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Black Maternal Mortality in the United States

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Murray State University Honors College

HONORS THESIS

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Black Maternal Mortality in the United States

Grace Phelps
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Approved to fulfill the
requirements of HON 437

Dr. Jessica Naber, Associate Professor
Nursing

Approved to fulfill the
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of the Murray State Honors
Diploma

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Black Maternal Mortality in the United States

Submitted in partial fulfillment
of the requirements
for the Murray State University Honors Diploma

Grace Phelps

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Abstract

Black maternal mortality is a looming issue in the United States as the rate of Black maternal deaths is 3-4 times higher than the average rate for White women. Research establishes that this is a multifaceted issue of care quality, preexisting health, biases and racism, and structural inequalities. This study aims to discuss the statistics, contributing factors, and possible solutions to the issue of Black maternal mortality. Specifically, this study aims to educate nursing students on the matter and test the implications an educational session has on knowledge about Black maternal mortality and how health care professionals can be part of the solution. It is hypothesized that an educational session will increase nursing students' knowledge of Black maternal mortality and proposed resolutions. A pre-test was given, then an educational session was presented over Zoom, and finally participants were asked to take a post-test. Results were statistically analyzed using a paired t-test. The results showed an increase in scores from the pre-test to the post-test therefore indicated that knowledge of Black maternal mortality after attending the educational session increased.

Black Maternal Mortality in the United States

Introduction

Serena Williams, a top-tier American tennis player, came very close to death in 2011 when she suffered from several clots in her lungs and discovered that she was predisposed to clotting issues. In 2018, Williams gave birth to her daughter and one day postpartum, she encountered clots again. Because of her previous experience in 2011, when she felt as though she could not breathe, she knew exactly what to tell her nurses saying, “I need a CT and an IV drip of Heparin”. Williams was met with the insinuation that pain medication must have been making her feel the symptoms she reported to her nurse. After insisting further testing, Williams received only an ultrasound to check for clots in her legs. When no clots were found, the physician finally ordered a CT and an intravenous anticoagulant (Heparin) to treat what Serena had suspected all along, a pulmonary embolism (Salam, 2018). Her story of being disregarded is unfortunately not uncommon, especially among Black women in labor and delivery units across America. The fact that maternal mortality in the United States is higher than in any other developed country may come as a surprise to some (Hayes & McNeil, 2019). Not only is maternal mortality higher overall, but specifically Black non-Hispanic mothers face even higher risks during and after pregnancy. The issue of America’s Black maternal mortality rate is becoming more well-known, but the question of what action to take has been a challenge.

Background and Significance

Maternal mortality can be defined as a death due to pregnancy and related conditions within one year of giving birth according to the Centers for Disease Control and Prevention (CDC) or within 42 days of giving birth according to the World Health Organization (Hayes & McNeil, 2019). In the United States, maternal mortality has increased from 7.2 deaths per

100,000 live births in 1987 to 17.3 deaths per 100,000 live births in 2017 (CDC, 2020). The trends show little change and even increasing rates of death in the last twenty years. By race, Black women have a mortality rate of 41.7 while non-Hispanic White women have a rate of 13.4, both per 100,000 (CDC, 2020). Using these statistics, Black women in the United States have a three to four times greater chance of dying due to complications of pregnancy and childbirth compared to White women.

Black maternal mortality rates cannot be attributed to any singular cause, but rather it is a multifaceted issue (Collier & Molina, 2019). Data collection of maternal deaths in the United States is not well-standardized which means that different states can mark different codes on death certificates for the same cause of death. Social determinants of health such as education, racism, access to care, employment, living situation, and more also majorly contribute to Black maternal mortality. Racism in the medical field specifically has led to a sense of mistrust between Black patients and their doctors or other healthcare providers. In not having a trusting relationship, many Black mothers do not voice their concerns for fear of being stereotyped or ignored (Scott & McLemore, 2019). This lack of communication combined with an already higher incidence of chronic conditions in the Black population also leads to increased deaths from these conditions that can be exacerbated by pregnancy and delivery.

Black mothers are faced with the reality of having a much higher chance of dying when going in for delivery than their White counterparts. The medical field has been mistrusted by the Black population due to a long history of unethical experimentation of Black populations. These studies go far beyond the Tuskegee Syphilis Studies. “As recently as the 1990s, unethical medical research involving African Americans has been conducted by highly esteemed academic institutions” (Scharff et al., 2010, p. 2). Medical professionals have a responsibility to become

educated on the reasoning for the general mistrust and learn how to best empower and convey best care for patients.

Finding a resolution to reducing Black maternal mortality rates is a challenge. Multifaceted issues call for multifaceted solutions (Petersen et al., 2019). Overall standardization of calculating maternal mortality rates, better reproductive education across the United States, improved access to healthcare, building rapport between providers and patients, and empowering patients with information and knowledge are all part of the solution. Another concern is how to reduce the implicit bias influence on how care is given to patients. With more education and awareness about Black maternal mortality, nurses and nursing students along with other health care professionals can be part of the solution by being advocates for Black mothers under their care.

Purpose

Due to racial tensions in the United States, issues that disproportionately affect Black people have recently gained more deserved attention. Maternal mortality rates have steadily increased with the average rate as of 2016 being more than double of what it was in 1987 (Hayes and McNeil, 2019). Furthermore, the United States Black maternal mortality is more than triple the rate of White maternal mortality (CDC, 2020). More discussion and education on the topic can inform medical professionals about Black maternal mortality and possible solutions to be implemented. The purpose of this study is to provide education on the statistics, contributing factors, and solutions to nursing students in order to help reduce Black maternal mortality.

Research Question

The research question for this study is as follows: After an educational session discussing Black maternal mortality, is there an increase in knowledge about Black maternal mortality and

how nurses can help these women? By conducting an educational session, it is hypothesized that knowledge about Black maternal mortality and the possible solutions will be increased. The increased knowledge about Black maternal mortality will allow nursing students to be informed about the contributing factors and the ways in which they can help advocate for Black mothers according to previously proposed solutions.

Review of Literature

Statistics

Maternal mortality in the United States is at a concerning rate when compared to other countries. According to Hayes and McNeil (2019), the United States has one of the highest maternal mortality rates of any first world country despite having some of the most advanced medical treatment available. The problem begins with the fact that data collection of maternal deaths has not been standardized. States have different codes and causes of death on death certificates. There are two national data sources for maternal deaths managed by the CDC: The National Vital Statistics System and the Pregnancy Mortality Surveillance System. While one relies on disease classification codes on maternal death certificates, the other relies on reporting from epidemiologists to categorize maternal death (Collier & Molina, 2019). The use of two separate sources of data, both of which have their own deviations within that system, is cause for concern and question.

Even the overall definition of what is considered a death related to pregnancy complications is not standard. The CDC (2020) defines a maternal mortality as being one year within the end of pregnancy while the World Health Organization uses a time frame of 42 days within the end of pregnancy. It has been found that only approximately 11.7% of deaths occur after the 42 day mark, so the time period of the CDC is more inclusive but does not necessarily

inflate the rate (Hayes & McNeil, 2019). The issue with the lack of a standard time-period as well as no standard definition of a pregnancy-related death is that reported rates do not align with actual rates of maternal mortality. In recent years with the development of the Pregnancy Mortality Surveillance System, the death rate increased. Better data collection has caused an increase, but the magnitude of increase and continual increase cannot be contributed to collection methods alone. The upward trend has been an ongoing phenomenon for at least the last 20 years (CDC, 2020). What is needed now is clarity about why death rates continue to rise as medicine advances.

Racism

Racism in medical practices and research is no new issue. The United States has a long history of poor treatment of other races for gain. Black people were first used as experimental subjects in various studies and trainings for medical schools during the 1800s and even resulted in “scientifically justifying” slavery. Of course, starting in the twentieth century, these claims of scientific inferiority were disputed, but that did not end the experiments. In 1907, Black women had hysterectomies performed without their consent or even knowledge of the procedure. These were referred to by physicians as “Mississippi appendectomies” which undoubtedly were racially motivated (St. Clair, 2020). Perhaps the most notorious nonconsensual experiments performed on Black people were the Tuskegee syphilis studies. Scientists told Black men that they could receive free medical care, food, and transportation if joining the study because they needed to be treated for “several issues” (which they left unspecified). These experiments continued until 1972 when the unethical treatment was exposed to the media. Black men with syphilis enrolled in this study either died or suffered complications due to not being treated with penicillin and instead being given placebos (St. Clair, 2020). James Marion Sims, the “founder” of modern

gynecology has a racist medical background. He conducted experiments on Black enslaved women without any pain relief because of his belief that Black people could not feel pain. These women could not even consent to the treatment they were subjected to because they were owned by masters, and Sims was granted “temporary ownership” to treat and experiment on them. His beliefs about pain sensation continue to be harmful to Black patients today (Holland, 2017).

Research on how exactly racism may affect care is limited due to the fact that it is multifaceted and interest in research of that nature is lacking. One facet of racism in healthcare can be attributed to institutional bias, also known as structural racism (further elaborated upon in the next section). It is a form of racism that is in the normal practices of everyday life such as housing, schools, employment, the justice system, health care, and even political power. A major example of this is social segregation, the separation of different social groups (Ford & Gee, 2011). Racial segregation is prevalent in residential areas where there is a higher concentration of factors that may negatively impact health (lack of access to care, pollution, higher infection transmission, poverty). Workplace segregation is also still an issue as White workers are given safer jobs and better opportunity than Black workers. Even social networks are segregated contributing to the spread of infectious diseases in the smaller social circles. How does this relate to health? It all comes down to higher incidence of disease and lack of access to quality care. This particular issue is both time and context specific therefore making impacts disproportionately based upon when in time and geographically where it occurs (Ford & Gee, 2011).

Individual bias and racism are also unfortunately prevalent. Covert discriminatory issues continue to occur in subtle ways such as attitudes of providers toward certain racial groups. Condescending tones of voice decrease patients’ willingness to open up and form rapport with

their providers. Less thorough diagnostic testing and recommending different treatments based on assumptions about economic status and treatment adherence are also frequent but subtle ways for bias to show. “Negative attitudes... often exist at the margins of awareness and are not easily accessible to individuals” (Chapman et al., 2015, p. 2). Implicit value is a term used in sociology to encase this phenomenon. Implicit values are not explicitly said in conversation, but rather unconsciously expressed through actions. These attitudes can lead to prejudicial behaviors such as taking more time to build relationships with White patients and listening to their concerns more carefully than with Black patients. In the general population, psychology research has indicated that White Americans even tend to distrust and fear Black Americans (Chapman et al, 2015). There are certain words that are automatically associated with “Black”: Poor, violent, lazy, dangerous, and ignorant are among the most strongly associated words in American education and society (Williams, 2018). These stereotypes are buried deep in an individual’s mind and drive behaviors. This can help explain why patients of different races with the same presenting issue may be treated differently. “Across every single therapeutic intervention, minorities get poorer quality of care than white patients” (Williams, 2018, 29:55-31:37). An example of this is the percentage of non-white patients who presented with a broken bone and received no pain medication being at 55% while the White percentage was only 33% (Williams, 2018).

Well-meaning health professionals who are highly educated can create a discriminatory pattern on care through implicit bias because it is totally subconscious (Williams, 2018). These thoughts are activated when people do not notice them, when they are busy and under pressure (all healthcare workers) and require significant cognitive effort to overcome. Fatigue tends to cause quick categorization without even being aware of the effect it may have on patient

outcome and relationship with the healthcare professional. Even if explicit attitudes are changed, implicit bias is likely to still continue in ways that do not improve disparities and may further perpetuate systematic racism due to its covert nature, presenting a significant barrier for equity.

Social Determinants of Health

Social determinants of health can be defined as the conditions of a person's environment that affect the aspects and quality of life. Many of the factors that make up what is known as systematic racism are social determinants of health. This can include a person's geographic location, access to education, access to food, ability to afford and receive quality medical care, safety, and socioeconomic status. These socially driven aspects of life impact the state of a person's health more drastically than genetics in some cases (St. Claire, 2020). Hospitals that serve Black populations provide a lower quality of care, yet these locations are where seventy-five percent of Black women give birth. These hospitals have more maternal complication cases than others and have worse results in twelve out of fifteen birth outcomes ("Black Women's Maternal", 2018).

Education is a foundational social determinant of health. Statistics show that White women are more likely to have access to comprehensive sex and reproductive education than Black women, therefore Black women experience higher rates of unintended pregnancies, also partially due to disparities in access to quality contraceptive counseling, family planning, and healthcare ("Black Women's Maternal", 2018). An analysis of contraceptive use among different races and ethnicities found that both Black and Hispanic women were less likely to use effective contraceptive methods than White women (Borrero et al., 2019). Public schools are not currently required to teach comprehensive sex education in all states and if they do have a sex education, the curriculum is not standardized, but rather decided upon at the local, district, and school

levels. The result of this lax attitude towards reproductive education is that young people of color have the highest risks for sexually-transmitted infections and unintended pregnancy (“Black Mamas Matter”, 2018).

Socioeconomic status (SES) has been found to be the central determinant of the distribution of resources. This is true for every aspect of life. For example, SAT scores are strongly associated with economic status in that the higher the score, the more likely it is for the student to be from a home with a higher income. This association is also displayed in healthcare where higher risk factors are associated with lower incomes, strongly suggesting that there are racial inequalities in health because there are racial inequalities in SES. Racial inequality can be further illustrated by the fact that if Black America were its own country, it would rank ninety-sixth in the world in life expectancy (Williams, 2018).

Black women are at a double disadvantage when it comes to the social determinants of health. Not only do these women earn less money due to race, but also because of gender. In 2019, Black women earned sixty-eight cents for each dollar that was earned by White men (Beyer, 2020). Less income leads to less money to spend on essentials. This also perpetuates Black women living in areas that are within the price range (which is dictated by earning) and can be some of the more unsafe locations. Earning is in-part dictated by race and gender according to research, further perpetuating the housing segregation. Housing segregation leads to areas of poor access to quality care because quality health care providers are not likely to practice in areas of low income with medical facilities that are not equipped to draw in quality providers. Research shows that Black women experience quicker aging from chronic stress due to economic disadvantage over lifetime. This means that Black women experience higher risks

during pregnancy at younger ages in part because of socioeconomic status (“Black Women’s Maternal”, 2018).

Proper prenatal care is key to prevention of complications later in pregnancy. Just over eighty percent of Black women who are of reproductive age have health insurance. Without the means to afford or have access to care, many Black mothers go without quality care in the prenatal period (“Black Women’s Maternal”, 2018). Screenings during this time are vital to determine the health condition of the mother, to run tests and draw labs to determine the presence of complications or risk factors, and to determine the normal growth and development of the fetus. For example, Black women show signs of preeclampsia earlier in pregnancy and can lead to severe complications including death if not detected and treated early enough (“Black Women’s Maternal”, 2018). Without the knowledge of how to care for oneself properly during pregnancy and without knowing potential issues related to the health of the fetus, unforeseen circumstances during delivery and in the immediate postpartum period can occur and possibly lead to mortality. This is especially true if the facility in which they are giving birth is not properly prepared for an obstetric complication/emergency.

State of Health and Risk Factors

Currently, the major cause of maternal mortality is preexisting conditions. Cardiovascular conditions, hemorrhage, and chronic conditions combined with unintentional deaths are causes of maternal death that are increasing in frequency in the United States (Collier & Molina, 2019). In a report from 2018, the most common causes of death in non-Hispanic Black women were preeclampsia, eclampsia, and embolism (“Building U.S. Capacity”, 2018). Women of reproductive age continue to develop more chronic conditions and obesity which put

them at over a 200% higher risk of maternal morbidity and mortality (“Black Mamas Matter”, 2018).

According to a Michigan Medicine study (through the University of Michigan), pregnant women are more likely to have chronic conditions that could cause life-threatening complications currently than at any other time in the last ten years (Admon et al., 2017). The groups with the largest increase in chronic conditions are those from rural areas and those from low income communities. As for specific conditions, Black women are at increased risk for diabetes and gestational diabetes. Britton et al. (2019) states, “in 19 states in 2010, pregestational diabetes affected 0.89 in 100 births overall and 1.27 in 100 births to Black women” (page 110). Pregnant women with diabetes have an increased risk of other serious health consequences such as congestive heart failure, ketoacidosis, and preterm labor. Black women are also at increased risk for hypertension which can result in loss of the pregnancy or preterm birth. Other risk factors for this condition include obesity, oxidative stress, inflammation, and insulin resistance which can lead to preeclampsia, a severe hypertensive state unique to pregnancy.

Research indicates that there is correlation among preterm birth, preexisting conditions, and social determinants of health. Lack of access to care and less discussion about health problems and complications associated with lower SES foster an environment that is not conducive for Black mothers to learn about and seek help for their economic or their health status (Abbyad & Robertson, 2011). There is obvious correlation between social determinants of health such as socioeconomic status and adverse outcomes in pregnancy, but more research to determine the magnitude of this correlation is needed.

Statistically, Black people fare worse on nearly every single indicator of physical health (Lewis & Van Dyke, 2018). Research shows that the explanation for this phenomenon cannot

rest fully on socioeconomic status or health care access, but rather that it can further be explained by discriminatory stressors. Intersectionality is a term that refers to how people can experience different types of discrimination at the same time. For example, Black women may be subject to discrimination based on sex alone, race alone, or based upon being both Black and a woman. Research has shown links between discrimination experiences and physical outcomes, but more research is still needed to further correlate that data (Lewis & Van Dyke, 2018). So far, links between exposure to discrimination and increased rates of coronary artery calcification, hypertension, low birth weight, and mortality have been indicated (Williams, 2018).

Proposed Solutions

The problem of maternal mortality in the Black population is multifaceted, which means one solution will not be *the* solution. Several committees and groups have proposed what seem to be promising solutions. Starting with standardization of safety and quality practices could be the foundation to trigger change in maternal mortality rates (Collier & Molina, 2018).

The start of the solution should be to address social determinants of health. These issues would have to be addressed through policies that could bridge the income gap and provide access to better housing. Education, transportation, and food security are other points to be addressed with policy ("Black Women's Maternal, 2018). By addressing social determinants of health, what is thought to be at the center of the issue of Black maternal mortality could begin to see positive change. Health care professionals may not be able to necessarily take part in a policy-writing process but being advocates for change and staying informed is a way to support Black mothers.

According to Barfield et al. (2019), Maternal Mortality Review Committees identified causes and solutions for many factors. The levels of the factors were coded as follows:

community, health facility, patient, provider, and system factors. For each level there are three to four contributing factors and for each contributing factor there are one to three solutions being proposed. Community factors can be addressed by increasing access to quality care, housing, transportation, and nutrition. Health facilities can provide more training for obstetric emergencies and implement the use of safety bundles. Patients should receive more counseling of the signs and symptoms of possible complications, education for patients should be standardized, and home care or follow-up should be implemented consistently. Providers are urged to follow up closely on blood pressures, be thorough with cardiac and respiratory assessments, and to implement an early maternal warning system. Systematically speaking, expanded healthcare coverage and further policies on transport of higher risk pregnancies are suggested to improve the chance of good outcomes (Barfield et al., 2019).

Establishing access to quality prenatal care should be a priority because it allows early identification of risks and detection of any condition changes. Screenings for maternal risks that are usually completed at prenatal visits help to identify the acuity of any conditions related to the pregnancy. These visits also serve as a time to teach women the signs and symptoms of complications and emergencies. Consistent communication with providers through prenatal visits is directly correlated with better pregnancy outcomes. Providers and state health departments should be informed enough to provide comprehensive care that can address any overlapping risk factors as well (“Black Mamas Matter”, 2018). Hospitals that serve high numbers of Black mothers should improve responses to obstetric emergencies. The geographic locations of facilities able to handle higher risk cases should be assessed for accessibility and those facilities known to serve higher numbers of Black patients should have increased tools for providers to use in the care of Black mothers. Postpartum care continuity also needs to improve. Postpartum care

access is affected in practically the same ways as prenatal care. Follow up care after birth and regular communication is vital to the early detection of infection, postpartum depression, abnormal blood pressure and any other lingering issues for women after birth (“Black Mamas Matter”, 2018).

Accountability for data collection should be improved in order to obtain and maintain more accurate rates for maternal mortality in general. States should have systems for the collection, analysis, and sharing of data. Currently, protocols for reporting maternal deaths are not well-standardized and therefore the data is not as accurate as it could be. Different states have different protocols and even the national reporting system collects data from two different sources, one being codes on death certificates and the other being epidemiologists (Collier & Molina, 2019). By standardizing collection, research into contributing factors and therefore the solutions could be more readily identified and implemented. A distinction also exists between what is pregnancy-related and what is pregnancy-associated. Pregnancy-associated includes deaths from other problems such as drug overdose and violence while pregnancy-related deaths are those directly caused by pregnancy. For now, pregnancy-associated deaths are not tracked as a maternal mortality, but these deaths occur due to further issues than just medical ones, such as those included in the social determinants of health (“Black Mamas Matter”, 2018).

Policymakers can mandate trainings and cultivate a more diverse health care workforce by allocating resources to lower income areas and providing people in those areas with incentive and help to become workers in healthcare (“Black Mamas Matter”, 2018). Education and awareness for current medical professionals needs to increase in order to begin solving the problem. One suggestion for this is to build the cultural competency of providers. Most providers would suggest that they are culturally competent or at least unbiased with their patients. The

issue of implicit bias still looms, however. Training health care professionals on implicit bias, racism, socioeconomic class bias, gender bias, and human rights should be incorporated into education of providers including in required continuing education courses (“Black Mamas Matter”, 2018). Continual exposure and awareness is useful in combatting the issue of having biases that are not explicit.

Health care professionals can actively be part of the solution for these mothers once they are informed on the matter. Open communication about options women have during pregnancy is one of the best ways to empower the patient. Participating in collaborative care with public health and other professions would better serve Black mothers if inequities were addressed and improved upon. By becoming more of a partner to the family rather than mother blaming for adverse outcomes due to chronic issues, patient education is possible. Patients receive the information much better with understanding and sincerely educating rather than when they feel as though it is an attack on their parenting skills. Nurses especially are uniquely positioned to be able to lead the effort for health equity in perinatal disparities (Britton et al., 2019). Nurses are able to listen to patients’ concerns through the lens of recognition of the historical experiences of Black women both in and out of health care. The first step for nurses is to recognize that access to care does not mean that the care is equitable. Empowering the patient with choice and with knowledge as well as with encouragement, nurses can provide care through a reproductive justice framework (Britton et al., 2019).

Methodology

Design and Setting

The research method used for this study was a mixed methods design. The pre-test and post-test consisted of the same multiple choice questions, but on the post-test, there was an open-

ended question about how nursing students plan to use this information in their future careers. An educational session was presented to participants using PowerPoint via Zoom. In order to measure the impact that the session had on students, the pre-test and post-test were used, which allowed for demonstration of an increase in knowledge. The pre-test contained only close-ended questions and the post-test contained the same questions except for the addition of the last question, which was open-ended in order to understand how students may use knowledge they gained from the educational session in the future.

The educational session was presented as a one-time meeting lasting 30 minutes. There were two sessions scheduled so that participants had times to choose from to fit their schedules. The session was conducted over Zoom. Informed consent was addressed by having the participants read through a cover letter (Appendix A) that explained the purpose of the project, their consent to participation in the study, and how data would be used for research. After reading the cover letter participants proceeded to the pre-test which consisted of 15 questions. The first five questions in the pre-test were demographic questions which asked participants to select their semester in the nursing program, gender, age, race, and ethnicity. All demographic questions included a clause which stated that this information would be used for research purposes only. The pre-test took an average of six minutes for the participants to complete. After the pretest was complete, participants were given a 20-minute educational session on the statistics and causes of Black maternal mortality rates in America as well as proposed solutions. The primary visual aid was PowerPoint. After the educational session, the participants were given a link to the post-test via Zoom. The questions for the post-test were the same questions from the pre-test and were created using the information presented in the educational session on

PowerPoint. There was an open-ended question added to the end of the post-test to gather information about how nursing students plan to use this information in future nursing careers.

The effectiveness of the intervention, an educational session, was determined by a paired t-test data analysis of pre-test and post-test scores. Accomplishment of the research goal was determined by whether or not a statistical significance was found between the pre-test and post-test results. The intervention was determined to be successful if the statistical significance supported the use of an educational session to teach nursing students about Black maternal mortality and the solutions. If the educational session was not successful, the tests would reveal the need for alternate methods of educating nursing students on Black maternal mortality and the solutions.

The location and timing of the session was determined by the schedule of the researcher. The location was a Zoom session due to COVID-19 restrictions and ease of access for participants. Information of participants was completely anonymous, and data was collected via Google Forms, which the researcher had access to. For incentive, the researcher held a random drawing for a five-dollar gift card to Starbucks. No extra credit for attendance was given to participants.

Materials

A PowerPoint consisting of 18 slides was made for the educational portion of the study (Appendix B). The PowerPoint included information on the several facets of Black maternal mortality: how the statistics are obtained in the United States, statistics by race, racism as a contributing factor, social determinants of health, other contributing factors, and proposed solutions to the problem. Topics that were also incorporated into the pre-test and post-test include Black maternal mortality statistics and data collection, the contributing factors, and how

healthcare professionals can be a part of the solution. The researcher has a copy of both the pre-test (Appendix C) and post-test (Appendix D) with the correct answers. Demographic questions were only included at the beginning of the pre-test.

The content of the presentation was synthesized from an array of sources. Most information for the PowerPoint was from the Centers for Disease Control and Prevention (2020), Chapman et al. (2015), and Hayes and McNeil (2019). Additional information came from a lecture about implicit bias on YouTube by David Williams (2018) as well as some additional studies and journal articles. The materials that were involved in the session include: Zoom, Microsoft PowerPoint, a laptop, and participants' computers/smartphones with internet.

Sampling Process

The sample in this study was nursing students attending Murray State University. The goal of the selection was to focus on students wishing to begin a career in health care as nurses so as to provide further education to nursing students on how to advocate and care for Black patients, and specifically Black women giving birth. Convenience sampling was used by the researcher advertising to a specific group of nursing students and then to a social organization which she was involved with. Snowball sampling via other participants was also used to reach students outside of the groups that the researcher originally sent information to. Additionally, students who were interested in the topic, but not majoring in nursing were permitted to attend the session and did not take the pre-test or post-test. The focus was on students in college therefore the age range desired was 18-24 years and no person outside of that range chose to participate. Advertising was only to Murray State University students so it can be assumed that each participant was a student at the university.

Advertisement took place on a group messaging platform, GroupMe. The researcher sent a message advertising the location of the educational session, the time, and the Zoom link for joining (Appendix E). This was distributed to two group messages of which the researcher was a member of. From that message, two students privately messaged the researcher and asked to forward the information to Murray State nursing students outside of those group messages. From there, the snowball effect helped obtain additional participants.

Protection of Human Subjects

This study required the use of human subjects, therefore it needed approval from the Institutional Review Board (IRB). The application for IRB approval included the following: significance of the project, selection of participants, the method of data collection, informed consent, and how confidentiality and anonymity would be kept. This was submitted on March 13, 2021 and the IRB found that this project did not need approval (Appendix F). The researcher and her faculty mentor were notified via email on March 24, 2021 of the decision and the researcher then proceeded with the project.

A cover letter was attached to the pre-test which addressed the rights of participants and the voluntary nature of the study (Appendix A). This cover letter informed participants of their choice to participate or to terminate participation at any point in time. Participants' consent was implied if they completed the pre-test and post-test and if they did not finish either of those, it was implied that the participant had withdrawn participation and the data was not used.

For anonymity, the Google Form did not take email addresses or names at all. The researcher asked participants to make a code name for use on the pre-test and post-test and included a clause stating that the purpose of this was for comparison of results only, not

identification. The results were kept confidential as well. The process allowed protection of the rights of all participants including anonymity and confidentiality.

Participants were informed by the cover letter that data would be collected and that it would be kept confidential, only to be reviewed by the researcher and the faculty mentor. All responses were stored on the researcher's personal password-protected computer, where it will be kept for five years before being deleted.

Data Collection

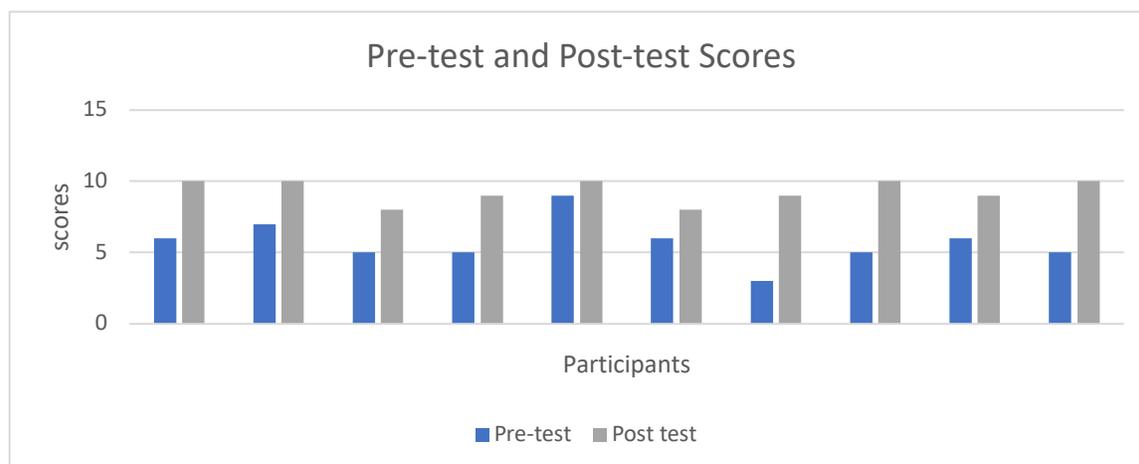
Once the educational session began, the researcher discussed, in-short, how the research was being used. Participants then clicked the link the researcher provided and took the pre-test. The cover letter was the first item on the link that explained that rights of the participants to voluntarily continue or to discontinue participation. After reading the cover letter, participants were asked to provide a code name for the purpose of comparing results from the pre-test and post-test. Demographic questions were next and included semester in the nursing program, age, gender, race, and ethnicity.

The pre-test (Appendix C) was administered prior to the educational session in order to gain an understanding of what ideas and knowledge the participants already had about Black maternal mortality in the United States. This involved the use of Google Forms on each participant's own computer. Other than the five demographic questions, participants were asked ten questions regarding Black maternal mortality data and collection of data, contributing factors, and possible solutions. Participants then attended a PowerPoint presentation by the researcher. After watching and listening to the educational session about Black maternal mortality, the post-test link was sent in the Zoom chat. This test included the code-name question, the same ten content questions from the pre-test, and then an open-ended question asking about the use of this

information in the participants' future nursing careers (Appendix D). After completion of the post-test the participants were asked if there were any questions about the session or the project in general. Once the entire session was complete, the researcher organized pre-test and post-test answers to align with the code names. Then the scores were compared, and results were analyzed.

Results

There were 12 participants for this study, but because of a data collection error only 10 results were statistically analyzed. There was a significant increase in the scores from the pre-test to the post-test overall. The pre-test mean score was 5.7 out of 10 or 57% with a standard deviation of 1.57. The highest score on the pre-test was 9/10 and the lowest score was 3/10. For the post-test, the mean of the correct answers was 9.3 out of 10 or 93% with a standard deviation of 0.82. The mean of the post-test increased by 36% from the pre-test. The highest score on the pre-test was a 9/10 and the highest on the post-test was a 10/10. Furthermore, the lowest score on the post-test was an 8/10 compared to the lowest score on the pre-test which was 3/10. The increase of the average from 57% (pre-test) to 93% (post-test) showed a 36% increase in the score. This improvement demonstrates an increase in knowledge and understanding of Black maternal mortality in the United States. The following graph shows a comparison of pre-test and post-test scores for each participant. The x-axis shows each participant whose data was analyzed, and the y-axis shows the number of questions each participant answered correctly out of 10. The blue bar indicates the pre-test score. The gray bar indicates the post-test score of the same participant.

Graph 1: Pre-test and Post-test Scores

Every question was analyzed to compare pre-test and post-test scores. The findings from this analysis can be found in the following table.

Table 1: Analysis of Questions

Question	Pre-test Results	Post-test Results	Increase/Decrease/No change
1	1/10 (10%)	9/10 (90%)	increase +8 (80%)
2	6/10 (60%)	10/10 (100%)	increase +4 (40%)
3	4/10 (40%)	6/10 (60%)	increase +2 (20%)
4	9/10 (90%)	10/10 (100%)	increase +1 (10%)
5	1/10 (10%)	10/10 (100%)	increase +9 (90%)
6	10/10 (100%)	10/10 (100%)	no change
7	4/10 (40%)	9/10 (90%)	increase +5 (50%)
8	9/10 (90%)	9/10 (90%)	no change
9	3/10 (30%)	9/10 (90%)	increase +6 (60%)
10	10/10 (100%)	10/10 (100%)	no change

The post-test had an open-ended question asking participants, “After attending the educational session, how do you foresee yourself incorporating your knowledge of this issue and solutions into your practice as a nurse?” The following table includes answers from 11 of 12 participants of the study in random order. This question was not statistically analyzed in the

results of the multiple choice portion and therefore did not require comparison with code names on the pre-test and post-test therefore all responses to this question could be utilized, including the answers from the two participants whose data was not used in the statistics portion. One participant of the twelve did not respond to this question.

Table 2: How Participants Plan to Apply New Knowledge

Participant (# 1-11)	Response
1	I plan to look at any bias I may have as well as the bias of my coworkers. I hope to be able to educate my co-workers on the importance of remembering bias as well as listening to and trusting patients. Trusting my patients and listening to what they have to say and incorporating that into their care is something I will ensure I do.
2	I think I can incorporate this into my practice by first becoming aware of my own beliefs and implicit bias that I may not even know that I have. I can also listen to my patients and give them support and the same quality of care that I am providing for everyone.
3	Keeping in mind any potential biases I might have and to remember that the health and safety of the patient is top priority no matter what their race is. Also, I will remember to really listen to and BELIEVE the patient because they know their body best.
4	This informational session has brought to my attention that I may subconsciously group people together and going forward I'm going to try leave my preconceived opinions out of my nursing judgment.
5	I intend to think more about how my biases might affect my patient care in the future. I will also use this knowledge to better advocate for better care for Black patients.
6	I see myself taking a good look on the biases that I have unconsciously and trying to detour those into less stereotypical ways of thinking.
7	I definitely need to focus on building rapport with a patient initially in order to be able to educate later in the most effective way!!
8	I will make sure to be an advocate to my Black patients, and call attention to harmful biases in the workplace.
9	I feel driven to support my patients and respond to their concerns quickly rather than passing them off.
10	I hope to better listen to my patient's concerns and take what they say as what is going on.
11	I will definitely be taking a bias training and trying to educate those around me.

The pretest and post test scores were evaluated in a paired t-test. After analysis, $t=7.5615$ and the p-value was <0.0001 . Because $p<0.05$, the increase from pretest to post-test was found to be statistically significant. This is indicative that the educational session on Black maternal mortality and the proposed solutions did impact the post-test scores.

Demographics

The demographics were quite imbalanced pertaining to both gender and ethnicity of participants. All 12 participants were White with only one participant indicating both White and Asian as their race. Additionally, no participants identified as male or filled in the option for identifying as any other gender.

Discussion

No participant had a lower score from the pre-test to the post-test. Additionally, every participant improved by at least one point from the pre-test to post-test. Data from two participants could not be included in the statistical analysis of the 10 material questions because the researcher did not develop a way to compare individual pre-test and post-test answers with a code name until after the first two participants concluded the study. The responses from the two participants not included in the statistical analysis were included in the open-ended question chart because there was no need for comparison of pre-test to post-test for that question and because the researcher found the responses valuable to include. Through statistical analysis of the results, the p-value was found to be low ($p<0.0001$) and the t-value was found to be high ($t=7.5615$). The results indicate that the educational session significantly contributed to improving scores. Therefore, the educational session can be considered successful for increasing the scores between pre-test and post-test for the sample. The findings of this research study

support the hypothesis that attending an educational session would increase the knowledge of the issue of Black maternal mortality in the United States and the potential solutions.

There were two most frequently missed question of the pre-test. The first most frequently missed question was question 1 which was about the time-frame that the Centers for Disease Control and Prevention use to define maternal mortality. Only one participant answered correctly prior to the educational session. On the post-test, 9/10 (90%) of the participants answered correctly. The time frame of one year after pregnancy is correct, but most participants chose “within 3 months”. The educational session provided increased knowledge on this topic as evidenced by the improvement from 10% to 90% correct.

The other most frequently missed was question 5. This question asks about the top cause of maternal mortality in the United States. Prior to attending the educational session, only 1/10 (10%) of participants answered the question correctly. Almost every participant chose “postpartum hemorrhage” for the pre-test likely because it is an obvious complication of delivery that nursing students learn about in classes pertaining to maternal and infant health. The correct answer, “preexisting cardiovascular complications” is not as obvious as a contributing factor to increased rates of Black maternal mortality. After the educational session, 10/10 (100%) of the participants answered correctly which shows significant increase in the knowledge about the causes of maternal mortality.

An interesting question to analyze is question 3. It was answered correctly by 4/10 participants on the pre-test and only by 6/10 on the post-test. The question asked the participants to select the option that does *not* contribute to Black maternal mortality. Questions with this type of wording are easily missed because of misreading or misunderstanding what the question is asking. The correct answer, “having access to quality prenatal and postpartum care” could have

confused participants with wording and context. This question was only answered correctly by 60% of participants on the post-test, indicating that the wording was confusing or that better clarification on all the contributing factors to Black maternal mortality would be needed in future sessions.

Questions 6, 8, and 10 all had no change in the percentage of participants that answered correctly from pre-test to post-test. Questions 6 and 10 were answered correctly on both tests by 100% of participants. Question 6 asked about how underlying segregation contributes to healthcare and each participant chose the correct answer that it causes poor access to quality healthcare. Question 10 asked how healthcare workers can improve the pregnancy and birth experiences of Black patients. Participants all chose “all of the above” which includes acknowledging concerns and feelings of the patient, empowering patients with knowledge, and completing bias training/ checking biases before giving care to anyone. Question 8 was answered correctly by 90% of participants in both the pre-test and post-test. This question asked about the purpose of the Preventing Maternal Deaths Act of 2018. By comparing the code names and tests, it was found that the same participant answered this question incorrectly on both the pre-test and post-test. The consistency of correct answers for these questions demonstrates some prior knowledge of contributing factors to Black maternal mortality. This also shows that nursing students know the general role of the nurse in part of the proposed solutions to the problem.

On the post-test, the researcher included an open-ended question regarding nursing students’ plans to use their new or improved knowledge on the subject of Black maternal mortality in their future careers. Table 2 (in the Results section) lists each individual response. Overall, the main theme of the responses was that participants plan to better recognize their implicit biases before doing any patient care. Implicit bias occurs in subtle ways that are often

hidden beneath consciousness (Chapman et al., 2015). These biases are shown through action and attitudes. The only way to decrease the effect of these biases on patient care is to recognize them and actively stay aware even in situations of stress.

Another common theme was that of patient-centered care. Listening to patients, advocating for them, and supporting patients were all listed in several responses. This theme ties into the portion of the educational session that discussed possible solutions to Black maternal mortality. Health care professionals can play a vital role by being informed, partnering with the family, empowering the patient with choice and knowledge, and being the patient's advocate both while caring for patients and by advocating for policy change to improve access to care and quality of care. Nurses specifically have a unique relationship with patients and can listen to patients while recognizing possible fears and previous experiences of Black women (Britton et al., 2019). This ability helps calm anxious patients and building rapport allows for better patient response to care.

Limitations

The obvious limitation for this study was sample size. Convenience sampling was used to obtain participants from the researcher's social groups and the snowball effect did recruit a few more participants. Because 12 nursing students participated and only 10 could be used for statistical analysis, these results are difficult to generalize to both Murray State nursing students and to nursing students in other programs throughout the state and country. Due to the nature of the project, those who qualified to participate were required to be in the nursing program. The target population severely limited eligibility to participate in the study.

Another limitation of this study was the lack of diversity of participants. Every participant identified as female and 11 out of 12 participants identified as White, with the other

participant identifying as both Asian and White. The results therefore may not be generalizable to a population that is more diverse in both gender and race. A second study with more balanced gender distribution and racial diversity would be needed in order to compare results to a generalized nursing student population. This could be accomplished by conducting another study with expanded inclusion criteria for participants of all healthcare fields, not just nursing. This study could also be conducted again in a healthcare facility which would likely diversify occupation, age, gender, and race.

The final limitation of this study was the use of Zoom as the location for the educational session due to the ongoing COVID-19 pandemic as well as for convenience of individuals wishing to participate but were unable to attend in-person. Participants are more likely to become distracted from the presentation via Zoom (Oliver, 2020). One participant was seen on their video square driving during the session and several others did not turn on the camera feature. This demonstrates that the educational session likely did not have their full attention and could have had an impact on post-test results.

Recommendations for Future Studies and Uses

The first recommendation for future studies is to increase the number of participants. One way this could be accomplished is by advertising to other nursing programs. Another recommendation for increasing participation is editing the inclusion criteria. This study could be adapted to encompass all healthcare related majors and even recruit participants already working in the healthcare profession, which would drastically improve participant numbers and diversity. This would provide better understanding of what healthcare students and workers know about Black maternal mortality and the solutions. The application of the findings of this study could be accomplished in a healthcare institution in order to better educate healthcare workers on Black

maternal mortality. This session could be presented in a variety of healthcare institutions but would be most beneficial in an obstetrics setting especially in communities that serve larger Black populations. This could educate staff to be aware of fears and concerns of Black mothers as well as how to improve patient-centered care.

Additionally, the study could be adapted to better categorize the topics so that the researcher could more effectively compare the previous knowledge of participants to knowledge participants gain by attending an educational session. Adding more questions in further detail with more categories would also serve to inform the researcher if participants retained information being taught. This could provide a way to improve the educational session to increase knowledge about Black maternal mortality and proposed solutions in the United States.

Another recommendation would be to collect data using a different form. Google Form is a free and easy way to collect data and for participants to use the link over Zoom via the chat. For comparison, the survey asked participants to enter a code name for both tests, which they had to remember. This was an important feature for the purpose of anonymity. The researcher did not add this portion until two participants had completed the study and therefore the results of the multiple choice portion of the survey could not be included in the data analysis. If the educational session could have been conducted in person or with use of a different collection method, both confidentiality and anonymity would be stronger.

Furthermore, a study that focused on the long-term effects of the educational session would demonstrate retention and application of information learned. The information learned during the educational session could be forgotten. Another post-test several months to a year after the educational session could show the true effectiveness of the session over time. Following up with nursing students who attended the educational session that graduated and

started working with patients would provide information about the application of knowledge in the participant's career. Follow-up with participants could also provide the researcher with further information that could be included in a future educational session.

Finally, the responses to the open-ended question on the post-test revealed that students are now better aware of the effect implicit biases can have on patient care and outcomes. A major theme of the answers was that students feel compelled to check their biases and the reasoning behind those biases more carefully. Required implicit bias trainings could be initiated in order to keep medical professionals aware of their beliefs about diverse groups of people and make them aware of the effects those beliefs can have on their patient care if left unnoticed. Trainings could improve patient outcomes and further the cultural competence of employees of healthcare institutions.

Conclusion

The results of this study support the hypothesis that an educational session would increase knowledge of nursing students at Murray State University about Black maternal mortality in the United States and solutions that have been proposed. Participants' current knowledge of Black maternal mortality was evaluated using the pre-test. Then, an educational session was presented. After the presentation, there was a statistically significant increase in the scores on the post-test. This demonstrates that an educational session could be beneficial to delivering information about the problem of Black maternal mortality as well as solutions that have been proposed. The findings of this study may be used to further educate healthcare professionals on the topic and to encourage them to actively be participants in efforts to reduce the Black maternal mortality rate.

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Appendices

Appendix A

Informed consent cover letter:

Please read before completing the questionnaire:

Invitation to Participate: You are being invited to participate in a research study entitled “Black Maternal Mortality in the United States” that is being conducted by Grace Phelps, an undergraduate nursing student at Murray State University. By participating in this questionnaire, you will help me understand your knowledge of Black maternal mortality rates in the United States. The goal of this project is to obtain information from fellow nursing students to understand what is known about Black maternal mortality and to educate about ways to improve care for Black birthers. Please answer to the best of your ability without the assistance of external materials.

Purpose and Participant Enrollment: If you agree to participate, you will be asked to fill out a questionnaire about your knowledge of Black maternal mortality. The questionnaire consists of 15 survey questions and should take no longer than 15 minutes to complete.

Risks and Benefits: There are no foreseeable risks to participating in the research. The direct benefits are minimal, but the study will likely contribute to awareness of this topic in the health care field and could be useful for your future career.

Voluntary Participation: Your participation in this study is completely voluntary. You have a right to refuse to participate without consequences or to discontinue your participation at any time without penalty. You may refuse to answer any specific questions at any point during the survey. If you agree to be a part of this research, but later change your mind, you may stop at any time.

Data: If you agree to participate, your responses will remain anonymous. I will not collect any identifying information. Should you choose to respond, I will keep your information confidential, such as your answers, by storing all results in my password-protected personal computer accessible only to myself, the primary investigator. To help protect your confidentiality, the survey does not contain any information that will personally identify you. The results obtained from this survey will be used for scholarly purposes only.

If you have any concerns or questions about the research study, please contact my faculty mentor, Dr. Jessica Naber at jnaber@murraystate.edu

Your completion and submission of the questionnaires and educational session will indicate your voluntary consent for participation in this research study.

Appendix B

Educational session slides:



BLACK MATERNAL MORTALITY RATES IN THE UNITED STATES



PRE-TEST LINK

<https://forms.gle/MA3ukDLQaponRYDy8>



STORY OF SERENA WILLIAMS

- Serena Williams, an American tennis player and former number one in the world suffered a pulmonary embolism in 2018, one day after giving birth to her daughter
- The nurse brushed it off as her being confused due to pain medications and instead opted to do an ultrasound to check for clots in her legs
- When no clots were found, only then did they order a CT and Heparin

OUTLINE

- United States statistics
- Black maternal mortality statistics
- Racism: structural and individual
- Social determinants of health
- Other contributing factors
- How to alleviate the problem
- How YOU can be an advocate

BACKGROUND AND SIGNIFICANCE

- Black mothers are dying of childbirth related complications at a disproportionate rate compared to White mothers
- Statistics show that over half of these deaths were preventable
- Healthcare workers need to be made aware of the statistics as well as educate themselves on how to advocate for Black women in these situations

UNITED STATES STATISTICS

- The CDC calculates deaths by including those that occur within one year of pregnancy
- The WHO calculates deaths by including those that occur within 42 days from the end of pregnancy
- Standardization of counting maternal deaths is lacking
- Overall, deaths have increased steadily, going from 7.2 deaths per 100K in 1987 to 17.3 in 2017

DATA COLLECTION EFFORTS IMPROVED

- Preventing Maternal Deaths Act (2018): grants to investigate deaths of women who die within one year of pregnancy
- Maternal Mortality Review Committees created to help standardize reporting for quality improvement interventions
- These are not active and available in all states yet, however (38 states have these)

NON-HISPANIC BLACK MATERNAL MORTALITY STATISTICS

- White non-Hispanic women have a maternal mortality rate of 13.4/100K while Black women have a rate of 41.7/100K
- Black women are 3-4 times more likely to die from complications related to pregnancy and childbirth

TOP CAUSES OF MATERNAL MORTALITY (2007-2016)

- Cardiovascular conditions (33.6%)
- Non-cardiovascular medical conditions (13.3%)
- Infection (13.3%)
- Also: hemorrhages, hypertension, lack of insurance, older age, access to quality care

“Zip code is a stronger predictor of health than genetic code”

SOCIAL DETERMINANTS OF HEALTH

- Conditions of a person's environment that affect the aspects and quality of life
- Examples: access to healthcare, education, safety of living arrangements, socioeconomic status, literacy, access to resources to meet daily needs
- By race and gender, Black women are already at a disadvantage. Statistically, Black women are more likely to experience poverty which contributes to poor care access (especially quality care)

RACISM IN THE MEDICAL FIELD

- Structural: the underlying racial segregation of housing contributes to many factors that lead to increased maternal mortality
- Implicit bias: whether consciously or unconsciously, many medical professionals have ideals about the Black community and/or women and let it reflect in their practice

OTHER CONTRIBUTING FACTORS

- Preexisting conditions are the leading cause of maternal death over delivery complications currently
- Access to proper care both prenatal and postnatal
- Unnecessary cesarean sections (rate has increased by 500% since 1970. 1 in 3 pregnancies is statistically ending in C-section)
- General mistrust of the medical field
- Lack of inclusive reproductive education

PROPOSED SOLUTIONS

- Standardized reporting could reflect more accurate rates by state and race
- Empower mothers with access, knowledge, and information
- Better reproductive education nationwide
- Required bias training
- The use of tool-kits for improvement
- Advocate for policies that allocate resources to lower income areas

HOW YOU AS NURSING STUDENTS AND NURSES CAN HELP

- LISTEN– be attentive to the client when they are telling you about what they are feeling
- Form a partnership with the mom/family (rapport goes a long way!)
- Check your own biases and beliefs before caring for anyone
- Continuing education on the topic

POST-TEST LINK

<https://forms.gle/Xwini66ZCbAoVYBH6>

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ANY QUESTIONS?

Appendix C

Pre-test (with answers)

1. Please make a code name to use on both the pre-test and post-test. This cannot contain any identifying information. It will be used only for comparison of pre-test and post-test scores.

2. For the purpose of data collection and analysis, please select your semester in the nursing program.

Mark only one oval.

- 1st semester
- 2nd semester
- 3rd semester
- 4th semester
- 5th semester

3. For the purpose of data collection and analysis, please select your gender. *Mark only one oval.*

- Female
- Male
- Prefer not to say
- Other:

4. For the purpose of data collection and analyzing, please type your age.

5. For the purpose of data collection and analysis, please select your ethnicity. *Mark only one oval.*

- Hispanic
- Non-Hispanic

6. For the purpose of data collection and analysis, please select your race (all that apply).

Check all that apply.

- American Indian or Alaska Native
- Asian
- Black or African American
- Native Hawaiian or Other Pacific Islander
- White
- Other:

7. What amount of time after birth does the Centers for Disease Control and Prevention (CDC) define as a pregnancy related death?

Mark only one oval.

- within 1 month
- within 3 months
- within 2 weeks
- within 1 year

8. Black women are how many times more likely to die from complications related to pregnancy and childbirth?

Mark only one oval.

- 1 to 2
- 3 to 4
- 5
- not more likely to die

9. Which of the following is NOT a contributing factor to Black maternal mortality rates?

Mark only one oval.

- lack of reproductive education
- preexisting conditions
- having access to quality prenatal and postpartum care
- systematic racism/implicit bias

10. What does the term "social determinants of health" mean?

Mark only one oval.

- when it is not culturally acceptable to seek healthcare
- social life alone determines how healthy a person is
- the initial psychosocial assessment
- the conditions of a person's environment that affect quality of life

11. Which of the following is the top cause of maternal mortality in the United States?

Mark only one oval.

- postpartum hemorrhage
- preexisting cardiovascular conditions
- infection
- postpartum depression

12. What role does underlying racial segregation in housing have in healthcare? *Mark only one oval.*

- does not relate
- contributes to poor healthcare access
- it prevents spread of illness
- it improves access to healthcare

13. True or false: The United States has a standardized method for calculating the national maternal mortality rate.

Mark only one oval.

- True
- False

14. What is the Preventing Maternal Deaths Act?

Mark only one oval.

- a group of mothers who fight for prevention of maternal deaths
- a proposed method for calculating maternal deaths
- nurses who joined together to raise money for maternal mortality research
- an act that provides grants for investigation of deaths occurring within 1 year of pregnancy

15. True or false: maternal deaths have increased steadily since 1987

Mark only one oval.

- True
- False

16. How can healthcare professionals improve the pregnancy and birth experience of Black mothers?

Mark only one oval.

- acknowledging concerns and feelings of the patient
- empowering patients with knowledge
- completing bias training and checking biases before giving care to anyone
- all the above

Appendix D

Post-test (with answers)

1. Please type in the same code name you used for the pre-test. This is only for the purpose of comparison and will not be identifying you in any way.

2. What amount of time after birth does the Centers for Disease Control and Prevention (CDC) define as a pregnancy related death?

Mark only one oval.

- within 1 month
- within 3 months
- within 2 weeks
- within 1 year

3. Black women are how many times more likely to die from complications related to pregnancy and childbirth?

Mark only one oval.

- 1 to 2
- 3 to 4
- 5
- not more likely to die

4. Which of the following is NOT a contributing factor to Black maternal mortality rates?

Mark only one oval.

- lack of reproductive education
- preexisting conditions
- having access to quality prenatal and postpartum care
- systematic racism/implicit bias

5. What does the term "social determinants of health" mean?

Mark only one oval.

- when it is not culturally acceptable to seek healthcare
- social life alone determines how healthy a person is
- the initial psychosocial assessment
- the conditions of a person's environment that affect quality of life

6. Which of the following is the top cause of maternal mortality in the United States?

Mark only one oval.

- postpartum hemorrhage
- preexisting cardiovascular conditions
- infection
- postpartum depression

7. What role does underlying racial segregation in housing have in healthcare? *Mark only one oval.*

- does not relate
- contributes to poor healthcare access
- it prevents spread of illness
- it improves access to healthcare

8. True or false: The United States has a standardized method for calculating the national maternal mortality rate.

Mark only one oval.

- True
- False

9. What is the Preventing Maternal Deaths Act?

Mark only one oval.

- a group of mothers who fight for prevention of maternal deaths
- a proposed method for calculating maternal deaths
- nurses who joined together to raise money for maternal mortality research

- an act that provides grants for investigation of deaths occurring within 1 year of pregnancy

10. True or false: maternal deaths have increased steadily since 1987

Mark only one oval.

- True
- False

11. How can healthcare professionals improve the pregnancy and birth experience of Black mothers?

Mark only one oval.

- acknowledging concerns and feelings of the patient
- empowering patients with knowledge
- completing bias training and checking biases before giving care to anyone
- all the above

12. After attending the educational session, how do you foresee yourself incorporating your knowledge of this issue and solutions into your future practice as a nurse? *Please type your answer below*

Appendix E

Educational session advertisement message (sent via GroupMe)

Hi everyone! I am currently writing my thesis and need nursing student participants for an educational session and a questionnaire. This will be about a 30 minute session where you will take a pre-test, I will present an educational session, and you will take a post test. I plan to present on Monday March 29 at 11:00am on Zoom.

I will be doing another session for anyone that can participate but has clinicals during the first time slot. This will be Monday April 5 at 4:30pm on Zoom.

Participants will be entered to win a \$5 Starbucks gift card!

Thank you all!

Grace Phelps is inviting you to a scheduled Zoom meeting.

Topic: Grace Phelps' Zoom Meeting

Time: Mar 29, 2021 11:00 AM Central Time (US and Canada)

Apr 5, 2021 04:30 PM Central Time (US and Canada)

Join Zoom Meeting

<https://murraystate.zoom.us/j/6165725653>

Meeting ID: 616 572 5653

Appendix F

IRB Exemption



Institutional Review Board

328 Wells Hall
Murray, KY 42071-3318
270-809-2916 • msu.irb@murraystate.edu

TO: Jessica Naber, Nursing

FROM: Jonathan Baskin, IRB Coordinator 

DATE: March 24, 2021

RE: Determination for IRB # 21-141

Project Title: *Black Maternal Mortality Rates in the United States*

Principal Investigator(s): Grace Phelps

Determination: Program Evaluation - Activity is not research as defined in 45 CFR 46.102(l)

The Murray State University IRB has reviewed the information you supplied for the project named above. Based on that information, it has been determined that this project does not involve activities and/or subjects that would require IRB review and oversight. The IRB will keep your determination form on file for a period of 3 years.

Please note that there may be other Federal, State, or local laws and/or regulations that may apply to your project and any changes to the subjects, intent, or methodology of your project could change this determination. You are responsible for informing the IRB of any such changes so that an updated determination can be made. If you have any questions or require guidance, please contact the IRB Coordinator for assistance.

Thank you for providing information concerning your project.

Opportunity
afforded

murraystate.edu