THE USE OF THE "SMART" ABDOMEN MODEL TO ACHIEVE STUDENT COMPETENCY IMPROVEMENT IN PHYSICAL EXAMINATION IN POSTPARTUM

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ABSTRACT

This study aims to determine the effectiveness of the "SMART" abdominal model as a clinical learning media in increasing student competence improvement in physical examination postpartum. This research is a quasi-experimental research with The Posttest-only Control Group Design. The population of this study was all students in the third semester of the midwifery D III. The intervention group consisted of some students who were assisted in using the "SMART" abdominal model to assess the height of the uterine fundus in postpartum mothers in simulated patients, while the control group consisted of some students without assistance in using the "SMART" abdominal model to assess height. uterine fundus in postpartum women on a conventional abdominal. The total sample was 60 people. The sampling technique was purposive sampling. Data was collected through questionnaires and observation. The type of data in this study is primary data. Data analysis uses Kai Square. The SMART abdominal model supports the achievement of learning competencies by 81.4%. There was no significant difference in competence when students used the SMART abdominal model on simulated patients or paired them with Zoe's abdominal model. For this reason, the innovation and creativity of lecturers are needed in supporting the achievement of subject learning through the development of learning models and technology.

Keywords*:increase student competence; physical examination postpartum; use SMART abdominal model*

INTRODUCTION

To increase the achievement of competence in clinical skills procedures in learning clinical skills in the skills lab, a manikin or simulator, trainer, or simulated patient or standard patient is needed (Weller, et al, 2012 in Herlyssa et al, 2022). Simulation of

the implementation of clinical skills usually uses a lot of hybrid simulation (Sendir, & Coşkun, 2017). Study program learning outcomes (CPL) have a formula that refers to SN-Dikti and IQF descriptors according to their level of education. CPL can also add capabilities that reflect the uniqueness of each tertiary institution by the vision and mission, and the uniqueness of the region where the tertiary institution is located (Junaidi, 2020).

Learningclinical skills for health students is mandatory. The theory obtained in class will not be useful at all if the implementation of learning clinical skills in terms of demonstrating these clinical skills is not carried out. Therefore, the integration between the theories obtained in the classroom must be implemented in clinical practice. Therefore, the preparation of lecturers and clinical supervisors in the field must be done as well as possible.

The Ministry of Health Polytechnic has made various efforts to support learning achievements, one of which is the provision of clinical learning media in the laboratory. At present the mannequins or simulators used for the high assessment skills of the uterine fundus are considered inadequate for achieving good competency, considering that the available Zoe abdominal model (Zoe simulator) is a model with an empty abdomen. So, in their study, students can only estimate the height of the uterine fundus and cannot be sure what the actual fundal height is according to the condition of the postpartum mother. Plus the number of mannequins available is also limited. This is because the cost is quite expensive to procure the Zoe abdominal model. developing appropriate technology that is simple and cheap but very useful, namely in the form of a "SMART" abdominal model to assess the height of the uterine fundus during the puerperium. The "SMART" abdominal model is one of the innovations in midwifery education. This "SMART" abdominal model has specific characteristics, low cost, accurate, realistic, and measurable. The development of this model is one of the efforts to improve the learning outcomes of health students, especially in providing care during the postpartum period The SMART Abdomen Model is expected to become a specific teaching aid, namely the puerperal abdominal model, which can be purchased at a low cost, and the results of measuring the height of the uterine fundus are more accurate. This abdominal model has a resemblance to the original item and is measurable, meaning it can assess the height of the uterine fundus during the

puerperium. Considering that there is no research on the effectiveness of the "SMART" abdominal model, this research must be carried out as soon as possible so that the results created are expected to be a very useful contribution for the advancement of obstetrics in particular and health sciences in general. This research is also expected to be an inspiration for academics both in midwifery and health sciences in general to be able to work by producing real products that can be used in student learning. Thus, this research is very important to be realized immediately

METHOD

This type of research is quasi-experimental research with quantitative methods, in which researchers conduct quasi-experimental tests on respondents and the results of calculating the data analysis are numerical or using numbers (Sugiyono, 2007). The research design used in this study was quasi-experimental with The Posttest-only Control Group Design. In this design, the subjects were not chosen randomly and were grouped into 2 groups (control and experimental), and only the experimental group was given treatment. After in-depth observation, both groups were given a post-test, and a conclusion was drawn from the differences that occurred between the two groups (Sugiyono, 2011).

The treatment group consisted of some students who were assisted in using the "SMART" abdominal model to assess the height of the uterine fundus in postpartum mothers in simulated patients, while the control group consisted of some students without assistance in using the "SMART" abdominal model to assess the height of the uterine fundus in mothers. puerperium in a conventional abdominal model (Zoe abdomen model). Then the two groups were given a case of care for postpartum mothers to determine student competence in assessing the height of the uterine fundus and contractions in postpartum mothers.

The variables of this study were the competency variables of D III Midwifery students in assessing the height of the uterine fundus in postpartum women as the dependent variable and the variable using the "SMART" abdominal model for assessing uterine fundal height in postpartum women as the independent variable and the respondent's characteristic variable (self-confidence and personality). as a confounding

variable. The population of this study was all third-semester students of the D III midwifery study program at the Poltekkes Kemenkes Jakarta III and Poltekeks Kemenkes Malang in March-April 2022. The sample was part of students studying study program D III midwifery at the Poltekkes Kemenkes Jakarta III and Poltekkes Kemenkes Malang in March -April 2022. The intervention group is part of the students who are assisted in using the "SMART" abdominal model to assess the height of the uterine fundus in postpartum mothers in simulated patients, while the control group is part of the students who do not receive assistance in using the "SMART" abdominal model to assess height uterine fundus in puerperal women in a conventional abdominal model (Zoe abdomen model). The total sample size was 120 people, which were divided into 60 people from the Poltekkes Kemenkes Jakarta III (control group) and 60 people from Poltekkes Malang (intervention group). The sampling technique was purposive sampling. The analysis was carried out using univariate and bivariate methods with Kai Square. The variables of this study were the competency variables of D III Midwifery students in assessing the height of the uterine fundus in postpartum women as the dependent variable and the use of the “SMART” abdominal model for evaluating the height of the uterine fundus in postpartum women as independent variables and student characteristic variables (self-confidence, practice experience , personality, motivation), support from practicum supervisors and compliance with the application of practicum credits as a confounding variable. This researcher fulfills the respondent's right to make a choice by explaining that his participation is voluntary and there is no coercion. Respondents have the right to participate or not participate in the research, having previously been given an explanation of the procedures, benefits, and risks of the research being conducted. Respondents can withdraw from this research at any time if they do not wish without any sanctions. Researchers try to reduce respondent resistance by fostering a relationship of mutual trust and explaining research procedures and their benefits for and the elderly. To fulfill the principle of beneficence.

RESULTS AND DISCUSSION

Characteristics of the Research Sample

Table 1. Distribution of Research Variable Characteristics in the control and intervention groups

Variable	Group							
	Control				Intervention			
	Mean	SD	Median	95% CI	Mean	SD	Median	95%CI
Confidence	12.48	2.966	13	1.413-12.48	12.82	1.712	13	12.37-13.26
Experience train	1.83	0.376	2.00	1.74-1.93	1.97	0.181	2	1.92-2.01
Personality	12.49	3.500	12	11.56-13.37	12.47	1.873	13	11.98-12.95
Motivation	13.07	2.742	13	12.36-13.78	12.80	1.655	13	12.37-13.23
Lecturer support practicum adviser	13.07	2.742	13	12.36-13.78	12.80	1.655	13	12.37-13.23
Compliance with the implementation of the SKS Practice	13.13	3.234	13	12.30-13.97	12.60	2.172	13	12.04-13.16

Based on table 1, it is known that the use of models, self-confidence, practice experience, personality, motivation, support from practicum supervisors, and compliance with the application of practicum credits in the intervention group and the control group are homogeneous.

Table 2. Frequency distribution of student competency in assessing uterine fundal height in postpartum

Sub Variabel	frekuensi	persentase
Incompetent	22	18.3
Competence	98	81.4

Based on Table 2, it is known that 98 students (81.4%) are competent to assess fundal height and uterine contractions in midwifery at the Poltekkes Kemenkes Jakarta III and Poltekkes Kemenkes Malang.

Table 3. Frequency distribution of student competence in assessing the height of the uterine fundus in postpartum mothers based on the procedures performed

Action procedure	Sub variable	frequency	percentage
Welcome Mother	incompetent	14	11.3
	competent	106	88.7
Explain the purpose of the examination	incompetent	32	26.7
	competent	88	73.3
Empty the bladder	incompetent	31	25.8
	competent	89	74.2
Washing hands	incompetent	30	25
	competent	90	75
Adjust the patient's position	incompetent	30	25
	competent	90	75
Measure TFU 24 hours	incompetent	41	34.2
	competent	79	63.8
Measuring TFU 6 days	incompetent	30	25
	competent	90	75
Measuring TFU 10-40 days	incompetent	30	25
	competent	90	75
	competent		

Based on table 3 it is known that students are competent 106 people (88.7) performed the procedure of welcoming patients well (88.7), explained the purpose of the examination 88 people (73.3%), 89 people (74.2%) emptying the bladder, 90 people washing hands (75%), 90 people positioning the patient (75%), measuring 24-hour TFU in 79 people (63.8%) and measuring 6-day and 10-40 day TFU in 90 people (75%) respectively.

Table 4. Distribution of respondent characteristics, supervisor support and institutional adherence to practicum credits based on control and intervention groups

Variable	Group				Total		QR (95%,CI)	P Value
	Control		Intervention					
	n	%	n	%	n	%		
Competence							1.519	
- Tidak Kompeten	27	56.3	21	43.8	48	100	(0.729-3.169)	0.351
- Kompeten	33	45.8	39	54.2	72	100		

Competence							1.403	
- Incompetent	29	54.7	24	45.3	53	100	(0.681-2.892)	0.462
- Self Confident	31	46.3	36	53.7	67	100		
Practice experience								
-1-3x	50	46.3	58	53.7	108	100	0.172	0.033
->=3x	10	83.3	2	16.7	12	100	(0.036-0.824)	
Personality							1.397	
-Negative	32	54.2	27	45.8	59	100	(0.681-2.865)	0.465
-Positive	28	45.9	33	54.1	61	100		
Motivation							0.224	
-Not Good	52	47.3	58	52.7	110	100	(0.046-1.104)	0.099
- Good	8	80	2	20	10	100		
Supervisor practicum							1.000	1.000
-<mean	26	50	26	50	52	100	(0.468-2.059)	
->=mean	34	50	34	50	68	100		
implementation of SKS							1.000	1.000
-<mean	25	49	26	51	51	100	(0.453-1.927)	
->-mean	35	50.7	34	49.3	69	100		

One of the competencies that must be achieved by graduates of the D III Midwifery Study Program is being able to provide midwifery care for postpartum mothers. To support the achievement of these competencies, students must be able to carry out physical examinations on postpartum mothers, including being able to assess fundal height and contractions in postpartum mothers (Ministry of Health No. 320/2020). The results showed that the competence of D III midwifery students at the Poltekkes Kemenkes Jakarta III and Poltekkes Malang in assessing the height of the uterine fundus and uterine contractions were 98 people (81.4%). The results of this study were higher compared to Ulya and Maya (2020) who stated that the majority of the achievement of KDPK practice competency for D III Midwifery Stikes West Sumatra Study Program students was 36.7% (good) and for Antenatal Care practice the majority was 37.1% (good). This is probably caused by differences in research respondents and the competencies of the subjects studied.

Poltekkes Kemenkes Jakarta III and Poltekkes Kemenkes Malang are midwifery educational institutions under the guidance of the Ministry of Health, specifically the Directorate General of Health Workers' Directorate General of Indonesian Health Workers,

which have their respective accreditation status with an A grade (very good) (https://poltekkesjakarta3. ac. id/ and https://www.poltekkes-malang.ac.id/ downloaded on October 28, 2022). This is evidenced by the results of the study which showed that there was no difference in the competence of students at the Poltekkes Kemenkes Jakarta III and Poltekkes Kemenkes Malang in assessing uterine fundal height and contractions in postpartum women with a P-Value of 0.351 with an OR of 1.519 (CI: 0.729-3.169). This means both Poltekkes students.

The Ministry of Health Jakarta III and students from the Poltekkes Kemenkes Malang have equally good competence in assessing TFU and contractions in postpartum mothers.

Health education institutions that have an accreditation score of A (very good) can be ascertained that these institutions have carried out the learning process very well. Poltekkes Kemenkes Jakarta III and Poltekes Malang are very supportive of the competence achievement of D III Midwifery graduates, this is evidenced by the passing competency test results which are always above 98% each year (https://ukbidan.kemdikbud.go.id downloaded on October 28, 2022).

The results showed that 36 respondents (60%) had self-confidence, but there was no significant relationship between self-confidence and high assessment competence of the uterine fundus in postpartum mothers. This is not by Zwel and Wibowo (2012) who explain that a person's behavior is strongly influenced by his beliefs about himself and others. If people believe in their ability to do something, then it will be done more easily. Students who have high self-confidence will encourage them to continue learning and try many times the skills to be achieved. He will not give up before he feels skilled in carrying out certain competencies including high fundus assessment competence uterus in certain breathing mothers. As supervisors, lecturers should have the ability to increase student confidence in performing a skill (Cholifah, Rusnoto, and Dewi, 2015), explaining that the application of the bedside method can increase the achievement of clinical competence, self-confidence, self-esteem, and student self-awareness

The results of the study stated that 33 people (55 %) had positive personalities. In this study, it was not explained further what types of student personality were meant,

whether phlegmatic, sanguine, choleric, or melancholy personality types. Hasmila and Shabri (2016) explained that people with a melancholic personality type are very detailed, look neat, speak politely, are sensitive to people's feelings, and care about people who are experiencing distress. A nursing student with the melancholic type will later be able to show caring behavior towards his patients with a sense of care and be willing to listen to his patient's complaints. As is the case with nursing students, midwifery students who have melancholic personalities will also have caring behavior toward their patients. Hasmila and Shabri (2016) also explained that there is no relationship between student personality and student learning motivation.

The SMART abdominal model is one of the simulators that has been developed to evaluate the height of the uterine fundus in postpartum women. 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 following the results of a survey by Herlyssa et al (2022) which showed almost 60% strongly agreed and 40% agreed that the SMART abdominal model depicts the abdomen of postpartum women in a real way.

Besides being able to be used by patients simulating postpartum mothers, the SMART abdominal model can also be used on Zoe's abdominal model by tying the two clothes on the left and right sides of Zoe's abdomen. The results showed that there was no significant difference in competence between the use of the SMART abdominal model with the guidance of a lecturer on simulated patients or without the guidance of a lecturer on the Zoe abdominal model with a P value of 0.351 with an OR of 1.519 (CI = (0.729-3.169). The use of the SMART abdominal model in simulated patients is very beneficial because students can directly learn appropriate communication techniques, and can generate empathy towards real patients. The use of the SMART abdominal model in the Zoe abdominal model is an alternative when simulated patients are not available.

For midwifery students, a simulation of the obstetric fundus height assessment procedure can be carried out in a clinical skills laboratory or skills lab for both simulated patients and Zoe's abdomen. The midwifery skills laboratory plays an important role in increasing the competence and confidence of lecturers and students through clinical skills

training without risk to patients (Utz, Kana, & van den Broek, 2015; Strand, Nåden, & Slettebø, 2009). The clinical skills laboratory provides a safe and secure environment in which students can practice clinical skills before using them in real clinical settings. This skills lab helps ensure that all students acquire the necessary techniques and are properly assessed before practicing on real patients (Bradley, & Postlethwaite, 2003).

The SMART abdominal model can also perform simulations with a combination of high and low fidelity (Kjellin, et al, 2014; Goolsby, Goodwin, & Vest, 2014). Fidelity, (Dow, & Histon, 2014) which refers to how closely a simulation imitates or reinforces reality, is divided into three levels when referring to the Miller Pyramid, (Miller, 1990). namely 1) low fidelity, which is used to build knowledge (know); 2) medium fidelity (a combination of know-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, (Dow, & Histon, 2014), 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 shows the extent to which the simulation can duplicate or capture real tasks using simulated tasks and make students feel as if they were real.

The use of the SMART abdominal model is proven to be able to increase student competence both in simulated patients and in the Zoe abdominal model. This is by Weller, et al (2012) who state that learning clinical skills in the skills lab can be done using several learning media such as manikins or simulators, trainers, simulated patients, or standard patients. Simulations for the implementation of clinical skills that use a combination of standard patients and simulators can help students demonstrate the achievement of a clinical skill procedure competency which is expected to be much better (Sendir & Coşkun, 2017).

A student can use this model repeatedly until declared competent by the lecturer or practicum supervisor in the classroom laboratory. So the prototype of the SMART abdominal model maintains patient safety when students take care of patients directly. Patient safety must be given to patients as a form of quality and best care for these patients (Ziv, & Paul, 2000). Midwifery students who are inexperienced in patient safety may

present unacceptable dangers later (Aggarwal, et al 2010). This is in by Herlyssa (2022) who explains that the SMART abdominal model can be used many times by simulated patients where 56% of respondents strongly agree and 44% agree. Using the model repeatedly by students will increase student competence in assessing the height of the uterine fundus in postpartum mothers. In addition, this model is also not easily damaged even though it is used many times because it is made of cloth that is not easily torn. A student can use this model repeatedly until declared competent by the lecturer or practicum supervisor in the classroom laboratory. When students feel competent in this model, then they can do it on actual patients, so this SMART abdomen model maintains patient safety when students take care of patients directly. Patient safety must be given to patients as a form of quality and best care for these patients (Ziv, & Paul, 2000). Health students who are inexperienced in patient safety may be able to present unacceptable harm later (Aggarwal, et al. 2010).

Simulation of clinical action procedures carried out in the laboratory plays an important role in increasing the competence and confidence of lecturers and students through clinical skills training without risk to patients (Utz, Kana & van den Broek, 2015; Strand, Nåden, & Slettebø, 2009). In addition, repeated exercises in the skills laboratory help ensure that all students acquire the necessary techniques and are properly assessed before practicing on real patients (Bradley, & Postlethwaite, 2003).

CONCLUSION

The SMART abdominal model can be used as a clinical learning medium for midwifery in increasing the competence of evaluating the height of the uterine fundus in postpartum women by 81.4%. And the SMART abdominal model can be used on simulated patients as well as the Zoe abdominal model. There is no difference between student characteristics (self-confidence, practicum training, personality and motivation). There is no difference between compliance with the application of practicum credits, and the support of practicum guidance lecturers for the competence achievement of D III Midwifery students in assessing the height of the uterine fundus in postpartum mothers.

ACKNOWLEDGEMENT

The authors would like to thank the Director of the Poltekkes Kemenkes Jakarta III for providing the opportunity and funding for this research activity.

REFERENCES

Aggarwal, R., Mytton, O. T., Derbrew, M., Hananel, D., Heydenburg, M., Issenberg, B., Reznick, R. (2010). Training and simulation for patient safety. *Quality and Safety in Health Care*, 19(Suppl 2), i34–i43. doi:10.1136/qshc.2009.038562.

BPPSDM, Kemenkes RI. (2017). *Modul Asuhan kebidanan pada Masa Nifas*. Jakarta: BPPSDM Kemenkes RI.

Bradley, P., & Postlethwaite, K. (2003). Setting up a clinical skills learning facility Medical Education, 37(s1), 6–13. doi:10.1046/j.1365-2923.37.s1.11.x.

Dow, C., & Histon, J. (2014). An Air Traffic Control Simulation Fidelity Definition and Categorization System. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, 58(1), 92–96. doi:10.1177/1541931214581020.

Goolsby, C. A., Goodwin, T. L., & Vest, R. M. (2014). Hybrid Simulation Improves Medical

Hasmila Sari dan Shabri (2016). Hubungan Tipe Kepribadian Dengan Motivasi Belajar Pada Mahasiswa Kurikulum Berbasis Kompetensi Fakultas Keperawatan Universitas Syiah Kuala. *Jurnal Idea Nursing Journal*, 7 (2).

Herlyssa, Jomima Batlajery & Sri Mulyati (2022). Pengembangan model abdomen SMART untuk menilai Tinggi fundus Uteri pada ibu Post Partum. *International Journal of demos*, 4(1).

Herlyssa (2022). Model Abdomen SMART sebagai Media Pembelajaran Klinis Dalam Upaya Peningkatan Capaian Pembelajaran Mahasiswa. Karya Tulis Ilmiah Kinerja Prestatif. Jakarta: Poltekkes Kemenkes Jakarta III.

Kepmendiknas 045 tahun 2001 tentang Kurikulum Inti Perguruan Tinggi. Kepmenkes No. 320 tahun 2020. Standar profesi Bidan. Jakarta: Kemenkes RI

Kemdikbud Ristek Dikti (2022). Hasil Uji Kompetensi Prodi D III Kebidanan. https://ukbidan.kemdikbud.go.id

Kjellin, A., Hedman, L., Escher, C., & Felländer-Tsai, L. (2014). Hybrid simulation: bringing motivation to the art of teamwork training in the operating room. *Scandinavian Journal of Surgery*, 103(4), 232–236. doi:10.1177/1457496913516897.

Miller, G. E. (1990). The assessment of clinical skills/competence/performance. *Academic Medicine*, 65(9), S63–7. doi:10.1097/00001888-199009000-00045.

Cholifah, N, Rusnoto, D.H. (2015). Bedside Sebagai Suatu Inovasi Metode Bimbingan Klinik Dalam kebidanan dan keperawatan. *JIKK, 6 (2):*39-51

Profil Poltekkes kemenkes Malang. https://www.poltekkes-malang.ac.id/

Profil Poltekkes kemenkes Jakarta III. https://www.poltekkes-jakarta3.ac.id/

Permendikbud No 3 (2020). *Standar Nasional Pendidikan Tinggi*. Jakarta: Kemdikbud Ristek.

Sendir, Merdiye & Coşkun, Ela. (2017). Hybrid simulations: applied cases. *International Journal of Health Sciences and Research*, 7: 253-259.

Strand, I., Nåden, D., & Slettebø, Å. (2009). Students Learning in a Skills Laboratory. Nordic *Journal of Nursing Research*, 29(3), 18–22. doi:10.1177/010740830902900305.

Utz, B., Kana, T., & van den Broek, N. (2015). Practical aspects of setting up obstetric skills laboratories – A literature review and proposed model. *Midwifery*, 31(4), 400–408. doi:10.1016/j.midw.2014.11.010.

Ulya, Rahmatul dan Maya fernanda dielsa (2020). Hubungan manajemen laboratorium dengan pencapaian kompetensi KDPK dan antenatal care mahasiswa semester IV Prodi D III Kebidanan Stikes Sumatera Barat. *Jurnal Bidan Komunitas*. 3(2): 73-79

Varney, H., Krieb, J. M., Gregor, C.L., (2007). *Buku Ajar Asuhan Kebidanan*. Volume 1, Edisi 4, Alih bahasa: Mahmudah, L, dan Trisetyowati, G. Jakarta: EGC.

Weller, J. M., Nestel, D., Marshall, S. D., Brooks, P. M., & Conn, J. J. (2012). Simulation in clinical teaching and learning. *The Medical Journal of Australia*, 196(9), 594. doi:10.5694/mja10.11474.

Ziv, Stephen D. Small, Paul Root Wo, A. (2000). Patient safety and simulation-based medical education. *Medical Teacher*, 22(5), 489–495. doi:10.1080/01421590050110777.