DIFFERENCES IN THE COMPETENCY OF ASSESSING FUNDUS HEIGHT AND UTERUS CONTRACTIONS OF POST-PARTNERS IN THE USE OF THE SMART ABDOMEN MODEL OF SIMULATED PATIENTS AND THE ZOE SIMULATOR

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ABSTRACT

The study aims to determine the competence of students in assessing fundus height and uterine contractions of postpartum mothers using the SMART Abdomen Model of simulated patients and the Zoe Simulator. The type of research is Quasi Experiment. The study population was all students of the D III Midwifery study program at the Jakarta III and Malang Ministry of Health Polytechnics in March-April 2022.The intervention group of students used the "SMART" abdominal model on 60 simulated patients, while the control group was students using the "SMART" abdominal model on the Zoe Simulator as many as 60 people. Data collection through questionnaires and observations. Data analysis using Chi Square. The SMART abdominal model used on simulated patients and the Zoe simulator supported the achievement of competency in assessing fundus height and uterine contractions of postpartum mothers by 81.4%. Respondents had poor motivation of 110 people (91.7%), had support from the practicum supervisor>mean of 68 people (56.75) and institutional compliance in implementing the practicum credits>mean of 69 people (57.5%). There was no significant difference in the competency in assessing fundus height and uterine contractions in the use of the SMART Abdomen Model for simulated patients and the Zoe Simulator. There was no relationship between motivation, support from the practicum supervisor and institutional compliance in implementing the practicum credits with student competency. The use of the SMART abdominal model was used on both simulated patients and the Zoe simulator. It is necessary to increase the number of SMART abdominal models in each Health institution.
Keywords: SMART abdominal model; Zoe abdominal model; competence; fundal height and uterine contraction assessment

ABSTRAK

Penelitian bertujuan mengetahui kompetensi mahasiswa melakukan penilaian tinggi fundus dan kontraksi uterus ibu nifas dengan menggunakan Model Abdomen SMART pasien simulasi dan Simulator *Zoe*. Jenis penelitian *Quasi Eskperimen*. Populasi penelitian seluruh mahasiswa prodi D III Kebidanan Poltekkes Kemenkes Jakarta III dan Malang pada bulan Maret-April 2022. Kelompok intervensi mahasiswa menggunakan model abdomen "SMART" pada pasien simulasi sebanyak 60 orang, sedangkan kelompok kontrol adalah mahasiswa menggunakan model abdomen "SMART" pada Simulator *Zoe* sebanyak 60 orang. Pengumpulan data melalui kuesioner, dan observasi. Analisis data menggunakan Kai Kuadrat.

Model abdomen SMART digunakan pada pasien simulasi dan simulator Zoe mendukung pencapaian kompetensi penilaian tinggi fundus dan kontraksi uterus ibu nifas sebesar 81,4%. Responden memiliki motivasi yang kurang baik sebesar 110 orang (91.7%), memiliki dukungan dari pembimbing praktikum >mean sebesar 68 orang (56.75) dan kepatuhan institusi dalam menerapkan SKS praktikum >mean sebesar 69 orang (57.5%). Tidak ada perbedaan signifikans kompetensi penilaian tinggi fundus dan kontraksi uterus pada penggunaan Model Abdomen SMART pasien simulasi dan Simulator *Zoe*. Tidak ada hubungan antara motivasi, dukungan pembimbing praktikum dan kepatuhan institusi dalam menerapkan SKS praktikum dengan kompetensi mahasiswa. Penggunaan model abdomen SMART digunakan pada pasien simulasi maupun simulator *Zoe*. Perlu penambahan jumlah model abdomen SMART pada setiap institusi Kesehatan.

Kata Kunci: model abdomen SMART; model abdomen Zoe; kompetensi; penilaian tinggi fundus dan kontraksi uterus

INTRODUCTION

Assessment of fundus height and uterine contraction is one of the competencies that must be achieved by graduates of the D III Midwifery study program. To improve this competency, a mannequin or simulator is needed to be used for skills training in the laboratory.(Alone, 2017).The midwifery skills laboratory plays an important role in improving the competence and confidence of lecturers and students through clinical skills training without risk to patients.(Utz et al., 2015).The simulators for assessing fundus height and uterine contractions owned by Jakarta III and Malang Ministry of Health Polytechnics are considered inadequate for achieving good competency, considering that the Zoe abdomen model (Zoe simulator) available is a model with an empty abdomen. So, in their learning, students can only estimate the fundus height and uterine contractions and cannot be sure how high the fundus and uterine contractions are actually according to the condition of the postpartum mother. In addition, the number of available mannequins is also limited. This is because the cost of procuring the Zoe abdomen model is quite expensive.

 The "SMART" abdominal model is an innovation in midwifery education that has been developed by researchers in 2021. The "SMART" abdominal model has specific characteristics, is cheap, accurate, realistic and measurable.(Herlyssa, Mulyati, et al., 2022). In addition, this model can be used on simulated patients

and conventional models (Zoe's abdomen). Simulation-based clinical learning can be a valuable tool for improved clinical practice.(Jones et al., 2015). This learning emphasizes a safe and controlled environment with problem-based learning developed and competencies practiced. Simulation-based clinical education is a useful pedagogical approach that provides students with the opportunity to practice their clinical skills and decision-making through a variety of real-life situational experiences, without compromising patient welfare.(Kim et al., 2016). Laboratory guidance assistance using the SMART abdominal model on simulated patients and the Zoe simulator model is one of the efforts to improve the learning outcomes of midwifery students, especially in providing care during the postpartum period. This study aims to determine the competence of students in assessing fundus height and uterine contractions in postpartum mothers using the SMART Abdomen Model of simulated patients and the Conventional Abdomen Model (Zoe Simulator).

METHODS

This type of research is Quasi Experimental research. The dependent variable is the competency variable of D III Midwifery students in assessing fundus height and uterine contractions in postpartum mothers. The use of the SMART abdominal model of simulated patients and the Zoe simulator,motivation, support from the practicum supervisor and institutional compliance in implementing the practicum credits as independent variables. The population of this study was all D III Midwifery study program students in semester III at Malang Ministry of Health Polytechnic who used the SMART abdominal model on simulated patients and conventional models in March-April 2022. The intervention group was some students who were given assistance in using the "SMART" abdominal model to assess fundal height and uterine contractions in postpartum mothers on simulated patients, while the control group was some students without assistance in using the "SMART" abdominal model to assess fundal height and uterine contractions in postpartum mothers on the Zoe Simulator model. The total sample size was 120 people, divided into 60 people from   Jakarta III Ministry of Health Polytechnic (control group) and 60 people from Malang Ministry of Health Polytechnic (intervention group). The sampling criteria were third semester students who had taken postpartum care and breastfeeding

courses and were willing to be respondents. The sampling technique was purposive sampling. Data collection in the intervention group began with a guidance process by the lecturer on how to use the SMART abdominal model, after which students carried out practical exercises both with guidance and independently, after which an assessment was carried out on student competency regarding fundus examination and uterine contractions in simulated postpartum patients. The research instrument was developed by the researcher based on (Wibowo, 2014), consisting of six statement items for each variable, using a Likert scale consisting of positive statements (strongly agree scale = 4, agree = 3, disagree = 2 and strongly disagree = 1) and negative statements (strongly agree scale = 1, agree = 2, disagree = 3 and strongly disagree = 4). The research instrument has been tested for reliability and validity of the instrument. The data collection technique was carried out primarily using the questionnaire method and observation of the procedure for assessing fundus height and uterine contractions in postpartum mothers. The analysis was carried out univariately and bivariately with Chi Square.

RESULTS AND DISCUSSION

A. Research result

1. Univariate Analysis

Table 1. Frequency distribution of student competencies in assess fundus height and uterine contractions in postpartum mothers

Sub Variables	frequency	Percentage
Not Competent	22	18.3
Competent	98	81.4

Based on table 1, it is known that 98 students (81.4%) of the D III Midwifery study program at the Jakarta III Ministry of Health Polytechnic and Malang Ministry of Health Polytechnic were competent in assessing fundus height and uterine contractions in postpartum mothers.

Table 2. Frequency distribution of respondents regarding motivation, mentor support and institutional compliance with the Practical Work Credits

Variables	Sub variables	Amount	%
motivation	Not good	110	91.7
	Good	10	8.3
support	<mean	52	43.3
	>mean	68	56.7
Compliance	<mean	51	42.5
	>mean	69	57.5

Based on table 2, it is known that respondents who have poor motivation are 110 people (91.7%), have support from the practicum supervisor >mean of 68 people (56.75) and institutional compliance in implementing the practicum credits >mean of 69 people (57.5%).

2. Bivariate Analysis

a. Use of the SMART Abdomen Model in the control and intervention groupsThe process of testing the effectiveness of the use of the SMART abdominal model on student competence in assessing fundus height and uterine contractions was carried out by comparing the intervention group and the control group. The following is the distribution of respondent characteristics, experience practicing in one semester, motivation, supervisor support and institutional compliance with the practicum credits based on the control and intervention groups in table 3 below.

Table 3. Distribution of motivation, supervisor support and institutional compliance with practicum credits based on control and intervention groups

Variables	Group				Total		OR (95% CI)	P value
	Control		Intervention					
	n	%	n	%	n	%		
Competence							1,519 (0.729-3.169)	0.351
- Not Competent	27	56.3	21	43.8	48	100		
- Competent	33	45.8	39	54.2	72	100		
Motivation							0.224 (0.046-1.104)	0.099
-Not good	52	47.3	58	52.7	110	100		
-Good	8	80	2	20	10	100		

Support from the practicum supervisor							1,000 (0.468-2.059)	1,000
-<mean	26	50	26	50	52	100		
->=mean	34	50	34	50	68	100		
Compliance with the implementation of Practical Credits							1,000 (0.453-1.927)	1,000
-<mean	25	49	26	51	51	100		
->-mean	35	50.7	34	49.3	69	100		

Based on Table 3, it shows that there is no significant difference between the variables of competence, motivation, support from practical supervisors and compliance with the implementation of practical credits in the control and intervention groups.

Table 4. Distribution of Respondents According to Control and Intervention Groups Regarding student competence

Group	Student Competence				Total		OR (95% CI)	P value
	Not Competent		Competent					
	n	%	n	%	n	%		
Control	27	45	33	55	60	100	1,519 (0.729-3.169)	0.351
Intervention	21	35	39	65	60	100		

Table 5 shows that the statistical test results show no significant difference between the control group and the intervention group in terms of student competence in assessing fundus height and uterine contractions with a P value of 0.351 with an OR value of 1.519 (0.729-3.169), which means that respondents who were given assistance in using the SMART abdomen on simulated patients and respondents who were not given assistance in using the SMART abdomen installed on the Zoe simulator had the same competence in assessing fundus height and uterine contractions in postpartum mothers.

Table 5

Distribution of Respondents According to Independent Variables

and Student Competencies

Variables	Student Competence				Total		OR (95% CI)	P value
	Not Competent		Competent					
	n	%	n	%	n	%		
Motivation							0.412 (0.110-1.545)	0.196
-Not good	42	38.2	68	61.8	110	100		
-Good	6	60	4	40	10	100		
Support from the practicum supervisor							1,029 (0.492-2.149)	1,000
-<mean	21	40.4	31	59.6	52	100		
->=mean	21	38.7	41	60.3	68	100		
Compliance with the implementation of Practical Credits							1.375 (0.390-6.848)	0.761
-<mean	19	37.3	32	62.7	51	100		
->-mean	29	42	40	58		100		

Table 5 shows that the results of the statistical test showed no significant difference between all independent variables and student competence in assessing fundus height and uterine contractions.

b. Multivariate Analysis

Considering that in the bivariate analysis there were no variables that had a P value <=0.05, the multivariate analysis in this study was not continued.

The competence to assess fundus height and uterine contractions in postpartum mothers is one of the competencies that must be achieved by graduates of the D III Study Program.(Herlyssa, Elly Dwi Wahyuni, et al., 2022). The results of the study showed that the competence of students of the D III Midwifery study program at the Jakarta III Ministry of Health Polytechnic and Malang Polytechnic in assessing fundus height and uterine contractions was 98 people (81.4%). The results of this study were higher compared to Mayestika & Hasmira (2021)which states that p The achievement of KDPK practice competency in D III Midwifery Study Program students of Stikes Sumatera Barat is mostly 36.7% (good) and for Antenatal Care practice, the majority is 37.1% (good). This is likely due to differences in research respondents and competency in the courses studied.

Jakarta III and Malang Ministry of Health Polytechnics are midwifery education institutions under the guidance of the Indonesian Ministry of Health, specifically the Directorate of Health Workforce Provision, Directorate General of Health Workforce, Indonesian Republic, which have their respective accreditation statuses with a grade of A (very good) (h*ttps://poltekkesjakarta3.ac.id/*Andhttps://www.poltekkes-malang.ac.id/downloaded on September 28, 2024). This is proven by the results of the study which showed that there was no difference in the competence of students from Jakarta III and Malang Ministry of Health Polytechnics in assessing fundus height and uterine contractions and contractions in postpartum mothers with a P Value of 0.351 with OR1.519 (CI: 0.729-3.169). This means that both students of *Jakarta III and Malang Ministry of Health Polytechnics* have the same competence in assessing fundus height and uterine contractions in postpartum mothers.

Health education institutions that have an A (very good) accreditation value can be assured that the institution has organized the learning process very well. Poltekkes Kemenkes Jakarta III and Poltekkes Malang strongly support the achievement of D III Midwifery graduate competency, this is proven by the passing of the competency test results always above 98% every year (https://ukbidan.kemdikbud.go.iddownloaded on September 28, 2024).

The results of the study showed that respondents who had poor motivation were 110 people (91.7%). This figure is much higher compared to the study.(Sari, 2016), on students at the Faculty of Nursing, Syiah Kuala University, Banda Aceh, which is 49.7%. The high number of respondents who have poor motivation, both at Jakarta III and Malang Ministry of Health Polytechnics, is likely due to the lack of variation in online learning carried out during the pandemic. Although learning has been carried out using blended learning, the portion is still greater online, because the number of Covid-19 cases is not yet stable. This is in accordance withThe Last Supper (2021)which explains thatTeacher creativity has a positive effect on students' learning motivation during the pandemic (the coefficient value is positive 0.236). Motivation is an internal or external drive that is characterized by the desire and interest to do activities; the drive and need to do activities; hopes

and ideals; self-esteem and respect; a good environment; and interesting activities.(Agatha, 2016). Students who have low learning motivation will affect them in following the learning process, both theory and laboratory practice. For this reason, the role of academic supervisors or laboratory supervisors is needed. The results of the study also showed that respondents whohave support from good practicum supervisors (>mean) of 68 people (56.75). This figure is actually still far from what is expected from both Jakarta III and Malang Ministry of Health Polytechnics. As an institution that has an A or Excellent accreditation value, support from practicum supervisors for the student practicum guidance process should reach 90-100%. This is likely due to the increasing burden that must be carried out by lecturers. In addition to lecturers carrying out their duties and functions in the Tridharma of Higher Education activities, namely the fields of education and teaching both in class, laboratories and in practice facilities, research, community service and supporting activities, lecturers are also required to carry out various innovations in supporting the Main Performance Indicators and Additional Performance Indicators in accordance with the vision and mission of Ministry of Health Polytechnics Another factor is likely due to the fairly high ratio of lecturers and students, which is 1:22.

The results of the study showed that institutional compliance in implementing the practicum credits> mean of 69 people (57.5%). As with the previous discussion, this figure is still far from what is expected from both Jakarta III and Malang Ministry of Health Polytechnics. As an institution that has an A or Excellent accreditation value, the institution should be 100% compliant in implementing the student practicum credits. This non-compliance is likely due to the burden on lecturers and the high ratio of lecturers and students. When lecturers are going to provide guidance, lecturers are also required to teach other classes. For this reason, it is necessary to map the class and laboratory schedules for midwifery care courses during the postpartum period and other courses in each study program by the study program manager and midwifery department.

The SMART abdominal model is one of the simulators that has been developed in assessing fundus height and uterine contractions in postpartum mothers. This prototype has the characteristics of a SMART simulator, namely

Specific (>mean 56.7%), Cheap (>mean 56.7%), Accurate (>mean 63.3%), Realistic (>mean 56.7%), and Measurable (>mean 60%) (Herlyssa et al., 2021).This is also in accordance with the survey results.(Herlyssa, Elly Dwi Wahyuni, et al., 2022)which shows that almost 60% strongly agree and 40% agree that the SMART abdomen model depicts the abdomen of a postpartum mother realistically.

In addition to being used by postpartum simulation patients, the SMART abdominal model can also be used in simulator models.*Zoe* namely by tying the two cloths on the left and right sides of the Zoe simulator. The results of the study showed that with a P value of 0.351 with an OR of 1.519 (CI =(0.729-3.169).This is because the researcher has compiled a pocket book on the use of the SMART abdominal model. This pocket book contains the structure of the abdomen and SMART models and how to use this model in detail and completely, so that students can use the SMART abdominal model even without being accompanied by a practicum supervisor.

For obstetric students, simulation of fundal height assessment and uterine contraction procedures in obstetrics can be performed in the clinical skills laboratory or skills-lab on both simulated patients and Zoe's abdomen. The obstetric skills laboratory plays an important role in improving the competence and confidence of lecturers and students through clinical skills training without risk to patients.(Utz et al., 2015). The clinical skills laboratory provides a safe and secure environment in which students can practice clinical skills before using them in a real clinical setting. This skills laboratory helps ensure that all students acquire the necessary techniques and are properly assessed before practicing on real patients.(Nikolic et al., 2017,(Terzio et al., 2016).

This SMART abdomen model can also perform simulations with a combination of high and low fidelity.(Kjellin et al., 2014). Fidelity,(Herlyssa, Elly Dwi Wahyuni, et al., 2022) which refers to how closely a simulation imitates or reinforces reality, is divided into three levels when referring to Miller's Pyramid,(Miller et al., 2015). namely 1) low fidelity, which is used to build knowledge (know); 2) medium fidelity (a combination of knows-how and shows-how), which is used to build competence; and 3) high fidelity (a combination of

shows-how and does), which is used to build performance and action. Fidelity can also be divided into three types,(Herlyssa, Mulyati, et al., 2022), namely 1) physical fidelity which indicates the extent to which the simulator duplicates the appearance and feel of the actual system; and 3) emotional or psychological fidelity which indicates the extent to which the simulation can duplicate or capture the real task by using the simulated task and making the student feel as if it is real.

A student can use this model repeatedly until declared competent by the lecturer or laboratory instructor in the class. So this SMART abdominal model prototype really maintains patient safety when students provide direct care to patients. Patient safety is one of the things that must be given to patients as a form of quality and best care for the patient. Midwifery students who are inexperienced in patient safety may be able to provide dangers that are clearly unacceptable later.

Table 5 shows that the statistical test results show no significant difference between the control group and the intervention group in terms of student competence in assessing fundus height and uterine contractions with a P value of 0.351 with an OR value of 1.519 (0.729-3.169), which means that respondents who were given assistance in using the SMART abdomen on simulated patients and respondents who were not given assistance in using the SMART abdomen installed on the Zoe simulator had the same competence in assessing fundus height and uterine contractions in postpartum mothers. This shows that the SMART abdominal model can be used by students to improve the competence of examining the uterine fundus and uterine contractions in postpartum mothers even without getting guidance from lecturers. This condition can reduce the burden on lecturers and increase independent practice by students. The use of the SMART abdominal model, both on simulated patients and on the Zoe simulator model, can improve students' competence in assessing fundus height and uterine contractions in postpartum mothers.

CONCLUSION

The SMART abdominal model can be used both on simulated patients and on the Zoe Simulator to improve the competence of assessing fundus height and uterine contractions in postpartum mothers. For this reason, it is necessary tothe role of

institutions in increasing the procurement of the SMART Abdomen model to meet the ratio of students and supervising lecturers.

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