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Evaluation of antenatal care competency with Objective Structure Examination Blended Learning (OSCE-BL)

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ABSTRACT

Midwifery students must possess clinical competency before entering clinical practice in the practice area. Assessing clinical competency using Objective Structure Clinical Evaluation (OSCE) is necessary. However, OSCE examiners are limited, so blended learning is carried out. The research aims to determine the learning outcomes of midwifery students using OSCE Blended Learning (BL) in the pregnancy care module. This research used a descriptive cross-sectional method using OSCE scores from 2020 to 2022. That research sample was 92 people using a total sampling technique. Competencies tested in the OSCE are anamnesis, physical examination in the second and third trimester, laboratory examination, and counseling. Processing and analyzing univariate data descriptively. The anamnesis competency score was the greatest mean in 2021 (91.45), physical examination in the second trimester (88.79), and third trimester (88.03). Meanwhile, supporting examinations in 2020 (88.36) and counseling (88.31). In the OSCE evaluation in 2021, only a small number of students did not pass the anamnesis (2 people), physical examination second trimester (2 people), and third trimester (2 people), support (2 people), and counseling (1 person). Method OSCE BL can be used to evaluate pregnancy care competency before midwifery students do clinical practice in the practice area.

ABSTRAK

Kompetensi klinis harus dimiliki oleh mahasiswi kebidanan sebelum memasuki praktik klinis di lahan praktik sehingga perlu dilakukan penilaian kompetensi klinis menggunakan Objective Structure Clinical Evaluation (OSCE). Akan tetapi, penguji OSCE terbatas, maka OSCE dilakukan dengan blended learning. Penelitian bertujuan mengetahui hasil belajar mahasiswi kebidanan dengan OSCE Blended Learning (OSCE BL) pada modul asuhan kehamilan (ANC). Penelitian dengan metode deskriptif dengan cross sectional menggunakan nilai OSCE dari tahun 2020 (36 orang), 2021 (25 orang), dan 2022 (31 orang) sehingga jumlah sampel penelitian sebanyak 92 orang dengan teknik total sampling. Kompetensi yang diujikan pada OSCE, yaitu anamnesa, pemeriksaan fisik trimester 2 dan 3, pemeriksaan laboratorium, dan konseling. Pengolahan dan analisis data univariat secara deskriptif (nilai mean, standar deviasi, nilai maksimal, dan minimal). Nilai kompetensi anamnesa paling besar tahun 2021 (mean=91.45), pemeriksaan fisik trimester 2 (mean=88.79) dan trimester 3 (mean=88.03). Sedangkan pemeriksaan penunjang tahun 2020 (mean=88.36) dan konseling (mean=88.31). Pada evaluasi OSCE hanya sebagian kecil mahasiswa yang tidak lulus kompetensi anamnesa (2 orang), pemeriksaan fisik trimester 2 (2 orang), dan trimester 3 (2 orang), penunjang (2 orang), dan konseling (1 orang) tahun 2021. Metode OSCE BL dapat digunakan untuk evaluasi kompetensi asuhan kehamilan sebelum mahasiswi kebidanan praktik klinis di lahan praktik.

Kata Kunci: *Blended learning; evaluasi: kompetensi; mahasiswa kebidanan; OSCE*

INTRODUCTION

As science continues to develop and midwifery technology becomes increasingly sophisticated, it demands competent midwives. Thus, midwifery education must prepare graduates who can compete nationally and globally (Erianti & Lestari, 2021). To support this, the midwife education curriculum needs to be developed based on the needs of professionals committed to paying attention to ethics and understanding the role of social factors as individuals and families play a role in improving health. The skills that must be achieved in the teaching and learning process have shown that there are limitations to assessing student skills holistically (Castellani et al., 2020). The OSCE method is used to achieve competency, especially in skills (Erianti & Lestari, 2021).

Various student skills evaluated using various performance assessments are related to student skills using the Objective Structure Clinical Evaluation (OSCE) method. In addition, organizing assessments such as OSCEs prepared by diverse, committed, and competent parties can serve as a unique assessment tool to assess the development of clinical skills for future midwives (Castellani et al., 2020). It is essential to assess the clinical competency of midwifery students before they enter clinical practice in the practice area. Thus, the OSCE is widely used and is part of clinical competency assessment (Lee et al., 2020).

OSCE has been widely used to assess the clinical performance of midwifery students. The results of research conducted at the Suez Canal University Faculty of Medicine (FOM-SCU) revealed that OSCE is an effective evaluation tool for evaluating the clinical skills of midwifery students (Fouad et al., 2019). Based on the literature review, OSCE is formally used to assess clinical skills, so it is an important part of the educational life cycle for midwifery students. OSCE is essential in the curriculum because it equips students in a real-world context to understand complex patient care needs (Kristina & Wijoyo, 2019).

OSCEs are a valuable evaluation strategy for assessing student competency in various skills. This has been integrated into midwife education. OSCE is an effective evaluation method for assessing student competency in providing midwifery care. Students and examiners showed a positive attitude in using OSCE as an evaluation method. OSCE has various advantages, including measuring progress in clinical skills and assessing students' performance in carrying out clinical skills that support implementing midwife education (Widyandana et al., 2015). Therefore, it is necessary to find solutions to overcome obstacles using the OSCE assessment method and develop appropriate interventions based on recommendations (Bdair et al., 2019).

The OSCE exam consists of several competencies to test the ability to communicate, physical examination, data interpretation, diagnostic procedures, and actions objectively. The OSCE exam is conducted face-to-face (Yuan, 2021). However, due to the COVID-19 pandemic, the OSCE was carried out in a blended learning manner by combining competencies that can be done offline and online competencies. Changes in the clinical learning environment will impact professional identity (Susani et al., 2022). Blended learning is a learning approach that combines face-to-face teaching with e-learning experiences. The Master's Program in Oncoplastic Breast Surgery at the University of East Anglia in England conducted research comparing clinical practice in blended and conventional learning (Leinster et al., 2021). Blended learning is carried out to discuss cases synchronously and discussions asynchronously, while conventional practical learning is carried out directly in the hospital. Blended and conventional learning was carried out for eight weeks, and there was an increase in scores for blended learning compared to conventional learning. Thus, interactive blended learning (synchronous and asynchronous) can add practical value to conventional learning (Leinster et al., 2021).

Blended learning in higher education is adequate because it supports student learning outcomes. Thus, it is recommended to use digital resources to enrich teaching and improve student learning experiences (Grønlien et al., 2021). One of the pregnancy care module lectures uses the Problem-Based Learning (PBL) method, which is based on e-learning with asynchronous methods, and most use the blended learning method.

Mock Objective Structured Clinical Examination (MOSCE) is a clinical skills learning tool that benefits students, including reducing anxiety levels, increasing self-confidence, and retaining clinical skills for students, in addition to the logistical advantages of the online process. The online MOSCE is a viable option as an alternative or addition to consider for undergraduate curriculum programs (Coe & Bryant, 2022). Therefore, students are delighted with improving their professional management skills. Ultimately, it will improve health services, reduce costs, and encourage further innovative educational actions for health professionals (Fernandes et al., 2020).

Based on the results of a scoping review of the literature regarding the use of Blended Learning in nursing and midwifery education in Sub-Saharan Africa (SSA), and especially Rwanda, it was found that the integration of Blended Learning methods improves the quality of nursing and midwifery education (Ndayisenga et al., 2021). This is supported by the results of research conducted in the Diploma III Midwifery study program at Stikes Nani Hasanuddin Makassar that blended learning using e-modules on Android-based applications can improve students' skills in managing the fourth stage of labor (Ghita et al., 2021). In addition, blended learning can teach perineal suturing to provide experience, confidence, knowledge, and skills and students' readiness to practice and assess clinical skills in the laboratory (Brereton et al., 2022).

Based on a systematic review, students show a good perspective on using OSCE, namely contributing to developing clinical skills and increasing self-confidence in students' knowledge (Kassabry, 2023). This is supported by the results of research conducted in the D4 Midwifery Study Program that the value, hope, and affective variables together produce a motivational force which has the impact that Unpad midwifery diploma program students can carry out competencies and get OSCE scores based on predetermined standards (Martini et al., 2019). Based on various research on blended learning, used in theoretical and practical learning, blended learning has not been used in evaluations using the OSCE method. Thus, this study aims to determine the results of evaluating pregnancy care competency using the Objective Structure Clinical Evaluation Blended Learning (OSCE BL) method.

LITERATURE REVIEW

Competency Evaluation

Competency is the ability possessed by a person in the form of knowledge, skills, and attitudes (Akbar, 2021). Meanwhile, midwife competency is an ability possessed by a person who has a profession as a midwife; where this ability is inherent in the midwife in serving mothers and children in their life cycle starting from pregnancy, childbirth, babies, toddlers, teenagers, adults to the elderly (Yunida, 2022). Contextual conditions at various levels support midwives' relational competence, autonomy, and reflective power by facilitating women-centered approaches and beliefs. Therefore, experienced midwives must have an interest, organizational priorities in peer reflection, and flexibility. When midwives lack experience and do not develop competencies based on psychosocial assessments, they cannot provide optimal midwifery care (Andersen et al., 2023). Midwifery students must possess competencies to become professional midwives. Skills in midwifery practice are part of the competencies that must be carried out repeatedly. This aims to enable students to gain experience from each skill that has been carried out. Midwifery students apply this competency to provide maternal and child health services based on a woman's life cycle from pregnancy, childbirth, baby, toddler, teenager, adult to elderly.

OSCE

Assessing the clinical competence of midwifery students is recognized as a challenging responsibility. Emphasizing clinical assessment and utilizing evaluation techniques to measure students' abilities, competencies, and skills are crucial in the context of the midwifery profession, which plays a central role in caring for women and infants during pregnancy, childbirth, and the postpartum period. Research findings indicate that competent midwives can provide essential care for women and infants and prevent fetal abnormalities. One of the examinations conducted to assess this competence is the Objective Structured Clinical Examination (OSCE) (Malakooti et al., 2018). OSCE is an evaluation method to assess clinical performance or abilities in a structured and objective manner. The findings of their study demonstrated that OSCE is effective in providing a comprehensive overview of clinical competence, and the method is regarded as a reliable assessment tool (Erianti & Lestari, 2021). The OSCE aims to assess the clinical competence of medical students comprehensively. The OSCE evaluation method is reliable and valid (Majumder et al., 2019). At the end of the learning module, each midwifery student's competency must be evaluated in a structured and objective manner using the OSCE method. The competencies evaluated in the OSCE consist of anamnesis, physical examination, laboratory examinations, and counseling in pregnancy, childbirth, newborns, and postpartum.

Blended Learning

Blended learning is integrating learning experiences in face-to-face classes with online learning experiences (Bizami et al., 2023). Blended learning empowers lectures to deliver a more comprehensive learning experience for students. This approach enhances accessibility and convenience by granting students greater access to learning materials, improving overall learning quality, and reducing associated costs (Oktova & Rahmi, 2021). The success of blended learning depends on the quality of integrated face-to-face activities, so it requires more face-to-face characterization in blended learning to support interventions tailored to practice guidelines (Buhl et al., 2023). Thus, students must attend face-to-face exams using blended learning to reduce the distance. It was further found that face-to-face and online learning challenges must be resolved to ensure successful blended learning for students (Segbenya & MensahMinadzi, 2023). Blended learning is a learning method that combines online methods (synchronous and asynchronous) and face-to-face. This Blended learning is not only used in the learning process but can also be used in learning evaluation methods. One method of evaluating skills learning in midwife competency practice can use BL, namely OSCE, based on practice guidelines.

METHODS

This research is quantitative research that used descriptive methods with a cross-sectional approach. Hamzah & Susanti, in their book "*Metode Penelitian Kuantitatif Kajian Teoretik & Praktik Dilengkapi Desain, Proses, dan Hasil Penelitian*" stated that quantitative research is also seen as the purest and most objective research because it uses clear research variables, strict controls and is thoroughly tested. Quantitative research aims to explore the wide range of study findings and present them as general empirical truths or facts (Firmansyah et al., 2021). Cross-sectional studies are studies that analyze data from a population at a time point in time (Wang & Cheng, 2020). This research was conducted during the pregnancy care module lecture. Thus, research data was collected based on OSCE scores from 2020 with 36 students, 25 students in 2021, and 31 students in 2022, so the total sample for this research was 92 people. The sampling technique used was total sampling. Total sampling is a technique where the sample size matches the size of the entire population (Saragih et al., 2023). The total sampling was taken because the population was less than 100. The entire population was used as the research sample. This OSCE method uses a blueprint to determine the type of competency students have achieved **(Table 1)**.

Table 1. Pregnancy Care Competency Blueprint

Competency	Sub Competency										
	DS	DO	TM I	TM II	TM III	Hb	P	G	CT	KM	KL
Anamnesis	√	√									
Physical examination				√	√						
Laboratory examination						√	√	√			
Prevention of infection									√		
Professionalism										√	√

Note: DS (*Data Subjektif/*Subjective Data), DO (*Data Objektif/*Objective Data), TM I (Trimester I), TM II (Trimester II), TM III (Trimester III), Hb (Haemoglobin), P (Proteinuria), G (Glucose), CT (*Cuci Tangan/*Handwashing), KM (*Komunikasi/*Communication), KL (*Konseling/*Counseling)
*Source: OSCE Implementation Guidelines (2020-2023)*

In **Table 1**, we use a pregnancy care competency blueprint, which includes three core competencies: anamnesis, pregnancy examination, and supporting examinations, which must pay attention to infection prevention in every action. In carrying out core competencies, one must have a dissertation with a professional attitude as a midwife. OSCE must be carried out based on existing standards so that OSCE can be used to measure students' clinical skills, especially in preparing blueprints, which is an essential point for implementing OSCE (Erianti & Lestari, 2021).

The OSCE method is implemented using blended learning, where students carry out anamnesis competency (station 1), physical examination in the second trimester (station 2) and third trimester (station 3), supporting examinations (station 4), and counseling (station 5) in the skills lab room. At the same time, the examiners observe the competencies carried out by students using Zoom meetings synchronously or asynchronously, and students record videos of the competencies carried out **(Figure 1)**. Computer-based Case Simulation OSCE (CCS-OSCE) evaluates competencies in anamnesis, exploration, clinical assessment, management, ethical aspects, interprofessional relationships, prevention, and health promotion (García-Seoane et al., 2021).
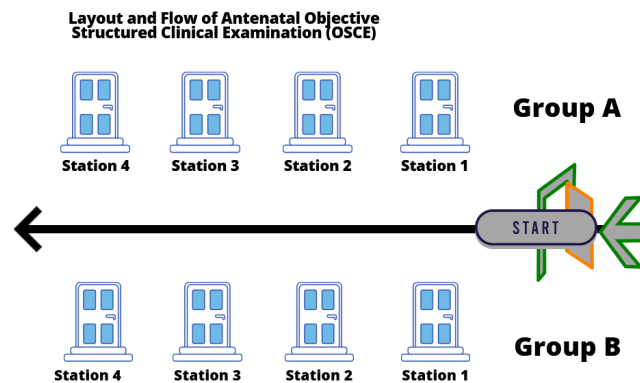
Figure 1. OSCE ANC Exam Plan and Flow
Source: Author's documentation (2023)

OSCE activities are carried out in a room setting divided into two groups, where each group consists of 4 stations, so it requires 8 OSCE examiners **(Figure 2)**. As for preparation for OSCE activities, it is necessary to prepare blueprints, cases, stations, checklists or rating forms), standard patients, examiners, facilities and infrastructure, standard settings, and OSCE implementation.
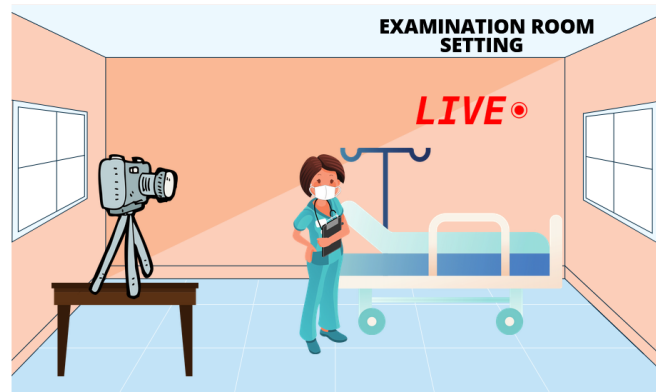
Figure 2. Exam room settings
Source: Author's documentation (2023)

Every competency carried out by students is recorded in video form by their friends who have completed the OSCE. Then, the competency video for each station is uploaded to the Google Drive link prepared by the group and station **(Figure 3)**. Students enter the video after completing all stations. The competencies performed in the OSCE are recorded, and the results of the OSCE scores are as good as the OSCE scores carried out directly in front of the OSCE examiner (Kang et al., 2022).
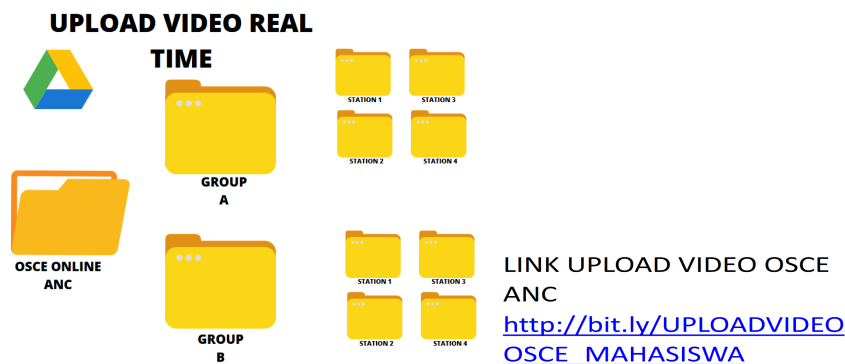
Figure 3. OSCE video folder in Google Drive link
Source: Author's documentation (2023)

Processed and analyzed univariate data with descriptive numerical data types with statistical tests, including mean value, standard deviation, maximum value, and minimum value, using SPSS version 24 software.

RESULT AND DISCUSSION

Online OSCE method and Blended learning

Table 2. OSCE Method based on Learning Type

Station	Kompetensi	2020 Online (n=36)	2021 Blended Learning (n=25)	2022 Blended Learning (n=31)
1	Anamnesis	√	0	√
2	Physical examination (Trimester 2)	√	X	X
3	Physical examination (Trimester 3)	√	X	X
4	Laboratory examination	√	X	X
5	Counseling	√	0	√

Note: √ = asynchronous, 0 = synchronous, X = face to face directly
Source: Operating procedure OSCE (2020-2023)

Table 2 shows that the OSCE evaluation was conducted online (asynchronously) on five pregnancy care competencies in 2020 because there were still COVID-19 cases where it was not possible to do it face to face. However, the OSCE method will be carried out using blended learning in 2021, where stations 2, 3, and 4 are carried out face to face, and stations 1 and 5 are carried out synchronously via Zoom meetings. Furthermore, in 2022, the OSCE method will also be carried out using blended learning. However, stations 1 and 5 will be carried out asynchronously, where students conduct anamnesis and counseling directly with the patient and then record it in video form. The OSCE BL was stated to be more effective than the direct OSCE examiners (Jawaid et al., 2021).

OSCE is carried out synchronously, consisting of pre-OSCE, OSCE, and post-OSCE stages. In the preparation stage, facilities must provide information conveyed during technical meetings. The OSCE questions, including an internet connection and technical support communication, were explained at the implementation stage, and the processing time was sufficient (Elbilgahy et al., 2020; Herlambang et al., 2021).

Learning Results for Pregnancy Care Competencies with OSCE BL

Table 3. OSCE Method Evaluation Results

Competency	Years		
	2020 (n=36)	2021 (n=25)	2022 (n=31)
Anamnesis			
Mean	88.78	85.90	91.45
Standard Deviation	6.36	6.77	5.95
Max Value	100.00	97.50	100.00
Min Value	80.00	72.50	80.00
Physical examination (Trimester 2)			
Mean	82.36	87.20	88.79
Standard Deviation	4.74	6.22	7.99
Max Value	95.00	97.50	100.00
Min Value	80.00	80.00	80.00
Physical examination (Trimester 3)			
Mean	88.03	84.06	87.56
Standard Deviation	7.46	6.84	6.31
Max Value	100.00	97.82	97.20
Min Value	80.00	76.00	80.00
Laboratory examinations			
Mean	86.10	88.29	88.36
Standard Deviation	6.89	5.88	4.64
Max Value	100.00	97.36	100.00
Min Value	80.00	80.00	80.00
Counseling			
Mean	88.31	87.78	87.58
Standard Deviation	6.44	6.16	5.50
Max Value	100.00	100.00	100.00
Min Value	80.00	79.16	80.00

Source: Research (2023)

Table 3 shows that the average value of anamnesis competency was the greatest in 2021 (mean=91.45), physical examination trimester 2 (mean=88.79) and trimester 3 (mean=88.03), laboratory examinations (mean=88.36), and counseling (mean=88.31) in 2020. This study's results align with research on OSCE students, which can increase knowledge and skills in communicating and counseling patients (Farahani et al., 2020).

OSCE scores are critical in assessing medical students' competency achievements. Numerous studies already examined factors that may impact OSCE scores, such as external and internal factors (Zimmerman & Kadmon, 2020). The OSCE exam measures graduates' abilities using a method where the testing is carried out comprehensively to produce competent midwife graduates. The mechanism for implementing the OSCE exam has been implemented by providing supporting facilities such as rooms based on the number of stations, examining lecturers, standard clients, supporting equipment, and officers who assist in carrying out the exam. Factors that influence the OSCE results, namely the quality of the questions, the examining lecturer who meets the requirements, and the readiness of students to take the OSCE exam, as well as evaluation of the results of the exam, the majority of students have passed without remedial (Rumagit et al., 2022).

Table 4. OSCE BL Method Competency Pass Results

Competency	Years					
	2020 (n=36)		2021 (n=25)		2022 (n=31)	
	Passed	No Pass	Passed	No Pass	Passed	No Pass
Anamnesis	36	0	23	2	31	0
Physical examination (Trimester 2)	36	0	25	2	31	0
Physical examination (Trimester 3)	36	0	25	2	31	0
Laboratory examination	36	0	25	2	31	0
Counseling	36	0	24	1	31	0

Source: Research (2023)

Table 4 shows the small number of students who did not pass the anamnesis competency (2 people), physical examination in the second trimester (2 people) and third trimester (2 people), support (2 people), and counseling (1 person) in 2021. Blended learning is as effective as conventional learning in medical students' teaching and learning processes (Suwannaphisit et al., 2021).

Poor management of OSCE preparation, limited student preparation time, and limited number and time of stations are factors that have a negative impact on OSCE implementation. Student satisfaction with OSCE includes a team approach, having shared responsibility, and proper planning between faculties to minimize inhibiting factors in implementing OSCE. Apart from that, in developing the OSCE, it is necessary to utilize the skills lab space by arranging the schedule well for students and lecturers in the simulation-based learning process so that it can improve the implementation of the OSCE (Ataro et al., 2020).

The Learning Management System (LMS) to facilitate structured online learning has four basic concepts: constructivism, constructionism, and social constructionism. Learning that combines online learning (LMS) with conventional classes shows increased knowledge, attitudes, and behavior. Conventional clinical skills learning has many limitations. Therefore, it is recommended to use e-modules based on e-learning (LMS), which is used as a blended learning approach to overcome the shortcomings of conventional learning methods in teaching clinical skills to medical students (Feriandi et al., 2020). Overall, the OSCE received a positive response and was welcomed by both students and examiners. Concerns and challenges regarding OSCEs can be addressed through better faculty orientation and student preparation for OSCE (Majumder et al., 2019).

CONCLUSION

The OSCE BL evaluation method produces competency results that are as good as conventional OSCE. OSCE BL can overcome the limitations of examiners, facilities, and infrastructure. Therefore, OSCE BL can be used to evaluate pregnancy care competency before midwifery students do clinical practice in the practice area. Gathering feedback from students and educators regarding their experiences is recommended, as this can offer valuable insights for improvement. Furthermore, conducting longitudinal

assessments to evaluate the impact of the blended learning (BL) Objective Structured Clinical Examination (OSCE) on graduates' clinical performance and exploring the integration of emerging technologies are essential steps for continuous refinement and advancement.

AUTHOR'S NOTE

This article has no conflict of interest or research data, and the article's content is free from plagiarism.

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