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What Do Medical Students Learn from an OSCE? An Exploratory Study in Indonesia

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ABSTRACT

The Objective Structured Clinical Examination (OSCE) is a widely used assessment tool in medical schools, increasingly recognised for its impact on learning behaviour. This qualitative study explored the impact of OSCE on medical students' learning behaviours at Alkhairaat University in Palu, Indonesia. Data were collected through six focus group discussions with 35 students purposively selected to represent diverse OSCE performances, and were analysed using thematic analysis. The results indicated that students perceived the OSCE as encouraging deeper learning, enhancing structured preparation, fostering skills relevant to professional growth, and reinforcing collaborative and self-regulated learning. Students also reported acquiring altruistic values through peer teaching and community-oriented behaviour. However, some students reported surface learning and dependency on rote memorisation. These findings highlight OSCE's learning impact on medical students towards the accomplishment of not only clinical competence but also holistic professional development.

Keywords: *Objective Structured Clinical Examination (OSCE), Learning impact, Learning behaviour, Quality of learning, Regulation of learning*

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INTRODUCTION

Objective Structured Clinical Examination (OSCE) is an assessment method widely used in medical schools to assess clinical skills (1). Students work on similar clinical competencies, in the same amount of time, and are assessed using the same instrument (2). OSCE, with its high validity and reliability (3), is expected to drive learning behaviours through quality learning activities and regulations (4, 5). In taking the OSCE, students experience improvements in aspects of knowledge, communication skills, practical procedures, patient

management, counselling skills, and self-confidence (3, 6). OSCE also encourages students to form study groups, practise their clinical skills (7, 8), and focus on cognitive learning strategies, such as reviewing textbooks or class notes, when preparing for OSCE (9).

Since 2023, OSCE has been used as a summative clinical skills assessment method at the end of each semester at the Faculty of Medicine, Alkhairaat University Palu, Indonesia (FK UNISA). Various practices are implemented to fulfil the criteria of a good assessment framework, an essential component of which is learning impact in the form of learning behaviours. However, an evaluation report is yet to be made to determine OSCE's impact on students' learning behaviours at FK UNISA.

Hence, this study explored students' behaviours attributed to the learning impact of OSCE at FK UNISA by delving into learning outcomes that provide varying depths of learning, amount of learning time, resources and topics that were crucial for learning, strategies students employed, and how they maintained their learning focus.

METHODS

Study Design and Participants

This exploratory, qualitative study included undergraduate medical students from the 3rd, 5th, and 7th semesters of the FK UNISA who had participated in the OSCE during the odd semester of the 2023/2024 academic year. The OSCE that was held consisted of eight 'case stations' and two 'break stations.' The participants were selected through purposive sampling to ensure diversity in gender, academic performance, and the number of stations passed during the OSCE.

In FK UNISA, the borderline regression method sets passing criteria, categorising students based on the number of stations they pass. Participants were grouped into three categories: those who passed all eight stations, those who passed four or more stations, and those who passed fewer than four stations. This grouping allowed for a comprehensive exploration of different experiences and perspectives. The final sample consisted of 35 students, distributed across six focus group discussions (FGDs), with each category consisting of two FGDs to broaden the exploration. The inclusion criteria were: (a) students who had previously participated in the OSCE, ensuring relevant experiential exposure to the phenomenon under investigation; and (b) students who voluntarily agreed to participate and signed the informed consent form.

Study Instruments and Procedure

The primary data were collected through FGDs, with guides developed by drawing upon previous studies (4, 5, 10, 11). A blueprint was created comprising main and probing questions, which underwent expert review by two experts and pilot testing with 20 respondents to assess the clarity and sequencing of the questions and alignment with the research objectives.

Each FGD session was structured to last between 90 and 120 minutes, comprised 5 to 6 participants, and was facilitated by a moderator, a lecturer in FK UNISA who is familiar with the research objectives and framework. A note-taker recorded critical points during

the discussions. The sessions were audio- and video-recorded to ensure accuracy. Following each FGD, the researcher reviewed the recordings and made necessary adjustments to the guide. This 'iterative process' of review and adjustment continued until thematic saturation was reached, meaning no new significant insights were generated from the discussions.

Before starting the FGDs, the moderator introduced herself to the participants, explained the study's objectives, and emphasised that participation was voluntary and could be withdrawn at any time. Participants were assured that their responses would be confidential and used solely for research. After each FGD, the researcher asked permission to call back in case any confirmations were required, to foster a trustworthy and open environment conducive to gathering reliable data. Figure 1 presents the study flow and participant recruitment process.

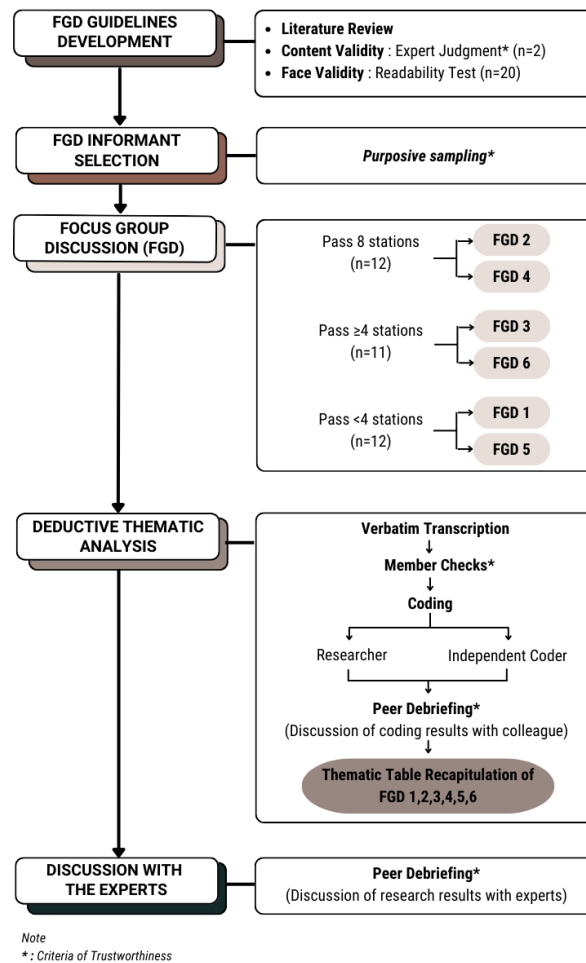


Figure 1: Study procedure.

Thematic Analysis

The thematic analysis process began with data preparation, including transcribing the FGD recordings verbatim. The transcripts were then cross-checked with the note-taker's notes to ensure the accuracy and completeness of the data. The researchers reviewed the transcripts multiple times to familiarise themselves with the content and ensure a deep understanding of the context.

Once the transcripts were finalised, member checking was conducted by sharing the transcripts with the participants to ensure credibility and that the data accurately reflected the participants' viewpoints. Thematic analysis was performed using MAX-QDA Analytics Pro 2020 software to assist in coding and data organising. The researchers and colleagues of similar qualifications collaboratively coded the data, initially applying predetermined themes based on the research questions and theoretical framework. The coding scheme was refined and consolidated as the analysis progressed to reflect emerging patterns and insights.

The final themes were discussed and analysed through peer debriefing sessions, in which the researchers reviewed the findings with colleagues and supervisors. Discrepancies in interpretation were resolved through discussions with peers, contributing to the trustworthiness of the study's results. Additionally, thematic tables were created to present and organise the findings for further review and refinement.

Trustworthiness

This study adhered to the criteria for trustworthiness in qualitative research, including credibility, transferability, dependability, and confirmability. Credibility was ensured through the prolonged engagement of the participants, which allowed the researchers to build rapport and gain a deep understanding of their perspectives. Transferability was addressed by providing robust descriptions and clear purposive sampling strategies, enabling the application of findings to similar contexts. Dependability and confirmability were achieved through peer debriefing, member checking, and the use of an audit trail. These strategies collectively contributed to the credibility and rigour of the study, ensuring that the findings are trustworthy.

RESULTS

Data were gathered through six FGDs with medical students ($n = 35$; 13 men and 22 women) from three classes (2020, 2021, and 2022). Participants from the 2020 class demonstrated superior OSCE performance, with a higher proportion passing four or more stations, while the 2021 and 2022 cohorts had a greater number of students passing fewer than four stations (Table 1). Thematic analysis revealed that students' learning behaviours could be analysed through two primary themes: quality and regulation of learning. Each theme was divided into specific subthemes that describe both intended and unintended learning impacts (Table 2).

Table 1: Participant characteristics

Characteristic	Subgroup	Class					
		2020		2021		2022	
		n (10)	%	n (13)	%	n (12)	%
Gender	Men	3	30	9	69.2	1	8.3
	Women	7	70	4	30.8	11	91.7
Number of stations passed	8 stations	4	40	4	30.8	4	33.3
	≥ 4 stations	5	50	3	23.1	3	25.0
	< 4 stations	1	10	6	46.1	5	41.7

Table 2: Classification of themes, subthemes, and categories

Quality of learning			
Intended learning impact		Unintended learning impact	
Subthemes	Categories	Subthemes	Categories
Knowledge	Learn about the disease holistically. Understand the clinical skills that are performed.	Clinical skills	Guess the diagnosis from predictable clues of standardised patients.
Clinical skills	Practice structured history taking skills. Practice physical examination skills. Practice skills in linking the findings of history taking and physical examination into a diagnosis/differential diagnosis.		
Practical procedures	Perform various types of clinical actions (such as blood pressure check, blood sugar check, etc.). More confidence in practising clinical skills that have been mastered.		
Patient investigation	Knowing the reality of a doctor's profession. Knowing the mandatory examinations based on the disease. Ability to interpret examination results.		
Patient management	Identify and carry out the right treatment for the patient. Time management when handling patients. Perform initial aid actions. Determine treatment and write the right prescription.		
Health promotion and disease prevention communication	Conduct health education. Confidently perform health education that has been mastered. Perform effective communication. Confidently perform effective communication that has been mastered. Practice professionalism and empathy as a doctor. Mental training when dealing with patients.		
Regulation of learning			
Intended learning impact		Unintended learning impact	
Subthemes	Categories	Subthemes	Categories
Allocation of learning time	Prepare since before entering the OSCE block. Prepare since the moment of entering the OSCE block. Spend more time studying than usual (≥ 3 h/day). Have a specific learning time (morning/afternoon/evening). Spend time learning clinical skills after the OSCE.	Allocation of learning time	Prepare only on the night before the OSCE to be held.

(Continued on next page)

Table 2. (continued)

Regulation of learning			
Intended learning impact		Unintended learning impact	
Subthemes	Categories	Subthemes	Categories
Selection of learning resource	Pay attention and ask questions to the lecturer. Learn the CSL manual. Learn clinical skills from videos on the internet. Discuss with friends/seniors. Make lesson notes and learn it. Learn content from lecturer's slides and/or textbooks.	Learning strategy	Prioritise checklist memorisation. Predict and only study possible cases on the exam based on the lecturer's explanation. Study lightly, then rely on luck during exams.
Selection of learning content	Learn content in order. Learn content from difficult topics first. Learn content that have a lot of topics first. Use SKDI to select the content to study. Learn the content randomly.	Learning persistence	Play mobile phones/games, then get distracted from learning.
Learning strategy	Self/group learning/combination of self and group learning. Practising clinical skills. Repeating the content learnt. Divide the topic of content learnt, then discuss with friends. Look and/or listen to lecturers' or friends' explanations, to know what to do. Creating case scenarios and applying them in OSCE simulations. Evaluate each other's clinical skills with friends. Evaluate own clinical skills based on CSL checklist and/or own records. Use active and varied learning strategies during OSCE preparation. Familiarise for UKMPPD preparation.		
Learning persistence	Refreshing activities: Sleep, watching entertainment, group study (cheering each other up, reminding and encouraging peers), hang out with friends, play mobile phones/games, then focus back on learning. Spiritual practices: Pray and increase worship. Beneficial activities: Give charities (teach friends to study, feed stray animals).		

Notes: CSL = Clinical Skills Laboratory; SKDI = Competency Standards of Medical Doctors in Indonesia (Indonesian: Standar Kompetensi Dokter Indonesia); OSCE = Objective Structured Clinical Examination; UKMPPD = Indonesian Medical Doctor National Competency Examination (Indonesian: Uji Kompetensi Mahasiswa Program Profesi Dokter)

Quality of Learning

This theme captures students' perceptions of how OSCE influenced learning objectives across seven subthemes.

Knowledge

OSCE encouraged students' deep learning and holistic disease understanding, integrating theoretical frameworks with clinical applications. Students reported that OSCE prompted comprehensive learning, from history taking to patient education, evidenced in phrases such as 'learn about the disease holistically' and 'understand the clinical skills performed', reflecting perceptions of OSCE catalysing integration across cognitive domains.

We already know the theory, so when we meet a case, we already have a picture in our head of what to ask. (P66-FGD4)

For every disease, I study from history taking, physical examination, up to providing education. (P397-FGD3)

Clinical skills

Students described that OSCE enhanced diagnostic reasoning and critical thinking through structured history-taking, linking findings with physical exams, and formulating diagnoses. These align with the 'practice skills in linking the findings of history-taking and physical examination into a diagnosis/differential diagnosis' category, as students stated:

We are required to think critically, connecting symptoms to possible diagnoses. (P24-FGD4)

However, limitations emerged, aligning with the 'guessing diagnosis from standardised patients' category.

I expect the patients to act convincingly, but they only memorise. So, the outcomes are predictable. (P101-FGD2)

Despite the limitations of scripted standardised patients, students perceived that the experience honed clinical acumen.

Practical procedures

Students reported that frequent rehearsals of hands-on skills, such as blood pressure checks or infusion techniques, boosted confidence. Categories like 'more confident to practice skills that have been mastered' were consistently mentioned. Students also noticed that OSCE promoted iterative practice, reinforcing essential psychomotor skills.

I can now perform procedures like blood pressure examination, blood infusion, and blood tests. (P127-FGD1)

Patient investigation

Students described stronger diagnostic reasoning in selecting and interpreting investigations. Categories such as 'know the examination based on disease' and 'interpretation of results' emerged clearly.

After gathering information from history-taking, we decide which examination to do first. (P172-FGD6)

If, in theory, we only imagine the radiology, in the OSCE, we are provided with the images:
This is a fracture; what are the features? (P75-FGD4)

These exemplify perceived alignment between theory and application.

Patient management

Students reported developing patient care management skills under time constraints. Themes such as ‘identify the right treatment’, ‘perform initial aid’, and ‘manage time’ were evident. They underscored OSCE realism in simulating time-bound clinical decision-making.

We learned to manage accident cases, such as properly transporting a patient. (P106-FGD4)

We must overcome the problems before the specified time limit. We have to think quickly and precisely according to that. (P107-FGD2)

Health promotion and disease prevention

Students described engaging in real-world health promotion, gaining public health communication confidence. The category ‘confidently perform health education’ was supported by the statement:

I was able to educate a friend’s parent on proper medication and exercise. (P114-FGD3)

These experiences suggest that students perceived OSCE as cultivating civic professionalism.

Communication

Students reported improved interpersonal communication skills, especially empathy and professionalism. Categories such as ‘effective communication’ and ‘mental training in patient interaction’ were reinforced. They recognised OSCE support for the affective learning domain.

We were taught how to communicate empathetically and professionally with patients. (P24-FGD3)

Regulation of Learning

This theme addresses students’ experiences of learning process management during OSCE preparation across five subthemes.

Allocation of learning time

Students demonstrated varied approaches—some began early with systematic preparation, whereas others employed last-minute cramming. These behaviours were mapped to categories like ‘prepared since entering OSCE block’ and ‘prepared only the night before’.

We started to learn from each block; so when it is OSCE block, we just need to do review. (P122-FGD4)

I prepared for OSCE in one night, which was risky and often led to forgetfulness during the exam. (P148-FGD1)

Post-exam learning continued through remedial preparation and peer teaching, evidencing sustained engagement.

We will recall it when the time comes for remediation. If it is incorrect, we do not repeat it. (P235-FGD5)

For our organisation, where all disaster response abilities will be trained, we must do a review. Especially if a junior asks. (P191-FGD6)

Selection of learning resources

Students accessed diverse materials—Clinical Skills Laboratory (CSL) manuals, videos, textbooks, slides, peer summaries, and senior guidance. This aligns with ‘learn from videos’, ‘make lesson notes and learn from them’ and ‘discuss with friends/seniors’ categories.

I watched OSCE-related videos from YouTube, including those from FK Andalus and UNAIR. (P245-FGD6)

We compiled the content in Word, taken from slides, e-books, notes, and additionally, from seniors. (P254-FGD4)

Mostly from friends, as it is more inclusive than learning from doctors. (P268-FGD1)

These reflect a resourceful, community-supported learning culture.

Selection of learning content

Students prioritised relevant content and adopted strategic sequencing, aligning with categories such as ‘learn in order’ and ‘starting with difficult topics’.

From the earliest to the latest, doc. (P326-FGD2)

I prioritised studying the nervous system because it is very dense. (P325-FGD1)

These behaviours reveal emerging metacognitive control over what and how to study.

Learning strategies

Students reported diverse learning strategies, including self-study, group work, simulation, and peer teaching. Strategies such as ‘create case scenarios’ ‘evaluate each other’s skills’ and ‘rehearse checklists’ dominated this subtheme.

We divided the tasks and compiled disease management summaries, which we reviewed together. (P153-FGD3)

In history taking, we work in pairs. So, I am doing the skill with my friend. (P358-FGD5)

We made cases by ourselves, divided them respectively, and practiced using a timer. (P153-FGD3)

These capture the collaborative innovation in learning. However, surface approaches emerged, indicating assessment-driven rote memorisation tendencies when sensed as rewarded, underlining estimated maximum results with minimal effort.

Some doctors in OSCE prioritise fluency in memorising the checklist. So we must be fluent in memorising the verses. (P164-FGD1)

We started studying just the night before OSCE. Sometimes we are one-shot, lucky. Those who have learnt from last week, the remedial is 6 to 7 stations. (P174-P179-FGD1)

Learning persistence

Students integrated academic discipline with stress management and spiritual resilience through categories such as ‘refreshing activities’, ‘spiritual practices’ and ‘charity-based motivation’. Activities such as group encouragement, prayer, and altruism emerged as mechanisms for maintaining study focus.

If we don’t pray, we will be given difficulty. I’m praying *tahajjud*, up to before the exam. (P339-FGD4)

I watch everything: TikTok, Instagram, Doctor Gray, Netflix, until I want to study again. (P93-FGD6)

In group, we share funny stories and experiences, and laugh. We do not get bored easily. (P387-FGD3)

Notably, teaching peers and feeding stray animals were seen as compassionate acts grounded in religious virtue.

It is not charity like money or goods. Sharing knowledge is charity, too. I seek my friends and invite them to learn together. It also makes me understand more. (P361-365-FGD1)

When I go out on the street and meet stray cats, I usually feed them. Because giving charity to animals is rare. (P339-FGD4)

These findings reveal students’ expanded learning persistence definition encompassing emotional and spiritual commitment, echoing humanistic medical education values. In contrast, the unintended way to relieve the stress emerged as:

I am a person who is easily distracted. If my friends invite me to play games, then we play. Let us go out first and hang out. I will follow them. (P463-FGD5)

DISCUSSION

This study explored students’ perceptions and experiences of OSCE’s learning impact on behaviours at FK UNISA. Students described how OSCE promoted deep learning by engaging them in complex cognitive processes—diagnostic reasoning and critical thinking—integral to clinical competencies (12, 13), which in turn enhanced their ability to connect clinical signs with diagnoses and fostered profound medical content understanding and bolstered clinical confidence (3, 12). These findings align with the experiential learning theory, emphasising the role of concrete experiences and reflective observation in transforming knowledge into competence.

Students recognised the OSCE format as fostering essential clinical skills—history-taking, physical examinations, and procedural techniques, in line with findings that assessments reinforce content mastery through practice and reflection (10). Time-limited OSCE stations reportedly improve students' ability to prioritise patient inquiries efficiently—an indispensable future clinical practice skill (8). Procedural skill assessments were particularly motivating, with students reporting increased practice frequency and confidence—findings mirrored by McKenzie et al. (14). These experiences suggest that students describe OSCE as a self-regulated learning catalyst, encouraging ownership of skill development.

Students noted substantial communication skills and patient management improvements, consistent with previous studies highlighting the role of assessments in reinforcing clinical applications (6, 15, 16). From an assessment-driven learning perspective, these findings suggest that OSCE functions not merely as a summative evaluation but as a formative learning experience shaping students' professional identity and clinical confidence.

Despite its benefits, concerns about standardised patient performance emerged, as inconsistencies in role portrayal may compromise the exam's authenticity. As suggested in prior research, enhanced training for standardised patients could improve learning process contributions (6, 7).

Students perceived OSCE to not only enhance clinical competencies but also regulate learning strategies. Its summative nature appeared to drive sustained, focused preparation, particularly pre-exam (10, 17). Lafleur et al. (18) noted that students dedicate substantial time to theory-based learning, believing it enhances clinical practice. Participants highlighted peer learning as essential preparation, gaining deeper insights through discussions and collaborative learning (8, 10). OSCE scenario simulation and peer feedback exchange appeared to enhance self-regulated learning and reflection (11).

Beyond academics, students reported spiritual and recreational activities helped maintain mental well-being during preparation. Interestingly, students described altruistic behaviours—such as teaching peers and feeding stray animals—as components of OSCE preparation. These behaviours, framed as spiritually driven 'acts of charity', appeared to enhance understanding, resilience, and stress management. This finding is particularly noteworthy in the Indonesian context, where Islamic values deeply influence students' worldview and behaviour. Integration of spiritual practices with academic preparation reflects holistic learning extending beyond cognitive and psychomotor domains to encompass moral and ethical development. These behaviours align with prior research (19, 20) demonstrating that religious beliefs can motivate prosocial behaviours among students. In this study, students' charitable activities were not incidental but intentionally connected to OSCE preparation as a means of seeking spiritual merit and emotional balance. This suggests that students' perspective of OSCE, within this cultural and religious context, serves beyond assessment; it integrates into students' broader moral framework, fostering not only clinical competence but also character development.

However, distraction potential, particularly with immersive activities like gaming, can negatively impact students' focus and learning outcomes (21–24). Factual mastery focus, often examiner-driven, led to rote memorisation in clinical skill development. This superficial learning tendency may result in cognitive dissonance, ultimately hindering long-term knowledge retention and skill proficiency (10, 25–28). Additionally, among some students, OSCE time pressure and suboptimal study habits prompted reliance on luck rather than solid preparation, thereby exacerbating anxiety and reducing meaningful learning outcome potential (23, 29, 30).

While OSCE appears promising, the study acknowledges current implementation limitations. The recent introduction of OSCEs means further data are needed to evaluate long-term student learning impact comprehensively. Additionally, single-institution findings may limit generalisability to broader Indonesian medical student populations. Expanding research to multiple institutions will provide a more comprehensive understanding of OSCE effects on student learning behaviours.

CONCLUSION

This study reveals students' perceptions and experiences of OSCE's multifaceted learning impact on behaviours contributing to overall professional development. Students perceived OSCE as fostering deep learning through enhanced critical thinking, diagnostic reasoning, clinical skill development, and communication abilities. They also reported that it regulated learning strategies by promoting effective time management, active and collaborative learning, and self-reflection. Notably, spiritual and altruistic values emerged as unique aspects of learning persistence, enriching students' holistic personal growth within their cultural and religious context. However, challenges such as rote memorisation prioritisation, reliance on luck, and standardised patient inconsistencies suggest areas for refinement. Expanding research to diverse contexts can validate these findings and support OSCE optimisation as a transformative assessment tool promoting not only clinical competence but also professional identity formation grounded in ethical and humanistic values.

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ETHICAL APPROVAL

The study was approved by the Health Research Ethics Committee of FK UNHAS with protocol number UH24030192, ensuring adherence to ethical standards throughout the study.

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