn baby at increased risk of severe morbidity and or deaths. (Joho et al., 2020, p. 5)

This implies that nurse knowledge of pre-eclampsia was a significant factor in the high morbidity and mortality rates. This formed the primary purpose of my project in which I sought to assess the knowledge level of nurses on pre-eclampsia and how it affected their delivery of care. This was attributed to the fact that early detection, timely response, accurate management, and timely and effective delivery of women with pre-eclampsia reduce deaths and fetal and maternal complications (Joho et al., 2020). Therefore, the knowledge and skills of nurses regarding diagnosis and management of pre-eclampsia were critical factors in neonatal and maternal mortality and morbidity.

The gap in practice that I addressed in this project was the knowledge deficit of nurses caring for pregnant women and the identification of pre-eclampsia, especially as it relates to pregnant African American people.

The guiding practice-focused question for this doctoral project was, "How effective is simulation-based training on neonatal and obstetric emergencies in improving nursing knowledge of pre-eclampsia?"

A second question related to the first question was, "Does nursing education on neonatal and obstetric emergencies reduce the rates of pre-eclampsia among African American women?"

These questions were relevant to my identified gap in practice because nursing knowledge of eclampsia is foundational to the early identification of pre-eclampsia since nurses are often the first a health care professional they see for their care.

Nature of the Doctoral Project

Sources of Evidence

Studies have outlined the effects of pre-eclampsia among African American women and how they are disadvantaged due to factors such as socioeconomic status and poor health care services. In addition, Joho et al. (2020) identified a critical knowledge deficiency among maternal nurses on the management and prevention of pre-eclampsia. Consequently, Joho et al. recommended regular practical training on preventing and managing pre-eclampsia and eclampsia for maternal nurses. The effects of pre-eclampsia and their contributing factors have been outlined by Miller et al. (2020) and Ming et al.

(2020), who identified and noted the racial impacts of the condition on African American mothers.

Approach or Procedural Steps

In this project I analyzed baseline data collected from the educational program that assessed the effectiveness of nurse education on pre-eclampsia and eclampsia on neonatal and obstetric nurses in managing and preventing pre-eclampsia. I recruited maternal nurses from a community hospital targeting African American mothers. I focused on staff education which fell under one of the categories of the DNP prospectus and was guided by the staff education manual.

Project Purpose

In this staff education project, I aimed to improve the knowledge of nurses on the factors contributing to high rates of pre-eclampsia among African American women to improve the quality of services offered to the population. I examined the effectiveness of simulation-based training on neonatal and obstetric emergencies in reducing the rates of pre-eclampsia among African American women. Various studies have identified knowledge deficiency among nurses on the prevention and management of pre-eclampsia among women. Therefore, offering an educational intervention to nurses can help improve their level of knowledge and eventually improve the quality of services and health outcomes of African American women.

Significance

The project is essential for social change as it could improve the provision of healthcare services and reduce the disparities within the healthcare system. Individual

patients, especially African American women, are the first to potentially benefit from increasing the nursing staff's knowledge. Families benefit since the management of pre-eclampsia could prevent some of the serious /fatal outcomes. Nursing benefits, along with other provider groups, because pregnancy loss is a devasting event, with health care providers often becoming second victims (Joho et al., 2020). In addition, the project can be of significance to other practice areas as the same approach can be used to solve nurse knowledge deficiency in other practice areas. Finally, organizations benefit because quality care equates to less potential for medico-legal actions because of errors and oversights. Also, the project supported Walden University's mission as it aimed to have positive impacts on society by improving the health outcomes of pregnant African American women.

Summary

This section outlined the project's background information, problem statement, purpose, and significance. Pre-eclampsia is a significant public health concern that affects between 2% and 10% of women globally and affects 4% of pregnancies in the United States (Henderson, et al., 2017). The condition has a high morbidity and mortality rate, especially in developing countries where it has overtaken hemorrhage as the leading cause of maternal deaths (Johnson, & Louis, 2020). Moreover, the condition has racial factors as it affects African American women more than other races, attributed to various factors such as genes and socioeconomic factors. Nonetheless, early identification, rapid response, and effective management and delivery are considered factors that can significantly improve expectant mothers' and fetuses' health outcomes and reduce the

impact of pre-eclampsia (Joho et al., 2020). However, the knowledge gap among frontline healthcare practitioners makes it hard to diagnose and manage the condition effectively. Therefore, I assessed the knowledge gap among nurses, the effectiveness of educational models on pre-eclampsia, and how it impacts the rates of the condition. This implies that the project is significant to society as it can help increase knowledge of pre-eclampsia and develop strategies to improve knowledge of the condition to healthcare practitioners to facilitate timely diagnosis and effective management of the condition. The following section outlined the conceptual/theoretical framework, relevance of the topic to nursing practice, local background and context, and my role.

Section 2: Background and Context

Maternal and neonatal deaths remain a significant healthcare concern globally. Various studies have demonstrated that hypertensive disorders of pregnancy, such as eclampsia and pre-eclampsia, are among the leading causes of preventable maternal deaths (Shahul et al., 2015). The United States Preventive Services Task Force (2017) pointed out that nearly 4% of pregnancies are affected by pre-eclampsia in the United States. The condition is considered the second leading cause of maternal mortality globally. Similarly, Olaoye et al. (2019) noted that 2% to 10% of pregnant women suffer from pre-eclampsia globally. However, Joshi et al. (2020) pointed out that the burden of the condition is more significant in "low-and-middle-income countries (LMICs), where the hypertensive disorders of pregnancy contribute 10-15% of maternal deaths" (p. 625). It was important to note that the condition can result in severe complications such as stroke, organ failure, and eclampsia.

Moreover, the condition can have severe perinatal outcomes for the newborn and fetus, including low birth weight, intrauterine growth restrictions, and stillbirth Joho et al. (2020). Despite the severity of the condition, its etiology remains unclear. Studies attributed the condition to a host of maternal and social risk factors such as marital status, maternal age, gravidity, education, and family history of diabetes mellitus and hypertension significantly affected the onset of pre-eclampsia (Sripad et al., 2018). In addition, a history of hypertension within a family increases the maternal risk of pre-eclampsia by 7.2 times, while a history of diabetes mellitus or hypertension increased the risk by 2.4 times (Henderson, et al., 2017).

Women with pre-eclampsia have approximately 1.7 % higher risk of dying from cardiovascular disease later in life (Henderson, et al., 2017). The condition affects 2-8% of pregnancies worldwide and contributes to approximately nine percent of maternal deaths in the United States and more than one-third of severe obstetric complications. (Henderson et al., 2017). However, evidence shows that African American women are at higher risk of developing pre-eclampsia during pregnancy (Ming et al., 2020). Moreover, Ming et al. (2020) noted that African American patients with pre-eclampsia had double the number of intrauterine fetal deaths compared to other races. Also, the authors noted that African American mothers with pre-eclampsia had high rates of antepartum hemorrhage, severe hypertension, and increased mortality. The racial disparities in pre-eclampsia may be attributed to genetic differences, but the quality of care and socioeconomic status have also been identified as contributing factors (Miller et al., 2020).

Nurses and other health care professionals play a significant role in providing care to pregnant women. According to Joho et al. (2020), nurses play a critical role in managing and preventing pre-eclampsia. However, their knowledge of pre-eclampsia has not been evaluated, particularly those working in primary health care settings where opportunities for continuing education are limited. Joho et al. pointed out a critical knowledge deficiency in managing and preventing pre-eclampsia and eclampsia among nurses working in maternal units of primary health care settings. This pointed to the need for educating nurses on the management and prevention of pre-eclampsia. As a result, the

specific local nursing practice problem was a knowledge deficiency in preventing and managing pre-eclampsia among nurses.

Healthcare providers face dynamic challenges such as lower general health literacy and education levels and limited use and access to antenatal care services (Joshi et al., 2020). However, it is essential to note that complex factors impact the timely care of women with pre-eclampsia. According to Joho et al. (2020) "lack of competent frontline (nurses) health care providers' diagnosis and management, especially in the area of maternal and neonatal emergency care may account for high deaths" (p. 4). The authors noted that the lack of competent frontline healthcare providers results in a third delay model for timely and appropriate management of the condition. This is attributed to the fact that if a woman visits the labor ward of an antenatal clinic early to receive appropriate care and the nurse attending to the woman does not have sufficient knowledge to diagnose and manage the condition, it “puts the woman and her unborn baby at increased risk of severe morbidity and or deaths” (Joho et, 2020, p. 5). This implied that nurse knowledge of pre-eclampsia was a significant factor in the high morbidity and mortality rates. This formed the primary purpose of my project was to assess nurses' knowledge level of pre-eclampsia and how it affected their care delivery. Early detection, timely response, accurate management, and timely and effective delivery of women with pre-eclampsia reduces deaths and fetal and maternal complications (Joho et al., 2020). Therefore, the knowledge and skills of nurses regarding diagnosis and management of pre-eclampsia are critical factors in neonatal and maternal mortality and morbidity. In this regard, the guiding practice-focused question for this doctoral project

was, “How effective was simulation-based training on neonatal and obstetric emergencies in improving nursing knowledge of pre-eclampsia?”

A second question related to the first question was “Did nursing education on neonatal and obstetric emergencies reduce the rates of pre-eclampsia among African American women?”

These questions were relevant to the identified gap in practice because nursing knowledge of eclampsia is foundational to early identification of pre-eclampsia since nurses are often the first health care professionals expectant women see for their care. In this regard, the project was essential for social change since it aims to improve the provision of health care services to African American mothers, which can help reduce the disparities experienced by the population within the care system.

In this project I aimed to improve the knowledge of nurses on the factors contributing to high rates of pre-eclampsia among African American women to improve the quality of services offered to the population. In addition, I focused on improving the health outcomes of African American women affected by pre-eclampsia through the provision of quality healthcare services throughout their interaction with the system because of their pregnancy.

In this chapter I outline the concepts, models, and theories used in the project. Also, I discuss the relevance of the project to nursing practice. I also include the local and background context of the project coupled with the role of DNP students in the project.

Concepts, Models, and Theories

Background and Definitions

Research, practice, and theory form the foundation of the nursing profession. According to Saleh (2018), the relationship between the three foundational attributes is cyclical and reciprocal since clinical practice creates research questions and knowledge that leads to the generation of theory, while research guides practice and created knowledge through the development of theory guides nursing research leading to improvements in practice. Similarly, Wilson et al. (2015) pointed out that theoretical and conceptual frameworks are used to organize the educational curriculum of nursing and play a significant role in preserving and protecting the clarity and focus of the unique contributions of nursing to the health care system. Moreover, conceptual frameworks of nursing offered a way of looking at nursing in association with other external factors that enable the assigning of meaning to practice. In addition, Wilson et al. further noted that conceptual frameworks are essential for creating a harmonious relationship between content, objective, and program curricula. Walker and Avant (2019) supported this sentiment. They posited that conceptual frameworks offer the logic behind the interrelationships between variables and terms and enhance the explanation and understanding of nursing concepts. Notably, conceptual frameworks play a significant role in nursing education. In this regard, Baumann (1998) argued that nursing education should focus on the uniqueness of the position of the nurse practitioner compared to other healthcare professionals using nursing theory and conceptual nursing models other than the strict biomedical model. According to Wilson et al. conceptual frameworks enabled

grounding a nursing lens in advanced practice nursing curricula. Therefore, conceptual frameworks and theories played a significant role in advancing nursing practice by equipping and enabling nurses to apply concepts outside the biomedical model.

Nonetheless, effective nursing practice needs the application of caring, skills, knowledge, and art to care for patients in an efficient, effective, and considerate manner. Research findings play a significant role in generating the knowledge used in clinical nursing decisions. This has led to the growth of evidence-based practice as clinicians strive to align all clinical decisions to research evidence. According to Saleh (2018), in addition to guiding nursing practice, research plays a vital role in building knowledge through establishing and testing theories. In this regard, Saleh argued that the primary aim of theory in nursing is to improve nursing practice by positively influencing patients' quality of life and health. This implied that the relationship between practice and theory is reciprocal since practice forms the basis for nursing theory development, while theory must be validated through practice. Aliakbari et al. (2015) defined a theory as the construction and interpretation of the aspect or field of cognition. Ideally, a theory is a "set of related propositions, which should be able to describe, explain, predict, or control the phenomena" (Aliakbari et al., 2015, p. 3). There are varieties of theories in different fields that attempt to break down concepts of the respective fields. For instance, learning theories have attempted to offer explanations regarding learning and its applications. As a result, educational researchers and psychologists have provided many theories to explain how people organize, acquire, and deploy knowledge and skills over the years.

Educational psychologists have provided a variety of perspectives and theories regarding the way learning occurs and what inspires the learning process and change. In this regard, Rezai and Haghani (2012) posited that comprehending learning theories that form the basis of educational psychology is crucial in education. It aids in providing an environment that facilitates learning, harmonizes education, and enhances the efficiency of the educational system. In this regard, Aliakbari et al. (2015) pointed out that the development and testing of theories have enabled educators to identify individuals and changes in feelings, thinking, and behavior. Consequently, Aliakbari et al. posited that theories of learning provide the framework of the principles and structure that outline the learning process of individuals. For this project I will employ various conceptual frameworks and theories to inform the research problem.

Competence-Based Curriculum Model

Competence-based education (CBE) has received significant attention in recent years as the demand for nurses shifts according to the shifting health care needs of the population. Saud and Chen (2018) defined competence "as a holistic term that refers to an overall capacity or ability to do something successfully" (p. 3). This implies that the achievement of competence could entail meeting the minimum standard to demonstrate independence in practice. On the other hand, Eraut (1994, as cited by Saud & Chen, (2018) defined competence as the "command of pertinent knowledge and/or skills," while a competent person "not only possesses the requisite competencies but can use them" to make contextually effective judgments and decisions" (p. 3). Ideally, competence often outlined the demonstration of skills, knowledge, and abilities necessary to perform a task

or job successfully and effectively. According to the Center to Champion Nursing in America via the Educational and Learning Cooperative (2017) various models support the transformation of nursing education. For this project I employed the competence-based curriculum model as the preferred conceptual framework. The competency-based curriculum model entailed a process where common goals, shared understanding, and framework are created by educational workgroups that entail representatives from different educational experiences and backgrounds. The competency-based curriculum model focused on partnership with universities and community colleges, coupled with a partnership with state and local nursing programs, and successful implementation-based models to the curriculum of competence.

The competency-based curriculum model is one of the newer and innovative models of education (Kim, 2015). As such, the boundaries and concepts of the model are often blurred, but there is a general agreement that the competency-based model is characterized by the establishment of clearly defined competencies coupled with mapping of the curriculum to achieve the outlined competencies and an assessment process aligned to the competencies (Kim, 2015). Moreover, Kim (2015) posited that the competencies were often associated with the workforce's needs as defined by the profession and employers, such as specific skills, knowledge, and abilities essential to the field's practitioners. The competency-based curriculum model entails a specific and organized body of learning objectives and activities designed to equip students with the necessary skills, knowledge, and attributes coupled with integrative experiences that facilitate the acquisition of competencies needed for identified practice problems. A comprehensive

literature review by Saud and Chen (2018) outlined that CBE offers an effective framework to outperform traditional education approaches on various outcome measures such as technical skills, clinical knowledge, and clinical judgment. Saud and Chen (2018) pointed out that (CBE) benefits nursing programs, medical programs, and continuing medical education programs. This demonstrated that the competence-based curriculum model can effectively improve the knowledge of pre-eclampsia among maternity nurses in the selected hospital.

Sunrise Concept Model/Diversity and Universality Theory

Culture has emerged as a crucial component in the provision of care. Culture care was made prominent by Leininger in culture care: diversity and universality theory that emphasized transcultural nursing to offer care that aligns with cultural beliefs, values, and practices (Leininger, & McFarland, 2006). Leininger and McFarland (2006) defined transcultural nursing as examining cultures to understand differences and similarities within a group. Ideally, in transcultural nursing, nurses practice in accordance with the culture of the patient, which implied that the culture of the patient was considered before the establishment of the nursing care plan. In addition, Leininger (2006) noted that three levels offer basic knowledge for delivering culturally sensitive care. These levels were referred to as the sunrise concept model. This model offered multiple factors that affect the expression and meaning of cultural care, and the concept was employed in guiding nurses in offering meaningful care. Also, Leininger outlined three nursing decisions that amount to culturally competent care. These decisions were:

> (a) Cultural care preservation- maintains or preserves health, recover from illness, or face death, (b) Cultural care accommodation- adapts and negotiates for beneficial health status, or face death, and (c) Cultural care re-patterning- restructure or change the culturally meaningful lifestyle (Leininger & McFarland, 2006, p. 16)

In this regard, de Melo (2013) noted that the primary aim of the theory of culture care diversity and universality was to offer culturally competent care intending to contribute to the well-being and health of the people or help them face death or disability. In addition, de Melo pointed out that using the sunrise model to develop a program for nursing students enabled the students to establish competencies and abilities to understand and identify multiple factors that affect care and understand them from a holistic perspective.

On the other hand, Hall's (1964) theory on the core, care, and cure outlined three independent but interconnected circles of care. These circles entailed (a) the core, the patient that the nursing care is directed. (b) The care, which was the role of the nurse and it entailed advocating, educating, and implementing care to meet the needs of the patient; and (c) The cure, which outlined the attention directed towards the patient by health care practitioners that entails interventions that treat the patient (Petiprin, 2016). In addition, Donabedian (1988) outlined a quality framework that assessed healthcare quality. The Donabedian framework offers a model that classifies measures to examine various aspects of quality care. The author concluded that there are three aspects of care: (a) structure, which outlined the material resources such as equipment, facilities, and money, human resources factors such as methods of peer review, medical staff organization, and reimbursement methods; to offer adequate healthcare: (b) process that outlined the

patient's activities in looking for care and undertaking it coupled with providers activities; and (c) outcome that outlined changes in patients condition after treatment and also entail patients satisfaction and knowledge. Moreover, Donabedian expanded the quality of care to entail: (a) accessibility, which outlines access to care; (b) technical management, which outlines care by practitioners, other healthcare practitioners, technical such as evidence-based practice; (c) continuity of care, that ensures care was offered over some time; and (d) management of interpersonal relationships, that outlines the relationship between the patient and the provider (Donabedian, 1988).

These concepts are crucial to nursing care. Considering that patients can resist medical treatment and care because of their cultural beliefs, the understanding offered by Hall's theory and Leininger's theory affects how nurses can approach patient care when dealing with patients from diverse cultural backgrounds. These theories support the current project by enabling nurses to consider each patient's cultural perspective. Moreover, the theories play a crucial role in designing nursing education and how nurses approach patient care within the facility by enabling nurses to uphold their commitment to patient care via mutual respect and understanding of patient medical decisions. In addition, Hall's and Leininger's theories outline and emphasize the importance of culture within healthcare institutions and nursing. They guided health care institutions and the nursing profession in offering culturally sensitive care based on patients' views of quality care. However, since healthcare institutions and nursing cultural perceptions of quality of nursing could differ from the expectation and view of a patient on quality, both theories

reinforce the importance of understanding culture within the context of nursing and healthcare institutions.

Orem's Self-Care Deficit Nursing Theory

According to Hartweg (2015), Orem viewed nursing knowledge as theoretical made of conceptual structure and elements that exemplify her self-care deficit nursing theory and as "practically practical" with rules, knowledge, and defined roles for practice situations. Moreover, Hartweg (2015) pointed out that Orem's formal education, personal life experiences, and philosophical readings directed her thinking as she sought to understand the phenomena, she observed that led to the conceptualization of nursing education disciplinary knowledge theory of self-care deficit nursing theory. Orem's understanding or inquiry of nursing practice occurred while she was at the Indiana State Board of Health, where she conceptualized "nurses' ability to "do nursing," but their inability to "describe nursing" (Hartweg, 2015, p. 106). She believed that the nurses could not improve practice without understanding nursing or describing it. She attempted to define nursing in one of her reports (Orem, 1956, as cited by Hartweg, 2015). This led to subsequent works that led to the development of the self-care deficit nursing theory.

Orem believe that a theory or general model established for practical science like nursing should encompass the why, what, how, and who (Orem, 2006). As a result, Orem's theory outlined the specific roles of nurses and patients. According to Hartweg (2015), the original theory entail three interrelated theories: the theory of self-care deficit, the theory of self-care, and the theory of nursing systems. However, a fourth theory, the theory of dependent care, emerged to address the complexities of individuals in need of

care and the caregivers whose capabilities and knowledge influence the design of the nursing system (Taylor & Renpenning, 2011). These theories are founded on six major concepts with one peripheral concept and similar concepts emanating from the theory of dependent care.

The exploration of the underlying assumptions are crucial to learning any theory. As a result, many principles emerged from the independent work of Orem as well as discussion from the Nursing Development Conference Group. Hartweg (2015) noted that five general principles/assumptions regarding humans offer guidance to the conceptualization of Orem. Orem conceptualized two types of people: those who produce care and those in need of care (patient and nurse). Moreover, these assumptions reveal human properties and powers sufficient for self-care. There are four constituent theories within the self-care deficit nursing theory. According to Hartweg, each theory comprises a central idea, propositions, and presuppositions. The central idea outlines the theory's focus; the presuppositions form the theory's assumptions, while the propositions refer to the statements regarding the concepts and their associations.

Theory of Self-Care (TSC)

The central idea of TSC outlined self-care and differentiated it from other forms of care. The theory outlined that care or self-care must be learned and performed deliberately for human functioning, life, and well-being (Hartweg, 2015). Six presuppositions articulated necessary capabilities, resources for motivation, and learning for self-care. However, Hartweg pointed out that situational factors such as culture affect self-care. Nonetheless, Orem noted that a person undergoing self-care must investigate or

estimate what should and can be done, which entails a complex action of seeking and knowing information on specific care measures. Moreover, the self-care sequence entailed deciding what can be done and eventually producing the care (Hartweg, 2015).

Theory of Dependent Care (TDC)

TDC entailed concepts parallel to the concepts in the theory of self-care. The assumptions of TDC relate to the nature of social dependency and interpersonal action systems. Ideally, within a certain social unit, such as the family, the agent of self-care (the patient) was socially dependent on the person offering care, and the absence or presence of self-care deficit results in the need for nursing (Taylor & Renpenning, 2011).

Theory of Self-Care Deficit

The central idea of this theory outlined why people need nursing care. The requirements for nursing entail health-related limitations for deciding, knowing, and producing care to self. In this regard, Orem outlined two presuppositions that relate this theory with the theory of self-care and what she referred to as social dependency. Ideally, Orem argued that for a person to engage in self-care, they must possess capabilities and values to know (to learn), to decide, and to manage (create and regulate care) (Hartweg, 2015). It is important to note that the self-care deficit theory entails nine propositions referred to as guides or principles for future development and theory testing. Moreover, Orem noted that nursing is needed or legitimate when the personal care demands and self-care capabilities are less than, equal to, or more than at a certain time. Consequently, this inequity creates a self-care deficit within patients and a dependent-care deficit within caregivers.

Theory of Nursing Systems (TNS)

The theory of the nursing system is the final theory, and it encompasses the previous three. The focus of TNS is the outcome of nursing, the creation of both content and structure for nursing practice coupled with the nursing role. This theory has four presuppositions that direct nurses to significant complexities enshrined in nursing practice. For instance, Orem noted that "Nursing has results-achieving operations that must be articulated with the interpersonal and societal features of nursing" (Orem, 2001, p. 147). Even though the theory was focused on actions, diagnosis, and outcomes based on the deficit relationship between self-care demand and self-care capabilities, Orem (2001) offered a theoretical work related to the relationship between persons receiving nursing care and the nurse and a social contract between patients and nurses. The theory of nursing systems entails seven propositions associated with the most current concepts of the self-care deficit nursing theory. Still, it included nursing systems (complex actions) and nursing agencies (nurse capabilities). According to Hartweg (2015), nursing systems and nursing agencies are associated with the concepts of the individual receiving care, such as self-care demands (therapeutic self-care demand), self-care capabilities (agency), and deficits (limitations) for self-care, which made the theory of self-care deficit nursing theory critical to the nursing practice. In this regard, Orem noted that nursing systems be determined by the self-care limitation of an individual. As a result, the nursing system varied depending on the amount of nursing care nurses must provide, such as the wholly compensatory system or total care system, partially compensatory system or partial care, or supportive educative system.

The theory of self-care deficit nursing theory was based on six concepts and a peripheral concept with four concepts focusing on the patients: "self-care/dependent care, self-care agency/dependent-care agency, therapeutic self-care demand/dependent-care demand, and self-care deficit/dependent-care deficit" (Hartweg, 2015, p. 109), while two concepts related to nurses: nursing system and nursing agency. The two concepts related to nursing played a significant role in informing the current project as they outlined factors that affect the ability of nurses to meet the health demands or fill the health deficit of the patient due to various reasons.

Relevance to Nursing Practice

Complications due to hypertensive disorders during the postpartum and pregnancy period are among the leading causes of preventable maternal mortality and severe maternal morbidity (Abd El Monem et al., 2021). According to the World Health Organization (WHO, 2015), hypertensive disorders in the postpartum and pregnancy period account for 26% of maternal deaths globally, making them the second leading cause of maternal mortality after hemorrhage. Hauspurg et al. (2019) pointed out that appropriate and timely care has the potential to reduce hypertension-related complications. The authors further noted that complex factors affect appropriate care of women with hypertensive disorders, such as the lack of competent frontline healthcare providers. Similarly, Sheikh et al. (2016) found gaps in knowledge among frontline healthcare providers regarding the causes and management of pre-eclampsia. The authors noted that healthcare providers had knowledge of etiology and complications resulting from the disease, but there was limited knowledge on the management of the conditions,

and various misperceptions existed. In addition, Ramadurg et al. (2016) stated that there are a lot of misconceptions among frontline healthcare providers regarding pre-eclampsia. For instance, the authors noted that "many community health providers believed missing tetanus toxoid vaccinations could lead to eclampsia" (p 29), which demonstrated a misunderstanding of the underlying factors of the disease. Similarly, mental tension because of personal conflict was also identified as the cause of hypertensive disorder among healthcare providers, demonstrating a significant knowledge gap among frontline healthcare providers on the detection and management of pre-eclampsia, which contributes to high maternal mortality and morbidity are preventable.

Similarly, Sethi et al. (2019) found that nurses and midwives working in hospitals across Indonesia had knowledge deficiencies in basic new-born and maternal care guidelines for handling new-born and maternal emergencies, management of severe pre-eclampsia, normal childbirth, and obstructed labor. Also, Joho et al. (2020) found that there is a critical knowledge deficiency among nurses working in maternal units of primary health settings in the prevention and management of eclampsia and pre-eclampsia. The authors suggested regular nurses' training on the management and prevention of eclampsia and pre-eclampsia to improve neonatal and maternal survival.

Various studies have outlined strategies to mitigate the knowledge deficiency among frontline healthcare workers dealing with pregnant women. For instance, Abd El Monem et al. (2021) suggested using a patient safety bundle. A patient safety bundle entails a set of evidence-based guidelines implemented in the local setting to manage a

medical condition, hence improving patient outcomes. The safety bundle described critical clinical practices that should be followed in maternity care. The safety bundle is organized into four action domains: recognition and prevention, readiness, reporting, and response (Bernstein, et al., 2017).

On the other hand, Sheikh et al. (2016) proposed refresher training for nurses and written guidelines for managing the disease that includes management protocols at all levels of health care. In addition, Sheikh et al. suggested using MgSO4 at the emergency center before referral to the secondary level of healthcare. In this regard, the present project aimed to implement an educational program for maternal and neonatal care nurses to improve the knowledge of pre-eclampsia targeting African American women. This project helped fill the gap of knowledge deficiency by empowering nurses with critical knowledge of a condition that affects pregnant women. This was relevant to nursing practice as it contributed to improving the quality of care and clinical practice.

Local Background and Context

The project will take place on the labor and delivery floor and doctors' office of a hospital and office complex in the southeastern United States. The hospital is a 172-bed community hospital founded in 1951, which has 41.1% of African Americans. As a result, the hospital receives a lot of African American women in the maternity wing and has observed a high rate of pre-eclampsia among African American women. The hospital reports two out of 10 cases of pre-eclampsia among African Americans, which is high compared to the national average. Therefore, pre-eclampsia among African Americans had emerged as a serious issue for the facility. Nurses play a significant role in providing

care to pregnant women at the hospital. Therefore, the project targeted nurses and aimed to improve their knowledge on the prevention and management of pre-eclampsia among African Americans. This implied that the project was significant to nursing as it contributed to improvements in nursing practice and enhanced their knowledge of pre-eclampsia, which could result in improved patient care and improvements in the population's health outcomes.

The hospital offered a variety of childbirth preparation classes for the whole family and believed that women's health goes beyond obstetrics. However, these services were not tailored to the needs of African American women due to their unique needs during pregnancy. However, the hospital's mission was to enhance health through nursing excellence, which was supported by a vision of creating an environment of health and healing. Moreover, the hospital valued quality, people, service, patient safety, and integrity, which were vital for implementing the current project.

State/Federal Context

The wide ethnic and racial disparities in maternal health and the gaps present in maternity care services in various communities had received significant attention in recent times. There had been growing attention to improving care in the postpartum period. In this regard, the Kaiser Family Foundation (2020) report outlined that Medicaid catered to more than four in ten births federally. It was the focus of various pending bills in Congress and state efforts to improve maternity care. In addition, the 115th Congress implemented the Preventing Maternal Deaths Act of 2018 (H.R. 1318), which authorized the CDC to increase aid for tribal and state maternity mortality review committees

(MMRCs). Also, there were pending bills in Congress that aimed to address various maternity-related issues, such as extending Medicaid postpartum cover to one year, creating broader networks of maternity care providers in rural areas, funding for clinical training on implicit bias and health equity, and research on potential benefits of Medicaid coverage for doula care (Kaiser Family Foundation, 2020). These efforts could play a significant role in reducing the impact of pre-eclampsia among African Americans if they were passed.

Role of the DNP Student

This project was inspired by the fact that African American women continue to experience disparities in healthcare services despite significant advances within the healthcare system. In this regard, I took the lead role in implementing and designing the project as part of my practicum experience and evidence-based practice change within an organization. Moreover, the project allowed me to apply what I have learned in my practicum period regarding leadership qualities, change theories, and evidence-based practice. In addition, my desire for equitable healthcare services was my motivation for this project since nurses, especially doctoral level nurses, can change the healthcare system by implementing evidence-based practice to achieve equity within the healthcare system. Nonetheless, my experience and time spent in the maternity wing have taught me the importance of knowledge in achieving high-quality care sensitive to all patients' needs.

The advancement of cultural sensitivity and the requirement of nurses to be sensitive to the cultural beliefs and values of the patients served as further motivation for

this project. Nonetheless, the project took place in the maternity wing of the local hospital, where an educational program on the treatment, diagnosis, and management of pre-eclampsia among African American women was provided.

Summary

This section outlined the concepts, models, and theories and the project's significance to nursing practice. Nursing education has evolved over the years, and theoretical concepts and frameworks coupled with theories have played a significant role in developing the practice. Models such as competency-based curricula have gained popularity in nursing education. They target to impart nurses with the knowledge that enables them to become effective in decision-making and clinician practice. Also, cultural competence care has emerged as a critical component within the health care system as healthcare practitioners, including nurses, are mandated to offer care that is sensitive to the beliefs and values of the patients. In this regard, the Sunrise Concept Model/ Theory of Diversity and Universality by Leininger (2006) played a significant role in informing the cultural component of the project. Finally, the theory of self-care deficit nursing theory played a significant role in informing the general project as it outlined the role of nurses in the health care system. Nonetheless, the next section outlined the collection and analysis of evidence relevant to the research problem.

Section 3: Collection and Analysis of Evidence

Nurses and other health care professionals play a significant role in providing care to pregnant women. According to Joho et al. (2020), nurses play a critical role in managing and preventing pre-eclampsia. However, their knowledge of pre-eclampsia has not been evaluated, particularly those working in primary health care settings where opportunities for continuing education are limited. Joho et al. pointed out a critical knowledge deficiency in managing and preventing pre-eclampsia and eclampsia among nurses working in maternal units of primary health care settings. This pointed to the need for educating nurses on the management and prevention of pre-eclampsia. As a result, the specific local nursing practice problem is the knowledge deficiency of nurses in preventing and managing pre-eclampsia among pregnant women. In this section I outline the collection and analysis of data. I also present the methods employed in the collection of data and the analysis tools.

Practice-Focused Questions

The project took place on the labor and delivery unit in a hospital in the southeastern United States. The hospital was a 172-bed community hospital founded in 1951. The community is made of 41.1% African Americans, which implies that the hospital receives many African American women in the maternity wing and has observed a high rate of pre-eclampsia among African American women. The hospital reported two out of 10 cases of pre-eclampsia among African Americans, which was high compared to the national average. Therefore, pre-eclampsia among African Americans has emerged as a serious issue for the facility. Nurses played a significant role in providing care to

pregnant women at the hospital. For this project, I targeted nurses and aimed to improve their knowledge of the prevention and management of pre-eclampsia among African Americans. As a result, the gap in practice that I addressed is the knowledge deficit of nurses caring for pregnant women and the identification of pre-eclampsia, especially as it relates to different races.

The guiding practice-focused question for this doctoral project was, "How effective is simulation-based training on neonatal and obstetric emergencies in improving nursing knowledge of pre-eclampsia?" A second question related to the first question was, "Does nursing education on neonatal and obstetric emergencies reduce the rates of pre-eclampsia among African American women?" This question was relevant to my identified gap in practice because nursing knowledge of eclampsia is foundational to the early identification of pre-eclampsia since nurses are often the first a health care professional they see for their care.

Sources of Evidence

For this project, I employed a descriptive design to achieve the objectives and aims of the project. The project was conducted in the obstetrical department of a hospital. Notably, the project took place in the labor and delivery unit of the hospital. A convenience sample was selected and all nurses (62) working in the labor and delivery flow of the hospital were recruited for the project. Three tools were developed for the collection of data: (a) self-administered questionnaire, (b) observational checklist, and (c) a modified Likert scale.

Tool 1: Self-administered Questionnaire

I developed the questionnaire through a relevant literature review and consultation with an expert. The questionnaire was written in simple and plain English; and contained two parts. Part 1 was designed to understand the general characteristics of the sample, such as level of education, age, years of experience, and training received regarding caring for pregnant women with pre-eclampsia and use of evidence-based practice. Part 2 assessed nurses' knowledge of applying evidence-based practice for pre-eclampsia cases. This item was written in simple English and as a multiple-choice form. The nurse's knowledge was assessed in four sections.

Section 1 assessed knowledge about evidence-based practice for pre-eclampsia through six items: "definition of EBP, steps of EBP, important of EBP, EBP for caring for women with pre-eclampsia, EBP that given for women with pre-eclampsia and EBP to protect women from pre-eclampsia" (Soliman et al., 2021, p. 500). Section 2 assessed the general knowledge of pre-eclampsia through nine items: Definition of pre-eclampsia, degree of pre-eclampsia, the risk factor of pre-eclampsia, signs, and symptoms of pre-eclampsia, danger signs for women with pre-eclampsia, the complication of pre-eclampsia, tests that confirm pre-eclampsia, times of visits' women with pre-eclampsia and medications that given for women with pre-eclampsia. (Soliman et al., 2021, p. 500) Section 3 assessed knowledge about HELLP syndrome through three items: "definition of HELLP syndrome, signs and symptoms of HELLP syndrome and management for HELLP syndrome" (Soliman et al., 2021, p. 500).

Section 4 examined knowledge on the use of magnesium sulfate through nine items:

> The loading dose of magnesium sulfate, the maintenance dose of magnesium sulfate, precautions to be followed while giving magnesium sulfate, the most common side effect of magnesium sulfate, symptoms of magnesium sulfate toxicity, the antagonist used in case of magnesium sulfate toxicity, respiratory depression is a concern when blood levels of magnesium sulfate reach, the most common cause of accidents of magnesium sulfate and the doctor should be informed if the woman receiving magnesium sulfate was suffering from. (Soliman et al., 2021, p. 500-501).

The questionnaire used in the study was developed based on a literature review and input from an expert. It consisted of two parts. Part 1 gathered information about the participants' general characteristics and their training in caring for pregnant women with pre-eclampsia and evidence-based practice. Part 2 focused on assessing nurses' knowledge of evidence-based practice for pre-eclampsia. It was divided into four sections: one on evidence-based practice, one on general knowledge of pre-eclampsia, one on knowledge of HELLP syndrome, and one on knowledge of using magnesium sulfate. Each section contained multiple-choice questions aimed at measuring the nurses' understanding of the respective topics.

Scoring of the Assessment

Each response was assigned a score of 2 if the answer was correct, a 1 for any incompletely correct answer, and a 0 for the “I don’t know” responses. The total score for each section was calculated by summation of the scores for each item, and the total score for nurse knowledge was calculated by adding the total score of all sections. The score

for total knowledge was categorized as follows: Good :(>75%); Average: (60 - 75%); and Poor: (< 60%)

Tool 2: Observational Checklist

This tool examined the application of evidence-based practice in the management of pre-eclampsia. The statement was scored as follows: 0 if not done and 1 if done. Moreover, the score for total practice was classified as satisfactory for a score greater than or equal to 60% and unsatisfactory for scores less than 60%.

I developed the tool specifically for the study, considering the research objectives and relevant literature on evidence-based practice in pre-eclampsia management. I also adapted some aspects of the tool from Joho et al. (2020). The participants who took the tool were nurses involved in the care of pregnant women with pre-eclampsia, as my questionnaire aimed to assess their knowledge and application of evidence-based practice in this context. The purpose of administering the tool was to gather data on nurses' knowledge and practice regarding evidence-based management of pre-eclampsia, which would contribute to my study's findings and conclusions.

Tool 3: Modified Likert Scale

The modified Likert scale was adopted from Jensen-Doss and Hawley (2010) and modified to measure nurses' knowledge of the barriers impacting the utilization of evidence-based practice. This scale had 10 items: (a) lack of nurses and a medical team regarding the number of cases, (b) lack of capabilities and tools in hospital, (c) not attending the training courses, (d) little information is available on EBP, (e) lack of

technology in the field of nursing, (f) sources of access to evidence-based practices are limited, (g) the inability of nurses to read and analyze evidence-based research, (h) nursing resistance to change, (i) insufficient support for nurses, (j) lack of time with three points (agree, uncertain, disagree; Soliman et al., 2021, p. 501).

Scoring System

Each awareness item was scored as follows: a2 if awareness was agreed, 1 if awareness was uncertain, and 0 if awareness was disagreed. The score for total awareness regarding barriers was as follows: High: (> 75%); Moderate: (60 – 75 %); and Low: (< 60%).

Validity and Reliability of Tools

Specialized professionals conducted the validity of tools in gynecology and obstetrics, and minor modifications were done. The reliability depended on already tested surveys, which implied that there will be no need to test for the reliability of the tool.

Ethical Considerations

The aim and purpose of the project was explained to each nurse before the application of the tools to obtain their trust and confidence. In addition, the project considered the following ethical aspects before commencement. Approval for the research was sought before commencement from Walden University Institutional Review Board (IRB). Consent was obtained from each nurse to participate in the project, and the allowance to withdraw at any time without any obligations. Confidentiality of nurses' personal information was ensured to protect their identity.

Analysis and Synthesis

The collected data was tabulated, categorized, and analyzed using the Statistical Package for Social Sciences (SPSS version 20.0). The descriptive statistics were expressed in standard deviation and mean for quantitative variables, while qualitative categorical variables were examined using the chi-square test. Moreover, a simple t-test was used to compare the pre-test and post-test results. The p-value outlines the degree of significance coupled with the correlation (r) test. Ideally, the p-value outlines the probability that an "observed difference is due to chance and not true difference" (Soliman et al., 2021, p. 502). Therefore, the project will consider a significant level when the p-value is less than 0.05 ($P < 0.05$), and a highly significant level will be considered when the p-value is less than 0.001 ($p < 0.001$), while a p-value greater than 0.05 ($p > 0.05$) indicates a non-significant result.

Summary

This section outlined the collection and analysis of evidence. The project recruited maternal nurses from a community hospital targeting African American mothers. The project focused on staff education, which fell under one of the categories of the DNP prospectus and was guided by the Staff Education Manual. Moreover, the collection and analysis of baseline data helped address the practice-focused question by outlining the impact of educational programs on the knowledge level of maternal nurses and how it impacted the quality of care.

Nonetheless, a descriptive project design was utilized to achieve the objectives and aims of the project. Three tools were developed to collect data: a self-administered

questionnaire, an observational checklist, and a modified Likert scale. The project sought approval from Walden University IRB before commencement to ensure ethical guidelines are adhered to and protect participants' information. The collected data was tabulated, categorized, and analyzed using the Statistical Package for Social Sciences (SPSS version 20.0). The collected data helped address the next section of results and recommendations.

Section 4: Findings and Recommendations

Nurses and other health care professionals play a significant role in providing care to pregnant women. According to Joho et al. (2020), nurses play a critical role in managing and preventing pre-eclampsia. However, their knowledge of pre-eclampsia has not been evaluated, particularly those working in primary health care settings where opportunities for continuing education are limited. Joho et al. (2020) pointed out a critical knowledge deficiency in managing and preventing pre-eclampsia and eclampsia among nurses working in maternal units of primary health care settings. This pointed to the need for educating nurses on the management and prevention of pre-eclampsia. As a result, the specific local nursing practice problem was the knowledge deficiency of nurses in preventing and managing pre-eclampsia among pregnant women. In this section I outline the collection and analysis of data as well as the methods employed in the collection of data and the analysis tools.

Practice-Focused Questions

The project took place on the labor and delivery unit in a hospital in the southeastern United States. The hospital was a 172-bed community hospital founded in 1951 in the heart of the community. The community was made of 41.1% African Americans, which implied that the hospital receives many African American women in the maternity wing and had observed a high rate of pre-eclampsia among African American women. The hospital reported two out of 10 cases of pre-eclampsia among African Americans, which was high compared to the national average. Therefore, pre-eclampsia among African Americans had emerged as a serious issue for the facility.

Nurses played a significant role in providing care to pregnant women at the hospital. I focused the project on nurses and aimed to improve their knowledge of the prevention and management of pre-eclampsia among African Americans. As a result, the gap in practice that this project addressed was the knowledge deficit of nurses caring for pregnant women and the identification of pre-eclampsia, especially as it related to different races.

The guiding practice-focused question for this doctoral project was "How effective is simulation-based training on neonatal and obstetric emergencies in improving nursing knowledge of pre-eclampsia?" A second question related to the first question was "Does nursing education on neonatal and obstetric emergencies reduce the rates of pre-eclampsia among African American women?" This question was relevant to my identified gap in practice because nursing knowledge of eclampsia was foundational to the early identification of pre-eclampsia since nurses are often the first a health care professional they see for their care.

Sources of Evidence

I used staff education to achieve the objectives and aims of the project. The project was conducted in the obstetrical department of a hospital. Notably, the project took place on the labor and delivery floor of the hospital. A convenience sample of nurses was selected, and all nurses (62) working in the labor and delivery flow of the hospital were recruited for the project.

A staff education approach was used to achieve the objectives and aims of the project. Three tools were developed to collect data: a self-administered questionnaire, an

observational checklist, and a modified Likert scale. I sought approval from Walden University's IRB before starting to ensure ethical guidelines are adhered to and protect participants' information. The collected data was tabulated, categorized, and analyzed using the Statistical Package for Social Sciences (SPSS version 20.0).

Findings and Implications

Table 1 shows that more than half of studied nurses (56.7%) were in the age group 20-30 years old with a mean age of 32.45±9.68 years. Regarding educational level, less than two thirds of the nurses (61.7%) had technical institute training.

Table 1

Frequency Distribution of Studied Nurses Regarding Their Socio-Demographic Characteristics

Sociodemographic Data	Frequency	%
Age in years		
21-31	30	75.0
32-41	17	12.5
42-51	14	12.5
Mean±SD	29.03±7.66	
Educational qualification		
Secondary nursing education	11	32.5
Technical nursing education	25	62.5
Bachelor of nursing	25	5.0
Professional title		
Bedside nurse	23	32.5
Technical nurse	25	62.5
Head nurse	3	5.0
Years of employment		
1-5	38	70.0
5-10	12	17.5
10-20	11	12.5
Attending workshops or programs related to pre-eclampsia		
No	42	77.5
Yes	19	22.5
Source of Information		
Studying	9	28.1
Work experience	52	71.9

Note: N = 61

Table 2 shows that less than two thirds of the nurses (61.7%) had incomplete correct answer regarding definition of EBP. About half of the nurses (50,0%) had incomplete correct answer regarding steps of EBP and about half of studied nurses (50%) do not know answers about importance of EBP application while more than half of the nurses (51.7% and 53.3%) had incomplete correct answer regarding EBP for caring women with pre-eclampsia and EBP that given for women with pre-eclampsia, respectively. In addition, about two third (65.0%) of them had complete correct answer regarding EBP to protect women from pre-eclampsia.

Table 1

Frequency Distribution of Studied Nurses Regarding Their Knowledge About Evidence-Based Practice

Knowledge items	Complete Correct		Incomplete Correct		I don't know	
	No	%	No	%	No	%
Definition of EBP	3	3.4	38	61.6	22	35.0
Steps of EBP	3	3.4	31	50.1	29	46.7
Importance of EBP application	2	1.6	28	48.2	31	50.0
EBP for caring women with pre-eclampsia	26	41.6	32	51.8	5	6.7
EBP that given for women with pre-eclampsia	29	46.6	33	53.2	0	0.0
EBP to protect women from pre-eclampsia	39	65.1	22	35.1	0	0.0

Table 3 shows that 68.3% of the nurses had a full understanding of the definition and complications of pre-eclampsia. Seventy-five percent of the nurses had a complete grasp of the signs and symptoms and the diagnosis of pre-eclampsia. However, only 60% and 63.3% had a partially correct understanding of the degree and risk factors of pre-eclampsia, respectively. Approximately 72% of the nurses were fully aware of the

warning signs for women with pre-eclampsia. On the other hand, 68.3% and 73.3% of the nurses had a partial correct understanding of the frequency of visits for women with pre-eclampsia and the medication given for women with pre-eclampsia, respectively.

Table 2

Frequency Distribution of Studied Nurses Regarding Their Knowledge About Pre-eclampsia

Knowledge items	Complete Correct		Incomplete Correct	I don't know	
	No	%	No	%	%
Definition of pre-eclampsia	41	68.3	19	31.7	0.0
Degree of pre-eclampsia	18	30.0	36	60.0	10.0
Risk factor of pre-eclampsia	22	36.7	38	63.3	0.0
Signs and symptoms of pre-eclampsia	45	75.0	15	25.0	0.0
Danger signs for women with pre-eclampsia	43	71.7	17	28.3	0.0
Complication of pre-eclampsia	41	68.3	19	31.7	0.0
Diagnosis of pre-eclampsia	45	75.0	15	25.0	0.0
Frequency of visits for women with pre-eclampsia	18	30.0	41	68.3	1.7
Medication that given for women with pre-eclampsia	16	26.7	44	73.3	0.0

Note: N=61

More than one third of the nurses (41.7%) had an average level of total knowledge about EBP and pre-eclampsia. The percentage distribution of the total scores of nurses' knowledge immediately postsimulation was 80% of the participants had a good level of knowledge, while it illustrates that they were 7.5% before simulation training. Table 4 shows statistically significant improvement in the scheduling of antenatal visits, tests, and components of antenatal history immediately after the simulation training compared to before the training (p<0.001). The improvement was also maintained 8 weeks after the training, with a highly significant difference compared to preintervention (p<0.001).

However, there is a noteworthy difference between preintervention and the 8-week follow-up regarding the components of antenatal history (p<0.05).

Table 3

Comparison of the Nurses' Knowledge Mean Score Regarding Antenatal Care at Different Assessment Phases)

	Presimulation	Immediate postsimulation	Follow up (8 weeks)				
Knowledge items	Mean ±SD	Mean ±SD	Mean ±SD	Paired t test (1)	P value	Paired t test (1)	P value
Schedule antenatal visits for normal pregnancy	1.17±0.67	2.77±0.61	2.52±0.67	-11.61	<0.001	-9.56	<0.001
Schedule antenatal visits for high-risk pregnancy	1.30±0.72	2.77±0.57	2.47±0.78	-10.30	<0.001	-7.18	<0.001
First antenatal visit tests	1.50±0.55	2.55±0.59	2.30±0.79	-7.58	<0.001	-5.23	<0.001
Follow-up antenatal visits' tests for normal pregnancy	1.80±0.79	2.75±0.58	2.45±0.84	-6.44	<0.001	-3.52	<0.001
Follow-up antenatal visits' tests for high-risk pregnancy group	2.02±0.94	2.67±0.57	2.47±0.59	-3.82	<0.001	-2.74	<0.001
Antenatal history components	1.17±0.67	2.77±0.61	2.52±0.67	-11.61	<0.001	-9.56	<0.001

Note: N=61

Table 5 shows a statistically significant improvement in knowledge immediately after simulation training compared to before simulation, about the definition of pre-eclampsia and eclampsia, risk factors, symptoms, signs, preventive measures, management, and complications of pre-eclampsia (p<0.001). Additionally, there was a highly statistically significant improvement seen during the follow-up (8weeks after

simulation training) compared to the pre-intervention period, regarding the same subjects (p<0.001).

Table 4

Comparison of the Nurses' Knowledge Mean Score Regarding Pre-eclampsia at Different Assessment Phases

	Presimulation	Immediate postsimulation	Follow up (8 weeks)				
Knowledge items	Mean ±*SD*	Mean ±*SD*	Mean ±*SD*	Paired *t* test (1)	*P* value	Paired *t* test (1)	*P* value
Meaning of pre-eclampsia	1.70±0.99	2.77±0.53	2.45±0.71	-5.73	<0.001	-3.90	<0.001
Meaning of eclampsia	1.52±0.78	2.70±0.56	2.35±0.83	-6.85	<0.001	-4.61	<0.001
Risk factors of pre-eclampsia	1.97±1.54	4.02±1.22	3.67±1.18	-6.70	<0.001	-5.17	<0.001
Symptoms of pre-eclampsia	1.92±1.18	4.07±0.94	3.72±1.10	-10.21	<0.001	-6.89	<0.001
Signs of pre-eclampsia	1.67±0.94	2.77±0.42	2.45±0.78	-7.28	<0.001	-4.46	<0.001
Preventive measures of pre-eclampsia.	2.30±1.38	3.72±0.98	3.45±1.15	-6.73	<0.001	-4.98	<0.001
Management of pre-eclampsia	2.17±1.63	3.80±0.96	3.47±1.13	-6.08	<0.001	-4.49	<0.001
Complications of pre-eclampsia	1.92±1.42	3.65±1.02	3.15±1.05	-7.02	<0.001	-4.29	<0.001

Note: *N*=61

Table 6 shows a statistically significant improvement in nurses' knowledge immediately after simulation training and during follow-up (8 weeks after simulation) compared to their pre-simulation performance for all items, except for assessing vital signs every 15 minutes, correctly performing blood pressure measurements, administering antihypertensive treatment, and administering magnesium sulfate (p<0.001).

Table 5

Comparison of the Nurses' Practice Regarding the Management of Pre-eclampsia Pre- and Immediate Post-Simulation Training

	No	%	No	%	No	%	No	%	No	%	No	%	(1)	
Follow correct measures of infection control during each procedure	24	60.0	16	40.0	9	22.5	31	77.5	12	30	28	70	11.60	<0.001
Assess vital signs every 15 minutes and correctly perform blood pressure	29	72.5	11	27.5	16	40.0	24	60.0	15	37.5	25	62.5	8.58	<0.05
Palpate the mother's abdomen.	36	90.0	4	10.0	7	17.5	33	82.5	6	15	34	85	42.28	<0.001
Electronic fetal / Heart monitoring.	30	75.0	10	25.0	4	10.0	36	90.0	5	12.5	35	87.5	34.57	<0.001
Insert bladder catheter and start hourly urine measurements.	30	75.0	10	25.0	0	0.0	40	100	1	2.5	39	97.5	11.42	<0.001
Use chart for hourly observation ofvital signs, oxygen saturation, urine output, fluid input (IV and oral)	21	52.5	19	47.5	0	0.0	40	100	1	2.5	39	97.5	28.47	<0.001
Weight the patient and palpate for edema.	28	70.0	12	30.0	0	0.0	40	100	2	5	38	95	43.30	<0.001
Assess deep tendon reflexes and clonus	22	55.0	18	45.0	0	0.0	40	100	1	2.5	39	97.5	30.34	<0.001
Test urine for protein	27	67.5	13	32.5	10	25.0	30	75.0	12	30	28	70	14.53	<0.001
No visitors and Reduce stimulation from noise and light.	18	45.0	22	55.0	0	0.0	40	100	1	2.5	39	97.5	23.22	<0.001
Assess CNS as Headache and Visual changes.	31	77.5	9	22.5	0	0.0	40	100	0	0.0	40	100	50.61	<0.001
Assess GI system as Nausea/vomiting, Epigastric pain	34	85.0	6	15.0	1	2.5	39	97.5	3	7.5	37	93.5	55.31	<0.001
Inform obstetric consultants and obstetric anesthetists	18	45.0	22	55.0	0	0.0	40	100	2	5	38	95	23.22	<0.001
Inform neonatal unit if <37 weeks' gestation	32	80.0	8	20.0	17	42.5	23	57.5	10	25	30	75	11.85	<0.001
Consider the need forantihypertensive treatment	19	47.5	21	52.5	6	15.0	34	85.0	5	12.5	35	87.5	9.83	<0.05

Consider the need for magnesium sulfate	6	15.0	34	85.0	0	0.0	40	100	1	2.5	39	97.5	6.48	<0.05
Monitored appropriate lab values	33	82.5	7	17.5	6	15.0	34	85.0	4	10	36	90	36.47	<0.001

Note: *N*= 61

Table 7 demonstrates a statistically significant improvement in the nurses' level of confidence in the management of pre-eclampsia, both immediately after the simulation training and during the follow-up 8 weeks later, as compared to pre-simulation. This improvement was observed in various aspects, including assessing vital signs, assessing reflexes (patellar, brachial, clonus), completing a full obstetrical admission physical assessment, completing the postpartum assessment, inserting IV lines, administering IV push medication, administering IV piggyback, calculating magnesium sulfate loading dose, monitoring fluid levels, administering blood products, understanding pre-eclampsia lab values, monitoring CNS involvement with pre-eclampsia, managing the antepartum patient with the disease/condition of pre-eclampsia, and managing active labor for a patient with the disease/condition of pre-eclampsia. ($p<0.001$).

Table 6

Comparison of the Nurses' Practice Regarding the Management of Pre-eclampsia Pre- and Immediate Postsimulation Training

	Presimulation	Immediate postsimulation	Follow up (8 weeks)				
I am confident that in the clinical setting, I can:	2.62±0.92	4.67±0.47	4.27±0.84	-12.50	<0.001	-9.49	<0.001
Assess vital signs (BP, P, R, T)	2.55±0.74	3.55±0.81	3.05±1.03	-7.21	<0.001	-3.38	<0.001
Assess reflexes (patellar, brachial, clonus)	2.92±1.07	4.07±0.69	3.40±1.17	-7.26	<0.001	-2.07	<0.001
Complete full obstetrical admission physical assessment	2.55±1.06	4.10±0.67	3.45±1.01	-7.02	<0.001	-4.26	<0.001
Complete postpartum assessment.	2.67±0.99	4.77±0.42	3.85±1.07	-11.54	<0.001	-5.07	<0.001
Insert IV line.	2.60±0.77	4.72±0.45	3.97±0.86	-15.75	<0.001	-8.06	<0.001
Administer IV push medication.	2.17±0.71	4.05±6.36	2.87±1.28	10.43	<0.001	-3.50	<0.001
Administer IV piggyback.	2.45±0.78	4.22±0.94	3.05±1.06	-8.56	<0.001	-3.07	<0.001
Calculate magnesium sulfate loading dose	2.35±0.73	3.52±0.93	3.55±0.87	-6.85	<0.001	-7.27	<0.001
Monitor fluid levels.	2.52±0.75	4.60±0.59	4.55±0.59	-12.83	<0.001	12.49	<0.001
Administer blood products.	2.50±0.64	3.65±0.83	3.65±0.80	-8.14	<0.001	-8.42	<0.001
Understand pre-eclampsia lab values.	2.85±0.57	3.55±0.95	3.45±0.93	-4.24	<0.001	-3.58	<0.001
Monitor CNS involvement with pre-eclampsia.	2.17±0.90	4.17±0.74	4.07±0.76	-11.17	<0.001	10.65	<0.001
Manage the antepartum patient with the disease/condition of pre-eclampsia.	2.25±0.43	4.25±0.63	4.07±0.72	-14.42	<0.001	12.40	<0.001
Manage active labor patient with disease /condition of pre-eclampsia.	2.62±0.92	4.67±0.47	4.27±0.84	-12.50	<0.001	-9.49	<0.001

Note: *N*=61

Table 8 shows a strong and statistically significant correlation existed between practice and self-efficacy both before and immediately after simulation, as well as during the follow-up period (8 weeks after simulation training). Additionally, a strong and statistically significant correlation was seen between knowledge and self-efficacy during the follow-up period after simulation.

Table 7

Correlation Between Studied Sample Total Knowledge, Practice, and Self-Efficacy at Different Assessment Phases

		Pre-simulation			Immediate post-simulation			Follow-up (8 weeks)		
	Variables	Practice	Knowledge	Self-efficacy	Practice	Knowledge	Self-efficacy	Practice	Knowledge	Self-efficacy
Total practice	Pearson Correlation (r)	1	0.277	0.336	1	0.353	0.414	1	0.343	0.674
	P-value		0.084	0.034		0.025	0.000		0.030	0.000
Total knowledge	Pearson Correlation(r)	0.277	1	0.116	0.353	1	-0.010	0.343	1	0.427
	P value	0.084		0.475	0.025		0.953	0.030		0.006
Total self-efficacy	Pearson Correlation(r)	0.336	0.116	1	0.414	-0.010	1	0.674	0.427	1
	P value	0.034	0.475		0.000	0.953		0.000	0.006	

Note: *N*= 40

Discussion

Evidence-based nursing is a method that allows nurses to provide the highest standard of care based on the best available evidence, leading to improved patient outcomes. It is crucial that this approach is implemented in clinical settings, which requires nurses to possess the necessary competencies and understand the fundamental concepts of EBP (Higgins et al., 2019). Pre-eclampsia continues to pose a significant threat during pregnancy. It is defined as a pregnancy-related disorder involving hypertension, proteinuria, and potentially edema, occurring after 20 weeks of gestation

(Serban et al., 2018). The project aimed to examine the effectiveness of simulation-based training on neonatal and obstetric emergencies in reducing the rates of pre-eclampsia among African American women through a staff development project, addressing questions related to nurses' knowledge and practice of EBP for pre-eclampsia, as well as the obstacles to its implementation.

Total Knowledge Regarding Pre-Eclampsia and EBP

Concerning the project nurses' total knowledge. The current project showed that more than one third of staff nurses had an average level of total knowledge. This concurs with Ahmed (2017) findings that only ten out of sixty had optimal knowledge. On the other hand Angelina et al. (2020) found that 51.2% of primary healthcare settings nurse had adequate knowledge on prevention and management of pre-eclampsia and eclampsia. From my findings, the nurses in the project had an average level of total knowledge due to lack of training programs about pre-eclampsia and EBP. It was believed that the inadequate knowledge and hands-on experience of nurses in managing pre-eclampsia and eclampsia was partly due to their youthful age and limited years of experience. As demonstrated in the current project, nearly three-quarters of the staff nurses had between one and five years of experience, contradicting the findings of Emam and Sabre (2018), who found that over half of the registered nurses had more than ten years of experience. Furthermore, Verma et al. (2016) reported that most of the nurses had less than two years of overall work experience.

Knowledge about Evidence-Based Practice

The integration of evidence-based practice (EBP) in nursing provided nurses with access to current and relevant scientific research, allowing them to make informed decisions regarding patient care. By utilizing EBP, nurses can stay updated on new medical protocols and identify the most appropriate interventions for their patients, thereby, increasing the chances of positive outcomes. EBP also enabled nurses to critically assess research, understand the risks and benefits of diagnostic tests and treatments, and involve patients in the care planning process. Patients can play a more active role in their healthcare by expressing their concerns, sharing their values and preferences, and making suggestions on their preferred course of action (Rasmussen, et al., 2018).

The findings of the current project revealed that less than two-thirds of staff nurses had a limited understanding of the definition of evidence-based practice (EBP). This may be attributed to the lack of emphasis on EBP in both undergraduate education and hospital work settings. It is imperative for the government to prioritize the development of EBP education and enhance the curriculum accordingly. These results align with previous studies, such as Ellboudy, et al. (2018), which found that nurses had limited knowledge of EBP, and Stokke et al. (2014), who found that nurses lacked knowledge of EBP and tended to rely on their own experience and social interactions rather than incorporating research findings into their practice.

The findings of the current project indicated that approximately half of the staff nurses had an inadequate understanding of the steps involved in evidence-based practice

(EBP). This is consistent with the results of previous research, such as Enuku and Adeyemo (2014), who found that 68% of nurse educators lacked knowledge of the steps of EBP. Similar findings were reported by Hussein and Hussein (2014), who found that the culture in healthcare and nursing education in Egypt did not promote the use of EBP. In contrast to the present project's results, the research conducted by Upton et al. (2015) found that nurses had a high level of knowledge and skills in evidence-based practice (EBP), particularly those who received EBP training.

General Knowledge Regarding Pre-eclampsia

The present project showed that over two thirds of the staff nurses had a complete and correct understanding of the definition and complications of pre-eclampsia. These results were in line with Munirathnamma et al. (2013) who found that more than half of the sample had a correct understanding of the definition of toxemia of pregnancy.

The results of this project indicated that nearly three-quarters of the staff nurses had a comprehensive understanding of the signs, symptoms, and diagnosis of pre-eclampsia. This finding differed from the results of Stellenberg and Ngwekazi (2016), who found a gap in the knowledge of nurses about hypertensive disorders during pregnancy, with only 56% of participants being able to answer questions about the clinical manifestations of pre-eclampsia and 28% having no information about it. The increase in the number of cases of pre-eclampsia could be a contributing factor to the improved knowledge. On the other hand, the present project revealed that less than two-thirds of the participants had an inadequate understanding of the severity and risk factors

of pre-eclampsia, which contradicts Zahran, et al. (2018), who found that over two-thirds of the sample had satisfactory knowledge about the risk factors of toxemia.

The present project showed that less than one third of staff nurses had a complete and correct understanding of the medication prescribed for women with pre-eclampsia. This aligns with the findings of Lakshmamma and Munirathnamma (2013) who found that most participants had an incorrect understanding of the medication given to women with toxemia due to their diverse cultural backgrounds and educational levels.

Effectiveness of Simulation-Based Training

The current project found a significant improvement in the mean score of nurses' knowledge regarding antenatal care after the simulation training compared to before the training. The improvement was statistically significant with regards to the schedule of antenatal visits during normal and high-risk pregnancies, first antenatal tests, follow-up tests for normal and high-risk pregnancy groups, and components of antenatal history. Additionally, the improvement was maintained during the follow-up period (eight weeks after simulation training) compared to the pre-intervention results. However, there was still a significant difference between pre-intervention and follow-up with respect to the components of antenatal history.

The current project showed significant improvements in nurses' knowledge about pre-eclampsia and eclampsia after simulation training. The results indicated a significant increase in nurses' understanding of the definitions, risk factors, symptoms and signs, prevention, management, and complications of pre-eclampsia, both immediately after the simulation ($p<0.001$) and eight weeks later ($p<0.001$). This result supported the

effectiveness of simulation training in filling the gap of pre-eclampsia experience and training that the nurses previously lacked.

Kim and Shin (2016), conducted a study to evaluate the effectiveness of nursing process-based simulation in improving maternal emergency care knowledge, attitudes, and skills of clinical nurses. The results revealed that nurses who underwent simulation training outperformed the control group. Similarly, Ekaterina et al. (2017) conducted a study to assess the impact of simulation training on physicians and nurses across different disciplines. The study found that the participants gained considerable knowledge and improved their teamwork skills, which remained steady for three months post-training (p<0.001, 0.009).

Similarly, Tabatabaeian et al. (2018) conducted a study to compare the effectiveness of simulation-based training, blended training, and lecture-based training on midwives' simulated performance in dealing with pre-eclampsia and eclampsia. The study was conducted on 90 midwives selected from hospitals in Mashhad, and was designed as a three-group clinical trial. The results showed that the mean cognitive ability scores and performance in managing pre-eclampsia and eclampsia were higher in the simulation-based training group compared to the blended and lecture-based training groups. This supported the use of simulation-based education, as a self-centered method, for training in the management of pre-eclampsia and eclampsia.

The current project found that nurses' practices in managing pre-eclampsia showed significant improvement immediately after the simulation training and eight weeks later. The results indicated that only one-third of the nurses demonstrated

satisfactory practice during the pre-simulation assessment, while the remaining two-thirds performed unsatisfactorily. This improvement could be attributed to the design of the simulation training, which was based on a realistic scenario and was accompanied by an educational video that motivated the nurses to provide their best practices. This result aligned with the findings of Emam and Sabre (2018), who showed that prior to the intervention, most nurses had subpar to average practice and that post-intervention, most of the nurses demonstrated good practice. This conclusion was further supported by Adoyi et al. (2016), who investigated the ongoing challenges in delivering quality midwifery care for women with pre-eclampsia and eclampsia in Nigeria. The project revealed that providers lacked basic tools like blood pressure monitors, stethoscopes, urine test strips, and essential drugs such as magnesium sulfate (MgSO4) and antihypertensive drugs. The improvement observed after the simulation training highlighted the significance of simulation in enhancing nursing practice during emergencies.

The notion of self-efficacy involves the belief that an individual possesses the capability to effectively carry out a specific task (Goulo, 2014). The current project discovered that there was a statistically significant increase in nurses' self-efficacy in performing all necessary care for mothers with pre-eclampsia after the intervention and an eight-week follow-up ($p<0.001$). This improvement in self-efficacy was likely a result of the simulation training. This was further supported by the strong positive correlation found between practice and self-efficacy both before and immediately after the simulation, as well as between self-efficacy and knowledge during the follow-up. These

results aligned with the third project objective. The results of the current project were consistent with the findings of Christian and Krumwiede (2013), who observed a statistically significant improvement in self-efficacy scores before, after, and eight weeks after training. This was also in agreement with the results of Kimhi et al. (2016), who studied the impact of simulation and clinical experience on self-efficacy among student nurses. Their research found that simulation-based training, regardless of whether it was performed before or after the clinical experience, had a positive impact on self-efficacy and confidence.

The current findings were consistent with the results of Kimhi et al. (2016), who discovered that simulations elevated confidence and self-efficacy in both pre- and post-clinical experiences. Roh et al. (2016) also explored the impact of simulation-based resuscitation training in conjunction with clinical practice on nursing student mastery and self-efficacy learning. They concluded that a combination of simulation-based resuscitation training and clinical practice may boost nursing students' learning and self-efficacy through increased engagement and feedback. Furthermore, Larsen et al. (2017) noted that individuals who received simulation training reported more favorable experiences and higher self-efficacy ratings compared to those who underwent traditional education, in line with the current findings. Hsu et al. (2015) investigated the effect of scenario-based simulation course training on nurses' communication, competence, and self-efficacy, and found that both traditional classroom lectures and simulation-based communication training can enhance nurses' communication skills and self-efficacy.

The current project reveals that despite most nurses starting off with low-to-moderate levels of self-efficacy in providing care for pre-eclampsia, there was a statistically significant improvement in their overall self-efficacy after the simulation training and eight weeks later. This improvement was attributed to the gains in nursing practice and knowledge made during the simulation training, as evidenced by the positive correlation between practice and self-efficacy both before and immediately after the training, as well as during the follow-up, and between knowledge and self-efficacy during the follow-up.

The current project's results were in line with those of Roh et al. (2016), who conducted a study to assess the impact of a combined simulation-based resuscitation skills training program and clinical practicum on mastery of learning and self-efficacy in nursing students. This project suggested that a combined approach of simulation training and clinical experience might be effective in enhancing nursing students' mastery of learning and self-efficacy through increased engagement and feedback. The findings emphasized that self-efficacy played a mediating role between knowledge and action, and that simply possessing knowledge and skills was not enough to achieve desired outcomes.

The results of the current project demonstrated that utilizing innovative education strategies like simulation-based training could boost nurses' knowledge, practical skills, self-efficacy, and confidence in delivering care. To keep pace with the advancements in nursing practice and close existing performance gaps, it is crucial for nursing research to embrace these innovative techniques.

Implications

The findings of the present project demonstrated that simulation-based training on the management of pre-eclampsia has the possibility of improving nurse-midwifery knowledge, practice, and self-efficacy. The improvement in knowledge and self-efficacy can help nurse-midwifery to improve the quality of service offered to African American women who suffer from high rates of pre-eclampsia. This could help reduce the rates of pre-eclampsia among African American women and eventually improving the health outcomes of the mothers. Ideally, the present project could institute positive social change by improving the health outcomes of African American women and the maternal health. This improvement, in turn, could improve the health and wellbeing of the families of these mothers. Communities would benefit because the mother and baby would not need supportive resources that might be required of the mother or baby incurred averse chronic outcomes from pre-eclampsia. Health care organizations would experience positive social change because they would not incur the costs of caring for complicated mother-baby care. Finally, nursing benefits because the nurses can provide quality care that is culturally competent.

Recommendations

The following recommendations were made based on the findings of the present project.

(a) Develop continuous educational programs for nurses working in gynecological and obstetric departments on the management of pre-eclampsia.

(b) Improve the awareness of nurses on evidence-based practice through involvement to encourage them to adopt and use EBP in practice.

(c) Simulation-based training could be used to increase nurse's knowledge on the management of pre-eclampsia.

(d) Nursing education should adopt simulation and promote simulation as a significant component of curriculum development.

(e) The project should be replicated in various hospitals using larger samples to increase evidence and prove efficiency.

Strength and Limitations of the Project

The present project had a few strengths and limitations. One of the strengths of the project was that the objectives were clearly defined. Also, collaboration from the management of the hospital was crucial as they encouraged the nurses to participate in the project. This made recruitment and getting response easy since the nurses were available. However, there were a lot of disruptions since nurses were at work and they had to check on something now and then during the project. Another, strength of the project was that it offered the institution a means of constantly educating its employees on various nursing practice issues and programs. Also, this project offered a means for identifying and addressing other problems within the clinical setting.

The project had limitations such as the busy state of nurses within the department. This made data collection difficult since the nurses took longer than expected. In addition, the project was limited to only one hospital which made generalization difficult.

This created the need for further studies that could assess many institutions on diverse locations.

Summary

Section 4 outlined the project findings, implications, limitations and strengths, and the recommendations resulting from the findings of the present DNP project. The section outlined the knowledge levels of nurses on pre-eclampsia definition and management. The section further outlined the effectiveness of simulation-based training in educating nurses on pre-eclampsia. The section focused on the dissemination of the project to larger audiences and other institutions. Also, the section outlined a personal analysis of myself as a practitioner, project manager, scholar, and any challenges.

Section 5: Dissemination Plan

The dissemination plan for this work entails sharing the findings with stakeholders and hospital administration who include leadership of the gynecology and obstetrics departments and the director of nursing education of the facility. The findings will also be shared with other healthcare facilities that might be experiencing a similar problem. The project will be submitted to ProQuest for publication upon approval by Walden's chief academic officer. I will also submit an abstract of the project to my colleagues and department head. I also intend to reach out to various healthcare institutions managing a large population of African Americans and share with them the findings of the project.

Analysis of Self

As a nurse who has been offering healthcare services in a community setting, I gained extensive knowledge and experience managing people with various health care complications and helping them regain their health. Nonetheless, engaging in this project enabled me to expand my knowledge on clinical practice such as identifying practice problems and developing steps to address the problem. The developed steps not only improved organizational outcomes but also created social change.

The engagement in this project has improved me as a professional as it has enabled me to identify a practice problem and solve it. Second, the project has improved me as a scholar as I have contributed to the evidence of the effectiveness of simulation-based training in equipping nurses with knowledge. Finally, the project has equipped me with crucial project management skills as I successful developed and conducted a project.

Generally, the project has contributed to my personal growth through the interactions with different professionals and colleagues.

Summary

Simulation-based training to manage pre-eclampsia has been proved to improve nurses' performance and self-efficacy. The project has demonstrated that simulation-based training can successfully be used to training nurses. Knowledge on pre-eclampsia is crucial to the successful diagnosis and management of the condition. Ensuring that nurses and other healthcare practitioners are equipped with knowledge of pre-eclampsia is crucial in the management of the condition and improving the maternal healthcare outcomes of mothers especially African American mothers. Addressing the educational needs of nurses and continuously updating and offering further evidence-based training can help improve the general health outcome of the community. The findings and implications of the present project showed the effectiveness of simulation-based training in improving nurse knowledge who take care of African American mothers, who have been identified to have a high prevalence of pre-eclampsia. Due to the success of the project, the findings could be shared with other healthcare facilities to transform their clinical practice through simulation-based training.

References

Abd El Monem, M. M., Shahin, M. A., & Salim, H. M. (2021). Safety bundle application on nurses' knowledge and performance regarding management of hypertension during pregnancy and postpartum period. *Egyptian Nursing Journal, 18*, 98-106. https://doi.org/10.4103/enj.enj_22_21

Adoyi, G., Ishaku, S. N., Babatunde, O. A., & Kirk, K. R. (2016). Persisting challenges in the provision of quality obstetric care to women with pre-eclampsia and eclampsia in Nigeria: Assessment of health providers' preparedness and facility readiness: Prevention of pre-eclampsia., *Pregnancy Hypertension. An International Journal of Women's Cardiovascular Health*, *6*(3), 158. https://doi.org/10.1016/j.preghy.2016.08.046

Aliakbari, F., Parvin, N., Heidari, M., & Haghani, F. (2015). Learning theories application in nursing education. *Journal of Education Health Promotion, 4*, 3-11. https://doi.org/10.4103%2F2277-9531.151867

American Hearts Association. (2021). *Scientific Sessions 2021*. American Heart Association. PDF

Angelina, J. A., Kibusi, S. M., Mwampagatwa, I., & Ernest, A. (2020). Knowledge on prevention and management of pre-eclampsia and eclampsia among nurses in primary health settings: baseline findings from an interventional study in Dodoma Region, Tanzania. *EA Health Research Journal*, *4*(1), 33-40. https://doi.org/10.24248/eahrj.v4i1.619

Ayed, A. Y., & Ibrahim, R. H. (2021). Effect of educational program of eclampsia

management on knowledge of maternity nurses at Mosul teaching hospitals. *Advances in Health Sciences Research*, 5(2), 175-180. https://doi.org/10.2991/ahsr.k.211012.029

Baumann, S. L. (1998). The missing ingredient in nurse practitioner education. *Nursing Science Quarterly, 11*(3), 89-90. https://doi.org/10.1177/089431849801100301

Bernstein, P. S., Martin, J. N., Barton, J. R., Shields, L. E., Druzin, M. L., & Scavone, B. M. (2017). Consensus bundle on severe hypertension during pregnancy and the postpartum period. *Journal of Obstetric, Gynecologic, & Neonatal Nursing, 46*, 776-787. https://doi.org/10.1097/aog.0000000000002115

Christian, A., & Krumwiede, N. (2013). Simulation enhances self-efficacy in the management of pre-eclampsia and eclampsia in obstetrical staff nurses. *Clinical Simulation in Nursing, 9*(9), e369-e377. https://doi.org/10.1016/j.ecns.2012.05.006

de Melo, L. P. (2013). The sunrise model: A contribution to the teaching of nursing consultation in collective health. *American Journal of Nursing Research, 1*(1), 20-23. https://doi.org/10.12691/ajnr-1-1-3

Donabedian, A. (1988). The quality of care. How can it be assessed? *Journal of American Medical Association, 260*(12), 1743-1748. https://doi.org/10.1001/jama.260.12.1743

Ellboudy, D., Eid, N., & Rashad, Z. (2018). Nurse managers' perceived knowledge and skills regarding evidence-based nursing practice. *Menoufia Nursing Journal, 3*(2), 27- 34. https://dx.doi.org/10.21608/menj.2018.121022

Enuku, C. A., and Adeyemo, F. O. (2014). Knowledge, beliefs and teaching strategies of evidencebased practice among nurse educators/lecturers in nursing institutions in Benin City, Edo State, Nigeria. *International Journal of Collaborative Research on Internal Medicine & Public Health, 6*(1), 0-0. https://www.researchgate.net/publication/303077148_Knowledge_beliefs_and_teaching_strategies_of_evidence-based_practice_among_nurse_educatorslecturers_in_nursing_institutions_in_Benin_City_Edo_State_Nigeria

Ekaterina, K., Danielle, W., Mansi, T., Emily, M., & Kelsey, N. (2017). The effectiveness of simulation training in the management of pre-eclampsia. *Obstetrics & Gynecology, 129*(5), 41S. https://doi.org/10.1097/01.aog.0000514386.27179.3c

Emam, E. A., & Saber, N. M. (2018). Effect of nursing program on improving nurses' knowledge and skills regarding care of eclamptic women. *American Journal of Nursing Research*, *6*(6), 430-436. https://doi.org/10.12691/ajnr-6-6-10

Ghosh, G., Grewal, J., Männistö, T., Mendola, P., Chen, Z., Xie, Y., & Laughon, S. K. (2014). Racial/ethnic differences in pregnancy-related hypertensive disease in nulliparous women. *Ethnicity & Disease.*, 283-289. http://www.ncbi.nlm.nih.gov/pmc/articles/pmc4171100/

Goulão, M. F. (2014). The relationship between selfefficacy and academic achievement in adults' learners. *Athens Journal of Education, 1*(3), 237. https://doi.org/10.30958/aje.1-3-4

Hartweg, D. L. (2015). Dorothea Orem's self-care deficit nursing theory. In M. C. Smith, & M. E. Parker (Eds.), *Nursing Theories and Nursing Practice* (pp. 105-132).

Hauspurg, A., Countouris, M. E., & Catov, J. M. (2019). Hypertensive disorders of pregnancy and future maternal health: how can the evidence guide postpartum management? *Current Hypertension Reports, 21*, 1-10. https://doi.org/10.1007/s11906-019-0999-7

Henderson, J. T., Thompson, J. H., Burda, B. U., Cantor, A., Beil, T., & Whitlock, E. P. (2017). S*creening for pre-eclampsia: A systematic evidence review for the US Preventive Services Task Force. Evidence synthesis no. 148.* Agency for Healthcare Research and Quality. Retrieved from https://pubmed.ncbi.nlm.nih.gov/28813128/

Hounkpatin, O. I., Amidou, S. A., Houehanou, Y. C., Lacroix, P., Preux, P. M., Houinato, D. S., & Bezanahary, H. (2021). Systematic review of observational studies of the impact of cardiovascular risk factors on Pre-eclampsia in sub-saharan Africa. *BMC Pregnancy and Childbirth, 21*(97), 1-9. https://doi.org/10.1186/s12884-021-03566-2

Hussein, A. H., and Hussein, R. G. (2014). Nursing educators' knowledge, skills in evidence-based practice and their critical thinking skills: self-report study. *Life Science Journal, 11*(4), 231-238. https://www.iiste.org/Journals/index.php/JEP/article/view/15972

Ishaku, S. M., Ismail, S. M., Adoyi, G., Kanij, S., Babatunde, O. A., & Ara, N. R. (2016). 87 Knowledge and practices for the prevention of pre-eclampsia among frontline

health care providers in Bangladesh and Nigeria: A call for action: Prevention of pre-eclampsia. *Pregnancy Hypertension: An International Journal of Women's Cardiovascular Health, 6*(3), 219-220. https://doi.org/10.1016/j.preghy.2016.08.169

Johnson, J. D., & Louis, J. M. (2020). Does race or ethnicity play a role in the origin, pathophysiology, and outcomes of pre-eclampsia? An expert review of the literature. *American Journal of Obstetrics and Gynecology.* 226(2),s876-s885. https://doi.org/10.1016/j.ajog.2020.07.038

Joho, A. A., Kibusi, S. M., Mwampagatwa, I., & Ernest, A. (2020). Knowledge on prevention and management of pre-eclampsia and eclampsia among nurses in primary health settings: Baseline findings from an interventional study in Dodoma region, Tanzania. *EA Health Research Journal, 4*(1), 33-40. https://doi.org/10.24248/eahrj.v4i1.619

Joshi, A., Beyuo, T., Oppong, S. A., Moyer, C. A., & Lawrence, E. R. (2020). Pre-eclampsia knowledge among postpartum women treated for Pre-eclampsia and eclampsia at Korle Bu Teaching Hospital in Accra, Ghana. *BMC Pregnancy and Childbirth*, 20(1), 625-632. https://doi.org/10.1186/s12884-020-03316-w

Kaiser Family Foundation. (2020). *Analysis of Federal Bills to Strengthen Maternal Health Care.* Kaiser Family Foundation. Retrieved from https://www.kff.org/womens-health-policy/fact-sheet/analysis-of-federal-bills-to-strengthen-maternal-health-care/

Kim, J. (2015). Competency-based Curriculum: An Effective Approach to Digital

Curation Education. *J. of Education for Library and Information Science, 56*(4), 283-297. https://eric.ed.gov/?redir=http%3a%2f%2fdpi-journals.com%2findex.php%2fJELIS%2farticle%2fview%2f1573

Kimhi, E., Reishtein, J. L., Cohen, M., Friger, M., Hurvitz, N., & Avraham, R. (2016). Impact of simulation and clinical experience on self-efficacy in nursing students: Intervention study, *Nurse Educator*, 41(1), E1–4. https://doi.org/10.1097/NNE.0000000000000194.

Kruse, J. A., Collins, J. L., & Vugrin, M. (2022). Educational strategies used to improve the knowledge, skills, and attitudes of health care students and providers regarding implicit bias: An integrative review of the literature. *International Journal of Nursing Studies Advances, 4*, 1-19. https://doi.org/10.1016/j.ijnsa.2022.100073

Lakshmamma T, and Munirathnamma M., (2013). Knowledge of staff nurses regarding management of pregnancy induced hypertension (PIH). *International Journal of Humanities and Social Science Invention*, 2(11) :8-12.

Larsen, M., Jørgensen, B. E., & Gram, B. (2017). Simulation as an educational tool in acute nursing care: A controlled intervention study, *Nurse Education in Practice*., 32, 28-33. https://doi.org/10.1016/j.nepr.2018.07.001.

Leininger, M. M., & McFarland, M. R. (2006). *Culture care diversity & universality; a worldwide nursing theory.* Jones &Barlett Learning.

Meazaw, M. W., Chojenta, C., Muluneh, M. D., & Loxton, D. (2020). Systematic and meta-analysis of factors associated with Pre-eclampsia and eclampsia in sub-

Saharan Africa. *PLoS ONE, 15*(8), 1-23. https://doi.org/10.1371/journal.pone.0237600

Miller, E. C., Espinoza, M. D., Huang, Y., Friedman, A. M., Boehme, A. K., Bello, N. A., . . . D'Alton, M. E. (2020). Maternal Race/Ethnicity, Hypertension, and Risk for Stroke During Delivery Admission. *Journal of the American Heart Association*. 9(3), e14775. https://doi.org/10.1161/jaha.119.014775

Ming, Z., Philip, W., Kenneth, N., Kurnvir, S., Hsuan, C. T., Ivan, V., . . . Wlody, D. (2020). Pre-eclampsia Among African American Pregnant Women: An Update on Prevalence, Complications, Etiology, and Biomarkers. *Obstetrical & Gynecological Survey*, 75(2), 110-120. https://doi.org/10.1097/ogx.0000000000000747

Myatt, L., & Roberts, J. M. (2015). Pre-eclampsia: syndrome or disease? *Current Hypertension Report.* 17(11), 83. https://doi.org/10.1007/s11906-015-0595-4

Olaoye, T., Oyerinde, O. O., Elebuji, O. J., & Ologun, O. (2019). Knowledge, Perception and Management of Pre-eclampsia among Health Care Providers in a Maternity Hospital. *The International Journal of Maternal and Child Health (MCH) and AIDS (IJMA).* 8(2), 80-88. https://doi.org/10.21106/ijma.275

Orem, D. (2001). *Nursing concepts of practice* (6 ed.). Wilkes Barre, PA: Mosby.

Orem, D. E. (2006). Dorothea E. Orem's self-care nursing theory. In M. E. Parker, *Nursing theories and nursing practice* (2 ed., pp. 141-149).

Petiprin, A. (2016). *Lydia Hall- Nursing theorist.* School of Nursing, Jillian University.

Ramadurg, U., Vidler, M., Charanthimath, U., Katageri, G., Mrutyunjaya, B., Mallapur,

A., . . . Qureshi, R. (2016). Community health worker knowledge and management of pre-eclampsia in rural Karnataka State, India. *Reproductive Health, 13(2),*113. https://doi.org/10.1186/s12978-016-0219-8

Rasmussen, C. D. N., Højberg, H., Bengtsen, E., & Jørgensen, M. B. (2018). Identifying knowledge gaps between practice and research for implementation components of sustainable interventions to improve the working environment–A rapid review. *Applied ergonomics*, 67: 178-192. https://doi.org/10.1016/j.apergo.2017.09.014

Rezai, H., & Haghani, F. (2012). Concrete application of learning theories in public health. *Iranian Journal of Medical Education*, 11(9), 1171-8. http://ijme.mui.ac.ir/article-1-2029-en.html

Roh, Y. S., Lim, E. J., & Issenberg, S. B. (2016). Effects of an integrated simulation-based resuscitation skills training with clinical practicum on mastery learning and selfefficacy in nursing students, *Collegian Journal*, 23(1), 53. https://doi.org/10.1016/j.colegn.2014.10.002.

Saleh, U. S. (2018). Theory guided practice in nursing. *Journal of Nursing Research and Practice, 2*(1), 18. https://www.scirp.org/%28S%28czeh2tfqyw2orz553k1w0r45%29%29/reference/referencespapers.aspx?referenceid=3076835#:~:text=https%3A//www.pulsus.com/scholarly%2Darticles/theory%2Dguided%2Dpractice%2Din%2Dnursing%2D4140.html

Saud, H., & Chen, R. (2018). The Effect of Competency-Based Education on Medical and Nursing Students' Academic Performance, Technical Skill Development, and

Overall Satisfaction and Preparedness for Future Practice: An Integrative Literature Review. *International Journal of Health Sciences Education, 5*(1), 1-14. https://doi.org/10.1111/ijn.13003

Sentara Obici Hospital. (2021). *2020 Nursing Annual Report.* Suffolk: Sentara Nursing.

Sethi, R., Tholandi, M., Amelia, D., Pedrana, A., & Ahmed, S. (2019). Assessment of knowledge of evidence-based maternal and newborn care practices among midwives and nurses in six provinces in Indonesia. *International Journal of Gynecology & Obstetrics, 144*(51), 51-58. https://doi.org/10.1002/ijgo.12735

Serban, D., Crisan, C., Serban, C., Serbu, I. B. M., Kundani, N., Poroch, V., Sharma, A., Buciu, V., Horhat, L.D., Sas, I., Biris, M., & Ratiu, A., (2018). Effects of acetylsalicylic acid in preterm pre-eclampsia prevention, Revista de Chimie (Bucharest), 69 (5), 1203. https://doi.org/10.37358/RC.18.5.6289 .

Shahul, S., Tung, A., Minhaj, M., Nizamuddin, J., Wenger, J., Mahmood, E., . . . Rana, S. (2015). Racial Disparities in Comorbidities, Complications, and Maternal and Fetal Outcomes in Women with Pre-eclampsia/Eclampsia. *Hypertens Pregnancy*, 34(4), 506-515. https://doi.org/10.3109/10641955.2015.1090581

Sheikh, S., Qureshi, R. N., Khowaja, A. R., Salam, R., Vidler, M., Sawchuck, D., Dadelszen, P., Zaidi, S., Bhutta, Z., & the CLIP Working Group. (2016). Health care provider knowledge and routine management of pre-eclampsia in Pakistan, Reproductive Health Journal, 13(2), 107. https://doi.org/10.1186/s12978-016-0215-z.

Soggiu-Duta, C. L., Popovic, D., Crauciuc, E., Crauciuc, D., & Suciu, N. (2019).

Investigating Nurses' Knowledge about Preeclamptic Patients' Care in a Tertiary Care Centre in Romania. *MÆDICA – a Journal of Clinical Medicine*, 14(3), 227-232. https://doi.org/10.26574%2Fmaedica.2019.14.3.227

Soliman, D. E., Hasneen, S. A., AbdElmoniem, S. O., & Ali, F. K. (2021). Assessment of nurses knowledge and practices regarding the use of evidence-based for pregnant women with pre-eclampsia. *Journal of Nursing Science*, 2(2), 498-513. https://doi.org/10.21608/jnsbu.2021.194587

Sripad, P., Ismail, H., Dempsey, A., Kirk, K., & Warren, C. (2018). *Exploring barriers and opportunities for pre-eclampsia and eclampsia prevention and management in Ethiopia* . Washington DC: Population Council.

Stokke, K., Olsen, N. R., Espehaug, B., & Nortvedt, M. W., (2014). Evidence based practice beliefs and implementation among nurses: a cross-sectional study. BMC nursing, 13(1): 8. https://doi.org/10.1186/1472-6955-13-8

Tabatabaeian, M., Kordi, M., Dadgar, S., Esmaeily, H., & Khadivzadeh, T. (2018). Comparing the effects of simulation-based training, blended, and lecture on the simulated performance of midwives in pre-eclampsia and eclampsia. *Journal Education Health Promotion*., 7, 110. https://doi.org/10.4103/jehp.jehp_116_17.

Taylor, S. G., & Renpenning, v. (2011). *Self-care science, nursing theory and evidence-based practice.* New York: Springer.

Upton, P, Scurlock-Evans, L, Williamson, K, Rouse, J, and Upton, D. (2015). The evidence- based practice profiles of academic and clinical staff involved in pre-registration nursing students' education: A cross sectional survey of US and UK

staff. *Nurse education today*, 35(1): 80-85. https://doi.org/10.1016/j.nedt.2014.06.006

US Preventive Services Task Force. (2017). Screening for Pre-eclampsia: US Preventive Services Task Force Recommendation Statement. *JAMA.*, 317(16), 1661-67. https://doi.org/10.1001/jama.2017.3439

Walker, L. O., & Avant, K. C. (2019). *Strategies for Theory Construction in Nursing* (Vol. 6). Upper Saddle River: Prentice Hall.

Wallis, A. B., Tsigas, E. Z., Saftlas, A. F., & Sibai, B. M. (2013). Prenatal education is an opportunity for improved outcomes in hypertensive disorders of pregnancy: Results from an internet-based survey. *J Matern Fetal Neonatal Med*, 26(16), 1565-7. https://doi.org/10.3109/14767058.2013.797403

Wilson, R., Godfrey, C. M., Sears, K., Medves, J., Ross-White, A., & Lambert, N. (2015). Exploring conceptual and theoretical frameworks for nurse practitioner education: a scoping review protocol. *JBI Database of Systematic Reviews & Implementation Reports, 13*(10), 146-155. https://doi.org/10.11124/jbisrir-2015-2150