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## Mock OSCEs Improve Medical Students' Confidence and Reduce Anxiety Related to Summative Examinations

Paul Robinson, Lydia Morton, Hari Haran, Robert Manton,

*Chichester Medical Education Centre, St Richard's Hospital,  
Chichester, UK*

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### ABSTRACT

**Objectives:** Observed Structured Clinical Examinations (OSCEs) are a commonly used method of assessing clinical competence at all levels. Students commonly regard OSCEs as the most stressful component of examinations and they are associated with high levels of anxiety. **Methods:** A simulated mock OSCE was designed by a group of junior doctors at a district general hospital. Candidates were from a variety of UK medical schools in the final year of their medical degree program. A prospective study was undertaken with candidates anonymously surveyed before and after the mock OSCE. A Numeric Rating Scale of 1–10 was used to assess candidates' confidence and anxiety related to upcoming summative examinations. Qualitative analysis was also undertaken via written feedback. **Results:** There are 57 students took part in the mock OSCE over two years. Only 54 (95%) opted to take part in the study and provide feedback. Mean confidence level significantly increased from 6.26 pre to 7.76 post mock OSCE (1.41 point [12%] increase,  $P$ -value < 0.001). Mean anxiety level significantly reduced from 8.70 pre to 7.15 post (1.56 point reduction [12%],  $p$ -value < 0.001). There are 100% of students rated the mock OSCE as either 'Excellent' ( $n = 50$ ) or 'Good' ( $n = 4$ ). Seventy percent of candidates felt that examination stations were the most useful with 37% of candidates specifically mentioning the benefit of using real patients. **Conclusions:** OSCEs remain a beneficial tool for learning, revision and assessment. The present study demonstrates that mock OSCEs significantly improve medical student confidence and significantly reduce anxiety related summative examinations.

**Keywords:** *Observed Structured Clinical Examination, Medical education, Confidence, Anxiety, Medical student*

### CORRESPONDING AUTHOR

Lydia Morton, Chichester Medical Education Centre, St Richard's Hospital, Spitalfield Lane, Chichester, UK PO19 6SE | Email: [lydiamorton@doctors.org.uk](mailto:lydiamorton@doctors.org.uk)

### INTRODUCTION

The format of assessment in medical education has changed dramatically over the past 100 years. Fact based written tests have given way in part to more complex competency-based assessments (1). Observed Structured Clinical Examinations (OSCEs) are now a commonly used method

of assessing clinical proficiency at all stages of training (2).

The idea of simulated clinical scenarios originated in the 1960s (3), but was not formalised as a method of assessment until 1975 (4). The OSCE is a limited performance assessment consisting of several brief (5 to 10 minute) stations during

which the student is asked to complete a focused clinical task (1, 2). Specific domains tested include physical examination, history taking, clinical skills and data interpretation. Integrated stations are common with the testing of professionalism, interpersonal skills and communication occurring simultaneously. Whilst their use is not without criticism, they are generally considered a fair and useful method of assessing a student's development, clinical competence and readiness to progress to the next stage of training (1, 2).

Many students perceive OSCEs to be the most stressful component of examinations (5, 6). They are associated with high levels of anxiety which may have a detrimental effect on performance. Many believe that the key to succeeding at OSCEs is practice, familiarity and confidence, with most students regarding mock OSCEs as a valuable revision tool (6). Students without such practice often feel unprepared for summative examinations (7). Despite this, significant variation exists between medical students' exposure to these learning opportunities (8).

In April 2013 a group of junior doctors organised and delivered a mock OSCE for final year medical students from a variety of UK medical schools. Qualitative feedback suggested that students found this to be a

good revision aid and helped reduce anxiety and improve their confidence relating to upcoming final examinations. The aim of the present study was to objectively evaluate whether mock OSCEs reduce anxiety and increase confidence related to summative examinations.

## METHODS

A mock OSCE was designed by a group of junior doctors at a single district general hospital. The OSCE consisted of 15, ten minute stations and covered a variety of topics in medicine and surgery. Stations included focused examinations, history taking, clinical skills (i.e. cannulation, arterial blood gas sampling), data interpretation, breaking bad news, prescribing and Intermediate Life Support (Figure 1). All examination stations involved real patients. Stations were designed to reflect the content and variety students could expect to experience in upcoming summative OSCEs. Graduates from the aforementioned universities were consulted when designing stations to ensure accuracy and similarity. Candidates were scored via a standardised mark scheme. Three minutes of individual (verbal and written) feedback was provided at every station at the end of the examination.

### OSCE Stations

- 1 – History Taking – Inflammatory Bowel Disease
- 2 – Examination – Fundoscopy
- 3 – Clinical Skill & Data Interpretation – Arterial Blood Gas sampling
- 4 – History – Headache
- 5 – Examination – Cardiovascular
- 6 – Data Interpretation – Plain Radiographs
- 7 – Examination – Neck
- 8 – Clinical Skill & Data Interpretation – Perform ECG
- 9 – Examination – Abdominal
- 10 – Clinical Skill – Intermediate Life Support
- 11 – Breaking Bad News – Bowel Cancer
- 12 – Examination – Respiratory
- 13 – Examination – Neurology
- 14 – Clinical Skill – Cannulation
- 15 – Prescribing – Pneumonia

**Figure 1:** Stations used in mock OSCE sessions.

All candidates were in their final year of the Bachelor of Medicine and Bachelor of Surgery (MBBS) degree program and expected to undertake final summative examinations later that year. Examiners were made of up a range of junior doctors who received training on how to examine and provide feedback.

A prospective study was undertaken with candidates asked to complete a voluntary, anonymous questionnaire (Figure 2) before and after they undertook the OSCE. This questionnaire asked candidates to rate how anxious they felt about their upcoming summative examinations. A Numeric Rating Scale (1–10) was used; with 1 = no anxiety, and 10 = extremely anxious. Students were also asked to rate how confident they felt about passing their finals with 1 = no confidence, and 10 = extremely confident. The before and after questionnaires were compared and any change in confidence and anxiety levels were statistically analysed. Quantitative and qualitative feedback was also sought via Likert-scale questions and free text boxes (Figure 3).

Statistical analysis of outcome data was completed using MedCalc® (MedCalc Software, Belgium). *t*-test was used for statistical analysis with a *P*-value < 0.05 considered significant.

All participants gave informed consent for their answers to be used anonymously for research purposes.

## RESULTS

In April 2015 and 2016 four mock OSCE sessions were conducted catering for students from a variety of UK medical schools (Brighton & Sussex Medical School, King's College London, Southampton Medical School and St. George's London Medical School). Each session was identical in format and content. A total of 57 students took part in the mock OSCE, with 54 (95%) opting to participate in the study. All candidates completed the pre and post-OSCE questionnaire and all responses were included.

Change in confidence level was recorded and analysed. The mean confidence level pre-OSCE was 6.26 and post-OSCE was 7.76; representing a 1.41 point (12%) increase (95% CI: 1.02 to 1.79, *p*-value < 0.001). Change in anxiety level was also recorded and analysed. The mean anxiety fell from 8.70 pre-OSCE to 7.15 post-OSCE; representing a 1.56 points (12%) reduction (95% CI: 1.47 to 1.64, *p*-value < 0.001).

Feedback was overwhelmingly positive. There are 100% of students rated the mock OSCE as either 'Excellent' (n = 50) or 'Good' (n = 4). Examination stations were found to be the most useful by 70% of candidates (n = 38). There are 37% (n = 20) of students specifically commented that they found the use of real patients to be of particular benefit.

Candidate Pre Exam Survey

Many thanks for participating in the day.

Please rate how confident you are about your chances of passing Finals, where 1 represents not confident at all and 10 represents highly confident. Please circle:

**1 2 3 4 5 6 7 8 9 10**

Please rate how anxious you feel about your upcoming Finals OSCE, where 1 represents no anxiety at all and 10 represents you're very anxious. Please circle:

**1 2 3 4 5 6 7 8 9 10**

**Figure 2:** Pre and post-OSCE surveys completed by candidates.

Candidate Feedback Form

Many thanks for participating in the day. Please take a moment to fill in this feedback form so we may improve the course in future & allow candidates to get the most out of the day. Please give your honest opinions.

Overall how would you rate the mock OSCE as part of your revision:

	Awful	Poor	Average	Good
Excellent				

How would you rate the mix of stations in the exam:

	Awful	Poor	Average	Good
Excellent				

How would you rate the professionalism & organisation of the day as a whole:

	Awful	Poor	Average	Good
Excellent				

How would you rate the communication from the team:

	Awful	Poor	Average	Good
Excellent				

**Figure 3:** Feedback form distributed to candidates upon completion of the mock OSCE.

Some feedback comments included:

1. Such a valuable and encouraging experience. Priceless. Thank you so much.
2. Really really helpful. Well run and organised.
3. Thank you - EXTREMELY helpful. Examiners very professional and feedback useful.

## DISCUSSION

Students commonly regard OSCEs as the most stressful component of examinations and they are associated with high levels of anxiety (8, 6). Practice is an integral part of students' revision for such examinations.

Controversy exists regarding the benefit of formative OSCEs. Young et al. found formative OSCEs to be of value in preparing students for summative examinations (8),

however this has been disputed in other studies (2, 7). Unlike formative OSCEs, mock OSCEs are designed to replicate the summative OSCE as closely as possible (7, 9). Students and educators generally regard summative OSCEs as being of value (2, 6, 9). Despite this there is a paucity of published data on the benefit of mock OSCEs.

In April 2015 and April 2016 we ran four mock OSCEs in conjunction with the Chichester Medical Education Centre at St Richard's Hospital, Chichester. We studied how anxiety and confidence related to upcoming summative examinations was affected by undertaking a mock OSCE. Both confidence and anxiety significantly improved as a result of the mock OSCE.

OSCEs are a beneficial tool for learning, revision and assessment. Suggested benefits of OSCEs include: reinforcing the patient-centred nature of medical practice, altering

student learning activities leading to more time being spent on the wards and improved feedback (6, 8). Potential disadvantages of OSCEs include: time and resources required, inherent variability, consistency of Simulated Patients (SPs) and examiners and questions as to their validity and reliability in predicting actual performance (2, 8, 10).

Qualitative feedback suggested students found examination stations to be the most useful and many specifically mentioned the benefit of using real patients. Replacement of real patients with SPs has become commonplace in OSCEs. A SP is a well person trained to simulate a patient's illness in a standardised way (10). SPs permit consistency, reliability and availability (10). Unfortunately they remain an imperfect surrogate to assess students' competences in the evaluation of real patients.

Exposure to mock OSCEs is highly variable. Given the benefit that students derive from mock OSCEs we would encourage educators at other trusts to host similar mock OSCE sessions. Feedback from the present study indicates that students derive most benefit from patients with real signs and symptoms. As such we would advocate the use of real patients.

To the best of our knowledge this is the first study to provide quantitative evidence of significant improvements in students' confidence and anxiety by undertaking a mock OSCE. The present study is limited by the modest sample size. Furthermore, whilst the benefits of mock OSCEs appear to be many, further work is needed to assess whether exposure to mock OSCEs improves performance at summative exams.

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