

Perceived Barriers Among Nursing Staff to Act Effectively in Patients with Preeclampsia and Eclampsia

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Abstract:

Severe preeclampsia and eclampsia are obstetric emergencies that require early recognition, timely clinical intervention, standardized protocols, and effective interdisciplinary communication. Continuing education may strengthen nurses' preparedness and confidence when responding to these high-risk conditions. **Objective:** To evaluate the effect of a structured educational intervention on nurses' perceived preparedness, confidence, communication, and ability to manage patients with severe preeclampsia and eclampsia. **Methods:** A quantitative, quasi-experimental, one-group pretest-posttest design was used. The study included 24 registered nurses from the emergency department, labor and delivery unit, and maternity unit of a hospital in southwestern Puerto Rico. Participants completed a 15-item Likert-scale questionnaire before and after a 30-minute educational session focused on early recognition, clinical management, magnesium sulfate administration, standardized protocols, SBAR communication, teamwork, and maternal safety. **Results:** Posttest responses showed greater agreement and higher perceived preparedness following the intervention. The Wilcoxon signed-rank test demonstrated a statistically significant difference between pretest and posttest scores ($p < .001$). **Conclusion:** The educational intervention was associated with improved self-reported preparedness, confidence, communication, and perceived response capacity. Structured continuing education may support safer, more coordinated, and evidence-based obstetric emergency care.

Keywords: Preeclampsia; eclampsia; nursing education; obstetric emergencies; maternal safety.

I. INTRODUCTION

Severe preeclampsia and eclampsia are obstetric emergencies that may progress rapidly and lead to serious maternal and neonatal complications.^{1,2} Their management requires early identification of warning signs, continuous clinical monitoring, timely treatment, and a coordinated response from the interdisciplinary healthcare team.³⁻⁶ Delays in recognition or in the implementation of evidence-based interventions may increase the risk of seizures, stroke, organ damage, and maternal mortality.¹⁻⁶

Nurses play an essential role in the care of these patients because of their continuous involvement in clinical assessment, vital-sign monitoring, recognition of changes in maternal condition, and implementation of immediate interventions.³⁻⁶ Their ability to communicate critical findings, activate institutional protocols, and collaborate with physicians and other healthcare professionals can influence the safety and quality of obstetric care.⁴⁻⁶

Despite the availability of clinical guidelines and standardized protocols, barriers may persist, including insufficient continuing education, variations in clinical knowledge, ineffective interdepartmental communication, limited team coordination, and reduced confidence when responding to critical situations.⁷⁻¹⁰ These limitations may affect nurses' clinical response and delay the timely management of patients with severe preeclampsia or eclampsia. Therefore, structured educational interventions represent an important strategy for strengthening clinical competencies, promoting consistent protocol use, and improving nurses' clinical decision-making abilities.⁷⁻¹⁰

Evidence-based education, structured communication tools such as SBAR, clinical simulation, and teamwork may contribute to the early recognition of complications and a more organized response to obstetric emergencies.⁷⁻¹⁰ These strategies may also increase staff confidence, reduce variability in clinical practice, and promote an institutional culture focused on maternal and neonatal safety.⁷⁻¹⁰

Accordingly, the objective of this study was to evaluate the effect of a structured educational program on nurses' preparedness, confidence, and ability to recognize and manage patients with severe preeclampsia and eclampsia. The intervention was directed toward registered nurses working in the emergency department, labor and delivery unit, and maternity unit, with the purpose of strengthening clinical knowledge, interdisciplinary communication, and the implementation of evidence-based practices.

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II. METHODOLOGY

A quantitative, quasi-experimental, one-group pretest-posttest design was used to evaluate the effect of a structured educational intervention on nursing personnel's preparedness to respond to patients with severe preeclampsia and eclampsia.

The study included 24 nursing professionals from the emergency department, labor and delivery unit, and maternity

unit of a healthcare institution in Puerto Rico. Participants were selected through nonprobability convenience sampling.

Data were collected using a questionnaire consisting of a demographic section and 15 items measured on a five-point Likert scale ranging from "strongly disagree" to "strongly agree." The instrument evaluated participants' perceptions regarding early recognition, clinical preparedness, communication, teamwork, protocol use, continuing education, and maternal safety. The questionnaire was reviewed by experts to assess its clarity, relevance, and content validity.

Participants completed a pretest before receiving a structured educational intervention lasting approximately 30 minutes. The educational session addressed the recognition and management of severe preeclampsia and eclampsia, timely nursing interventions, magnesium sulfate administration, clinical protocols, SBAR communication, interdisciplinary collaboration, and patient safety. Immediately after the intervention, participants completed the same questionnaire as a posttest.

Participation was voluntary, and written informed consent was obtained before data collection. Alphanumeric codes were used to protect participant confidentiality. All information was securely stored and accessible only to the principal investigator.

Descriptive statistics, including frequencies, percentages, medians, and ranges, were used to summarize the data. The Wilcoxon signed-rank test was used to compare paired pretest and posttest scores. Statistical significance was established at an alpha level of .05.

Inclusion Criteria

Participants were eligible for the study if they:

- Were nursing professionals providing direct patient care in the emergency department, labor and delivery unit, or maternity unit.
- Were available to complete both the pretest and posttest.
- Voluntarily agreed to participate.
- Signed the informed consent form.

Exclusion Criteria

Participants were excluded from the study if they:

- Did not complete the pretest or posttest.
- Were absent on the scheduled day of the posttest.
- Were unable to complete the educational intervention.
- Did not provide direct patient care in one of the selected clinical units.
- Declined to sign the informed consent form.
- Withdrew from the study before completing the data-collection process.

III. LITERATURE REVIEW

Severe preeclampsia and eclampsia remain important causes of maternal and neonatal morbidity and mortality worldwide.^{1,2,6} These hypertensive disorders may progress rapidly and result in seizures, stroke, organ damage, fetal complications, and maternal death when they are not recognized and treated promptly.^{1,3,6} The literature emphasizes that many complications associated with these

Characteristic	Category	n (%)
Age	21–29 years	1 (4.2%)
	30–39 years	10 (41.7%)
	40–49 years	9 (37.5%)
	60–64 years	4 (16.7%)
Sex	Female	22 (91.7%)
	Male	2 (8.3%)
Educational level	Bachelor's degree	24 (100.0%)
Residential area	Rural	14 (58.3%)
	Urban	10 (41.7%)
Work area	Emergency department	8 (33.3%)
	Labor and delivery unit	8 (33.3%)
	Maternity unit	8 (33.3%)
Years of nursing experience	1–5 years	3 (12.5%)
	6–10 years	11 (45.8%)
	11–15 years	7 (29.2%)
	More than 15 years	3 (12.5%)
Previous training in preeclampsia/eclampsia	Yes	15 (62.5%)
	No	9 (37.5%)

conditions may be prevented through early identification, continuous monitoring, timely clinical interventions, and adherence to evidence-based guidelines.^{3–6}

The American College of Obstetricians and Gynecologists emphasizes the importance of rapidly treating severe hypertension and administering magnesium sulfate in a timely manner to prevent seizures and other serious complications.³ Despite the availability of clinical recommendations and patient safety bundles, variability may occur in the recognition of warning signs, clinical decision-making, and adherence to standardized protocols.^{4–6} Delayed treatment and inconsistent practices across emergency, labor and delivery, and maternity units may negatively affect maternal and neonatal outcomes.^{3–6}

Nursing personnel play a central role in the early recognition and management of obstetric emergencies. Nurses are responsible for monitoring vital signs, identifying changes in the patient's condition, initiating timely interventions, communicating critical findings, activating institutional protocols, and coordinating care with the interdisciplinary healthcare team.^{4,5,9} Nevertheless, limited continuing education, insufficient confidence, inconsistent communication, and unfamiliarity with clinical protocols may create barriers to an effective and timely response.^{7–10}

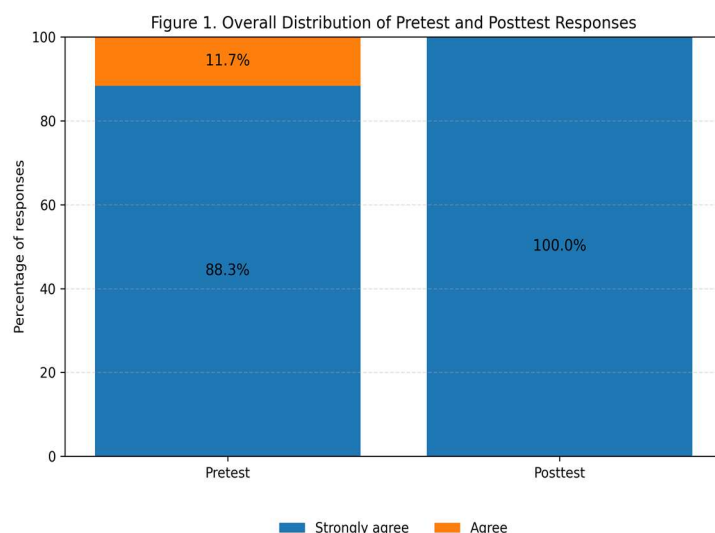
Evidence suggests that structured educational interventions can strengthen nurses' clinical knowledge, confidence, decision-making, communication, and adherence

to evidence-based protocols.^{7,10} Continuing education, clinical simulation, standardized checklists, structured handoff methods, and communication strategies may promote a faster and more organized response during obstetric emergencies.^{7–9} These approaches may also strengthen teamwork, reduce variation in clinical practice, and improve patient safety.^{7–10}

Overall, the reviewed literature supports the implementation of structured educational programs for nursing personnel involved in obstetric care.^{7–10} Strengthening clinical knowledge, communication, teamwork, and adherence to standardized protocols may improve the early recognition and timely management of severe preeclampsia and eclampsia.^{3–10} These findings provide the rationale for evaluating an educational intervention designed to improve nurses' preparedness and perceived ability to respond effectively to these high-risk conditions.

IV. DISCUSSION

A total of 24 nursing professionals participated in the study. Participants worked in the emergency department, labor and delivery unit, and maternity unit. Their demographic and professional characteristics are presented in Table 1.



Overall responses shifted toward the highest agreement category following the structured educational intervention. In the pretest, 88.3% of responses were classified as “Strongly agree” and 11.7% as “Agree.” In the posttest, 100% of responses were classified as “Strongly agree,” as shown in Figure 1. In addition, the median total score increased from 73.5 at pretest to 75.0 at posttest. The Wilcoxon signed-rank test showed a statistically significant difference between the two measurements ($p < .001$).

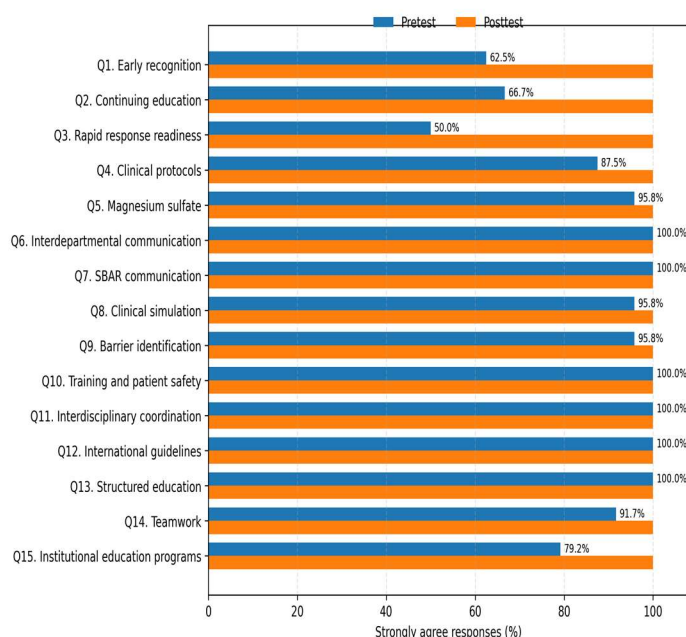


Figure 2. Percentage of Strongly Agree Responses by Questionnaire Item Before and After the Educational Intervention.

Note. Percentages represent the proportion of the 24 participants who selected “Strongly agree” for each questionnaire item. Following the intervention, all 15 posttest items reached 100% in the “Strongly agree” category.

The findings suggest that the structured educational intervention improved nurses’ perceived preparedness and confidence in managing patients with severe preeclampsia and eclampsia. Although participants had favorable responses before the intervention, the posttest scores were higher. The Wilcoxon signed-rank test showed a statistically significant difference between the pretest and posttest results ($p < .001$).

These results are consistent with previous literature indicating that continuing education can strengthen nurses’ knowledge, confidence, clinical decision-making, and use of evidence-based practices. Education is particularly important in obstetric emergencies because delays in recognizing warning signs or initiating treatment may increase the risk of serious maternal and neonatal complications.

The results also showed strong support for standardized clinical protocols, timely magnesium sulfate administration, teamwork, interdisciplinary coordination, and SBAR communication. These strategies can help nursing personnel communicate important information quickly and provide a more organized response during an obstetric emergency.

Only some participants reported having received previous training in pre-eclampsia or eclampsia management. This finding suggests that continuing education may not be equally available to all nursing personnel. Healthcare institutions should provide regular and standardized training for nurses working in emergency, labor and delivery, and maternity units.

Participants also recognized the value of clinical simulation. Although simulation was not part of the

intervention, it may be useful in future educational programs to help nurses practice decision-making, communication, teamwork, and emergency response skills.

The study has several limitations. It included only 24 nursing professionals from one healthcare institution, which limits the generalizability of the findings. The study did not include a control group, and the questionnaire measured participants’ perceptions rather than their actual clinical performance. Participants also had high pretest scores, and all posttest responses reached the highest agreement category, suggesting a possible ceiling effect. In addition, the posttest was administered immediately after the intervention, so the study did not evaluate long-term retention.

Despite these limitations, the findings suggest that structured education may improve nurses’ perceived preparedness and confidence in managing severe preeclampsia and eclampsia. Regular education, standardized protocols, effective communication, and teamwork may strengthen obstetric emergency care and promote maternal and neonatal safety.

V. RECOMMENDATIONS

Based on the findings of this study, healthcare institutions should provide regular and standardized education on the recognition and management of severe preeclampsia and eclampsia. Training should be offered to nursing personnel working in emergency, labor and delivery, and maternity units. Educational programs should reinforce the early identification of warning signs, timely administration of magnesium sulfate, use of clinical protocols, SBAR communication, teamwork, and interdisciplinary coordination. Periodic review of institutional guidelines may also help reduce variation in clinical practice. Clinical simulation should be considered as a complementary strategy to strengthen nurses’ confidence, communication, decision-making, and response during obstetric emergencies. Simulation activities may provide opportunities to practice high-risk situations in a safe and controlled environment.

Healthcare institutions should also evaluate nurses’ competencies regularly and identify barriers that may delay an effective response. These evaluations may guide the development of future educational activities and quality-improvement initiatives. Future studies should include larger and more diverse samples from multiple healthcare institutions. Researchers should also consider using a control group, objective knowledge tests, observed clinical performance, and follow-up evaluations to determine whether improvements are maintained over time. Finally, future research should examine whether educational interventions are associated with improvements in maternal and neonatal outcomes, protocol adherence, response time, and patient safety.

VI. CONCLUSION

The structured educational intervention was associated with an improvement in nursing personnel's perceived preparedness, confidence, communication, and ability to respond to patients with severe preeclampsia and eclampsia. Posttest results were higher than pretest results, and the difference was statistically significant ($p < .001$).

These findings highlight the importance of continuing education, standardized clinical protocols, timely magnesium sulfate administration, structured communication (e.g., SBAR), teamwork, and interdisciplinary coordination in obstetric emergency care. Providing nursing personnel with updated and consistent education may support earlier recognition of complications and a more organized clinical response. Although the findings were favorable, they should be interpreted considering the small sample, the absence of a control group, the use of self-reported responses, and the immediate administration of the posttest. Further studies with larger samples, follow-up evaluations, and objective measures of clinical performance are recommended.

Overall, structured education may be a useful strategy for strengthening nursing practice and promoting maternal and neonatal safety in the management of severe preeclampsia and eclampsia.

VII. ACKNOWLEDGMENT

This study involved human participants. A total of 24 nurses participated after approval was obtained from the Human Research Protection Board (IRB), Protocol No. **01-ONL076-26**, approved on July 9, 2026, with an expiration date of July 8, 2027. Written informed consent was obtained from all participants. No animals were involved in the study. The author declared no conflict of interest and received no external funding.

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