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The Role of Nursing Assessment in Decreasing Maternal Mortality and Severe Maternal Morbidity: Educating Third Year Nursing Students

According to the World Health Organization, maternal mortality is defined as "the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management." The United States has been unsuccessful in decreasing rates of maternal mortality or severe maternal morbidity in the last several decades, in contrast with most other high-income countries. Extensive research was conducted on existing literature on maternal mortality and morbidity in the United States, with a focus on the role of nurses in efforts to decrease adverse maternal outcomes. Through previously conducted research studies, risk factors and critical data points to assess risk were identified. With this knowledge, the education which was developed for junior nursing students, focused mostly on the postpartum period, however, the warning signs highlighted could be developed at any time during a pregnancy. The question posed is; Among undergraduate BSN students, does a supplemental education model on critical assessment of peripartum risk factors compared to no additional education model improve knowledge and understanding of the peripartum assessment requirements of an emergency nature? The strategy is to educate third year nursing students, who will go into many different fields of healthcare, of warning signs that can be fatal if missed. Obstetric and Women's Health nurses are not the only nurses that will come in contact with women who are currently or have been recently pregnant. It is crucial to be able to recognize these signs when presented to decrease adverse maternal outcomes.

Various different databases were utilized in the evidence search process including Pubmed, CINAHL, and Ebscohost. All databases were accessed through the University of Cincinnati Libraries. Keywords used in the search process included "Maternal Mortality", "Disparities", "Race", "Labor Complications", "Postpartum", "Morbidity", "Age", "African

American" and "Black". Additionally, Articles were filtered by "peer-reviewed" and by date published; within the last seven years. In total, twenty peer-reviewed sources from the literature search were used in the final project and to inform the education session developed.

Without question, maternal mortality and severe maternal morbidity is a complex and multifaceted problem facing the United States healthcare system. In recent years, as more studies have been conducted on this issue, it has become clear that the United States stands out when compared with other nations; "Over the past three decades, maternal mortality rates in the United States have not decreased, in contrast with other countries with high healthcare expenditures, where maternal mortality rates have declined to levels as low as 4 per 100,000 live births" (Darney et al, 2020). Additionally, "Twenty years ago, the United States and the United Kingdom had the same maternal mortality rate. Currently the United States has a rate about three times that of the United Kingdom" (Darney et al, 2020). This large gap in maternal outcomes between the United States and other similar high-earning countries concerns many professionals in the field and highlights the need for changes in the way peripartum healthcare is approached and further research. Additionally, it is impossible to discuss the research on maternal mortality and morbidity in the United States without discussing the disparities in outcomes between women of different demographics. One study that reviewed medical records of inpatient maternal mortality in the United States between 2002 and 2014 found that in antepartum, intrapartum, and postpartum women, "the proportion of women who died during pregnancy-related hospitalization was higher among women who are older (age > 35 years), non-Hispanic African Americans, users of alcohol and abused drugs, and from the southern region of the United States". The same study also found that the mortality rate in the inpatient setting was three times higher for African American women than for White or Hispanic women (Mogos et.

al, 2020). In addition to racial, regional, and age-related disparities, this review of medical records also noted that the postpartum period was the most deadly, despite being the period in which most patients have the least health monitoring. Postpartum hospitalizations represented only 2% of pregnancy- related hospitalizations in the group studied, yet these hospitalizations accounted for 27.2% of all inpatient maternal deaths (Mogos et al, 2020). This theme appeared in much of the literature used for the education session, and indicated the importance of postpartum assessment and education on warning signs for postpartum women and nurses who may encounter these patients.

Despite the glaring statistics in the literature, many nurses are not educated on the seriousness of the problem, the role of nurses in addressing these issues, and don't feel confident educating women on things to look out for that could indicate potentially dangerous complications. In a survey conducted of 372 nurses who work with women during the postpartum period, only 54% indicated knowledge of the rising maternal mortality rate in the United States, and only 12% knew the percentage of these deaths that occur during the postpartum period. Finally, 67% of the nurse respondents indicated that they spent less than 10 minutes with patients focusing on potential warning signs. (Suplee, Bingham, & Kleppel, 2017) Nurses are often the first people who make contact with patients in the healthcare setting, and bear much of the responsibility for patient education and answering questions. For this reason, it is crucial that nurses receive the necessary education and assessment skills not only so they can recognize potential complications in their patients, but so they are prepared to educate patients to identify warning signs outside the healthcare setting.

The education was conducted utilizing a self-paced slideshow that instructors could work through with their clinical groups at their chosen pace. A short video from the CDC that outlined

many of the terms used throughout the education session was included towards the beginning of the presentation. A case study was included towards the end of the slideshow to allow for clinical groups to apply the teaching through a clinical scenario. The plan for the education session was to begin by introducing the learners to the presenters as well as topics and terms that would be used throughout the session. The problem was then established with statistics that demonstrate the severity of preventable maternal mortality and morbidity in the United States and how they have only increased in recent years despite many other nations' success in decreasing these events. Statistics were also used to highlight disparities in outcomes between different regions of the nation and patients of different ages and races. The next portion of the education session focused on the main objective; the recognition of warning signs in the nursing assessment. Risk factors such as older age, African American Race, and insurance status were identified and connected with the disparities found in the literature. The most common causes of maternal mortality and morbidity events were listed, and when on the peripartum continuum patients were most at risk was highlighted. The program then moved into concrete assessment recommendations for nursing practice, such as important questions to ask when collecting a history, as well as physical warning signs to examine for. Learners were taught an acronym to use as a framework when completing a peripartum assessment in an acute setting that included the critical assessment data that could indicate many of the complications discussed in the presentation. The session concluded with a case study that students could work on in groups and apply their knowledge gained from the education. Attendees were also provided with a page of resources for further reading and research on the topic.

Due to the COVID-19 restrictions, education sessions were conducted through WebEx and were presented to each clinical group by clinical faculty. The week of March 15, students

were made aware of the education sessions they would be participating in during clinical, and were instructed to take the pre-test on Google Forms prior to their clinical session. Contact information for group members was provided in the announcement containing the pre-test if students had any questions or wanted more information. After the clinical session in which the education was delivered, students took a post-test that consisted of the same questions as the pre-test.

A standard pre-test and post-test format was used to evaluate the effectiveness of the teaching session at educating third-year nursing students on maternal mortality and morbidity. More specifically, the test was designed to determine students' understanding of the definitions of and most common causes of maternal mortality, risk factors that predispose women to adverse outcomes and how nursing judgement can be applied in a clinical scenario. Results from the pre and post-tests are likely to be skewed due to the inconsistency in the number of responses for each test. 39 and 18 responses were received for the pre and post-tests respectively. Overall, a higher percentage of respondents answered correctly on all five questions in the post-test when compared with the pre-test with the exception of question two, on which one student answered incorrectly for both the pre-test and post-test. For example, results from the pre-test found that only 33.3% of respondents were able to identify the definition of maternal mortality in a multiple-choice question. On the same question in the post-test 72.2% of respondents answered correctly. It is difficult to evaluate fully the success of the education session due to the inconsistency in participation between the pre and post-tests, but results are encouraging that the education session improved students' understanding of the targeted education points based on the responses that were received.

Based on the evidence reviewed, changes to nursing practice and education are likely indicated but not clearly defined. The statistics makes it clear that change is needed in the United States healthcare system in order to improve outcomes for peripartum women. This need is evident based on the dismal maternal morbidity and mortality rates in the US compared with other nations, trends in recent years, and stark racial disparities in outcomes. Additionally, the Suplee, Bingham, & Kleppel study on nurses who work with women during the postpartum period revealed deficiency in knowledge about both maternal mortality and morbidity as well as a need for education on nurses' roles in postpartum education.

While the current body of research makes obvious the need for some degree of change within the way the healthcare system interacts with peripartum women, further research would be helpful in identifying changes to nursing practice and nursing education that would most effectively address these issues. Specifically, studies that focus on what education nurses are currently receiving on maternal mortality and morbidity based on specialty, educational background, and length of time in practice would be a good first step in identifying what improvements could be made and where supplemental education programs may be useful. In addition, studies on what areas of nursing encounter women during the peripartum period most frequently in addition to those in specific women's health specialties would help target interventions to the most relevant areas. Much of the research reviewed also noted that while the postpartum period is when many health complications occur for peripartum women, frequent health visits and monitoring during this time is not commonplace in most places in the United States (Mogos et al, 2020). This suggests that further research on the impacts of continued women's health care throughout the peripartum period on maternal health outcomes may be warranted. Finally, a larger body of research into the degree to which implicit bias plays a role in

the outcome disparities between women of different races and ethnicities compared with issues such as resource availability, pre-existing conditions, and education.

Based on the research conducted, the education session implemented, and the evaluation of participants' learning, the capstone group identifies several areas in which improvements could have been made. In an ideal environment, the education session would have been delivered in real-time; either online or in-person, which would have allowed for a streamlined process between the pre-test, education, and post-test. This would have likely improved retention of students from the pre-test to the post-test and would ensure that students completed the assessments in a standardized time frame before and after receiving the education. Having a more structured process for receiving feedback and implementing the education sessions would have ensured more reliable data collection and subsequent conclusions.

Overall, the education to the target group was effective. The goal is to give the nursing students information that they will use everyday when assessing any patient of the childbearing age. It is important to highlight that it is not only the job of an OB/women's health nurse to identify these warning signs, it is every single nurse's job regardless of their speciality. When focusing more on the overall topic of maternal mortality in the United States, there needs to be more research and studies done regarding the policies and education already in place to combat this issue. In order to be able to identify what needs to be done to show a decrease in this statistic, it needs to be clear what is currently being done. From there, the "empty spaces" that are contributing to this issue can be identified and new implementations, whether that be education or in-practice interventions, can be created. It has been at least 20 years and the rate of maternal mortality in the United States has not shown any kind of decline, it is time for this statistic to change.

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