



Exploring the Factors that Enhance Learning and Self-Efficacy of Midwifery Students: A SEM-PLS Analysis

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A B S T R A C T

This study aims to identify the influencing factors on midwifery students' learning and self-efficacy development in Indonesia. The study employed a descriptive and cross-sectional analysis using an online questionnaire that included demographic data and analysis factors such as environmental learning, lecturer quality, learning methods, self-motivation, social support skills, assessment and feedback, circumstances of learning enhancement, and perceived self-efficacy. The study population was students majoring in midwifery at the Ministry of Health Polytechnic Sorong, who are currently enrolled in diploma and undergraduate programs. A total of 40 respondents completed the survey. The results showed that learning methods have a significant influence on both learning improvement and self-efficacy. The study highlights the need to identify and evaluate the various factors that influence midwifery students' learning to develop more effective and efficient strategies and methods to increase the quality and effectiveness of midwifery education. The study's findings could have implications for the future of education and health in Indonesia.

INTRODUCTION

The midwifery education field in Indonesia faces various changes and challenges. Several issues related to midwifery education exist, such as policy changes concerning midwifery services, the latest developments in the midwifery profession, and the challenges midwives encountered in their profession. Additionally, research indicates that the structure of midwifery programs, accreditation, midwifery laws, and the Midwifery Council are significant in influencing the quality of midwifery education. As of 2015, Indonesia had 151 midwifery programs that produced around 34,401 new midwives (Adnani, 2021; Adnani et al., 2023).

As education and health continue to evolve, the need to improve the quality and effectiveness of midwifery student education will increase. It is crucial to equip midwifery students with adequate knowledge and skills to provide high-quality health services to society. Various factors can enhance midwifery students' learning and development of self-efficacy. For example, a systematic review of qualitative studies found that the relationship with the preceptor is a prerequisite for the learning process and achievement of self-efficacy (Folkvord & Risa, 2023). Moreover, a high-fidelity simulation is an effective learning modality for technical and non-technical skill acquisition and transfer to patient care (Grabowski et al., 2020). The educational model for skill acquisition is also critical for managing students' stress, anxiety, and self-efficacy (Grabowski et al., 2020). Self-efficacy is a belief in one's ability to master challenges, a crucial

component in learning theories (Folkvord & Risa, 2023). Midwifery training aims to educate students who love their profession and find motivation in education.

Despite the extensive research in this area, there still needs to be a gap in understanding the most significant and effective factors influencing midwifery students (Adnani et al., 2022, 2023; Susanti et al., 2022). Further research is needed to gain more insight into the factors influencing student midwifery, learning, and the development of self-efficacy. This study must provide more accurate and relevant information about these factors. With more understanding of these factors, we can develop more effective and efficient strategies and methods for increasing the quality and effectiveness of midwifery student education, which can benefit the future of education and health.

Influencing factors for midwifery student learning are varied and can be grouped into several categories, including learning methods, quality of learning materials, the use of technology, information, and communication in learning, and supportive social and environmental factors. These factors can impact midwifery student learning and the development of self-efficacy. The study aims to identify the influencing factors for midwifery student learning and self-development efficacy. By evaluating these factors, we can develop more effective and efficient strategies and methods for increasing the quality and effectiveness of midwifery student education.

METHOD

This study employed a descriptive and cross-sectional analysis of the population of students majoring in midwifery at the Ministry of Health Polytechnic Sorong who are currently enrolled in diploma and undergraduate programs. The study utilized a simple random sampling technique to select respondents who are ready-to-practice midwives, and these respondents complete an online survey questionnaire distributed through WhatsApp.

The data collection techniques used in this study involved an online questionnaire created using Google Forms, which consisted of two parts: demographic data and analysis factors. Demographic data covers various information such as age, religion, ethnicity, education of the last parent, index of performance during college, semester or level at the moment, level of the study program, number of extracurricular activities followed, and the number of family members living together with the respondent. The analysis factors included environmental learning, quality of lecturer learning, learning methods, self-motivation, social support skills, assessment and feedback, and circumstances of learning enhancement, and perceived self-efficacy. Respondents were asked to provide their responses using a Likert scale.

Regarding data analysis, the study utilized validity and reliability analysis, as well as univariate analysis using the Jamovi application. Multivariate analysis was performed using Structural Equation Modeling

(SEM) analysis with SMART PLS. The study has received ethical approval from the Committee on Ethics and Health at the Ministry of Health and Health Polytechnic Sorong.

RESULT

A. Characteristics respondent

A total of 41 individuals participated in the study; however, only 40 respondents completed the questionnaire. Based on the data collected from the 40 participants, it was concluded that the majority of the respondents were undergraduate students in study programs (72.1%), with a mean age of 19.08 years (SD 1.16) and a cumulative performance index mean of 3.22 (SD 0.25). Of the respondents, 76.7% were from non-Papuan ethnic backgrounds, with the majority identifying as Muslim (62.8%). Regarding the education of the respondents' parents, the majority had completed high school (48.8%), and a significant portion of the respondents (79.1%) only participated in one extracurricular activity. The respondents' family size varied, with the majority reporting having five or more family members (46.5%). Table 1 below presents the data.

Table 1. Characteristics respondent

Variable	n	%
Age (mean,SD), Min-Max	19.08(1.16)	18-22
study program level		
diploma	12	27.9 %
bachelor	31	72.1 %
semester		
2	15	34.9 %
4	19	44.2 %
6	9	20.9 %
Index performance cumulative (mean,SD) min-max	3.22 (0.25)	2.50-3.90
Ethnic group		
non papua	33	76.7 %
Papua	10	23.3 %
Religion		
Islam	27	62.8 %
Catholic	3	7.0 %
Christian Protestant	13	30.2 %
parent education		
the end college tall	11	25.6 %
finished elementary school	6	14.0 %
finished high school	21	48.8 %
finished junior high	5	11.6 %
Activity following extracurriculars		
1	34	79.1 %
2	3	7.0 %
3	3	7.0 %
4	3	7.0 %
amount member family		
1	2	4.7 %
2	1	2.3 %
3	10	23.3 %
4	10	23.3 %
5/ more	20	46.5 %

B. Validity and reliability test

Based on the validity and reliability tests results conducted on the instruments as mentioned above, each measured factor exhibits a high level of validity and reliability. The coefficients of correlation between each item on the factors and the total score factor is all significant (as indicated by a sig star above 0.05), and the values of Cronbach's alpha are sufficiently high (above 0.7) for all factors, indicating that the instrument possesses adequate reliability.

Thus, the instrument utilized in this study is valid and reliable for measuring the factors examined: learning environment, lecturer quality, learning methods, self-motivation, social and familial support, and rating and feedback. The relevant data are presented in Table 2 below.

Table 2. Validity and reliability test results instrument

Question	Pearsons	If item dropped	Cronbach's α
A. Environment learning			'0.810
To what extent does the on-campus environment support self-efficacy in learning and development?	'0.841***	'0.734	
To what extent do the facilities on campus support self-efficacy in learning and development?	'0.828***	'0.739	
To what extent does the campus atmosphere support self-efficacy in learning and development?	'0.718***	'0.786	
To what extent does the surrounding environment of your residence support self-efficacy in learning and development?	'0.661***	'0.818	
How much does the support of family and friends contribute to your self-efficacy in learning and development?	'0.722***	'0.781	
B. Quality Lecturer			'0.954
To what extent does a good quality lecturer provide study materials in a clear and systematic manner?	'0.892***	'0.952	
To what extent does a good lecturer provide motivation and support to students facing academic challenges?	'0.945***	'0.936	
To what extent does a good lecturer respond to students' questions and provide adequate explanations?	'0.878***	'0.953	
To what extent does a good lecturer provide constructive and solution-focused feedback on students' performance?	'0.950***	'0.934	
To what extent does a good lecturer create a conducive and supportive environment for students' self-efficacy in learning and development?	'0.934***	'0.939	
C. Method Learning			'0.949
To what extent does the frequency of using learning methods in class help you understand college material?	'0.924***	'0.934	
To what extent do active learning methods used in class help you engage in the learning process?	'0.925***	'0.933	
To what extent do creative learning methods used in class provide inspiration and enhance your understanding of new material?	'0.895***	'0.945	
To what extent do learning methods used in class help to increase your cognitive abilities, such as critical thinking and analysis?	'0.898***	'0.941	
To what extent do easy-to-understand learning methods used in class increase your self-efficacy?	'0.924***	'0.934	
D. Motivation Self			0.810
To what extent do you feel motivated to learn?	'0.829***	0.825	
To what extent does the social environment influence your motivation to study?	'0.840***	0.821	
To what extent does the importance of academic objectives increase your motivation to study?	'0.832***	0.824	
To what extent does self-efficacy play a role in increasing your motivation to study?	'0.923***	0.792	

How often do you feel bored with college material, and to what extent does it impact your motivation to study?	'0.673***	0910	
E. Support Social and family			'0.877
How often do you actively participate in class discussions to increase your self-efficacy in learning and development?	'0.676***	'0.886	
How often do you participate in extracurricular activities related to midwifery to increase your self-efficacy in learning and development?	'0.775***	'0.872	
How often do you take the initiative to discuss learning material with classmates or lecturers to increase your self-efficacy in learning and development?	'0.948***	'0.801	
How often do you use additional learning resources from the library or outside of class to increase your self-efficacy in learning and development?	'0.832***	'0.850	
To what extent are you involved in activities organized by your study program or major to increase your self-efficacy in learning and development?	'0.863***	'0.835	
F. Ability self			'0.946
To what extent are you confident in your ability to read to increase your self-efficacy in learning and development?	'0.876***	'0.943	
To what extent do you trust your ability to write to increase your self-efficacy in learning and development?	'0.877***	'0.940	
To what extent are you confident in your ability to speak to increase your self-efficacy in learning and development?	'0.946***	'0.923	
To what extent do you trust your ability to think critically to increase your self-efficacy in learning and development?	'0.952***	'0.921	
To what extent are you confident in your academic abilities in general to increase your self-efficacy in learning and development?	'0.887***	'0.938	
G. Rating and bait come back			'0.958
How often do lecturers provide ratings and feedback on your study results to improve your self-efficacy in learning and development?	'0.934***	'0.943	
To what extent does clear and specific feedback provided by lecturers help you improve your self-efficacy in learning and development?	'0.921***	'0.940	
To what extent does honest and fair assessment by lecturers help you improve your self-efficacy in learning and development?	'0.924***	'0.923	
To what extent do solution-oriented ratings and feedback provided by lecturers help you improve your self-efficacy in learning and development?	'0.956***	'0.921	
To what extent do constructive ratings and feedback provided by lecturers help you improve your self-efficacy in learning and development?	'0.896***	'0.938	

Note. * $p < .05$, ** $p < .01$, *** $p < .001$

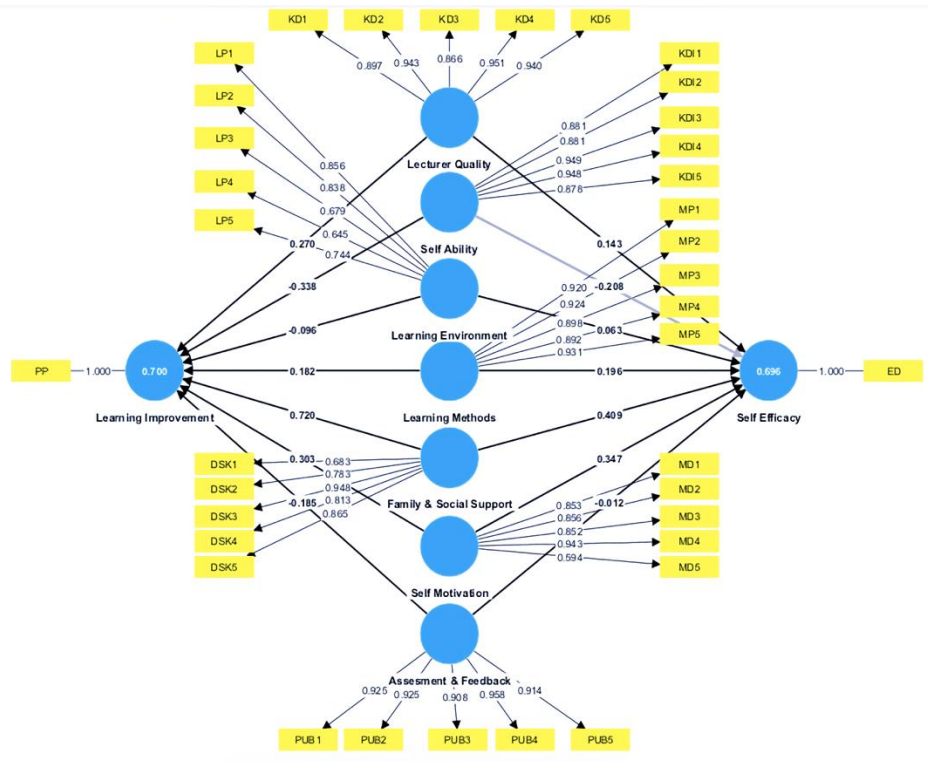
C. Partial analysis least square

1. Outer model testing

Outer model testing aims to look at the model's validity and reliability.

a) Factor loading

To ensure the quality and validity of the measured constructs, a factor loading model was tested, and the results showed that all indicators in each construct had a factor loading value exceeding 0.6. This indicates that each of the selected indicators, including the learning environment, lecturer quality, learning methods, self-motivation, social and family support, self-assessment ability, and feedback, has a strong relationship with the corresponding construct being measured. Therefore, the constructs used in this study have a reasonably high level of accuracy and can be relied upon to measure the factors that influence the improvement of learning and the development of self-efficacy for midwifery students. The outer research model analysis can be seen in Figure 1 below.



b) Inner model testing Coefficient of Determination R2 (R- Square)

The R-square value for Learning Improvement is 0.700, indicating that the observed factors in this study can explain 70% of the variability in learning enhancement. The Adjusted R-square value of 0.642 suggests that after controlling for other variables, the observed factors can explain 64.2% of the variation in learning enhancement. Similarly, the R-square value for Self-Efficacy is 0.696, indicating that the observed factors can explain 69.6% of the variation in self-efficacy for midwifery students. The Adjusted R-square value of 0.637 suggests that the observed factors can explain 63.7% of the variation in self-efficacy after controlling for other variables. These high R-square values indicate that this study’s observed factors effectively explain the variation in learning enhancement and self-efficacy for midwifery students. However, it is essential to note that other factors may influence these outcomes which were not observed in this study. The data is presented in Table 3.

Table 3. R-square analysis

Construct	R-square	Adjusted R-square
Learning improvements	0.700	0.642
Self Efficacy	0.696	0.637

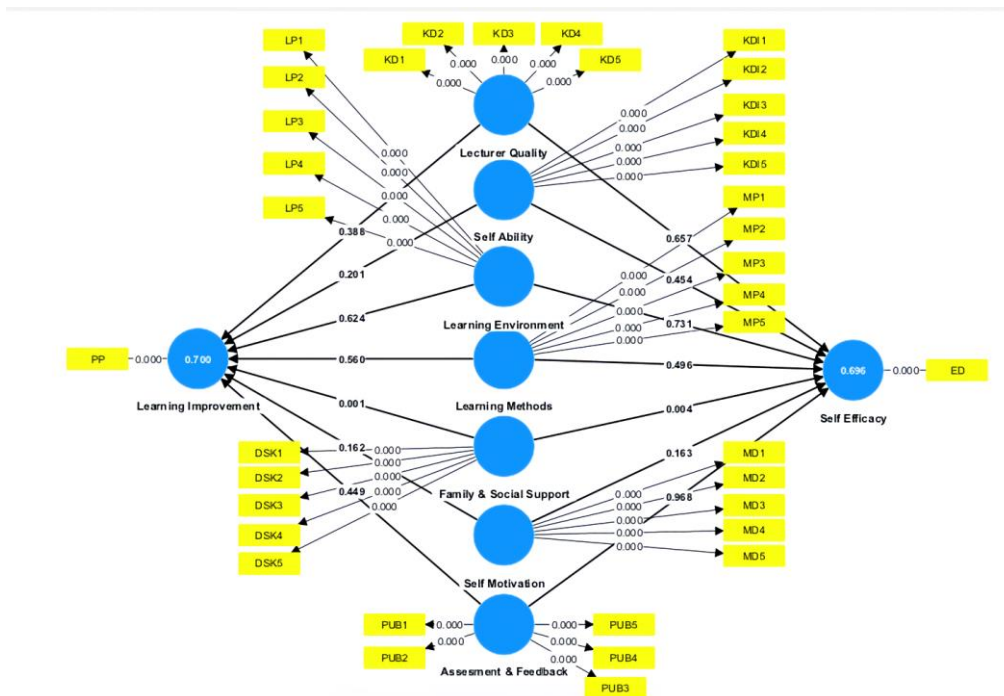
The R-square value indicates the proportion of variance in the dependent variable (in this case, learning improvement and self-efficacy) that can be explained by the independent variables (learning environment, lecturer quality, learning methods, self-motivation, social and family support, self-assessment ability, and feedback) included in the model. In this study, the R-square values for both learning improvement and

self-efficacy are relatively high; indicating that the observed factors in the study can explain a significant proportion of the variability in these outcomes.

However, the adjusted R-square values are slightly lower than the R-square values, indicating that controlling for other variables in the model reduces the proportion of variance explained by the independent variables. This suggests that other variables may contribute to learning improvement and self-efficacy but were not included in the study.

Therefore, while the observed factors in the study are significant in explaining learning improvement and self-efficacy among midwifery students, other factors may also influence these outcomes. Future studies could explore additional variables that may impact learning improvement and self-efficacy in this population.

c) Analysis Factor



Based on the statistical analysis, only the variable of learning method has a significant influence on both learning improvement and self-efficacy, with a p-value less than 0.05. This means that the other variables, such as learning environment, lecturer quality, self-motivation, social and family support, self-assessment abilities, and feedback, do not significantly influence learning improvement and self-efficacy, with p-values greater than 0.05. It is important to note that this is based on the data collected and analyzed in this study. There may be other factors that were not measured or accounted for that could potentially influence learning improvement and self-efficacy.

DISCUSSION

Research results show that only the learning method variable significantly influences the enhancement of learning and the efficacy of self-student midwifery. This indicates that the learning method used can influence the ability to learn and the development of self-efficacy in student midwifery. However, it is necessary to note that other variables, such as the learning environment, quality of the lecturer, self-motivation, social and family support, self-abilities, assessment, and feedback do not significantly influence the enhancement of learning and self-efficacy. Although they are not significant, this does not mean that these factors are not necessary in learning and the development of self-efficacy in student midwifery.

The findings of this study were obtained through the process of data collection and analysis. This study used a cross-sectional descriptive method with a sample of all students majoring in midwifery at the Health Polytechnic of the Ministry of Health Sorong diploma and undergraduate study programs. Data were collected through online questionnaires distributed using Google Forms and were filled out voluntarily by the respondents.

After the data is collected, descriptive analysis is performed to see the characteristics of the sample and analyze the data distribution. Next, multivariate analysis using Structural Equation Modeling (SEM) with the help of the Smart PLS application is used to analyze the connection between variables in the research.

The research results can be associated with previous studies that have found that the learning method significantly influences learning and the development of self-efficacy in students. Several previous studies show that the learning method significantly influences learning and self-efficacy in students (Folkvord & Risa, 2023; Gudayu et al., 2015; Jordan & Farley, 2008; Thompson et al., 2021).

However, the results of this study are different from previous studies that have shown that other factors such as the learning environment, quality of the lecturer, self-motivation, social and family support, self-abilities, assessment, and feedback also have a significant influence on learning and the development of self-efficacy in students. Several previous studies show that these factors significantly influence students' learning and self-efficacy (Grabowski et al., 2020; Inoue et al., 2023; Liu et al., 2021; Thompson et al., 2019, 2021).

Enhancement of learning and self-efficacy is an essential factor for student midwifery to achieve good academic quality. However, in research conducted on student obstetrics, there were findings that the variables of the learning environment, quality of the lecturer, self-motivation, social and family support, self-abilities, assessment, and feedback do not have a significant influence on the enhancement of learning and self-efficacy, with a p-value greater than 0.05.

This can be explained by some factors that influence the enhancement of learning and self-efficacy in student midwifery. First, the variables of the learning environment, quality of the lecturer, and facilities

may not be considered significant by midwifery students because of a lack of understanding about the importance of these factors in the learning process. Additionally, a lack of adequate quality lecturers and learning environments can be overcome by other factors, such as self-motivation and more significant social and family support, which may be more dominant (Chen & Xiao, 2022; Coman et al., 2020; Kim et al., 2019).

Second, the self-motivation and self-abilities of student midwifery may have already reached an optimum level, so they have little effect on the improvement of learning and self-efficacy. This can happen if midwifery students have intrinsic solid motivation and adequate self-abilities in facing academic tasks.

Thirdly, social and family support are possible factors that significantly enhance learning and self-efficacy in student midwifery. These factors are more important in the beginning stage of learning when student midwives are still experiencing difficulties in adapting to the new environment and building strong social relationships.

Several studies have supported the findings that these factors do not have a significant effect on improving learning and self-efficacy in student midwifery. For example, research by Firoozehchian et al., (2022); Iwanowicz-Palus et al., (2022) shows that social and family support does not significantly influence the self-efficacy of student midwives. However, research by Mirzakhani & Shorab, (2015); Mohamed Mohamed Bayoumy & Alsayed, (2021) shows that the self-motivation and abilities of student midwives have a moderate influence on their academic performance.

Environmental variables such as learning environment, quality of lecturers, self-motivation, social and family support, self-abilities, assessment, and feedback have no significant influence on increasing learning and self-efficacy in student obstetrics. These variables should be considered when designing effective learning strategies. Furthermore, the results of another study conducted by Kintu et al., (2017); Simões et al., (2022); Zhao et al., (2021) show that the study environment, quality of lecturers, and social support do not have a significant influence on the performance of students in high school. These research results also support the findings of previous studies that these factors do not significantly influence students' learning and academic achievement.

However, several other factors can influence the learning and efficacy of self-directed students, such as emotional intelligence, interpersonal skills, intelligence, and peer support (Chang & Tsai, 2022; Okwuduba et al., 2021; Tekkol & Demirel, 2018; Zhoc & Chen, 2016). Therefore, further research can explore specific variables that can influence the learning and efficacy of self-directed students in midwifery.

In conclusion, while the learning environment, quality of lecturers, self-motivation, social and family support, self-abilities, assessment, and feedback may not have a significant influence on enhancing the learning and efficacy of self-directed students in obstetrics, there are other necessary factors to be

considered for increasing the learning and efficacy of self-directed students in midwifery. Thus, further research can explore specific and more profound factors.

From the research results and discussion above, several relevant theories emerge that expand our understanding of the factors that influence learning and the development of self-directed students in midwifery. One trend is that self-directed learning is the main factor influencing self-directed students' learning and efficacy. This is based on the finding that self-motivation significantly influences learning and efficacy, while other variables do not. Therefore, the concept of self-directed learning, which refers to an individual's ability to control their learning process alone, is a critical factor in increasing the learning and efficacy of self-directed students in midwifery.

Enter variable method learning as the main factor. This is based on findings that the learning method itself significantly influences on the efficacy of oneself, which is more associated with various environmental learning variables, social support, and assessment. This modification theory can expand understanding of the influencing factors affecting the self-efficacy of student obstetrics, especially in the context of proper learning methods. The theory on influencing factors in psychology can shed light on the importance of psychological factors such as self-perception, motivation, and emotions in influencing the learning process and developing the self-efficacy of student midwifery.

CONCLUSION

Based on the research results and discussions above, only the variable of the learning method has a significant influence on enhancing learning and the efficacy of self-student midwifery. Currently, other variables such as the learning environment, lecturer quality, self-motivation, social and family support, self-abilities assessment, and feedback do not have a significant influence on enhancing learning and self-efficacy. This shows that effective learning methods can help increase learning and self-efficacy for student midwives. Therefore, it is suggested that the midwifery education institution pays attention to selecting and using proper learning methods to increase learning and self-efficacy for students. Furthermore, it is necessary to conduct further studies to deepen the understanding of other factors that can influence learning and self-efficacy for student midwives. These studies should consider factors such as learning style, personal factors, and social environment as potential variables that influence learning and self-efficacy for students. In this regard, a suggestion for student midwives is to choose appropriate learning methods that suit their learning style and maximize learning through extracurricular activities and self-development. Additionally, the midwifery education institution should provide more support regarding availability and accessibility of study facilities and adequate academic guidance.

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