



Research Article

Level of anxiety and internal tryout evaluation of the national objective structured clinical examinations (OSCE) results for pharmacy students

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ABSTRACT

OSCE (Objective Structured Clinical Examination) for pharmacist profession students is currently one of the measuring tools for success in competency exams to test victory in learning the Pharmacist Profession, in addition to the MCQ (Cognitive Based Test) method which is carried out in the form of CBT (Computer Based-Test). The Pharmacist Profession Study Program at the University of Muhammadiyah Malang (UMM) currently has professional pharmacist students and conducted a national tryout test for batch 2 students. In contrast, these students have never received training for the OSCE exam before. This study was conducted to evaluate the internal tryout on the results of the national OSCE score for Pharmacist students at the University of Muhammadiyah Malang" in batch 3 compared to batch 2, which had not done an internal tryout. In addition, an anxiety test was conducted on students taking the OSCE exam to get the degree of anxiety students taking the exam. From the study results, the anxiety level of the 2nd and 3rd batch students when facing the national OSCE exam was moderately anxious. Implementing the internal tryout had significant effects on the passing rate of the 3rd batch of students in the national OSCE exam.

1. Introduction

The implementation of pharmaceutical education in Indonesia now refers to the National Curriculum established by APTFI (Association of Indonesian Pharmaceutical Higher Education), namely the core curriculum of the Undergraduate Pharmacy Education Program and the 2008 Pharmacist Education Program Curriculum. The Pharmacist Education Program Curriculum was further agreed upon with the Indonesian Pharmacists Association (IAI) in 2009, and various developments occurred at the national and global levels (APTFI, 2013). As a tool for measuring success in competency, various development measuring instruments have been developed to test success in learning the pharmacist profession. Test methods and systems are systematically-designed to meet the assessment basics, namely *valid, objective, reliable, feasible, and impact on learning*. The methods developed to measure the competency of professional pharmacist students include the MCQ's (*Cognitive-Based Test*) method, which is carried out in the form of a CBT (*Computer-Based Test*), and the OSCE (*Objective Structure Clinical Examination*) method. The material tested refers to the OSCE UKAI (Indonesian Pharmacist Competency Examination) blueprint (UKAI, 2017).

There are 3 (three) divisions of pharmaceutical practices tested in the OSCE method, namely the manufacture of pharmaceutical preparations, distribution of pharmaceutical preparations, and pharmaceutical service (UKAI, 2017). OSCE is a series of measurements used to assess clinical skills. The OSCE method is often used for measurement, and it is important to see its reliability and validity. OSCE is an approach to clinical measurement where competency components can be measured in a structured system according to expected objectives (Brannick et al., 2011). The advantages of the OSCE method compared to other exam methods include the ability to assess communication and *interpersonal skills, professional judgment, and ethics* (Bdair et al., 2019)(Quero Munoz et al., 2005). The National UKAI Committee conducted a National Try-out Exam for professional pharmacist students in 2018 to evaluate the readiness of professional pharmacist students and supporting facilities and infrastructure. In 2020, professional pharmacist education requires a summative National OSCE exam. The material tested refers to the Indonesian Pharmacist Competency Standards based on the *blueprint* that outlines the priority competencies being tested.

Exam anxiety can be described as a combination of tension, fear, and autonomic activation that occurs when being evaluated in performance-based situations. Exam anxiety occurs due to combined physiological, emotional, and behavioral responses that vary depending on the individual, potentially resulting in worries and irrelevant thoughts that burden the cognitive system (Martin & Naziruddin, 2020). Hadi et al.'s research observed a weak relationship between exam anxiety and OSCE performance, limited by its relatively small sample size compared to similar studies. Additionally, a correlation was detected between worry (measured by TAI-W) and OSCE performance (Hadi et al., 2018).

The Pharmacist Profession Study Program at the University of Muhammadiyah Malang was established in 2016 according to the Decree of the Minister of Research, Technology, and Higher Education Number 446/KPT/I/2016 and has received B accreditation based on the decision of LAM-PTKes No. 0517/LAM-PTKes/Akr/Pro/VII/2018. The Pharmacist Profession Study Program currently has professional pharmacist students and has conducted a national tryout exam for the second batch of students, who did not have any internal tryout beforehand. From the results of the nationally held OSCE exam, it was found that out of 50 students in the second batch that have passed above the Passing Limit Value, only 35 students

(70%) passed above the score, while 15 students did not pass. The average score of UMM second-batch pharmacist students was 55.21, while the national average was 55.19.

UMM pharmacist students from the third batch underwent a formative OSCE exam in July 2019. Hence, this study aims to evaluate whether internal tryouts can improve the third batch of pharmacist students' pass rates in the national OSCE exam. Additionally, the anxiety levels of the students of the second and third-batch during the national OSCE exam will also be measured.

2. Materials and Methods

Instruments

Consent forms to participate in this study, self-assessment forms, and peer-assessment forms. The results of the national UKAI OSCE scores and the internal tryout scores for second and third-batch students of the Pharmacist Profession Study Program at UMM, each consisting of 50 samples, totaling 100 samples.

Type of Research

This study is a cross-sectional analytical study with the determination of peer assessment assessments by random sampling (Hidayati et al., 2021).

Testing

The questionnaire data includes levels of anxiety and knowledge during the national UKAI OSCE exam. The data from the questionnaires were analyzed using the Chi-square test to determine the effect of anxiety levels on knowledge during the UKAI OSCE exam for the second and third cohorts. The data processing steps include editing, coding, and data entry. The OSCE scores for the second-batch students were from the National OSCE scores in November 2018, and those of the third-batch were from the OSCE in July 2019. These results, then, were compared to the national average score ratio, the percentage increase in pass rates, and the improvement in scores from each review of pharmacist competencies. Therefore, this comparison evaluates whether the internal tryout conducted can improve the pass rates of the third batch. Data is visible in tables. The UKAI OSCE National scores of the second and third batches will be compared using a T-test to see if there is a significant difference in pass rates.

3. Results and Discussions

The study involved 100 samples consisting of 50 Pharmacist Profession students from Batch 2 and 50 Pharmacist Profession students from Batch 3. Based on the study result, characteristic data for the Pharmacist Profession students of Batch 2 showed 92% (46 students) were female and 8% (4 students) were male. The frequency of participating in the National OSCE tryout was 100% (50 students) who participated once. The frequency of student scores compared to the NBL (Passing Limit Value) showed that 70% (35 students) scored above the NBL, while 30% (15 students) scored below the NBL. The national passing rate for Pharmacist students of Batch 2 was 100% (50 students).

The level of anxiety in facing the National OSCE exam tryout was categorized as follows: 6% (3 students) were "not anxious", 54% (27 students) were "moderately anxious", and 40% (20 students) were "severely anxious". Anxiety can influence an individual's ability to make the right decision (Kaya et al., 2014). Experience is known, appreciated, and believed as a result of the emergence of motivation, leading to the manifestation of intention that forms an attitude (Musyayadah et al., 2022).

Characteristics of Pharmacist Profession students Batch 3 include 36% (18 students) female and 14% (7 students) male, with a 100% (50 students) participation rate in the National OSCE UKAI exam. The frequency of OSCE scores compared to the NBL (Passing Limit Value) was 80% (40 students) above the NBL and 20% (10 students) below the NBL. The National UKAI (CBT and OSCE) exam passing rate was 96% (48 students) passed and 4% (2 students) did not pass. The level of anxiety in facing the National OSCE exam tryout was 2% (1 student) "not anxious", 62% (31 students) experienced "mild anxiety", and 36% (18 students) experienced "moderate anxiety".

Table 1. Characteristics of OSCE's Batch 2 Participants

Characteristics	n	%
Gender		
Male	4	8
Female	46	92
Frequency of participating in National Try-out		
Once	50	100
> Once	0	0
Frequency of scores compared to National NBL OSCE		
Above NBL	35	70
Below NBL	15	30
UKAI National Pass		
Passed	50	100
Not Passed	0	0
Level of Anxiety		
No anxiety	3	6
Mild anxiety	0	0
Moderate anxiety	27	54
Severe anxiety	20	40

Table 2. Characteristics of OSCE's Batch 3 Participants

Characteristics	n	%
Gender		
Male	7	14
Female	43	36
Frequency of participating in National Try-out		
Once	50	100
> Once	0	0
Frequency of scores compared to National NBL OSCE		

Characteristics	n	%
Above NBL	40	80
Below NB	10	20
UKAI UKAI National Pass		
Passed	48	96
Not Passed	2	4
Level of Anxiety		
No anxiety	1	2
Mild anxiety	31	62
Moderate anxiety	18	36
Severe anxiety	0	0

Table 3. NBL Score (Passing Limit Value) for Internal Try-out of Batch 3 PSPA UMM

Station	NBL*
1	8,3439
2	13,9842
3	15,7680
4	10,9229
5	18,4960
6	13,8007
7	14,5027
8	19,3008
Total	115,1192

Table 4. Passing Rate for Internal Try-out of Batch 3

Passed	Not Passed
4	46

Batch 3 received internal tryouts from the institution, designed similarly to the National OSCE but with only 8 (eight) stations. The results of the internal tryout showed that 8% (4 students) passed, 62% (31 students) were in borderline, and 30% (15 students) did not pass. This low pass rate was because it was their first time taking the OSCE exam designed to the same standards as the National OSCE UKAI. The internal OSCE exam questions were provided by UMM internally.

Table 5. The UKAI OSCE Competency Test Results for Batch 2 Based on Competency Review on Day 1

Competency Review	Institutional average value (UMM)	National average value (Indonesia)	National Maximum Value	Passing Limit Value (NBL)
1	9,08	7,76	15	52,74
2	10,32	8,68	18	
3	8,95	9,13	21	
4	5,42	5,97	12	
5	4,39	5,35	12	
6	17,97	18,79	27	

Table 6. The UKAI OSCE Competency Test Results for Batch 2 Based on Competency Review on Day 2

Competency Review	Institutional average value (UMM)	National average value (Indonesia)	National Maximum Value	Passing Limit Value (NBL)
1	7,83	7,14	15	51,64
2	10,92	10,67	18	
3	8,5	9,12	24	
4	2,58	2,98	9	
5	5,92	6,14	12	
6	16,58	18,1	27	

Table 7. Average Percentage of Competency Review for Batch 2 on Day 1 and Day 2

Competency Review	Percentage of Day I (%)	Percentage of Day II (%)	Average
1	60,53	52,20	56,37
2	57,33	60,67	59,00
3	42,62	35,42	39,02
4	45,17	28,67	36,92
5	36,58	49,33	42,96
6	66,56	61,41	63,98

Table 8. The UKAI OSCE Competency Test Results for Batch 3 Based on Competency Review on Day 1

Competency Review	Institutional average value (UMM)	National average value (Indonesia)	National Maximum Value	Passing Limit Value (NBL)
1	24	22,06	39	83,76
2	11,85	11,73	24	
3	25,75	24,28	57	
4	3,1	5,51	18	
5	13,35	10,77	24	
6	18,93	17,71	27	

Table 9. The UKAI OSCE Competency Test Results for Batch 3 Based on Competency Review on Day 2

Competency Review	Institutional average value (UMM)	National average value (Indonesia)	National Maximum Value	Passing Limit Value (NBL)
1	13,8	14,65	30	85,89
2	21,4	20,07	33	
3	21,2	20,57	54	
4	5,6	6,4	18	
5	17,1	13,92	27	
6	20,8	18,92	27	

Table 10. Average Percentage of Competency Review for Batch 2 on Day 1 and Day 2

Competency Review*	Percentage of Day I (%)	Percentage of Day II (%)	Average
1	61,54	46,00	53,77
2	49,38	64,85	57,11
3	45,18	39,26	42,22
4	17,22	31,11	24,17
5	55,63	63,33	59,48
6	70,11	77,04	73,57

*Description of Competency Review. 1 = Data and Information Collection; 2 = Problem Determination; 3 = Problem Solving; 4 = Recording and Reporting; 5 = Effective Communication; 6 = Professional Attitude and Behavior

From the T-test results between Batch 2 and Batch 3 Pharmacist students who received internal tryouts before the National OSCE exam, it was found that there was a significant effect of internal tryouts on the passing rate of the National OSCE with a significance value of $0.003 < 0.05$. In the study by Fadhilah, M et al. on medical students, it was found that the general perception of the impact of basic clinical skills training on the National OSCE was quite good (Fadhilah et al., 2015). Therefore, the results of this study suggest that the curriculum for the Pharmacist program should include internal tryouts to better prepare students for the National OSCE. From the average specific competency test results for Batch 2 and Batch 3, the highest-scoring competency was Competency 6 (professional attitudes and behaviors), while the lowest was Competency 4 (recording and reporting). A pharmacist's basic skill is to perform accurate and valid pharmaceutical calculations, which plays a crucial role in *patient care* (Joshi & Klausner, 2022), as pharmacists are often the most accessible healthcare professionals in the community, such as in pharmacies (Pothireddy et al., 2022). This study suggests that the Pharmacist program should improve its curriculum to enhance the competencies with lower scores, particularly in recording and reporting. Students should also understand the strategies for personal health management amidst academic pressures so that they can have a positive impact on their education (Spivey et al., 2020). Evaluation of learning is crucial for making improvements, and this aspect should involve feedback from students, preceptors, and the study program (Ardinigtas. B, Marchaban, Kusnanto H, 2017).

4. Conclusions

The study concludes that internal OSCE tryouts have a significant effect on the passing rate for Batch 3. The average specific competency test results for Batches 2 and 3 indicate that out of 6 competencies tested, the highest score was for Competency 6 (professional attitudes and behaviors), and the lowest was for Competency 4 (recording and reporting). Most students in Batches 2 and 3 experienced moderate anxiety when facing the OSCE exam.

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