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Students' Views of the Objective Structured Clinical Examination (OSCE): Findings from two Malaysian Pharmacy Schools

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Abstract

Objectives: To investigate and compare the views of undergraduate pharmacy students in two Malaysian pharmacy schools (one private and one public) regarding the organization, quality, and objectivity of OSCE.

Methods: A cross-sectional study was undertaken among penultimate and final year students in two Malaysian pharmacy schools between October and December 2019. A questionnaire was developed, tested, and validated and then distributed to study participants through online Google forms.

Results: A total of 221 undergraduate pharmacy students participated in the study. Regarding the adequacy of the time allocated per OSCE station, students of the public university expressed a relatively higher level of disagreement (IIUM 63.9% & 48.7% vs. UoC 11.6% & 14.3%). Relatively few students agreed that OSCE is a less stressful type of assessment compared to other traditional methods (IIUM 7.2% & 10.3% vs. UoC 39.5% & 23.8%). Regarding the OSCE scores as valid indicators of student's skills, private university students had more agreement than their counterparts in a public university (UoC 79% & 64.3% vs. IIUM 39.2% 30.8%). In addition, both student groups disagreed that OSCE marks were likely to be affected by the student's gender (IIUM 73.2% & 66.7% vs. UoC 67.4% & 78.6%).

Conclusion: Overall, most of the participants had overall good views regarding the organization, quality, and objectivity of OSCE, with several differences between students in public and private universities. There are few areas to be further considered to ensure more positive students' OSCE experience such as revision on the time allocation for every station and on the provision of timely constructive feedback.

Key Messages

- Our study is the first at the local level, to explore the views of undergraduate students towards the OSCE in two pharmacy schools belonging to both the public and private sectors.
- Although there were positive students' views regarding the organization, quality, and objectivity of this type of clinical skills assessment, we were able to identify several differences between students in private and public universities at different study levels.
- The careful revision of these identified differences such as the time allocation for every station and on the provision of timely constructive feedback will be instrumental to improve the OSCE experience for undergraduate pharmacy students in Malaysia.

Introduction

The objective structured clinical examination (OSCE) was introduced as early as 1975 as an assessment method for students in clinical disciplines (Harden, Downie, Stevenson, & Wilson, 1975). It comprises various stations where candidates are required to perform a wide range of real-life clinical tasks and

respond to simulated clinical queries. These tasks should be carried out within time limits, including time for interaction with simulated patients or health care providers (Gupta, Seth, Rose, & Parijatham, 2011; Shirwaikar, 2015). For the interactive stations, a trained examiner is placed to observe and assess the candidates based on a standardized marking scheme. At the same time, written responses will be evaluated instead of observations at the non-interactive stations (Shirwaikar, 2015). With the shift occurring in the paradigm of pharmacy practice to be more patient-focused, the use of OSCE became an essential assessment part at schools of pharmacy worldwide as well as adapted by several pharmacist professional associations for certifying and licensing purposes (Austin, O'Byrne, Pugsley, & Munoz, 2003; Shirwaikar, 2015).

In Malaysia, twenty-one pharmacy schools are entitled to offer undergraduate pharmacy programs. Six programs are offered in public universities, and the rest are in private universities, either national or affiliated with international universities ("List of Authorized Local Universities Offering Pharmacy Course | Pharmaceutical Services Programme," n.d.). Generally, Malaysian undergraduate pharmacy programs are designed as four-year programs that will succeed later by one-year provisional training in community pharmacies, hospitals, industries, or academic institutions (Hassali, Mak, & See, 2014). Moreover, the initiatives taken by few Malaysian pharmacy schools offer specialized clinical pharmacy courses to meet the growing interest of undergraduate students in the clinical subjects (Elnaem et al., 2018; Elnaem, Jamshed, & Elkalmi, 2017).

As an integral assessment component of the learning process, almost all pharmacy schools in Malaysia are conducting OSCE to assess a wide range of their students' skills. It is well-established that a well-structured OSCE is the best method to assess students' skills of communication, professional judgment, and problem-solving skills in clinical health profession academic programs (Salinitri, O'Connell, Garwood, Lehr, & Abdallah, 2012; Shirwaikar, 2015). Little is known about the Malaysian pharmacy students' perspectives and views regarding the OSCE conducted to assess their skills and competencies (Awaisu, Mohamed, & Al-Efan, 2007). Furthermore, to the best of the authors' knowledge, no previous study has reported perspectives of students of both private and public universities concerning the extent of organization and objectivity of this type of assessment. Therefore, this work aimed to investigate and compare the views of undergraduate pharmacy students in two Malaysian pharmacy schools, one private and one public, regarding the organization, quality, and objectivity of OSCE.

Methods

Study design

A descriptive cross-sectional study was conducted to explore and compare the views of penultimate and final-year undergraduate pharmacy students at two Malaysian public and private universities concerning the organization, quality, and objectivity of the OSCE assessment.

Development, validity, and reliability of the study instrument

A self-designed 23-item structured questionnaire in English was developed as no similar tool to achieve the research objectives was found in the literature. The content validity of the developed tool was examined by three academic staff from the Department of Pharmacy Practice at International Islamic University Malaysia (IIUM), whose previous experience in designing OSCE assessments. Accordingly, the content validity index for each item was calculated, and the inputs from the validators were considered to make all necessary amendments. Upon validation, the finalized draft was transformed into an online Google form to be easily distributed for the pilot testing of the instrument. The selection of students for pilot testing was done randomly by the research team, and they were excluded from participating in the main study. The outputs of the pilot study were utilized to assess the internal consistency and reliability of the instrument before using it in the main study. The Cronbach's alpha value was calculated at 0.87, which was an acceptable value, according to the literature (Tavakol & Dennick, 2011).

Description of the study instrument

The study instrument was divided into three sections. Section one comprised three items of general information and participants' demographics. Section two contained six questions used to assess the views of the students regarding the organization of OSCE. Section three consisted of a total of 14 designed to explore the opinion of students about the OSCE Quality and Objectivity. Items in sections two and three were designed to be answered on a five-item Likert scale where one denoted "strongly disagree," and 5 indicated "strongly agree." Therefore, excluding the first introductory section of the questionnaire, the survey comprised a total of twenty questions. The estimated average time to complete the questionnaire was 15 to 20 minutes referring to the pilot study responses.

Study participants and sample size

The target participants of the study were penultimate and final-year students in the pharmacy schools of a public university (International Islamic University Malaysia "IIUM") and a private university (University of Cyberjaya "UoC"). The selection of students in the last two years of the study program was based on confirmation of their previous exposure to the OSCE. The subjects who were involved in the pilot study were excluded from real study participation. The participation of subjects was voluntary-based, and no payment was given. The student's consent form was implied by the submission of the completed questionnaires. The expected target population for the main study was 387 from both universities, 250 students from IIUM, and 137 students from UoC. A minimum of 194 participants was needed to fulfill the requirement of the sample size calculation by the RAOSOFT calculator with a 5% margin error and a 95% confidence level. A link to the online questionnaire was communicated to all potential study participants, and a minimum of three reminders were sent to increase the response rate.

Ethical requirements

The study protocol obtained an ethical approval recommendation from the faculty of Pharmacy Ethics Committee (KEC) (Review No. 4/2019) and obtained ethical approval from the IIUM Research Ethics Committee (IREC 2020-074). Private and confidential information regarding students' involvement was

kept secure and respected as the identity of the student was anonymous. The study conducted should, by any means, cause no harm to people and the environment.

Statistical analysis

The data were analyzed using SPSS software version 23. Descriptive data are expressed as percentages. The Kruskal-Wallis test was utilized to compare the differences in the mean questionnaire scores between the students' groups and between study levels at both universities. The level of significance was set at $p < 0.05$.

Results

Demographic information

A total of 387 students were identified as target respondents, and 221 questionnaires were collected online (response rate 57.1%) that achieved the target respondents' limit (more than 194 respondents). The response rates in IIUM and UoC were n=134, 53.7%, and n=87, 63.4%, respectively. Approximately 61.5% of the total responses were from IIUM (47% female & 14.5% male) whereas 38.5% (29% female & 9.5% male) were from UoC. Finally, 63.4% of the total responses were from penultimate students; meanwhile, 36.6% were responses from final year students.

Students' Views on the OSCE organization

In this domain, six items were designed to explore the students' views on the overall organization of the OSCE. Students responded with an agreement to the survey items except for the item of time allocation, where students of the public university expressed a relatively higher level of disagreement (IIUM 63.9% & 48.7% vs. UoC 11.6% & 14.3%). Additionally, there was a higher level of agreement among final year students and those belonging to the private university. For the ease of response categorization, responses of highly agree and agree were grouped. The same was done for the disagree items. All items showed significant differences between student groups and years of study except for item 5. **Table 1** presents the percentages of the students' responses to the items of the OSCE organization.

Students' Views on the OSCE objectivity and quality

This domain had mixed items on the students' opinions of the quality and objectivity of the OSCE. All items showed significant differences between student groups and years of study except for items 11, 13, and 18. Relatively few students agreed that OSCE is a less stressful type of assessment compared to other traditional methods (IIUM 7.2% & 10.3% vs. UoC 39.5% & 23.8%). Students in the public university were less in agreement that OSCE might help to reduce the failure rate of the subject (IIUM 22.7% & 46.2% vs. UoC 60.5% & 42.9%). Regarding the OSCE scores as valid indicators of students' skills, students from the private university had more agreement than their counterparts in the public university (UoC 79% & 64.3% vs. IIUM 39.2% 30.8%). Besides, both student groups disagreed that OSCE marks were likely to be affected by the student's gender (IIUM 73.2% & 66.7% vs. UoC 67.4% & 78.6%). However, the impact of

student characteristics on the OSCE assessment was highlighted with relatively fewer concerns among final year students in a public university (IIUM 68% & 35.9% vs. UoC 62.8% & 66.7%). **Table 2** demonstrates the responses of the students regarding the items of the quality and objectivity of the OSCE.

Discussion

Most of the participants had overall good opinions regarding the organization, quality, and objectivity of OSCE. Similarly, previous research involving a smaller number of participants at one Malaysian university reported that a considerable number of participants perceived their OSCE as a good, comprehensive, and fair experience (Awaisu et al., 2007). More importantly, there was a significant difference between students' groups concerning their opinions regarding the adequacy of allocated time for OSCE stations. The students from a public university whose OSCE was designed as 7-minute stations were more concerned about the allocated time compared to those from a private university whose OSCE was designed as 10-minute stations. The students' concerns about having sufficient time to perform the required tasks at the OSCE stations were highlighted frequently in the literature (Kristina, Gustriawanto, Rokhman, Aditama, & Sari, 2018; Salih et al., 2010). It seems that the allocation of slightly more time could contribute to making the OSCE experience less stressful from students' perspectives.

Concerning the feedback given after the OSCE and its efficiency in helping students learn from their mistakes, there was a noticeable difference between students' groups. Final-year students in general, particularly those from a public university, were more concerned about the quality and timely receipt of feedback regarding their OSCE performance. This could be attributed to the fact that in the final year, there is more than one course that uses OSCE as an assessment that requires many OSCE to be conducted in a relatively short period. This could make it more challenging for lecturers to provide extensive and detailed feedback for students who are on the way to prepare themselves for the next examination session.

Moreover, the majority of students in both universities believed that OSCE scores are true indicators of students' essential clinical skills. There were some differences in the extent of students' agreement with this statement in favor of penultimate students and final year students from a private university. In contrast, previous research conducted to explore students' opinions regarding the objectivity and validity of OSCE has highlighted that students had different views on the acceptance of the OSCE as the main evaluation assessment of their clinical skills (Alkhathlan et al., 2018; Almuqdadi et al., 2017). Overall, the participants in our study were found to have a good acceptance level of the OSCE to evaluate their clinical skills. Furthermore, concerning the objectivity of the assessment, most of the study participants did not see any significant contribution of other non-academic factors, such as student gender, on the quality of examination. Moreover, in particular, final-year students in the public university did not acknowledge any significant impact of students' characteristics on the obtained OSCE scores. This finding is consistent with previous research conducted on medical students that reported the lack of perception that students' characteristics played a role in their obtained scores.(Azim Majumder et al.,

2019) In contrast, in a previous UK study that aimed to explore pharmacy students' feedback on the assessment methods, a significant number of participants highlighted the potential impact of students' characteristics on their final OSCE scores (Hanna, Davidson, & Hall, 2017).

Concerning the perceived stress associated with the OSCE, previous research on OSCE experience among healthcare students has highlighted the students' anxiety associated with their OSCE (Fidment, 2012). Similarly, our study participants, particularly those from a public university, had the same opinion that OSCE was a stressful learning experience. Moreover, previous research showed that the majority of pharmacy students tend to visualize the OSCE as a more stressful assessment compared to other assessment methods (Hanna et al., 2017). In addition, another study among medical students underscored that they had perceived the OSCE as being more difficult compared to the traditional assessment, such as essay questions (Azim Majumder et al., 2019).

Overall, students in our sample have reported some good views about the importance of OSCE and its potential contribution to help them develop their skills towards their future healthcare professional career. They also reported that the layout of the examination was comfortable. This is in line with previous findings that highlighted that health care students tend to view the OSCE as a worthwhile experience that, with some fine adjustments, could be less stressful and more efficient (Fidment, 2012). Among the adjustments that could be considered in our setting is the revision of the time allocation for every station, the focus on providing timely constructive feedback, and further efforts should be exerted to motivate the students to maximize their benefits from this learning experience.

There is no work without limitations. Although our study involved responses from two schools of pharmacy, it still lacks the generalizability to represent the OSCE views of all Malaysian pharmacy students. In addition, it is assumed that a more prolonged period for data collection would contribute to a higher response rate.

Conclusion

Overall, most of the participants had overall good views regarding the organization, quality, and objectivity of OSCE, with several differences between students in public and private universities. There are few areas to be further considered, such as revision of the time allocation for every station and provision of timely constructive feedback. These are a few of the important considerations to ensure that students had the most positive and less stressful OSCE experience, and that they would value the OSCE as one of the assessment methods that could help them prepare for the real-world experience. The findings did not support any significant contribution of other non-academic factors such as student gender, on the OSCE assessment scores.

Declarations

Competing interests:

The authors declare no competing interests.

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Tables

Table 1: Views of students towards OSCE organization (expressed in percentages).

Students' groups per different years in each university	IIUM (N=134)						UoC (N=87)						*P*-Value*
	Year 3 (%)			Year 4 (%)			Year 3 (%)			Year 4 (%)			
Students responses (expressed in percentages)	A	N	D	A	N	D	A	N	D	A	N	D	
1)The instructions at the OSCE stations were well understood	66	25.8	8.2	77	12.8	10.2	88.4	11.6	0.00	83.4	9.5	7.1	0.02
2)Time provided for every task at a station was adequate	13.4	22.7	63.9	12.8	38.5	48.7	72.1	16.3	11.6	66.7	19	14.3	< 0.001
3)Briefing regarding the flow of OSCE before the exam was adequate	53.6	33	13.4	76.9	18	5.1	74.4	18.6	7	88.1	4.8	7.1	< 0.001
4)The materials provided during OSCE were sufficient	52.6	28.9	18.5	82	7.7	10.3	93	7	0.00	95.2	2.4	2.4	< 0.001
5)Questions in OSCE were mainly focused on counselling techniques	63.9	21.7	14.4	43.6	28.2	28.2	67.4	18.6	14	64.3	28.6	7.1	0.057
6)The overall layout during OSCE was convenient	60.8	25.8	13.4	79.5	15.4	5.1	93	7	0.00	98.1	11.9	0.00	< 0.001

Agree = A, Neutral = N, Disagree = D

* using the Kruskal-Wallis test

Table 2: Views of students towards OSCE quality and objectivity

Students' groups per different years in each university	IIUM (N=134)						UoC (N=87)						*P*-Value
	Year 3			Year 4			Year 3			Year 4			
Students responses (expressed in percentages)	A	N	D	A	N	D	A	N	D	A	N	D	
7)OSCE was a less stressful exam compared to other exams	7.2	20.6	72.2	10.3	28.2	61.5	39.5	25.6	34.9	23.8	38.1	38.1	< 0.001
8)OSCE helps in reducing the failure in a particular subject	22.7	43.3	34	46.2	23	30.8	60.5	30.2	9.3	42.9	50	7.1	< 0.001
9)Students were able to identify their mistakes from the feedback given by the assessor regarding their performance on OSCE	69	15.5	15.5	35.9	18	46.1	83.7	14	2.3	92.9	4.7	2.4	< 0.001
10)The marks were affected by the characters of the students	68	24.8	7.2	35.9	41	23.1	62.8	27.9	9.3	66.7	26.2	7.1	0.002
11)The marks were affected by the gender of the students	8.3	18.5	73.2	5.1	28.2	66.7	18.6	14	67.4	9.5	11.9	78.6	0.582
12)The level of difficulty in OSCE is aligned with the students' level of knowledge	60.8	23.7	15.5	56.4	41	2.6	86	11.6	2.4	76.2	16.7	7.1	0.007
13)Knowledge and skills gained from OSCE are relevant to future pharmacists	88.7	8.2	3.1	89.7	10.3	0	97.7	2.3	0	97.6	2.4	0	0.130
14)OSCE covered wide area of clinical skills in pharmacy practice	74.2	21.7	4.1	79.5	20.5	0	93	4.7	2.3	97.6	0	2.4	0.002
15)OSCE scores are true indicators of students' essential clinical skills	39.2	32	28.8	30.8	38.4	30.8	79	16.3	4.7	64.3	23.8	11.9	< 0.001
16)Students were able to apply the knowledge that had been taught in the class	74	19	7	76.9	18	5.1	93	7	0	95.2	4.8	0	0.003
17)Students were able to practice their skills rather than just memorising facts for OSCE	83.5	12.4	4.1	82.1	12.8	5.1	88.4	11.6	0	100	0	0	0.037
18)OSCE trained the students to be more confident when dealing with patients and health professionals in the future	89.7	8.2	2.1	84.6	12.8	2.6	95.3	4.7	0	100	0	0	0.051
19)OSCE enhanced the interest of students towards clinical pharmacy	68	26.8	5.2	64.1	28.2	7.7	90.7	6.9	2.4	81	19	0	0.010
20)The students became more motivated to increase their level of competency after OSCE	62.9	29.9	7.2	61.5	28.2	10.3	93	7	0	88.1	11.9	0	< 0.001