Improving Preeclampsia Education and Assessment Frequency Among Nurses and Patients With Non-Severe Features in a Postpartum Unit

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Improving Preeclampsia Education and Assessment Frequency Among Nurses and Patients With Non-Severe Features in a Postpartum Unit

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University of San Francisco School of Nursing and Health Professions
NURS 653-07: Quality improvement Internship
Nicole Beamish, DNP, APRN, PHN, CNL

December 12, 2023
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Abstract

Problem: This Quality Improvement project aimed to improve preeclampsia education among Registered Nurses (RNs) and simplify the preeclampsia assessment frequency for patients with non-severe features in the Mother-Baby Postpartum Unit at Hospital Y.

Context: The Quality Improvement project occurred in a 25-bed Mother-Baby Postpartum unit at Hospital Y. The nurse educators at Hospital Y requested that University of San Francisco (USF) nursing students focus on increasing preeclampsia education among nurses and reducing the nursing assessment frequency.

Interventions: Collect quantitative data through observation and hand anonymous questionnaires to the registered nurses and clinical nurse leaders (CNLs) to determine their knowledge of preeclampsia. No interventions have been applied at this time.

Measures: This project began with identifying the microsystem assessment utilizing the 5 P’s (purpose, patients, professionals, processes, and patterns). Edible incentives were given to encourage staff to participate in completing the surveys. We evaluated the nurses’ knowledge of preeclampsia topics and the frequency of preeclampsia assessments on Epic charting by asking questions on the surveys (See Appendix G). Results illustrated that nurses have multiple learning resources in the unit such as frequent education from the staff developer/manager, unit policy updates, and annual E-learning courses. The outcome measure would be to see improvement in preeclampsia knowledge among the multidisciplinary team and a simplified version of the assessment.

Results: We concluded that the results combined qualitative and quantitative data. The response rate of nurses who find it beneficial to have preeclampsia refreshers was 69.3%. The most common barriers mentioned in the surveys included the frequency of the preeclampsia
assessments needed for each patient without severe features and the lack of time nurses encounter to complete these surveys.

**Conclusions:** Surveys and ongoing research have shown increased preeclampsia education among nurses. However, having refresher courses was one suggestion made by the staff on the pre-assessment survey, as this will keep them updated and compliant with preeclampsia topics.

**Keywords:** preeclampsia, education, preeclampsia assessment, frequency, compliance, postpartum, improvement, nursing outcomes, maternal outcomes
Introduction

Preeclampsia (PE) is a serious blood pressure disorder that occurs during pregnancy (Preeclampsia Foundation, 2023). Preeclampsia is often accompanied by other signs and symptoms such as high protein in the urine known as proteinuria, severe headaches, vision changes, edema, and overactive reflexes (Mayo Clinic, 2022). Leadership identified problem areas within the unit and requested that the PE research team help find solutions that would improve outcomes for both patients and nurses. Issues that need improvement include providing preeclampsia education as refresher courses to postpartum nurses as well as finding data that supports the need to decrease the frequency of assessment checklists for preeclamptic patients without severe features (SF). Current data illustrates that the existing preeclampsia annual mortality rate is 46,000 maternal deaths and 500,000 fetal deaths worldwide (Magee et al., 2022). To improve patient outcomes, providing appropriate preeclamptic assessments is an important way of determining the patients’ existing or potential conditions.

According to the California Maternal Quality Care Collaborative (CMQCC), a thorough nursing assessment in the postpartum unit for patients without SF and not on magnesium sulfate includes assessment of blood pressure, pulse, respirations, oxygen, and lung sounds every four hours; deep consciousness, edema, assessment for headache, visual disturbances, epigastric pain every eight hours; temperature per facility protocol; and lastly intake/output every hour with totals every 8 and 24 hours (CMQCC, 2021). Educating the multidisciplinary team is a crucial initial step as this condition can lead to death if left untreated. Hospital Y located in Santa Clara is a non-profit healthcare organization. The Postpartum unit leaders reported an improvement in the need for increased preeclampsia education among registered nurses and a simplified version of their current preeclampsia assessment frequency for nonsevere features patients. Providing
frequent education is imperative as this will keep nurses updated on the current preeclampsia protocols.

**Problem Description**

The Mother-Baby Postpartum unit at Hospital Y is a 25-bed unit. The multidisciplinary team reported barriers to the frequency of the preeclampsia assessment for patients without SF. This is the most common challenge nurses face, as having frequent assessments for nonsevere features interrupts patients’ rest and increases the workload for the nurses. While analyzing the hospital’s protocol, it was determined that their current protocol is to assess preeclamptic patients without severe features every four hours (See Appendix N). This assessment includes a thorough assessment of vital signs and lung sounds. However, nurses are also required to assess deep tendon reflexes (DTRs), edema, level of consciousness (LOC), headache, visual disturbances, epigastric pain, and urine output every eight hours. Nurses play a crucial part in preventing and educating preeclamptic patients on the unit along with staff managers, developers, educators, and providers.

The process begins with the microsystem assessment to analyze the current preeclampsia education and assessment protocols used by the interdisciplinary team and establish current significant evidence-based preeclampsia practices. The process ends with recognizing the challenges nurses face within the microsystem assessment regarding the current preeclampsia education, the unit’s policy and protocols, and data gathered from the pre-assessment surveys. The goal of completing this microsystem assessment is to see improvements in preeclampsia education among nurses, a simplified version of the current assessment for nonsevere feature patients, patient safety, and decreased workload for nurses.

**PICOT Question**
Our question was created by utilizing the population, intervention, comparison, outcome, and time frame (PICOT) method. Having a PICOT helps to facilitate our research and helps to guide the microsystem assessment process. After learning about the problem and conducting a literature review, a PICOT question was created that follows: In Postpartum Registered Nurses (P), how does providing continuous preeclampsia education and less frequent assessments for non-severe feature patients (I), compared to no intervention (C), result in improved nursing education and patient outcomes (O), within a timeframe of three months (T)?

Rationale

Kurt Lewin’s change theory was used as a process of change model to account for the uncertainty and resistance of change. Lewin's change theory consists of the unfreezing, changing, and refreezing phases. The unfreeze phase determines the issue that needs improvement, ensuring there is strong leadership support, creating the need for change, and understanding the doubts and concerns of the team. In this project, the unfreezing phase consists of determining that education on preeclampsia and a simplified version of the current preeclampsia assessment checklist are the problems that require improvement. The changing phase empowers team members, involves the multidisciplinary team in the plan, and communicates changes often to the team members. During the changing phase, pre-assessment questionnaires and an educational handout were distributed among the nurses in the unit. This step helps determine how many nurses feel comfortable with preeclampsia and the benefits of having a refresher. For the last step, the refreezing phase implements the unit changes, develops ways to maintain the changes, provides support, education, and training, and celebrates the desired outcomes. In this last phase, changes are established as part of their current practice.

Search Strategy
A literature review was conducted from September to December 2023 using the following databases: EBSCO, Cumulative Index to Nursing and Allied Health (CINAHL), and PubMed. Keyword criteria for this search included “pre-eclampsia,” “education,” “pre-eclampsia assessment,” “frequency,” “compliance,” “postpartum,” “improvement,” “nursing outcomes,” and “maternal outcomes,” peer-reviewed articles published between 2019 to 2023. After finalizing the PICOT question, the Johns Hopkins Research Evidence Appraisal tool was used to evaluate the article’s level of evidence from I to V (See Appendix B).

**Literature Review**

A comprehensive literature review was conducted using the Johns Hopkins Evidence-Based Practice for Nurses and Healthcare Professionals to find evidence-based practice research on preeclampsia education among nurses in the postpartum department (See Appendix B). Studies showed a combination of education importance and training programs to improve preeclampsia knowledge in nursing. These suggestions concluded that increased compliance with preeclampsia knowledge leads to fewer cases of postpartum hypertensive disorders (Abd Elhakam et al., 2022; Alnuaimi et al., 2020; Boyd, 2023; Sara & Hunker, 2023; Spencer et al., 2019; Olaoye et al., 2019).

A quasi-experimental study examined the effects of simulation-based training programs on maternity nurses' performance and self-efficacy regarding the management of preeclampsia. Research showed the effect of simulation-based training on maternity nurses’ performance in 2022, highlighting the importance of providing interactive education resources to intradisciplinary staff to improve maternal-child outcomes. This article's research is relevant to this study because it highlights simulated learning environments as one that greatly improve staff interactions and ultimately understanding of medically necessary information and interventions.
specific to maternal-child health. For this study specifically, asking staff what their preferred learning method is significant to better assist the department in improving preeclampsia protocols (Abd Elhakam et al., 2022).

A randomized controlled trial examined the effects of implementing an interventional program about preeclampsia on high-risk Jordanian patients. The study randomly evaluated 113 pregnant high-risk preeclampsia women divided into control and interventional groups. Participants were given a 51-question questionnaire to assess their awareness of preeclampsia. The intervention group received a two-hour educational program on preeclampsia with self-monitoring of blood pressure and urine protein. On the other hand, the control group received a two-hour education on urinary tract infections. Pre and post-tests were conducted after two weeks. This article helped guide our research as knowing how comfortable patients feel with preeclampsia is key in determining a plan of care and future steps (Alnuaimi et al., 2020).

An article analyzed the factors contributing to high rates of preeclampsia among African-American women. This study took place in the Labor and Delivery setting of a southeastern hospital in the United States. Pre-tests were collected to determine the nurses’ knowledge of the management and practices of preeclampsia. The results concluded that their knowledge was low to moderate. For the post-test intervention, simulation training courses were implemented and showed improvement in nurses’ knowledge and awareness of preeclamptic topics (Boyd, 2023).

Obtaining evidence-based practice is pertinent in the nursing profession as this guides the education and knowledge to care for patients effectively and efficiently. Identification of preeclampsia signs and symptoms is an important step nurses take to prevent detrimental health outcomes in the maternal-child setting. This article is pertinent to our research as it highlights the
importance of implementing frequent preeclampsia educational sessions with the hope that increased knowledge will lead to improved maternal outcomes. This study also acknowledges that the nurses' degree level does not necessarily equal current knowledge on the topic (Sara & Hunker, 2023). This article highlights the importance of providing regular education sessions for intradisciplinary staff to stay current on topics specific to their profession.

An article focused on improving compliance with preeclampsia guidelines through an electronic health record (EHR) alert system. The study included 98 patients who had hypertension emergencies and 34 received treatment with rapid-acting antihypertensive medication. The post-intervention group of 54 out of 104 received rapid-acting antihypertensive within one hour. Having an automated electronic health record alert significantly improved the administration of antihypertensive medications, which could be implemented in the national guidelines (Spencer et al., 2019). This study shows the importance of having an automated EHR alert system, as this method notifies providers promptly of any hypertensive disorder and can be treated effectively and efficiently.

This cross-sectional study was conducted in 2019 in a hospital in southwest Nigeria. During this study, 36-item questionnaires were passed among the healthcare providers to determine their perceptions of preeclampsia knowledge. The results of this study showed that healthcare providers have average knowledge of preeclampsia topics. However, there are gaps in knowledge of preeclampsia etiology, diagnosis, and treatment that are associated with the lack of training refreshers. This article is relevant to our research and includes excellent examples of why providing constant refreshers and training is important in the maternity setting. For our study, we are gathering data on the importance of preeclampsia education among the multidisciplinary team. Having training is essential in the healthcare field, as this will help
reduce the chances of mistakes and improve nursing-patient education (Olaoye et al., 2019). This article illustrates the importance of recognizing the gaps associated with preeclampsia education among the maternity team.

The literature review assisted this evidence-based research in collecting relevant information to improve preeclampsia education among nurses as well as the frequency of assessment for patients without SF. In addition, conducting a literature review helped synthesize the data and deliver knowledge in a more organized manner to nurses on the unit.

**Specific Aim Statement**

The objective of this study is to improve preeclampsia education among the nursing staff in the postpartum unit at Hospital Y. Numerous bodies of up-to-date research on preeclampsia demonstrate a relationship between improving multidisciplinary staff education and enhancing maternal-child health outcomes. A pre-assessment survey will be given to all staff members to determine their baseline understanding of preeclampsia symptoms without severe features and the frequency of assessments required for each postpartum patient. Staff will get instruction using evidence-based practice as a refresher after baseline understanding of the subject is assessed. The effectiveness of staff training will be evaluated following the training with a post-assessment questionnaire. Preeclampsia suggestions will be presented to the leadership team based on the data obtained from the post-questionnaire responses and evidence-based practice.

**Methods**

**Project Overview**

The ME-MSN, CNL students were given the Quality Improvement project by the leadership team in Hospital Y. A Plan, Do, Study, Act (PDSA) cycle was used to initiate and carry out change (See Appendix D). A PICOT question and aim statement was created after
gathering information from the leadership and conducting a comprehensive literature review. The 5 P’s of the microsystem assessment were used to help guide our research (See Appendix C). In addition, a root cause analysis was conducted by creating a fishbone diagram to determine the factors contributing to the problem (See Appendix E). A Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis followed that helped identify the strengths of the current preeclampsia protocol and learn successful strategies for future changes (See Appendix F). Pre-assessment questionnaires were created, printed, and distributed to gain a better understanding of the nurses' current knowledge of preeclampsia. Edible incentives were given to nurses to increase participation (See Appendix G). After obtaining the results from the pre-assessment questionnaires (See Appendix H), an educational handout was created and distributed that educated nurses about preeclampsia as well as an illustration of the recommended nursing assessment chart (See Appendix I). Post-assessment questionnaires were generated to determine what was learned from the educational session/handout and to assess how satisfied the staff was with the suggestions made by the students (See Appendix J). A Cost-Benefit Analysis (CBA) was created to assess the advantages (benefits) and the disadvantages (costs) of the project in Hospital Y (See Appendix L). A Gantt chart was generated throughout the project to plan, schedule, and guide the progression of the project (See Appendix M).

**Microsystem Assessment**

The microsystem assessment was implemented by using the 5 P’s, which include purpose, patients, professionals, processes, and patterns. The purpose of this study was to reduce the frequency of preeclampsia assessment and improve education among nurses. Doing so would decrease the nurses' workload and increase patient rest as this will require nurses assessing
patients less frequently. The patient population involved preeclamptic mothers without severe features in the Mother-Baby Postpartum Unit at Hospital Y who may require education before discharge. The professionals involved are the multidisciplinary team improving patient outcomes including postpartum registered nurses, charge nurses, and clinical nurse educators. The processes implemented to improve this issue are implementing patient assessments every eight hours and providing a refresher to nurses on preeclampsia assessment for non-severe features patients. Patterns that were applied for preeclampsia education were nurse shift handout reports, change of shift huddles, rounds, and one-to-one nursing communication. The results concluded that during pre-assessment questionnaires, the majority of the nurses reported burnout due to frequent patient assessments that can result in a less thorough assessment leading to a decrease in patient safety.

**Plan, Do, Study, Act (PDSA) Cycle**

In the plan step of the PDSA cycle, it was determined that Hospital Y leadership identified preeclampsia assessment and education barriers in the Mother-Baby postpartum unit. After creating a PICOT question and specific aim statement, implementation of the plan began by locating preeclampsia resources, collecting pre-survey questionnaires, and finding ways to simplify their current preeclampsia assessment for patients without severe features. During the do phase of the cycle, a root cause analysis was conducted, and data collection regarding knowledge of the preeclampsia protocols occurred by administering the pre-assessment surveys to nurses. In addition to the do phase, an interactive educational session was provided to nurses during huddles and one-to-ones. In the study step of the cycle, pre-assessment surveys were analyzed and concluded a need for suggestions and improvement. Lastly, for the act phase, suggestions were made to the leadership team and nurse educators. Creating a PDSA cycle was a
crucial step during this project as this helped test the changes that needed improvement in the unit.

**Root Cause Analysis**

Hospital Y identified an issue with the frequency of preeclampsia assessments for non-SF patients in the postpartum unit, and a fishbone diagram RCA was conducted to determine the factors contributing to this issue (See Appendix E). Factors contributing to the issue of frequent preeclampsia assessment for non-SF postpartum patients included documentation, monitoring, policy and procedures, and people. Frequent assessments and extensive preeclampsia charting are part of the documentation factors contributing to the problem that can ultimately lead to increased workload, patients being unable to rest adequately, and nursing burnout. Furthermore, the monitoring factors concluded that low compliance without monitoring and full assessment per RN clinical judgment contributes to this part of the RCA. Other factors that involve policies and procedures include annual preeclampsia education, preeclampsia policies not easily available to nurses, and preeclampsia education is not mandatory. Additionally, new graduate nurses are less familiar with preeclampsia protocols.

**Strengths, Weaknesses, Opportunities, Threats (SWOT) Analysis**

A Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis was developed to evaluate the unit’s current factors contributing to the challenges of the current preeclampsia protocol (See Appendix F). Some strengths available in the postpartum unit include strong leadership support to implement change, commitment to patient safety, nursing staff confidence in their clinical judgment and assessment skills, and willingness to improve patient quality of care. The weaknesses include a challenging workload that impacts staff willingness to process implementation strategies, not all nurses participating in the preeclampsia educational handout,
and not receiving annual preeclampsia compliance training. Opportunities for improvement include possible changes in staffing protocols on Title 22 and AWHONN guidelines that reduce staff workload, increase compliance with preeclampsia assessment protocol, reduce long-term hospital costs associated with postpartum preeclampsia, and decrease mortality and morbidity rates. Threats to this change include nurses' willingness to participate in surveys to improve workload, challenging staffing protocols that do not allow for evidence-based practice implementation, and resistance to change current protocols.

**Cost-Benefit Analysis (CBA)**

A CBA was conducted to investigate the cost and benefits of educating nurses in the unit (See Appendix K). For this quality improvement project, providing education as a refresher course is beneficial to nurses. The estimated cost to implement education as a refresher course is $100/hour per nurse. In this unit, 74 nurses are receiving the education course. The annual cost to implement this education training is $7,400. Other implementations include supplies and staff educator audits every 12 months (yearly salary average for CA $120,000). The benefits of this implementation include decreased nurse turnover (anywhere from $10,098-$88,000), increased patient satisfaction, and decreased readmission rates ($33,000 per readmission).

**Timeline**

A Gantt chart was created to manage this QI project status. This timeline was conducted from September 2023 to December 2023 (See Appendix L). Utilizing a Gantt chart assisted in planning, managing, and scheduling all projects throughout the semester.

**Intervention**

Leadership team provided students with a staff roster of 74 nurses who work the following shifts: 7:00 am to 3:30 pm (day), 3:00 pm to 11:30 pm (evening), and 11:00 pm to 7:30
am (night). Due to time limitations, we could not implement the interventions, instead, we prepared an educational handout with the recommended preeclamptic assessment using evidence-based practice. This project aimed to improve the current preeclampsia protocol by providing education as a refresher to nurses and simplifying their preeclampsia assessment. Physical pre-assessment questionnaires were given to nurses at the beginning of the project to gain insight into their current knowledge and barriers to preeclampsia (See Appendix G). Pre-assessment questionnaires were distributed and completed within two weeks (See Appendix L). The focus of the pre-assessment survey was to learn how comfortable and prepared nurses felt with their current preeclampsia protocol and their opinion on implementing an eight-hour preeclampsia assessment for the nonsevere feature patients instead of four-hour assessments. Their responses concluded that most of the participants felt well prepared with the topic, but found it beneficial to implement eight-hour checks. Their feedback focused on doing less frequent assessments as this will help patients get more rest and lead to better patient outcomes (See Appendix H).

**Study of Intervention**

After implementing education around the unit, the clinical nurse educators evaluated the effectiveness of this intervention. The preeclampsia educational handout was distributed for two weeks in which preeclampsia topics were discussed. Topics included the importance of this condition, signs and symptoms, treatment, diagnostic tests, prevalence, and the recommended assessment frequency chart. A post-assessment questionnaire was conducted afterward to learn the effectiveness of the education and recommendations provided. Nurses' responses concluded that the handout was an effective refresher and the recommended assessment chart is a beneficial additional resource to their protocol.
Measures

The team gathered data from the pre-assessment and post-assessment questionnaires concluding that the education provided regarding preeclampsia and frequency of the assessment of eight hours improved maternal-child outcomes in the unit. The team offered free food to nurses as an incentive for participating in our pre and post-questionnaires. The pre-assessment questionnaire assessed the nurses’ comfort level regarding preeclampsia, how often they encounter preeclamptic patients, the last time they received an education, and their preferred learning method. On the other hand, the post-assessment questionnaire reviewed their comfort levels after the education was implemented, their comfort level teaching patients what to report, and their satisfaction with the new recommended nursing assessment frequency. Overall, these questions helped gather targeted results that guided our research.

Ethical Considerations

This project meets the guidelines for an Evidence-Based Change in Practice Project. It is not designated a research design and, therefore, does not meet the Institutional Review Board approval criteria.

Results

The Mother-Baby postpartum unit at Hospital Y counts 74 registered nurses. Out of those 74 nurses, 31 nurses participated in completing the pre-assessment questionnaire, while 32 nurses participated in the post-assessment questionnaire. The pre-assessment questionnaire was implemented to assess the nurses' comfort level on preeclampsia education for nonsevere patients by using a rating scale of one (not comfortable) to ten (very comfortable). During the pre-assessment questionnaire, 3% (n=1) of the nurses' comfort level was rated between one to ten, 59% (n=19) voted between four to six, and 38% (n=12) rated a seven to ten comfortability
with preeclampsia. On the other hand, the post-assessment questionnaire showed a 0% vote for the category of one to three, 12% (n=4) of nurses voted for four to six, and 88% (n=29) comfort level between seven to ten. This highlights the effectiveness of the education provided as the percentage of nurses who voted between seven to ten increased significantly during post-assessment.

The post-assessment questionnaire concluded that nurses found the education provided helpful by 70% (n=23), while the other 30% (n=10) felt like they already felt comfortable with preeclampsia and did not need a refresher. In addition to the post-assessment questionnaire, 67% (n=22) of nurses were very satisfied with the idea of changing the nursing assessment frequency to eight hours instead of four, while 24% (n=8) were somewhat satisfied, and 9% (n=3) were very dissatisfied. Nurses who reported less satisfaction with changing the frequency of assessment expressed concerns about a decline in patient safety. Furthermore, it was determined that 88% (n=29) of nurses felt comfortable teaching their patients the signs and symptoms to
report, while 12% (n=4) of nurses felt the need to assess every four hours until they felt comfortable assessing every eight hours.

At the end of the post-assessment questionnaire, nurses were asked to provide any additional information or recommendations they thought would improve the current preeclampsia protocol. There was a pattern of nurses sharing how beneficial it would be to have eight-hour nursing assessments instead of four, as this will allow the patient to get uninterrupted rest during admission and lead to better patient outcomes.

**Discussion**

Leadership at Hospital Y determined a need for change in improving education and nursing assessment frequency for non-severe feature patients in the postpartum unit. Research has shown that providing additional training resources can improve nurses’ knowledge about preeclampsia management (Abd Elhakam et al., 2022). After summarizing the pre- and post-assessment questionnaire data, it is important to follow up with recommendations, as this could improve future research. The following recommendations include conducting studies to learn the correlation between rest and improved maternal-child outcomes. In addition, providing education to the healthcare providers and patients on the importance of monitoring for
postpartum preeclampsia symptoms. During the pre- and post-assessment questionnaires, having an increased workload was a challenge in nursing participation. A suggestion to decrease nursing workload is to hire more nurses and decrease the patient-nurse ratio. This recommendation will allow nurses to have more time to assess their patients thoroughly and promptly.

Limitations

Some limitations impacted this Quality Improvement project. This project was conducted in a four-month timeframe from September to December 2023. Time constraints were a significant challenge that affected the process of the study. Because of the amount of time given, it was only possible to complete pre-assessment surveys within a two-week timeframe, educational handouts and education within a two-week timeframe, and post-assessment surveys within a two-week timeframe. Although it was possible to complete the educational handout, the team was not able to carry out the recommendations. Another limitation includes getting all 74 nursing staff to participate in the pre and post-assessment questionnaires as some were on off, vacation, or maternity leave. In addition, nurses' increased workload made it challenging to obtain their pre- and post-assessment surveys. Lastly, the lack of information supporting reducing assessment frequency made it difficult at the start of the project. Many articles argue against assessing patients every eight hours, since doing so may worsen their preeclampsia condition.

Summary

Overall, this quality improvement project focused on improving preeclampsia education and assessment frequency among nurses and patients with non-SF in a postpartum unit. After determining the goal of the project, a PICOT question was created to initiate the search strategy of the study. Followed by a microsystem assessment using the 5 Ps and a pre-assessment
questionnaire to gain insight into the nurses’ current knowledge of preeclampsia. Although time constraints did not allow implementation, an education handout was provided and presented to the staff as a reminder of the current data available on preeclampsia. After the interventions, post-assessment questionnaires determined that the education provided was a great refresher. The resources provided are beneficial to the nurses as this will update them with the latest information available and increase maternal outcomes in the postpartum unit.

Lessons Learned

Improving preeclampsia education and staying current on other factors that affect patient safety is crucial in the nursing profession. This project enabled student nurses the ability to design and implement a study that is pertinent to the healthcare field. As a CNL, conducting this project taught me valuable lessons such as being a team leader, team collaborator, and advocate to improve preeclampsia education among nurses and assessment frequency among patients.

Conclusion

The nursing leadership identified the issue of improving preeclampsia education and reducing the assessment frequency in the postpartum unit at Hospital Y. After conducting research and gathering data pertinent to the study, the team came up with a microsystem assessment to guide our project. A pre- and post-assessment questionnaire was distributed among nurses and it was determined that the education provided by the research team was a beneficial resource. Educating nurses about preeclampsia is vital, as this condition can lead to severe complications during and after pregnancy if left untreated.

For future research, the recommendation is to focus on finding the correlation between maternal rest and healthcare outcomes. This would determine if getting uninterrupted rest improves health outcomes leading to fewer preeclampsia cases. Overall, providing proper
nursing education and assessments improves a patient's existing or potential outcomes, which can lead to improved patient outcomes and greater job satisfaction for both patients and nurses.

References


Day-Herzog, Darlene, "Reducing the Postpartum Readmission Rate with Standardized Discharge Teaching" (2021). Master's Projects and Capstones. 1236.


https://www.pre-eclampsia.org/what-is-pre-eclampsia


https://www.mayoclinic.org/diseases-conditions/postpartum-pre-eclampsia/symptoms-causes/syc-20376646

Santa Clara Valley Medical Center Unit Protocol. Guideline for Managing Hypertensive Disorders of Pregnancy PreE protocols


Appendix A
Statement of Determination

Student Project Approval: Statement of Determination

Title of Project
Improving Preeclampsia Education and Assessment Frequency Among Nurses in the Postpartum Unit

Brief Description of Project:
The aim for this quality improvement project is to improve preeclampsia education among nurses and assessment frequency for nonsevere feature patients in the postpartum unit at Hospital Y. Data collected from a pre-assessment survey will show the gaps in knowledge for preeclampsia assessments. Recommendations from current evidence-based practice and the surveys collected from staff will be presented to the leadership team for evaluation and implementation.

To qualify as an Evidence-based Change in Practice Project, rather than a Research Project, the criteria outlined in federal guidelines will be used: (http://answers.hhs.gov/ohrp/categories/1569)

This project meets the guidelines for an Evidence-based Change in Practice Project as outlined in the Project Checklist (attached). Students may proceed with implementation.

Comments:

Signature of Supervising Faculty ________________ (date) ________________ 12/13/23

Signature of Student ________________ (date) 12/12/2023
**Appendix B**

**Literature Synthesis Table**

<table>
<thead>
<tr>
<th>Study Author(s)</th>
<th>Study Objective and Design</th>
<th>Sample &amp; Setting</th>
<th>Results</th>
<th>Level of Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abd Elhakam, E. M., Elshabory, N. E., &amp; Shehata, N. S. (2022)</td>
<td>This quasi-experimental study was used at the obstetric clinical laboratory in the faculty of nursing at port said university and gynecological speciality hospital in Port Said city.</td>
<td>The sample was 40 nurses who were given a structured self-administered questionnaire, nurses’ observational checklists, and a self-efficacy assessment scale.</td>
<td>Findings revealed a highly significant difference between pre and post-intervention concerning nurses' knowledge, practice, and self-efficacy concerning the management of preeclampsia.</td>
<td>Level II</td>
</tr>
<tr>
<td>Alnuaimi, Abuidhail, &amp; Abuzaid (2020)</td>
<td>This randomized controlled trial study examined the effects of preeclampsia interventional programs on high-risk pre-eclampsia women.</td>
<td>The sample included 113 pregnant high-risk preeclampsia women randomly divided into control and interventional groups. Participants were given a 51-question questionnaire to assess their awareness of preeclampsia. The intervention group received a two-hour educational program on preeclampsia with self-monitoring of blood pressure and urine protein. On the other hand, the control group received a two-hour education on urinary tract infections. Pre- and post-tests were conducted after 2 weeks.</td>
<td>Results showed a significant difference in mean scores for awareness of preeclampsia in the interventional group compared to the control group after conducting the education program.</td>
<td>Level I</td>
</tr>
<tr>
<td>Boyd (2023)</td>
<td>This study analyzed the factors that contribute to high rates of preeclampsia among minority groups.</td>
<td>This study was implemented in the Labor and Delivery of a hospital in the Southeastern part of the United States. Pre- and post-tests showed that nurses' knowledge of the management and practices of preeclampsia was low to moderate. Post-tests</td>
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<tr>
<td>Study Author(s)</td>
<td>Study Objective and Design</td>
<td>Sample &amp; Setting</td>
<td>Results</td>
<td>Level of Evidence</td>
</tr>
<tr>
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<tr>
<td>Sara &amp; Hunker (2023)</td>
<td>This Quality Improvement project focuses on initiatives to enhance and increase nurses’ knowledge of preeclampsia to decrease postpartum preeclamptic patient admissions.</td>
<td>This project included 71 Registered Nurses, but only 70 nurses participated. The setting was a large tertiary hospital in Michigan. Nurses completed a knowledge survey on how they manage and care for patients with preeclampsia.</td>
<td>It was concluded that 10.5% of nurse knowledge was increased from the pre to post-surveys in a two-month timeframe. Offering initiatives such as interactive education and escape room games has shown to be an effective method to increase nurses’ knowledge and improve patient outcomes.</td>
<td>Level III</td>
</tr>
<tr>
<td>Spencer, Gabra, Bedell, Scott, Anata, &amp; Rauk (2019)</td>
<td>This retrospective chart review focuses on improving appropriate and timely antihypertensive administration in emergency hypertensive situations.</td>
<td>The study included 98 patients who had hypertension emergencies, and 34 received treatment with rapid-acting antihypertensive medication, The post-intervention group of 54 out of 104 received rapid-acting antihypertensive within one hour.</td>
<td>Having an automated electronic health record alert significantly improved the administration of antihypertensive medications, which could be implemented in the national guidelines.</td>
<td>Level II</td>
</tr>
<tr>
<td>Olaoye, Oyerinde, Elebuji, &amp; Ologun (2019)</td>
<td>This cross-sectional study was conducted in a hospital in southwest Nigeria with a focus on the importance of identifying the gaps associated with preeclampsia education</td>
<td>The sample included 110 healthcare providers, 75 nurses, 9 physicians, and 26 general practitioners. Participants were given a 36-item semi-structured questionnaire and data was studied by utilizing</td>
<td>Results that showed healthcare providers had a mean average of 16.69±3.53 of knowledge in preeclampsia. Results also showed a good perception of</td>
<td>Level II</td>
</tr>
<tr>
<td>Study Author(s)</td>
<td>Study Objective and Design</td>
<td>Sample &amp; Setting</td>
<td>Results</td>
<td>Level of Evidence</td>
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<tr>
<td></td>
<td>among the maternity team.</td>
<td>statistical packages for social sciences.</td>
<td>preeclampsia and years of experience.</td>
<td></td>
</tr>
</tbody>
</table>
Appendix C

5 P's Microsystem Assessment

- **PURPOSE**: Reduce frequency of preeclampsia assessment and improve education among nurses
- **PATIENTS**: Preeclamptic mothers without severe features in the postpartum unit
- **PROFESSIONALS**: Postpartum Nurses, Charge Nurses, Clinical Nurse Educators
- **PROCESS**: Implement patient assessment every 8 hours, re-educate nurses on preeclampsia assessment for non-severe features
- **PATTERNS**: Significant burnout due to frequent patient assessments, results in less thorough assessments and a decrease in patient safety
Appendix D
Plan, Do, Study, Act (PDSA) Cycle

1. PLAN
- Obtain guidance from leadership
- Locate preeclampsia resources for nurses
- Collect pre-assessment survey from RNs
- Find ways to simplify the preeclampsia assessment on Epic for patients without severe features

2. DO
- Assess microsystem using 5Ps
- Collect data on the postpartum unit regarding knowledge of Preeclampsia protocols
  - Administer pre-assessment surveys to RNs
- Provide interactive RN education
- Collect post-survey questionnaire

3. STUDY
- Analyzed data from observations, surveys, and suggestions for improvement
- Synthesize and present findings

4. ACT
- Provide recommendations to leadership and nurse educator
- Determine if there is room for improvement or if the implementation is working out
Appendix E
Root Cause Analysis

ROOT CAUSE ANALYSIS: FISHBONE DIAGRAM
Factors that contribute to lack of preeclampsia compliance on the postpartum unit

**DOCUMENTATION**
- Frequent assessments leads to increased workload and burnout
- Extensive preeclampsia documentation for non-severe feature patients
- Preeclampsia education given annually
- Preeclampsia policies not easily available to nurses
- Pre-E education/training not mandatory

**MONITORING**
- Low compliance without state and national monitoring
- Full assessment needed per RNs clinical judgement
- Clinical Nurse Educator
- Nurse Manager
- RNs requesting refresher course on preeclampsia
- New Grad RNs less familiar with preeclampsia protocols

**POLICIES & PROCEDURES**

**PEOPLE**
Appendix F
Strengths, Weakness, Opportunities, and Threats (SWOT) Analysis

**STRENGTHS**
- Strong commitment to patient safety and willingness to improve patient quality of care.
- Nursing staff are confident in their clinical judgement and assessment skills.
- Strong leadership support to implement change.

**WEAKNESSES**
- Challenging workload impacts staff willingness to process implementation strategies.
- More than half of the staff did not receive preeclampsia education using educational handout.
- Lack of annual preeclampsia compliance training.

**OPPORTUNITIES**
- Possible changes in staffing protocols (Title 22/AWONN Guidelines for staffing) that reduce staff workload.
- Reduced long-term hospital costs associated with postpartum preeclampsia.
- Decreased preeclampsia mortality and morbidity rate.
- Increase compliance with preeclampsia assessment protocol.

**THREATS**
- Staff willingness to participate in surveys utilized to improve RN workload.
- Challenging staffing protocols that do not allow for evidence-based practice implementation.
- Resistance to change current standardized protocols from neighboring hospitals.
### Appendix G

**Pre-Assessment Survey Questionnaire**

Any information shared will remain confidential. Your participation is greatly appreciated.

**Name:**

**Date:**

1. **How long have you been a nurse?**
   - [ ] <1 year
   - [ ] 1+ year
   - [ ] 5+ years
   - [ ] 10+ years

2. **Have you received any previous training specific to preeclampsia?**
   - [ ] Yes
   - [ ] If not, why?

3. **What is your comfort level with preeclampsia?**
   - [ ] Not comfortable
   - [ ] Unsure
   - [ ] Comfortable
   - [ ] Very comfortable

4. **How often do you encounter patients with preeclampsia?**
   - [ ] Very often
   - [ ] Often
   - [ ] Rarely
   - [ ] Never

5. **When was the last time you received education on pre-eclampsia?**
   - [ ] Weeks ago
   - [ ] Months ago
   - [ ] Years ago
   - [ ] Never

6. **Would you find it beneficial to have a training class on preeclampsia?**
   - [ ] If not, why?
     - [ ] Every month
     - [ ] Every 6 months
     - [ ] Every year
     - [ ] Every 2 years

7. **What style or learning method would best help you feel comfortable with preeclampsia education?**
   - [ ] Online course
   - [ ] Interactive (in-person) class
   - [ ] Simulations
   - [ ] Unit training

8. **How are you currently staying informed on pre-eclampsia guidelines?**

9. **Based on your experience, how frequently do you think Preeclampsia assessments should be done?**
   - [ ] Severe features:
   - [ ] Non-severe features:

10. **If you could make a change to the preeclampsia protocol, what would your suggestion be?**
Appendix H
Nurses Responses

“If a pt is off MgSO4, we should not be checking q4hrs or still checking their I/O’s. If they’re without SF we should be able to just ask if they’re experiencing symptoms”

“Less frequent monitoring”

“Not so frequent, patients aren’t able to rest”

“Patient cannot rest”

“Less assessments for non severe features”

“Activity ad lib not always complete bedrest (depending on severity/ acuity)”

“NONE”

“If you could make a change to the preeclampsia protocol, what would your suggestion be?”

“Less frequent checks”

“Recommend that OBs consider PO maintenance antihypertensive earlier. (Be proactive, rather than reacting to hypertensive CRISIS.)”

“Not hourly, pt cannot rest”

“A lot...”

NURSES RESPONDED...
Appendix I
Preeclampsia Educational Handout

**What is Preeclampsia?**
Preeclampsia (Pre-E) is a severe hypertensive disorder that occurs during pregnancy after 20th week. This condition can affect other organs in the body and it is dangerous for mom and fetus.

**Clinical Manifestations**
- High BP
- Proteinuria
- SOB
- Edema
- Increased DTRs
- Headaches
- Visual disturbances

**Why is this important?**
- Pre-E occurs in 5-7% of all pregnancies.
- Annually, it is responsible for 70,000 maternal deaths and 500,000 fetal deaths worldwide.
- Early-onset HTN has increased by approx. 143% from 1990 and 2010 in the US.
- Pre-E has risk factors common with cardiovascular disease and sleep-disordered breathing including obesity, essential HTN, and diabetes.

**Risk Factors**
- Chronic HTN
- Multiparity
- Pregnancies ≤35yo
- Diabetes
- Obesity

**Diagnostics/Tests**
- Blood pressure: ≥140/90 mmHg
- 24-hr urine collection: ≥300mg protein
- ≥0.3mg/dL protein/creatinine
- ≥1.1mg/dL serum creatinine
- Dipstick: 2+
- Thrombocytopenia: ≤100 x 10
- Weight gain ≥ 5 lbs/week

**Recommended Nursing Assessment**

<table>
<thead>
<tr>
<th>Assessment/Findings</th>
<th>Postpartum Nursing Assessment Frequency</th>
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</thead>
<tbody>
<tr>
<td>BP ≥140/90 mmHg</td>
<td>Q 4-8 hrs</td>
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<tr>
<td>Pulse</td>
<td></td>
</tr>
<tr>
<td>Respiration sPo2</td>
<td></td>
</tr>
<tr>
<td>Temperature</td>
<td>Per unit protocol</td>
</tr>
<tr>
<td>Intake and Output (I&amp;Os)</td>
<td>Q 8 hrs</td>
</tr>
<tr>
<td>Lung Auscultation</td>
<td>Q 4-8 hrs</td>
</tr>
<tr>
<td>Deep tendon reflex</td>
<td></td>
</tr>
<tr>
<td>Clonus</td>
<td></td>
</tr>
<tr>
<td>Level of consciousness (LOC)</td>
<td>Q 4-8 hrs PRN</td>
</tr>
<tr>
<td>Edema</td>
<td></td>
</tr>
<tr>
<td>Headache, visual disturbances, epigastric pain</td>
<td>Q 4-8 hrs PRN</td>
</tr>
<tr>
<td>Fetal status and uterine activity</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

**Patient Outcomes**
- Uninterrupted rest periods necessary for recovery
- Increased patient safety

**Nurse Outcomes**
- Decreased assessment frequency allows more time for RN to adequately complete patient assessments

**Data supports assessing patients**
- q 4-8hr (Once per shift)
- However, clinical judgement and providing education to patients on what symptoms to look for is critical in ensuring patient safety.

THANK YOU FOR YOUR PARTICIPATION!

References
Appendix J
Post-Assessment Survey Questionnaire

Preeclampsia Post-Assessment Survey
Your participation is greatly appreciated.

1) After the implemented education, how comfortable do you feel with preeclampsia on a scale of 1–10?
   - □ 1-3 Not comfortable
   - □ 4-6 Comfortable
   - □ 7-10 Very comfortable

2) How has the education provided helped you better understand preeclampsia?
   - □ Yes-I needed a refresher
   - □ Not Really-I was comfortable with the material before

3) How satisfied are you with the new nursing frequency assessment recommendation of Q 8hrs (once a shift), instead of Q 4hrs?
   - □ Very dissatisfied
   - □ Somewhat dissatisfied
   - □ Somewhat Satisfied
   - □ Very Satisfied

4) Do you feel confident teaching a patient what to report to you as the RN since patient assessments will be less frequent?
   - □ Yes, Patients will be better prepared for discharge home.
   - □ No, I may still assess patients Q 4hrs until I feel comfortable.

5) Please share any additional comments below.

Thank you for your time!
Appendix K
Nurses Responses

“We should also look into limiting visitors. Toddlers running around the room and crying increases patients’ blood pressure.”

“Based on assessment and patient condition, we can make necessary judgement to do VS q4 hr or q8.”

“Not necessary to check I/O until D/C home unless pt has symptoms.”

“Got everyone talking about policy.”

NURSES RESPONDED...

“Always good for refresher.”

“Thanks for doing the survey!”

“I would feel comfortable checking vital signs every 8 hours on preeclampsia without severe features if they had an antihypertensive medication regimen.”

“Please share any additional comments below.”

“I’m a big fan of these types of patients getting as much “rest” as possible.”
Appendix L
Cost-Benefit Analysis

Estimated Cost of pre-eclampsia Education Refresher Course
74 Nurses*$100/hour
$7,400 per year

Estimated Cost of Badge Reference Card
$220

Total Estimated Cost/Year: $7,620

Compared To:

Decreased nurse turnover (anywhere from $10,098-$88,000). Increased patient satisfaction. Decreased readmission rates ($33,000 per readmission)
### Appendix M
Gantt Chart

#### Preeclampsia Education Quality Improvement

<table>
<thead>
<tr>
<th>TASKS</th>
<th>Start Date</th>
<th>Due Date</th>
<th>SEPTEMBER</th>
<th>OCTOBER</th>
<th>NOVEMBER</th>
<th>DECEMBER</th>
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<td>Orientation</td>
<td>09/26/23</td>
<td>09/28/23</td>
<td>Week 1</td>
<td>Week 3</td>
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<td>Literature Review</td>
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<td>09/30/23</td>
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<td>Meeting w/ Ldrshp</td>
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<td>Week 2</td>
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<td>10/31/23</td>
<td>Week 2</td>
<td>Week 3</td>
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<td>11/23/23</td>
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<td>Week 3</td>
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<td>Week 4</td>
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<tr>
<td>Post-Assessment (Data Collection)</td>
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<td>12/01/23</td>
<td>Week 3</td>
<td>Week 4</td>
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<td>Evidence-Based Project Poster Creation</td>
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<td>12/01/23</td>
<td>Week 4</td>
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<td>Project Presentation</td>
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Appendix N
Hospital Y’s Postpartum to Discharge Ongoing Assessment

**POSTPARTUM TO DISCHARGE ONGOING ASSESSMENT**

Preeclampsia *without* Severe Features

1. Obtain BP, HR, RR and O2 Sat every 4 hours
2. Assess lung sounds every 4 hours
3. DTR’s, edema, LOC, HA, visual disturbances, epigastric pain, and urine output every 8 hours

Preeclampsia *with* Severe Features

1. Obtain BP, HR, RR and O2 Sat hourly for the first 24 hours after delivery, then every 4 hours
2. Assess lung sounds every 2 hours for the first 24 hours after delivery, then every 4 hours
3. Assess DTR’s, edema, LOC, HA, visual disturbances, epigastric pain every 4 hour
4. Urine output hourly while on Magnesium, otherwise per provider