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Evaluation of a Cumulative Performance-based Assessment for Pharmacy Students in Qatar

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Background

Objective structured clinical examinations (OSCEs) are considered the most psychometrically robust form of clinical skills assessment in the health professions. In 2014, the College of Pharmacy at Qatar University (CoP-QU) piloted the first cumulative OSCE for graduating students in collaboration with the Supreme Council of Health and the University of Toronto. Since then, interest has grown in measuring the psychometric properties of this examination to ensure adequate reliability, validity and defensibility.

Objectives

This study aimed to evaluate the psychometric properties of the OSCE conducted in 2015 at the CoP-QU. A secondary objective of this study was to identify quality improvement opportunities for design, implementation, and evaluation of the OSCE.

Methods

The psychometric analysis occurred as follows: We calculated cut scores and pass rates of the 10 stations being used in the OSCE assessment using borderline regression method. Predictive validity of undergraduate courses grades with OSCE grades were calculated using correlation and regression statistics. Concurrent validity of similar cumulative exams were evaluated using Pearson correlation. Risk of bias was calculated using Spearman correlation between assessors' analytical (checklist sheet of required tasks to be performed in a station) and global (the score of whole

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performance including communication skills on a scale from 1 to 5) scoring. Content validity was assessed quantitatively using 18 student-feedback forms and qualitatively through focus groups with OSCE participants and contributors (total of 5 assessors, 3 students, 3 administrators, 3 standardized patients). Interrater reliability was assessed using intra-class correlation coefficients (ICCs). Construct validity was evaluated by comparing interrater reliability between the first and second OSCE cycles. Cronbach's alpha was used to determine internal consistency of students' performance in all stations in terms of global and total scores. Correlation statistics were conducted at α level < 0.05 .

Results

Out of 50% allocated for global score and 50% for analytical score per station, and based on the cut scores calculated for every station, average pass rate per analytical checklist grades in all stations was 70.4%, while average pass rate calculated for total scores in all stations was 79.2%. Four courses simulating professional skills of OSCE, two adapted undergraduate formative OSCEs, and a Medicinal Chemistry course, the control, correlated with the OSCE grades as follow, 0.72 ($P < 0.01$), 0.47 ($P < 0.05$), 0.43 ($P > 0.05$), 0.65 ($P < 0.01$), 0.78 ($P < 0.01$), 0.61 ($P < 0.01$), and 0.36 ($P > 0.05$) respectively. OSCE grades can be moderately predicted by Professional skills course grades (52.3%) and its practical assessment (61.2%). Average correlation between analytical and global grades for all assessors was 0.52. A total of 90% of the stations were deemed to reflect practice, according to student perceptions. The average ICC of analytical checklists scores, global scores, and total scores were 0.88 (0.71–0.95), 0.61 (0.19–0.82), and 0.75 (0.45–0.88) respectively. Cronbach's alpha of students' performance in global scores across stations was 0.87, and 0.93 in terms of total scores.

Conclusion

The cumulative OSCE conducted in 2015 showed acceptable validity and reliability as a high stakes examination and therefore is suitable to be implemented as a mandatory core curriculum component for student pharmacist assessment in Qatar.