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Clinical Competence and Self-Efficacy as Predictors of Severe Preeclampsia Management Among Midwives in East Kutai District

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ABSTRACT

Introduction *Improper management of severe preeclampsia (PEB) can lead to various adverse effects on both the mother and the fetus. Therefore, improving clinical competence and self-efficacy is an important strategy to enhance the quality of maternal care and reduce maternal mortality rates. The purpose of this study was to determine the relationship between clinical competence and self-efficacy of midwives in the management of severe preeclampsia cases in the working area of the East Kutai District Health Office.*

Methods *This research is a quantitative study using a cross-sectional approach. The sampling technique employed was simple random sampling, with a total sample of 267 respondents. Data were collected using questionnaires and observation sheets.*

Results *The results showed that the majority of respondents were competent (82%) and had high self-efficacy (66,3%). Based on the results of the chi-square test, there is a significant relationship between clinical competence (p=0.031) and self-efficacy (p=0.016) and the management of PEB cases. The variables of clinical competence (Sig. 0.031) and self-efficacy (Sig. 0.016) partially influenced the variable of PEB management.*

Discussion and Conclusion *In the management of preeclampsia (PE), competency serves as a key pillar because this condition is time-sensitive and highly dependent on the speed of action. Competent healthcare providers are able to perform early detection through accurate blood pressure assessment and rapid recognition of subjective symptoms, enabling the seizure prevention procedure through the administration of Magnesium Sulfate (MgSO4) to be carried out in accordance with standard operating procedures (SOP) without hesitation.*

Keywords: *clinical competence, self-efficacy, management of severe preeclampsia (PEB), midwives, preeclampsia management*

INTRODUCTION

Preeclampsia is a complex and serious pregnancy complication because it affects multiple systems in the mother's body, including the cardiovascular, renal, and central nervous systems. This condition typically appears after 20 weeks of gestation, with main symptoms including blood pressure ≥140/90 mmHg and proteinuria ≥300 mg/24 hours or a positive result of ≥+1 on a dipstick test (Liwang et al., 2019). Improper management of severe preeclampsia (PEB) can lead to various adverse effects for both the mother and the fetus. For the mother, possible complications include eclampsia (seizures), HELLP syndrome (liver and coagulation disorders), pulmonary edema, kidney damage, and stroke. For the fetus, PEB can cause intrauterine growth restriction (IUGR), preterm birth, and even intrauterine fetal death (IUFD) [1].

According to data from the World Health Organization (2020), approximately 342,000 pregnant women worldwide experience preeclampsia each year, with mortality rates reaching 50,000–70,000 mothers and more than 500,000 infant deaths due to its complications (Utari Deshinta & Hasibuan, 2022). This condition makes preeclampsia the cause of approximately 15–20% of maternal deaths worldwide. In Indonesia, data from the Maternal Perinatal Death Notification (MPDN) recorded that the number of maternal deaths increased from 4,005 cases in 2022 to 4,129 cases in 2023, with the majority caused by preeclampsia, hemorrhage, and infection [2].

The prevalence of hypertension in pregnancy in Indonesia is estimated to range between 5% and 10% of all pregnancies. National data show that preeclampsia is the second largest contributor (approximately 24-25%) to the maternal mortality rate after hemorrhage. This indicates that although medical technology has advanced, standardization of PEB management at the primary care level remains a critical point that needs evaluation [3].

This condition is an important indicator that improving the quality of midwifery services cannot rely solely on work experience but must be balanced with strengthening evidence-based clinical competence and increasing self-efficacy through structured and continuous training. Thus, it is expected that midwives will have better readiness in managing severe preeclampsia cases, so that maternal morbidity and mortality rates can be significantly reduced [1].

This indicates that the low clinical competence and level of self-efficacy among midwives are important factors affecting the accuracy of initial actions in severe preeclampsia cases. In fact, health workers, including midwives, have a vital role in the national health system as determined by their professionalism, knowledge, and clinical skills in managing severe preeclampsia [3]. Previous research by Febrianti[6] has proven a significant relationship between midwives' clinical competence and decision-making ability in obstetric emergency cases. Furthermore, Arifah and Widyasari showed that midwives with high levels of self-efficacy responded to pregnancy emergencies more quickly and accurately.

Therefore, improving clinical competence and self-efficacy is an important strategy for improving the quality of maternal care and reducing maternal mortality rates. To reduce the incidence of preeclampsia, the focus should be on improving health workers' skills in early detection, appropriate management, and empowering patients and families to recognize danger signs and seek immediate medical help.

Based on the background of the problems above, this study aims to determine the relationship between clinical competence and self-efficacy of midwives in the management of severe preeclampsia cases in the working area of the East Kutai District Health Office. The results of this study are expected to serve as a basis for policymaking in strengthening human resource capacity in the field of midwifery.

METHODS

This type of research is quantitative research. Using a cross-sectional approach. The population in this study consisted of all midwives working in the working area of the East Kutai District Health Office, totaling 802 individuals. The sampling technique used was simple random sampling, in which samples were drawn from the population randomly without regard to any strata within the population.

The sample size was determined using the Slovin formula, resulting in a total sample of 267 respondents. Data collection used questionnaires and observation sheets. Data for the independent variable of clinical competence were collected using a questionnaire comprising 7 items, derived from the Standard Operating Procedures (SOP) of Kudungga Regional General Hospital. The independent variable of self-efficacy was measured using a 10-item questionnaire.

The variable of PEB management was assessed using an observational checklist consisting of 19 procedural items, also adapted from the SOP of Kudungga Regional General Hospital. Data were analyzed using the chi-square test and multiple logistic regression.

The researcher adhered to all aspects of research ethics and obtained ethical clearance from the Health Research Ethics Committee of Universitas Stada Indonesia, as well as written informed consent from all respondents prior to the commencement of data collection.

RESULT / CLINICAL OUTCOME

Table 1. Characteristics of Respondents Based on Age, Latest Education, and Working Period in the Working Area of the East Kutai District Health Office

Respondent Characteristics	f	%
Age :		
< 35 tahun	127	47,6
≥ 35 tahun	140	52,4
Highest Education Level:		
D3	145	54,3
S1	122	45,7
Working Period:		
< 5 tahun	84	31,5
≥ 5 tahun	183	68,5
Total	267	100

Based on Table 1, the majority of respondents were aged ≥ 35 years, totaling 140 respondents (52.4%). The majority of respondents had a Diploma 3 (D3) as their latest education, totaling 145 respondents (54.3%). The majority of respondents had a working period of ≥ 5 years, totaling 183 respondents (68.5%).

Table 2. Characteristics of Clinical Competence, Self-Efficacy, and Variables of Severe Preeclampsia (PEB) Management in the Working Area of the East Kutai District Health Office

Variable	f	%
Clinical Competence:		
Competent	219	82
Incompetent	48	18
Self-Efficacy :		
High	177	66,3
Low	90	33,7
Results of Severe Preeclampsia (PEB) Management:		
Appropriate	168	62,9
Inappropriate	99	37,1
Total	**267**	**100**

Based on Table 2, almost all respondents were competent in managing severe preeclampsia (PEB), totaling 219 respondents (82%). The majority of respondents had high self-efficacy, totaling 177 respondents (66.3%). The majority of respondents were appropriate in managing severe preeclampsia (PEB), totaling 168 respondents (62.9%).

Table 3. Cross-tabulation Between Variables in the Working Area of the East Kutai District Health Office

Variable	Results of Severe Preeclampsia (PEB) Management					
	Appropriate		Inappropriate		Total	
	f	%	f	%	f	%
Clinical Competence:						
Competent	144	53,9	75	28,1	219	82
Incompetent	24	9	24	9	48	18
Self Efficacy :						
High	120	44,9	57	21,4	177	66,3
Low	48	18	42	15,7	90	33,7
Total	**168**	**62,9**	**99**	**37,1**	**267**	**100**

Based on Table 3, the majority of respondents who were appropriate in the observation of severe preeclampsia (PEB) management had competent clinical competence, totaling 144 respondents (53.9%). Nearly half of the respondents who were appropriate in PEB management had high self-efficacy, totaling 120 respondents (44.9%).

Table 4. Bivariate Test of the Relationship between Clinical Competence and Self-Efficacy on the Severe Preeclampsia (PEB) Management in the Working Area of the East Kutai District Health Office

Independent Variable	Dependent Variable	p-value
Clinical Competence	PEB Management	0,031
Self Efficacy		0,015

Based on Table 4, it shows that there is a relationship between clinical competence (p-value 0.031) and self-efficacy (p-value 0.015) on the severe preeclampsia (PEB) case management.

Table 5. Multiple Logistic Regression Test of the Relationship between Clinical Competence and Self-Efficacy on the Severe Preeclampsia (PEB) Management in the Working Area of the East Kutai District Health Office

		B	S.E	Wald	df	Sig.	Exp(B)	95,0% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	Clinical Competence	.704	.327	4.647	1	.031	2.022	1.066	3.835
	Self Efficacy	.649	.269	5.823	1	.016	1.913	1.130	3.241
	Constant	-2.244	.574	15.290	1	.000	.106		

Based on Table 5, it shows that the clinical competence variable (Sig. 0.031) and the self-efficacy variable (Sig. 0.016) are < 0.05, which means that these variables are partially related to the PEB Management variable.

Table 6. Multiple Logistic Regression Test of the Relationship between Clinical Competence and Self-Efficacy on the Severe Preeclampsia (PEB) Management in the Working Area of the East Kutai District Health Office

		B	S.E	Wald	df	Sig.	Exp(B)	95,0% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	Education	.401	.257	2.431	1	.119	1.493	.902	2.470
	Working Period	.431	.284	2.293	1	.130	1.538	.881	2.686
	Constant	-1.850	.607	9.288	1	.002	.157		
Step 2[a]	Education	.438	.255	2.946	1	.086	1.549	.940	2.553
	Constant	-1.172	.399	8.621	1	.003	.310		

Based on Table 6, an analysis was conducted to determine which independent variable most dominantly influences the management of Severe Preeclampsia (PEB) in the Working Area of the East Kutai District Health Office. The modeling process was carried out in two steps (steps).

In the first step (Step 1), the variables Education and Working Period were entered into the model. The test results showed that the Education variable had a significance value (p-value) of 0.119 and the Working Period variable had a value of 0.130. Because both variables had Sig. values > 0.05, statistically there were no variables that had a significant simultaneous effect in this first step model. Furthermore, elimination was performed on the variable with the weakest influence to obtain a simpler model in the second step (Step 2). At this stage, the Working Period variable was removed from the model, leaving only the Education variable. The analysis results in Step 2 showed a significance value for the Education variable of 0.086 with an Exp(B) or Odds Ratio (OR) of 1.549.

Although there was an increased tendency for the Education variable (OR = 1.549), because the Sig. value of 0.086 remained greater than 0.05, it can be concluded that statistically there were no variables that were dominantly or significantly related among Age, Education, and Working Period to the accuracy of PEB management in this study. The significant Constant value (0.003) indicates that there are other factors outside the variables studied (such as clinical competence or self-efficacy) that most likely have a stronger relationship with PEB management.

DISCUSSION

Analysis of the Relationship between Clinical Competence and Management of Severe Preeclampsia (PEB) Cases

Severe preeclampsia is a pregnancy complication characterized by the onset of hypertension of 160/110 mmHg or more accompanied by proteinuria and/or edema at 20 weeks of gestation or more[4]. The accuracy of initial action includes timeliness, type of action, and clinical evaluation according to standard operating procedures (SOP).

These findings are in line with the study by Hariyanti, Mumun Munigar, and Elina Lukman [5], which reported that midwives did not administer $MgSO_4$ in the initial management of preeclampsia due to low self-confidence in carrying out the initial management of severe preeclampsia, practical considerations, unavailability of drugs caused by insufficient attention to drug expiration dates, and the lack of available laboratory facilities. This study also revealed other factors contributing to the implementation of initial management of severe preeclampsia, namely insufficient dissemination of information, unclear availability of standard operating procedures (SOPs), and the factor of experience.

Overall, the total competence rate reaching 82% is a very strong asset for East Kutai Regency in providing maternal and child health services. However, there are still 18% of midwives who are incompetent, spread across both long and short working period groups. This proves that competence is not only determined by length of work but also by individual motivation to update their knowledge (knowledge refreshing). Without continuous training, even midwives who have worked for a long time risk experiencing a decline in competence if they get trapped in routine without following the latest health technology developments.

The clinical competence of midwives, which includes knowledge, skills, and attitudes, is a crucial factor in early detection, symptom management, and initiation of initial management (including MgSO4 administration) in PEB patients. Midwives with high competence are more likely to recognize danger signs quickly. The clinical competence of midwives also greatly determines the accuracy and speed of collaboration with specialist doctors in managing unstable PEB cases. Competent health workers tend to be calmer and faster in making clinical decisions. In critical PEB situations that often trigger panic, competence provides "control" for staff to act according to procedure without hesitation that could endanger the patient's life. Although the majority of respondents managed cases appropriately, there are still some respondents who may not

have achieved these competence standards. This confirms that capacity building through continuous training, such as emergency simulations, must continue to be carried out to improve midwife competence.

Based on questionnaire results, it was found that 53.9% of respondents were appropriate in management because they had clinical competence. Accuracy of management greatly depends on mastering all indicators comprehensively. Respondents with a total score of 4 had much higher technical readiness to conduct appropriate observations compared to respondents with a score of 2. Weakness in the 4th indicator (score 0) has the potential to create a gap for human error in clinical management in the field, even though the basic indicators (1 and 2) have been mastered. Many respondents were in the moderate to very good competence category. However, the existence of 20.8% of respondents who still had low scores indicates the need for re-standardization through training or creating simpler clinical checklists to minimize inaccuracies in medical actions.

Midwives under the age of 35 years are generally recent graduates or are still undergoing intensive training periods. It is assumed that they have greater exposure to the most current clinical guidelines (evidence-based practice) concerning PEB management, including procedures for $MgSO_4$ administration and pre-referral stabilization. Nevertheless, in obstetric emergencies such as eclampsia (a progression of PEB), emotional maturity and extended clinical experience—typically found in midwives over 35 years—are often considered more advantageous in maintaining situational calmness and clinical stability [6].

Nevertheless, the proportion of S1 graduates, comprising 45.7% of the sample, indicates a favorable trajectory toward the academic upgrading of midwives in East Kutai. From a theoretical standpoint, higher education (S1/Professional level) not only enhances technical proficiency but also reinforces clinical reasoning, complex case analysis, and a more robust scientific underpinning. Although the basic clinical competency rates between D3 and S1 graduates appear to be closely matched in this study, the undergraduate education confers additional advantages in service management and evidence-based clinical decision-making. Nevertheless, the proportion of S1 graduates, comprising 45.7% of the sample, indicates a favorable trajectory toward the academic upgrading of midwives in East Kutai. From a theoretical standpoint, higher education (S1/Professional level) not only enhances technical proficiency but also reinforces clinical reasoning, complex case analysis, and a more robust scientific underpinning[7]. Although the basic clinical competency rates between D3 and S1 graduates appear to be

closely matched in this study, the undergraduate education confers additional advantages in service management and evidence-based clinical decision-making[8] .

The findings of this study demonstrate a positive correlation between the duration of work experience and the level of clinical competence. Among midwives with a length of service of ≥ 5 years, 153 respondents (83.6% of that cohort) were classified as competent. In contrast, among midwives with fewer than 5 years of service, the competency rate was 78.5% (66 of 84 respondents). In narrative terms, this finding corroborates the notion that field experience serves as the most effective teacher in cultivating a midwife's clinical skills. A tenure of ≥ 5 years is regarded as a "maturation" period, during which midwives have been exposed to a diverse range of cases—both routine and emergency[9]. The ongoing experiential learning process (learning by doing) facilitates the refinement of clinical intuition and psychomotor abilities, ultimately enabling midwives to respond with greater composure and precision in executing interventions in accordance with established standard operating procedures (SOP) [10].

Analysis of the Relationship between Self-Efficacy and Management of Severe Preeclampsia (PEB) Cases

Severe preeclampsia is a hypertensive disorder of pregnancy characterized by blood pressure reaching 160/110 mmHg or greater, accompanied by proteinuria and/or edema, occurring at or beyond 20 weeks of gestation[4]. Early management constitutes a series of immediate medical interventions following the establishment of diagnosis or the emergence of clinical signs of severe preeclampsia. These interventions include continuous monitoring of vital signs, administration of magnesium sulfate for seizure prophylaxis, antihypertensive administration, and timely referral decision-making[11]. The precision of early management encompasses not only the appropriateness and timeliness of interventions but also comprehensive clinical evaluation, all of which must adhere to established standard operating procedures (SOP)[12].

This is in line with research by Hariyanti [5] that there is a need to increase the confidence and high integrity of midwives in carrying out their obligations as providers of midwifery services. Strong self-efficacy encourages midwives to be more proactive and alert in recognizing early symptoms of PEB, so that management can be carried out more quickly and reduce the risk of complications[13].

Self-efficacy is an individual factor that influences performance. Midwives with high self-efficacy will not hesitate to take action. They believe in their ability to inject MgSO4 or perform stabilization, so that the actions taken are appropriate and measurable.

Strong self-confidence makes a person more disciplined in following standard procedures (SOP). Respondents who believe in their abilities tend to be more thorough in monitoring vital signs and medication administration requirements, which are the main keys to patient safety with PEB. When facing a patient threatened by seizures or organ failure, confident medical personnel can manage stress well, so that team coordination and medical steps remain aligned. The higher the midwife's self-efficacy, the better the quality of initial management provided in severe preeclampsia cases, which has the potential to reduce maternal and neonatal complications. These findings suggest that both diploma and baccalaureate graduates exhibit a robust level of self-assurance in fulfilling their professional roles. Nevertheless, when proportions were calculated within each educational cohort, S1 graduates demonstrated a marginally higher percentage of high self-efficacy (approximately 69.6% of all S1 graduates) in comparison to D3 graduates (approximately 63.4% of all D3 graduates). This indicates that advancement in formal educational attainment contributes to the enhancement of midwives' psychological attributes, particularly with regard to their belief in their own professional capabilities [14].

Higher education at the undergraduate level (S1) is generally associated with more comprehensive theoretical comprehension, greater proficiency in evidence-based practice, and more advanced critical thinking abilities. These elements constitute essential components in the formation of self-efficacy. Individuals who perceive themselves as possessing a broader knowledge base tend to exhibit higher levels of preparedness and confidence when confronted with complex clinical scenarios or when tasked with making critical clinical decisions[15].

Nonetheless, the considerable prevalence of high self-efficacy among D3 graduates (34.5%) substantiates that intensive hands-on experience acquired during vocational training also serves as an effective source of self-confidence. This finding is consistent with the theory proposed by Nuraini & Rahmawati [16] which posits that self-efficacy is shaped not only by formal knowledge acquisition but also by "mastery experiences" gained through direct clinical practice. The achievement of healthcare providers in East Kutai Regency in sustaining self-efficacy rates exceeding 60% across all educational levels reflects a positive indication of the quality of maternal and child health service management within the region[17].

Analysis of the Relationship between Clinical Competence and Self-Efficacy on Management of Severe Preeclampsia (PEB) Cases

Based on the research results, there is a relationship between clinical competence (p-value 0.031) and self-efficacy (p-value 0.015) on the management of PEB cases. Midwives with good competence are proven to be more accurate in detecting PEB symptoms and making appropriate referral decisions. Lack of clinical skills often causes delays in administering Magnesium Sulfate (MgSO4) as initial management of PEB/Eclampsia[18]. Midwives with high self-efficacy feel more capable of managing emergency situations, so they are braver in providing initial actions such as MgSO4 injection. Self-efficacy increases along with practical experience and training received, which then improves performance in case management [19].

Based on statistical test results, the clinical competence variable (Sig. 0.031) and self-efficacy variable (Sig. 0.016) are < 0.05, which means that these variables partially affect the PEB Management variable. Competent and confident midwives can reduce maternal mortality rates by providing fast, appropriate, and standard-compliant first management. The combination of good knowledge, skills, and attitudes directly contributes to referral accuracy, avoiding fatal delays[20].

PEB management is highly technical and high-risk; if medical personnel make mistakes in administering Magnesium Sulfate (MgSO4) dosages or delay antihypertensive administration, it can be fatal[21]. The Sig. value of 0.031 proves that partial mastery of standard operating procedures (SOP) greatly contributes to saving maternal and fetal lives. Without competence, medical actions will only become unmeasured malpractice. The mentality of medical personnel is often the main determinant in critical situations[22]. A person may be theoretically knowledgeable (competent), but if they doubt their own abilities, they will experience decreased self-confidence. The Sig. value of 0.016 proves that high self-confidence allows health workers to execute the knowledge they have quickly, accurately, and calmly under the pressure of emergency situations. Increasing midwives' clinical competence (especially through training and simulation) directly improves their self-efficacy, which in turn improves the quality of PEB management in primary health facilities [23].

Based on the multiple logistic regression test results, it was found that the variables of education, working period, and age did not have a statistically significant relationship as dominant predictors of accuracy in PEB management (p > 0.05). Although in the second step (Step 2) the education variable showed a significance value approaching the limit (0.086) with an Odds Ratio of 1.549, methodologically this still indicates that

demographic background is not a single determining factor of the quality of midwives' clinical actions in East Kutai Regency. The non-significance of these demographic factors indicates a phenomenon that emergency management such as PEB is more determined by more dynamic internal factors, such as clinical competence and self-efficacy, rather than merely administrative attributes such as age or length of work [24].

The absence of a dominant relationship from working period indicates that long "flight hours" do not guarantee accuracy of action if not accompanied by knowledge updating (knowledge refreshing). In PEB management, procedures such as administering Magnesium Sulfate (MgSO4) dosages require technical precision that is more influenced by clinical reflexes from the latest training than just chronological age[25].

This finding provides an important message for health management in East Kutai Regency that to improve the quality of maternal services, interventions should not only focus on one particular education or working period group but must be carried out evenly through continuous clinical capacity building [4]. Overall, this study concludes that the accuracy of PEB management is a complex outcome. Demographic factors such as education and working period only act as a foundation, but the clinical competence variable remains the most determining or dominant variable in the success of patient management in the field.

CONCLUSIONS

The majority of midwives have good clinical competence, which directly contributes positively to the accuracy of managing severe preeclampsia (PEB) cases, with 144 respondents (53.9%) achieving this. A high level of self-efficacy or self-confidence in midwives is proven to have a strong relationship with the accuracy of clinical actions, where nearly half of the respondents (44.9%) were able to manage severe preeclampsia (PEB) cases appropriately due to their self-efficacy. Statistically, there is a significant relationship between clinical competence (p=0.031) and self-efficacy (p=0.016) on the management of severe preeclampsia (PEB) cases. Both variables are proven to have a partial relationship, which means the success of PEB management is largely determined by the combination of technical skill (competence) and self-confidence (self-efficacy) of the midwife in taking action.

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