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RESEARCH ARTICLE

Pharmacy students' views on the objective structured clinical examination (OSCE): findings from two Malaysian universities

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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 organisation, quality, and objectivity of Objective Structured Clinical Examination (OSCE). **Methods:** A cross-sectional study was undertaken among penultimate and final year students in two Malaysian pharmacy schools between October to December 2019 (International Islamic University Malaysia [IIUM] and University of Cyberjaya [UoC]). A questionnaire was developed, tested, validated and then distributed to study participants through online Google forms. **Results:** A total of 221 undergraduate pharmacy students participated in the study. Students from the public university disagreed with the allocated time for the OSCE stations (IIUM 63.9% and 48.7% vs UoC 11.6% and 14.3%). Relatively few students agreed that OSCE is a less stressful type of assessment compared to other traditional methods (IIUM 7.2% and 10.3% vs UoC 39.5% and 23.8%). Both groups of students disagreed that OSCE marks were likely to be affected by the student's gender (IIUM 73.2% and 66.7% vs UoC 67.4% and 78.6%). Private university students agreed more than their counterparts in public university that the OSCE scores were valid indicators of the students' skills (UoC 79% and 64.3% vs IIUM 39.2% and 30.8%). **Conclusion:** The majority of participants had positive views on the organisation, 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 OSCE experience for students such as revision on the time allocation for every station and on the provision of timely constructive feedback.

Introduction

The objective structured clinical examination (OSCE) was introduced as early as 1975 as an assessment method for students in clinical disciplines (Harden *et al.*, 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 limits on time

for interaction with simulated patients or healthcare providers (Gupta *et al.*, 2011; Shirwaikar, 2015). For the interactive stations, a trained examiner is placed to observe and assess the candidates based on a standardised marking scheme meanwhile, written responses will be evaluated instead of observations at the non-interactive stations (Shirwaikar, 2015). With the shift in paradigm for pharmacy practice to become more patient-focused, using OSCE became an essential

assessment part at schools of pharmacy worldwide and adapted by several pharmacist professional associations for certifying and licensing purposes (Austin *et al.*, 2003; Shirwaikar, 2015).

In Malaysia, 21 pharmacy schools are entitled to offer undergraduate pharmacy programmes; of these six programmes 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, the Malaysian undergraduate pharmacy programmes are designed as four-year programmes succeeded later by a one-year provisional training in hospital, community, industry, or academic institutions (Hassali, Mak & See, 2014). Moreover, it is important to notice the initiatives taken by few Malaysian pharmacy schools to offer specialised clinical pharmacy courses to meet the growing interest of undergraduate students in the clinical subjects (Elnaem, Jamshed & Elkalimi, 2017; Elnaem *et al.*, 2018).

As an integral assessment component of the learning process, most 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 the students' skills of communication, professional judgment, and problem-solving skills in clinical health professions academic programs (Salinitri *et al.*, 2012; Shirwaikar, 2015). Little has been known about the Malaysian pharmacy students' views and perspectives regarding the OSCE conducted to assess their skills and competencies (Awaisu, Mohamed & Al-Efan, 2007). 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 OSCE organisation and objectivity. 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 organisation, quality, and objectivity of OSCE.

Methods

Study design

A descriptive cross-sectional study was conducted to explore and compare the views of the penultimate and final-year undergraduate pharmacy students in two of the Malaysian public and private universities concerning the organisation, 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 an expert panel of three academic staff from the department of pharmacy practice at International Islamic University Malaysia (IIUM), whose experience in designing OSCE assessment. Accordingly, the content validity index for each item was calculated, and the inputs from the experts' panel were considered making all necessary amendments. Upon validation, the finalised 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 have been excluded from participating in the main study. The outputs of the pilot study were utilised 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 regarded as an acceptable value (Tavakol & Dennick, 2011).

Description of the study instrument

The study instrument was divided into three sections. Section one is composed of three items of general information and participants' demographics. Section two contained six questions used to assess the views of the students regarding the organisation 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'. So 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 have been

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. At least 194 participants were needed to fulfil the requirement of the sample size calculation by 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 that followed by at least three reminders were sent to increase the response rate.

Ethical requirements

The study protocol obtained ethical approval from the IIUM Research Ethics Committee (IREC). 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 analysed using SPSS software version 23. Descriptive data were expressed in percentages. Kruskal-Wallis test was utilised to compare the differences in the mean questionnaire scores between the students' groups and between study levels in 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%) which achieved the target respondents' limit (more than 194 respondents). The response rates in each of IIUM and UoC were $n=134$, 53.7%, and $n=87$, 63.4%, respectively. About 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 organisation

In this domain, six items explored the students' views on the overall organisation 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 have expressed a relatively higher level of disagreement (IIUM 63.9% & 48.7% vs UoC 11.6% & 14.3%). Also, there was a higher level of agreement among final year students and those belonging to the private university. For the ease of responses' presentation, responses were grouped into three categories; agree, neutral, and disagree. All items showed significant differences between students' groups and years of study except for item 5, which was related to counselling techniques indicating the relative agreement between study groups that counselling techniques are usually presented in their OSCE tasks. Table I presents the percentages of the students' responses to the items of the OSCE organisation.

Table I: Views of students towards OSCE organisation (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 Kruskal-Wallis Test

Students' Views on the OSCE objectivity and quality

This domain had mixed items of the students' opinions of the quality and objectivity of the OSCE. All items showed significant differences between students' 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 the student's skills, students from the private university had more agreement compared to their counterparts in a public university (UoC 79% & 64.3% vs IIUM 39.2% 30.8%). Besides, both students' 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's characters 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 II demonstrates the responses of the students regarding the items of the quality and objectivity of the OSCE.

Discussion

Most participants had overall good opinions regarding the organisation, quality, and objectivity of OSCE. Similarly, previous research involved a smaller number of participants at one Malaysian university reported that many participants perceived their OSCE as a good, comprehensive, and fair experience (Awaisu et al., 2007). More important, 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 seven-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 (Salih et al., 2010; Kristina, Gustriawanto et al., 2018). 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,

Table II: 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

there was a noticeable difference between students' groups. Final year students and particularly those from a public university were more concerned about the quality and timely receiving 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 conducting of many OSCEs in a relatively short period. That could make it more challenging for lecturers to provide extensive and detailed feedback for students on how 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 to this statement in favour 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 were having different views on the acceptance of the OSCE as the main evaluation assessment of their clinical skills (Almuqdad *et al.*, 2017; Alkhatlan *et al.*, 2018). Overall, the participants in our study had 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's gender on the quality of examination. Moreover, in particular, final year students in the public university acknowledged no significant impact of students' characters on the obtained OSCE scores. This finding is in line 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 have 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 opinions that OSCE was a stressful learning experience. Moreover, previous research showed that the majority of pharmacy students tend to visualise 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 good views about the importance of OSCE and its potential contribution to help them in developing their skills towards their future healthcare professional career. They have also reported that the layout of the examination was comfortable. This in line with the 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 the further efforts should be exerted to motivate the students to maximise 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 generalisability to represent the OSCE views of the whole 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 participants had good views regarding the organisation, quality, and objectivity of OSCE, with several differences between students in public and private universities. There are few improvement areas to be further considered, such as revision of the time allocation for every station and provision of timely constructive feedback, to ensure that students had a more positive and less stressful OSCE experience. The findings supported no significant contribution of other non-academic factors such as student's gender on the OSCE assessment scores.

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