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KNOWLEDGE OF REGISTERED NURSES REGARDING MANAGEMENT OF PRE-ECLAMPSIA AND ECLAMPSIA AT UNIVERSITY OF LAHORE TEACHING HOSPITAL

Original Research

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Acknowledgement: The researchers gratefully acknowledge the support of the University of Lahore Teaching Hospital staff during this study.

Conflict of Interest: None
Grant Support & Financial Support: None

ABSTRACT

Background: Pre-eclampsia and eclampsia remain significant contributors to maternal and perinatal morbidity and mortality, particularly in low- and middle-income countries. Nurses, as frontline caregivers in maternal health, require comprehensive knowledge to effectively manage these life-threatening hypertensive disorders of pregnancy. Despite global emphasis on emergency obstetric care, evidence indicates that knowledge gaps persist among healthcare providers, often impacting the timely diagnosis and management of these conditions. Assessing nursing knowledge is essential for designing targeted training interventions to improve maternal outcomes.

Objective: To assess the level of knowledge among registered nurses regarding the management of pre-eclampsia and eclampsia at the University of Lahore Teaching Hospital.

Methods: A descriptive cross-sectional study was conducted from September to December 2023. A purposive sample of 40 registered nurses, including charge nurses and team leaders aged 25–40 years, was recruited. A structured and validated questionnaire adapted from previous research was used to collect data. The tool consisted of sections covering demographic details and specific knowledge on the management of pre-eclampsia and eclampsia. Data were analyzed using SPSS version 21.0, with descriptive statistics and chi-square tests applied to explore associations between knowledge levels and demographic variables.

Results: Among the 40 participants, 80.0% demonstrated good knowledge, 15.0% had excellent knowledge, and 5.0% showed poor knowledge. A statistically significant association was found between professional designation and knowledge level ($p = 0.032$), while years of experience did not show a significant relationship ($p = 0.937$).

Conclusion: While overall knowledge levels were encouraging, the study highlights the need for continuous professional development and targeted training to address existing knowledge gaps. Emphasis on up-to-date clinical education is crucial for improving maternal care outcomes.

Keywords: Eclampsia, Hypertension, Magnesium Sulfate, Maternal Mortality, Nurses, Pre-eclampsia, Training Programs.

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INTRODUCTION

Pre-eclampsia and eclampsia remain critical public health challenges, particularly in low- and middle-income countries, due to their substantial contribution to maternal and fetal morbidity and mortality. Pre-eclampsia, as defined by the World Health Organization, is a pregnancy-specific multisystem disorder characterized by persistent hypertension that develops after 20 weeks of gestation or in the postpartum period, often accompanied by proteinuria, or in its absence, other signs of organ dysfunction such as thrombocytopenia, impaired liver function, renal insufficiency, pulmonary edema, or cerebral disturbances (1). Eclampsia is a more severe progression of the condition, involving the occurrence of generalized seizures in women diagnosed with pre-eclampsia, and typically emerges after the 20th week of pregnancy, though it may also manifest postpartum (2). The global burden of pre-eclampsia and eclampsia is staggering, with hypertensive disorders during pregnancy accounting for nearly 14% of all maternal deaths, approximately 42,000 annually, predominantly in developing countries (3). Despite progress in maternal health over recent decades, these hypertensive complications continue to hinder further reductions in maternal and perinatal mortality, particularly in sub-Saharan Africa, South Asia, and parts of Latin America. For instance, pre-eclampsia alone accounts for 26% of maternal deaths globally, with sub-Saharan Africa bearing the highest burden (4). In Tanzania, maternal mortality remains high at 524 deaths per 100,000 live births, with hypertensive disorders contributing significantly to these figures, including approximately 35% of maternal deaths in northern regions attributed to eclampsia (5). Similar high mortality rates have been reported in Ethiopia and Nigeria, underscoring the urgent need for effective prevention and management strategies (6).

Pre-eclampsia is primarily a vascular condition marked by endothelial dysfunction and vasospasm, with hallmark clinical features including a blood pressure of ≥140/90 mmHg and proteinuria >0.3 g/24 hours after 20 weeks of gestation. In severe cases, systolic pressures ≥160 mmHg or diastolic pressures ≥110 mmHg are observed, along with complications such as thrombocytopenia, acute kidney injury, severe headache, visual disturbances, and hepatic dysfunction (7). These complications pose life-threatening risks not only to mothers but also to neonates, who may suffer from intrauterine growth restriction, preterm birth, or neonatal death (8). The incidence of pre-eclampsia varies widely, ranging between 2–10% globally, with eclampsia affecting approximately 0.03–0.05% of pregnancies. The highest prevalence rates are observed in regions with limited healthcare infrastructure and inadequate prenatal care (9). Knowledge deficits among healthcare providers are a key barrier to the effective management of pre-eclampsia and eclampsia. Studies conducted in various low-resource settings have identified significant gaps in the knowledge and clinical competencies of nurses and midwives regarding the identification, emergency response, and pharmacological treatment of these conditions. For example, research from the Democratic Republic of Congo, Bujumbura, Zanzibar, and Nepal found that large proportions of healthcare workers lacked adequate understanding of critical management aspects such as magnesium sulfate administration and monitoring for toxicity (9,10). Even in areas where basic awareness exists, such as Ogun State in Nigeria or Calabar, knowledge levels often remain below the threshold necessary for optimal care delivery. In contrast, high-income countries demonstrate stronger healthcare provider competencies due to more consistent training and access to continuing professional development programs (11).

In Pakistan, where maternal mortality remains a significant concern, the limited knowledge of nurses regarding pre-eclampsia and eclampsia may contribute to delayed recognition and suboptimal management of affected patients. In a study conducted at the University of Lahore Teaching Hospital, findings revealed that while 73.3% of nurses demonstrated good knowledge on the management of pre-eclampsia and eclampsia, a considerable proportion (26.7%) still exhibited inadequate understanding. Furthermore, only a fraction of nurses had ever received formal training on the topic, and most had less than five years of clinical experience. This lack of exposure to structured educational programs is consistent with other findings from Egypt and Sudan, where knowledge gaps were similarly attributed to a lack of targeted training initiatives (12). The study also found disparities in knowledge depending on the nurses' educational background, with those holding bachelor's degrees tending to score higher compared to diploma holders or those from technical institutions. Moreover, professional training and participation in continuing education were significantly associated with better knowledge, echoing findings from global assessments that emphasize the importance of targeted competency-building interventions for maternal healthcare providers. Given the persistent global burden of hypertensive disorders in pregnancy and the critical role nurses play in frontline maternal care, evaluating their knowledge is essential. Strengthening their clinical capacity through structured education and refresher courses is key to reducing adverse outcomes associated with pre-eclampsia and eclampsia. This study aims to assess the level of knowledge among nurses regarding the management of pre-eclampsia and eclampsia at the University of Lahore Teaching Hospital, thereby identifying training gaps and informing future capacity-building strategies.

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METHODS

The study employed a descriptive cross-sectional design to assess the level of knowledge among nurses regarding the management of pre-eclampsia and eclampsia. It was conducted at the University of Lahore Teaching Hospital, a tertiary care facility offering a wide range of obstetric and maternal health services. The research was carried out over a period of four months, from September 2023 to December 2023. The target population included registered nurses working at the hospital, specifically charge nurses and team leaders aged between 25 and 40 years. These nurses were selected due to their active roles in maternal care and emergency obstetric services. Exclusion criteria encompassed undergraduate female nursing students and interns, as their clinical responsibilities and exposure were considered limited and inconsistent with the objectives of the study. Although the sample size formula $n = N / (1 + N(e)^2)$, where $N = 90$ and $e = 0.05$, would typically yield a sample size of approximately 73, a total of 40 participants were recruited for this study. This deviation from the calculated sample size was due to logistical limitations, including time constraints, availability of nurses during duty hours, and resource limitations for data collection. Despite the smaller sample, efforts were made to ensure that the selected participants were representative of the study population in terms of age, professional roles, and clinical experience. The sample size of 40, though modest, was considered sufficient to yield preliminary insights and identify knowledge gaps that can inform future, more expansive studies.

Data were collected using a structured, self-administered questionnaire adapted from a previously validated instrument. The tool included three sections: demographic information, knowledge of pre-eclampsia and eclampsia management, and clinical recognition of complications and appropriate interventions. Prior to distribution, the questionnaire underwent content validation by maternal health experts to ensure clarity and relevance. The average completion time was 8 to 10 minutes. Questionnaires were distributed in person to nurses available during their clinical shifts, and data were collected after obtaining written informed consent. Quantitative data were analyzed using SPSS version 21.0. Descriptive statistics were used to summarize demographic characteristics and knowledge levels. Relationships between variables were explored using appropriate statistical tests, including chi-square analysis, to examine associations between knowledge and demographic or professional characteristics such as age, educational background, years of experience, and training participation. The study adhered to ethical standards as outlined by the Ethical Review Committee of the University of Lahore. Ethical approval was obtained, and participants were fully informed about the objectives and voluntary nature of the study. Written informed consent was secured from each participant. Confidentiality and anonymity were strictly maintained, and participants were assured that there were no risks associated with participation and that they could withdraw from the study at any point without consequence.

RESULTS

The findings of this study are presented in accordance with the objective of assessing nurses' knowledge regarding the management of pre-eclampsia and eclampsia. A total of 40 registered nurses participated, of which 38 (95.0%) were female and 2 (5.0%) were male. The majority of participants (55.0%) were between 26–30 years of age, followed by 25.0% aged 20–25 years, 15.0% aged 31–35 years, and 5.0% aged 36–40 years. Regarding professional designation, 30 (75.0%) participants were charge nurses and 10 (25.0%) were team leaders. More than half of the participants (55.0%) reported having less than 5 years of clinical experience, while 30.0% had 5–10 years, 10.0% had 11–16 years, and 5.0% had over 17 years of service. Responses to knowledge statements on pre-eclampsia and eclampsia management varied considerably. Most participants (60.0%) disagreed with the inaccurate statement that eclampsia is not a serious condition, while 20.0% strongly disagreed, and only 20.0% (combined agreed and strongly agreed) held a misinformed view. A majority (90.0%) correctly identified that pre-eclampsia can be prevented, and the same percentage accurately identified the correct loading dose of magnesium sulphate. On the topic of essential medications, 80.0% agreed that Methyldopa and Magnesium sulphate are key drugs in the management of these conditions.

A notable proportion (65.0%) correctly disagreed with the statement that pre-eclampsia and eclampsia have no cure, while 25.0% strongly disagreed. Furthermore, 60.0% acknowledged that magnesium sulphate toxicity could result in serious side effects, including hypotension, arrhythmias, and reduced urine output. Knowledge about the antidote for magnesium sulphate overdose was varied, with 50.0% agreeing that calcium gluconate is the correct treatment, 20.0% strongly agreeing, and 30.0% disagreeing or strongly disagreeing. Regarding prevention responsibilities, 60.0% believed that healthcare providers bear the primary duty to prevent pre-eclampsia, while 25.0% disagreed and 15.0% remained neutral or misinformed. Meanwhile, 45.0% agreed and 30.0% strongly agreed that ongoing training enhances the management capacity of healthcare providers. Cumulative analysis of knowledge levels revealed that 80.0% of nurses demonstrated good knowledge (40–50% score range), 15.0% exhibited excellent knowledge (above 50%), and only 5.0% were

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classified as having poor knowledge (below 40%). The analysis further explored the relationship between nurses' knowledge levels and key demographic variables, specifically designation and years of clinical service. A chi-square test of independence was performed to determine whether knowledge levels regarding the management of pre-eclampsia and eclampsia were significantly associated with nurses' professional characteristics.

The results revealed a statistically significant association between professional designation and knowledge levels ($\chi^2 = 6.89$, $p = 0.032$), indicating that team leaders and charge nurses differed meaningfully in their knowledge scores. This suggests that hierarchical clinical roles may influence the depth or retention of knowledge related to maternal emergency care, possibly due to differences in responsibilities, exposure, or access to training. Conversely, no statistically significant association was found between years of service and knowledge levels ($\chi^2 = 1.80$, $p = 0.937$), implying that increased years of experience alone did not predict better understanding of pre-eclampsia and eclampsia management. This finding underscores the importance of continuous professional development and targeted training rather than reliance solely on experiential learning.

Table 1: Demographic data

Variables	Category	Frequency	Percentage
Gender	Male	2	5.0%
	Female	38	95.0%
Age	20-25	10	25.0%
	26-30	22	55.0%
	31-35	6	15.0%
	36-40	2	5.0%
Medical Designation	Team leader	10	25.0%
	Charge Nurse	30	75.0%
Year of the Services	Less than 5 years	22	55.0%
	5 to 10 years	12	30.0%
	11 to 16 years	4	10.0%
	17 and above	2	5.0%

Table 2: knowledge of register nurses regarding management of preeclampsia and eclampsia

Statements	Agree (f)	Agree (%)	Strongly Agree (f)	Strongly Agree (%)	Disagree (f)	Disagree (%)	Strongly Disagree (f)	Strongly Disagree (%)
Eclampsia is not a serious or severe condition.	4	10	4	10	24	60	8	20
Eclampsia is not a serious or severe condition.	14	35	24	60	0	0	2	5
Convulsion during pregnancy is hereditary.	10	25	22	55	4	10	4	10
Methyldopa and Magnesium sulphate are essential for management.	32	80	6	15	2	5	0	0
Tetanus toxoid vaccine reduces risk.	6	15	8	20	26	65	0	0
Preeclampsia can be prevented.	36	90	4	10	0	0	0	0
Correct Magnesium sulphate dosage is 4g of 20%.	36	90	4	10	0	0	0	0
Only pregnant women are responsible for prevention.	18	45	6	15	10	25	6	15
Training improves knowledge and management.	18	45	12	30	8	20	2	5

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Statements	Agree (f)	Agree (%)	Strongly Agree (f)	Strongly Agree (%)	Disagree (f)	Disagree (%)	Strongly Disagree (f)	Strongly Disagree (%)
Primary duty of healthcare provider is prevention.	0	0	24	60	6	15	10	25
Preeclampsia and eclampsia have no cure.	2	5	2	5	26	65	10	25
Preeclampsia and eclampsia cannot be managed.	6	15	0	0	22	55	12	30
Magnesium sulphate toxicity causes severe effects.	24	60	10	25	6	15	0	0
Calcium gluconate is the antidote for overdose.	20	50	8	20	10	25	2	5

Table 3: Knowledge Level of Reregister Nurses regarding Management of Pre-eclampsia \eclampsia

Category	Frequency	Percentage
<40% poor knowledge	2	5.0%
40 to 50% good knowledge	32	80.0%
50 to 100% excellent knowledge	6	15.0%
Total	40	100.0%

Table 4: Chi-Square Analysis Results

Variable	Chi-Square Value	Degrees of Freedom	P-Value
Designation	6.889	2	0.032
Years of Service	1.796	6	0.937

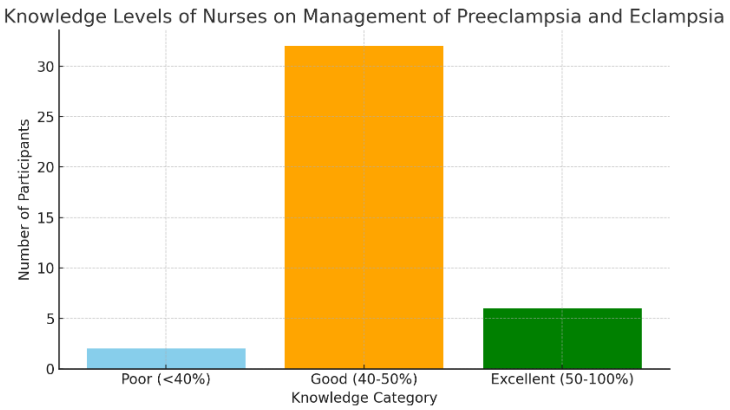


Figure 1 Knowledge Levels of Nurses on Management of Preeclampsia and Eclampsia

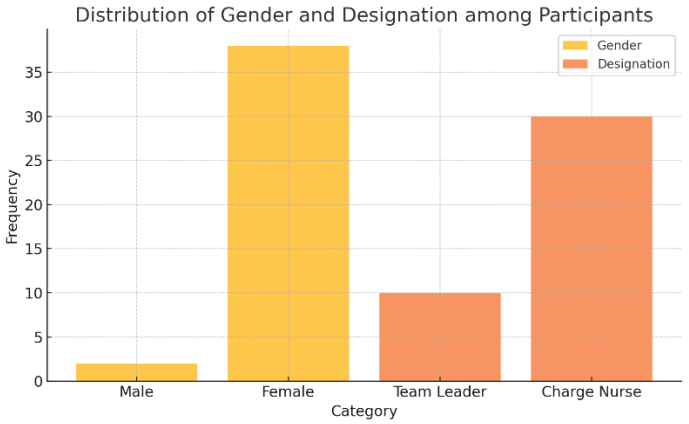


Figure 2 Distribution of Gender and Designation among Participants

DISCUSSION

The findings of this descriptive cross-sectional study conducted at the University of Lahore Teaching Hospital revealed that a majority of registered nurses possessed a good level of knowledge regarding the management of pre-eclampsia and eclampsia. Specifically, 80.0% of participants demonstrated good knowledge, 15.0% exhibited excellent knowledge, and only 5.0% were classified as having poor knowledge. These results indicate a reasonably strong awareness of the subject among the nursing staff involved in direct maternal care.

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This aligns with previous studies conducted in similar settings where a substantial proportion of nurses also showed adequate understanding of hypertensive disorders during pregnancy. However, variations in the depth of knowledge and specific clinical competencies were noted across different study populations. Comparative studies have shown varying levels of knowledge. In a prior investigation, around 73.3% of nurses exhibited adequate awareness of pre-eclampsia and eclampsia, while 26.7% were found to have insufficient knowledge (13,14). These figures are consistent with the present study's findings, further reinforcing that knowledge levels tend to be satisfactory among actively practicing nurses. Other regional studies found that over 50% of respondents had sufficient understanding, although important gaps persisted, particularly concerning the pharmacologic management of eclampsia, such as the use and toxicity of magnesium sulphate (15). In contrast, some studies in primary care settings, especially in resource-constrained regions, reported lower levels of competency among nurses, with approximately half demonstrating only basic knowledge (16,17).

The results of the chi-square analysis in this study added further insight, revealing a significant association between professional designation and knowledge levels, suggesting that leadership roles such as team leaders may have greater access to training or possess higher clinical responsibilities that enhance their understanding (18). However, years of experience did not appear to influence knowledge levels, emphasizing the need for ongoing education rather than relying solely on clinical exposure. These finding challenges traditional assumptions that length of service automatically translates to competency, reinforcing the importance of structured, up-to-date training in ensuring clinical preparedness (19). Despite the strengths of this study, including the use of a validated tool and focus on a high-impact area of maternal health, several limitations must be acknowledged. The sample size, though justified due to logistical constraints, limits generalizability and statistical power. The use of non-random sampling and data collection from a single tertiary institution further reduces the external validity of the findings. Moreover, the exclusion of undergraduate students and interns, although methodologically appropriate for assessing experienced nurses, restricts broader comparisons across various levels of nursing education. The timing of data collection, which coincided with clinical shifts, also posed a challenge, potentially affecting the focus and accuracy of responses.

To enhance the robustness of future research, expanding the sample size and including multiple institutions from diverse geographical and clinical settings would be beneficial. Incorporating randomized sampling techniques and stratified analysis based on academic qualifications and formal training exposure could offer a more nuanced understanding of knowledge gaps. Additionally, integrating qualitative methods such as interviews or focus groups could help explore contextual barriers to effective pre-eclampsia and eclampsia management beyond what structured questionnaires can capture. Regular in-service training and continued professional development programs remain essential strategies to bridge identified knowledge gaps (20). Future research should also evaluate the impact of such educational interventions on clinical performance and maternal outcomes, ensuring that knowledge acquisition translates into improved care practices. Overall, the findings highlight a positive trend in knowledge among nurses but reinforce the necessity of continuous learning to address evolving clinical challenges in maternal health.

CONCLUSION

This study concluded that while the majority of nurses demonstrated a satisfactory level of knowledge regarding the management of pre-eclampsia and eclampsia, notable gaps still exist that warrant attention. The findings underscore the importance of enhancing clinical education and training initiatives to strengthen nurses' competencies in managing these life-threatening maternal conditions. Investing in regular, evidence-based professional development can significantly improve the quality of maternal care, leading to better outcomes for both mothers and newborns. The results highlight the critical role nurses play in early recognition and intervention, emphasizing the need for sustained educational support within clinical settings.

Author Contribution

Author	Contribution
Rimsha zaffar*	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Aqsa Rasheed	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published

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