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Do Undergraduate Objective Structured Clinical Examinations (OSCEs) Adequately Address the Domains Required of a Safe Physician?

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Abstract

Issue: This work offers an educational analysis of Objective Structured Clinical Examinations (OSCEs) as assessments for safe soon-to-be junior doctors. Analysis of both OSCE domains, Bloom's taxonomy, and Bloom's domain hierarchy was undertaken to assess the components OSCEs cover in the undergraduate medical school curriculum.

Evidence: The results of this analysis suggest the domains of patient safety and quality improvement, research and development, and education and training are inadequately assessed through OSCEs. Suggestions of possible implementations to further the assessment of medical students are highlighted.

Implications: OSCEs offer a great foundation for the analysis of cognitive, affective, and psychomotor skills in soon-to-be doctors, however do not adequately assess the broad spectrum of domains required of safe practicing physicians. OSCEs may therefore benefit from expansion or adjunct stations, especially in order to serve as exit examinations for final year medical students becoming junior doctors.

Key Words

Education & Training (See Medical Education & Training); Medical Education & Training; Assessment; Competency.

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Introduction

To approach practical final year Objective Structured Clinical Examinations (OSCEs), medical students must draw from their cognitive, affective and psychomotor skills to successfully traverse each general medical station. This piece explores whether OSCEs are an adequate assessment of soon-to-be junior doctors and what could be further included to encourage students to develop as safe practicing physicians.

Domains and their Application to OSCEs:

The identification of 'domains', taxonomies used to categorise intended learning outcomes and assessment criteria in examinations, is an incredibly useful tool for the construction and blueprinting of a curriculum. A prominent educational domain example is Bloom's taxonomy, which identifies cognitive, affective and psychomotor domains for the direction of courses and assessment.¹ These domains can be used in conjunction with Bloom's domain hierarchy which creates a ladder in which to move from the simple retention of knowledge to the peak of evaluation and insight into a skill.¹ The levels of Bloom's domain hierarchy are as follows: knowledge > comprehension > application >

analysis > synthesis > evaluation.¹ The OSCE expects a minimum of 'comprehension' for all domains, which is developed from simple 'knowledge' in preclinical years of the medical curriculum. The OSCEs then assess the transition of the soon to be junior doctors from 'comprehension' to 'application', applying their undergraduate training to specific clinical stations. Transitioning to the next level 'analysis' will come through ongoing reflection throughout the student's clinical career.

The cognitive domain revolves around the application of the comprehension of medical physiological and pathological principles. Broad examples of stations which test the cognitive domain include history taking stations, interpretation of investigations and results, and formulating differential diagnoses following examinations. The affective domain of Bloom's taxonomy traditionally includes components such as listening and communication, values, organisation and prioritisation. It is assessed through the student's attitudes towards clinical stations which must be judged as appropriate to pass practical examinations. It is difficult to measure a student's

maturity, responsibility, and values in a short OSCE station. This may mean that the affective domain stays at the 'knowledge' level of Bloom's hierarchy, where students have knowledge of what is expected of them as opposed to the 'comprehension' level, understanding the reason why affect is important and how to apply that to real people. The psychomotor domain of Bloom's taxonomy is assessed through the physical stations of the OSCEs which revolve around examinations. Psychomotor skills are often undervalued, and often in 'acute assessment' stations the focus moves more to the interpretation of clinical information as opposed to physical assessment. It is common in OSCE stations that students can ask for investigation/intervention results, due to time and physical constraints, as opposed to physically performing these skills. Some stations will ask for the identification of equipment such as chest drains and airway adjuncts, however will not require the student to utilise the tools. These methods assess only the 'knowledge' level of Bloom's hierarchy.

The Domains Required of a Safe Physician

Good Medical Practice Professional Values and Behaviours guidance and the Framework for Professional Capabilities, both published by the General Medical Council, UK, as a blueprint for 'Outcomes for Graduates', jointly advise that postgraduate doctors should excel in the domains of:

- Knowledge, skills and performance;
- Patient safety and quality improvement;
- Communication, partnership, teamwork and leadership;
- Maintaining trust;
- Health promotion and illness prevention;
- Safeguarding vulnerable groups;
- Research and development;
- Education and training.^{2,3}

Although these guidances are not utilised for undergraduate medical school examinations or incorporated into them, they do bring into play several unique values that some consideration should be given to for inclusion.

Communication, Partnership, Teamwork and Leadership

Communication, partnership, teamwork and leadership revolves around the affective domain of Bloom's taxonomy. OSCEs do examine communication between the student and the patient throughout examination and history taking stations, however OSCEs do not involve any partnership, teamwork, or leadership. This is due to the structure of final year examinations which require each student to approach each station individually.

OSCE stations often ask students how they would manage a patient's long term illness, and the student is expected to explain the inclusion of a multi-disciplinary team and how teamwork with other professional is required for all patients, but this touches the 'knowledge' level of Bloom's hierarchy with no investigation of the student's comprehension of the roles of supporting healthcare workers. With the growing evidence for simulation in education, a simulated OSCE station which involves teamwork with a multi-disciplinary team to manage a patient should be considered for future inclusion which would test the higher levels of Bloom's hierarchy.

Maintaining Trust

Maintaining trust may be aimed at either maintaining trust with patients over a long period of management or being able to maintain trust between colleagues whilst working in a clinical setting. OSCEs require students to build and maintain trust with patients in order for them to build confidence in the student to divulge information about their medical condition. Brief stations may not be able to reveal the student's ability to maintain trust over a long period of time, however give a good indication of their approach to patients and whether you can envision them maintaining trust as a certified physician. As maintaining trust is valued more and more in the current healthcare climate, it may be that OSCEs cannot fully approach this domain and alternatives are required. These alternatives could include simulations, portfolio stations, or testimonials from clinicians or patients.

Patient Safety and Quality Improvement

These clinical skills are essential to becoming a safe physician. Quality improvement is required to develop the processes around us to improve patient outcomes which requires the application of comprehension of healthcare systems in order to plan, do, study, and act upon a healthcare process. There is no inclusion of quality improvement in the OSCE, however evidence of an implemented quality improvement project to be presented in the OSCE could both broaden the student's understanding of the healthcare system and having great benefit for the healthcare service.

Research and Development

There is debate around the question 'should every doctor be involved in research?' however, with today's ever growing academic advances and the spread of fake news, it is essential that doctors are able to engage in research and adequately critically appraise it. A research and development station within the OSCE, requiring students to critically appraise an abstract or research paper, could assess

students comprehension of a clinical subject and encourage them to develop appraisal skills necessary to base their clinical decisions in their future practice.

Education and Training

As a clinician, education and training becomes imperative to train future physicians to be safe and to engage doctors with the most up to date advances in the healthcare field. Educational evidence, or the presentation of up to date clinical practices in the OSCE, could assess the student's application of their comprehension of a clinical component of the curriculum whilst evaluating their ability as a trainer.

Conclusion

OSCEs offer a great foundation for the analysis of cognitive, affective, and psychomotor skills in soon-to-be doctors however do not adequately assess the broad spectrum of domains required of safe practicing physicians. OSCEs may therefore benefit from expansion or adjunct stations, especially in order to serve as exit examinations for final year medical students becoming junior doctors.

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