

Research Article

Perceptions of Junior Medical Students Undergoing Formative OSCE assessed by Senior Medical Students

Mudiyanse RM

Department of Paediatrics, Faculty of Medicine, University of Peradeniya, Sri Lanka

***Corresponding Author:**

Mudiyanse RM

Email: rasnayakamudiyanse@gmail.com

Abstract: Assessment drives education programmes. Objective Structured Clinical Examination(OSCE) assesses clinical competencies more efficiently than MCQ or essay questions. However OSCE demand intensive preparation, logistics and resource input. Senior medical students were recruited as assessors for the formative OSCE conducted after the introductory clinical appointment. Feedback of participating students was considered vital to evaluate the OSCE. The objective is to evaluate perceptions of 3rd year medical students undergoing and OSCE regarding fairness, suitability, acceptability and comprehensiveness when senior medical students assess and role-play simulated patients. Fourteen stations OSCE for the 3rd years medical students was developed by senior academics of all clinical departments. Final year (5th Year) students were trained to perform as simulated patients and assessors. The entire batch of third year medical students was given a pre tested self-administered questionnaire within two weeks of completion of the OSCE. The questionnaire was designed with adaptations from a similar study done by Russell B Pierre et al. Majority of students felt that the OSCE was fair (87.5%), comprehensive (78%), motivate learning (88%) and gives an opportunity to identify their weaknesses (72%). However 38% found it a very stressful experience and 38% of students felt that having senior students as simulated patients hindered their performance. On a par with the Jamaican students, our students also felt that the OSCE was fair and comprehensive. Compared to 67% of Jamaican students, only 38% of our students found the OSCE very stressful. Reasons for reported concern about senior students' performing as simulated patients by some students should be evaluated further in order to make use of advantages of senior students involvement in OSCE. Our students reiterated fairness, suitability, acceptability and comprehensiveness of OSCE as a method of assessment. Careful planning should foster students' acceptance of senior students as assessors. The faculty should use OSCE more often in evaluating students.

Keywords: Objective Structured Clinical Examination(OSCE), questionnaire, medical students, performance

INTRODUCTION

Assessment of students is crucial in any education programme [1]. Assessments drive education programmes with direct implication for students while providing a strong feedback to teachers, institutions and university administration [2, 3, 4]. General public and the administrator of health care systems will perceive the assessment as an assurance of the quality of doctors that they rely on [2]. Methods adopted for assessments in a curriculum should be evaluated for its validity or coherence, reproducibility or consistency, equivalence, feasibility, educational effect, catalytic effect and acceptability [2, 3, 4].

Methods of assessments have evolved progressively with increasing emphasis on aligning with the objectives of the education program [2, 5, 6, 7]. According to Millers' pyramid primary level of assessment recalls the knowledge [1, 2, 4]. Ability to deduce from the knowledge and performance based on that knowledge is considered as higher levels of assessment [1, 2, 4]. Objective Structured Clinical

Examination (OSCE) falls in to category of assessment of performance that involves comprehension of knowledge and application of knowledge along with psychomotor skills [1, 2]. However workplace based assessment and MiniCex would be considered the ultimate test of a success in education programs designed to create doctors [2].

Education programs need evaluation to ensure achieving targets of the curriculum. The spectrum of education program evaluation involves learner's immediate reaction, their achievements and performance and the impact of the changed performance on the society as elaborated in the Kirkpatrick pyramid [3, 4].

Assessment could be a valuable opportunity for learning. Involving senior medical students in assessment of junior students helps senior students to learn [5].

Faculty of Medicine Peradeniya conducts a five year vertically integrated course to produce basic medical graduates. After successful completion of preclinical subjects students will start clinical appointments in hospital while continuing to learn in classrooms and laboratory based para-clinical subjects. Induction of students to clinical practice is done by a series of lectures coupled with opportunities for clinical experience in communication and system examination under direct supervision over a period of one month. Assessment of this appointment is done by an OSCE. Different formats of the OSCE have been tried since its inception of the introductory clinical appointment in this faculty since 2009. However those assessments have not been evaluated for their educational value.

Acceptability is an important component of assessment that involves several aspects; cost effectiveness, cultural acceptability, time constraints and feasibility [2, 4]. Acceptability involve several stakeholders; teachers, administrators, patients, public, and most importantly students [2, 4]. This paper evaluates student's perception about its fairness, suitability and acceptability and comprehensiveness.

OBJECTIVE

To evaluate perceptions of 3rd year medical students after undertaking a OSCE assessed by senior students with regards to fairness, suitability, acceptability and comprehensiveness when senior medical students

METHODS

The blue print for the OSCE was developed based on the objectives of the curriculum of the introductory course incorporating clinical skills, communication and picture test. Assessment tools for all the stations were developed with the consensus among senior experts in respective subjects. Those assessment tools were made available for junior students as well as senior students to practice skills during the introductory appointment.

Voluntarily participating senior students were trained to perform as examiners or simulated patients during two week preceding the OSCE. They were encouraged to familiarize with the task of assessment using assessment tools developed along with junior students coming for the OSCE. They were made to understand the responsibilities and the importance of their conduct to ensure acceptance by the candidate students.

OSCE examination was conducted for 210 3rd year students at the end of the introductory clinical appointment. Time allocated for the entire OSCE was only 4-5 hours. Examination was conducted in four large halls in the university premises away from the hospital. Patients were not involved. Senior students took turns to perform the role of either simulated patient

or an examiner. The batch of students were divided in to four groups and rotated in four sections that include history taking, giving information, physical examination and pictures test.

Skills of history taking and giving information were assessed by two separate 7 minutes stations. Two senior medical students performing as a simulated patient or assessor managed each station. In order to complete assessment of 55 students in one hour 8 parallel lines were required. Communication skills assessment tools were developed according to the Calgary Cambridge Model of communication.

Clinical skills in physical examination were assessed in 4 parallel lines. Each line had 10 stations to test clinical skills, life support and procedural skills. Clinical skills include examination of respiratory system, cardiovascular system, abdomen, cranial nerves and lower limbs on volunteer students. Gynaecological and obstetric examinations and basic life support was tested using manikin while senior students performed as assessors. Locally prepared models were used to assess the skills of examination of a lump and ulcer. Two stations were rest stations.

The picture test was administered in 4 sessions. A quarter of the batch was assessed at a time by displaying 36 pictures over 45 minutes on a wide screen while students answered on a structured answer grid given.

The senior staff member in charge for each section supervised final recording of marks for each OSCE station and the chief examiner tabulated final marks. The average score for each station determined difficulty index. The discrimination index was determined by calculating difference of the average scores for each OSCE station of the best 1/3 overall performing students and the 1/3 of the poor performing students. Students were arranged according to a descending order based on total aggregate of marks in this examination. The difference of the average score of the top 1/3 performers and bottom one-third performers was calculated using an excel sheet to determine the discrimination index.

Assessment of students' perception

Assessment of student's perception and opinion was done using a pre tested self-administered questionnaire after the OSCE as a separate event within two weeks of completion of the OSCE. The questionnaire was designed using likert scale to evaluate students perception about the fairness, comprehensiveness and motivating effect on learning with adaptations from a similar study done by Russell B Pierre et al¹. Results were analysed using excel sheets and proportions were calculated.

RESULTS

Out of 210 students 180 has responded, response rate 86%. Out of 180 students 170 (87.5%)students felt that the OSCE was fair and 165 (78%) students have commented that OSCE was comprehensive. One hundred and seventy five 175 (88%)have indicated that OSCE motivate learning and

145 (72%)say that it gives an opportunity to identify their weaknesses. However 72 (38%) found it a very stressful experience and similar percentage of students felt that having senior students as simulated patients hindered their performance. Difficulty index ranged from 53 – 87 and discrimination index was raging 12-38.

Table-1: Students perception on the OSCE conducted for 3rd year Medical students as summative examination by the Faculty of Medicine Peradeniya in October 2012

	Totally agree	Neutral	Disagree
The OSCE was fair	140 (87)	18 (11.3)	2(1.3)
A wide area of knowledge was covered	125 (78)	31(19.4)	4 (2.5)
More time was needed at the stations	83 (51.9)	53(33.1)	24 (15.0)
The OSCE was very stressful	60 (37.5)	71 (44.4)	29 (18.1)
The exam was well structured & sequenced	121 (75.6)	36 (22.5)	3 (1.9)
The OSCE was less stressful than other exams	81 (50.6)	60 (37.5)	19 (11.9)
The OSCE highlighted areas of students' weaknesses	115 (71.9)	38 (23.8)	7 (4.4)
The OSCE was threatening	23 (14.4)	64 (40.0)	71 (44.4)
The students were aware of the level of information needed	109 (68.1)	40 (25.0)	11 (6.9)
A wide range of clinical skills were covered	115 (71.9)	44 (27.5)	1 (0.6)
The OSCE directed and motivated the students to learn clinical skills.	140(87.5)	16 (10.0)	4 (2.5)
The OSCE highlighted the importance of fundamental clinical skills	133 (83.1)	23 (14.4)	4 (2.5)
The overall duration of the OSCE was too long	30 (18.8)	62 (38.8)	68 (42.5)
Having parallel stations to examine the same skill was fair.	88 (55)	64 (40.0)	8 (5.0)
Receiving the evaluation sheets before the OSCE was a useful guide.	142 (88.8)	15 (9.4)	3 (1.9)
Because the evaluation formats were given to students their skills were limited to the skills highlighted in the form.	58 (36.3)	72 (45.0)	30 (18.8)
Having the senior students as simulated patients was an obstacle to our performance	61 (38.1)	58 (36.3)	41(25.6)
Receiving the evaluation of our performance at the OSCE will help us to improve our skills	135 (84.4)	23 (14.4)	2 (1.3)
Having a simulated patient acted out by a fellow student did not feel realistic	71(44.4)	71 (44.4)	18 (11.3)
The experience at the history taking and communication stations improved how students interact with patients	113 (70.6)	36 (22.5)	11 (6.9)
Receiving the information needed to be given at the communication skills station in advance was useful	128 (80.0)	28 (17.5)	4 (2.5)
Including an OSCE station for History taking and communication was a useful experience	130 (81.3)	24 (15.0)	6 (3.8)
It highlighted the importance of knowing the background of a patient before communicating with a patient.	115 (71.9)	42 (26.3)	3 (1.9)
The students were fully aware of the nature of the OSCE	118 (73.8)	36 (22.5)	6 (3.8)
The tasks given reflected those that were taught	123 (76.9)	35 (21.9)	2 (1.3)
The setting and context at each station felt realistic	62(38.8)	81 (50.6)	17 (10.6)
The instructions were clear	127(79.4)	31 (19.4)	2 (1.3)
The tasks that were asked to perform at the stations were fair	123(76.9)	30 (18.8)	7 (4.4)
The order of stations were logical and appropriate	98 (61.3)	59 (36.9)	3 (1.9)
The OSCE provided opportunities to learn	126 (78.8)	32 (20.0)	2 (1.3)
The OSCE scores provided a true measure of the essential clinical skills.	96(60.0)	58 (36.3)	6 (3.8)
The OSCE was a practical and useful experience	130(81.3)	28 (17.5)	2 (1.3)
A student's personality, ethnicity and gender will not affect OSCE scores	86 (53.8)	51 (31.9)	23 (14.4)

Table-2: Difficulty index and discriminating index of OSCE examination

	Total Marks	Picture Test	Giving information Station	History Taking Station	Gynecology n & Obstetrics Station	Psychiatry Station	Basic Life Support	Ulcer Examination	Lump Examination	Lower Limbs Examination	Cranial Nerves Examination	Abdomen Examination	CVS Examination	Respiratory System Examination
Average marks scored at the station (difficulty index)	71	53	83	66	87	79	85	79	84	68	81	68	72	68
Standard deviation	5	9	11	11	11	18	11	15	11	12	11	10	11	12
Discrimination index for the station	12	19	25	25	23	38	24	34	22	26	23	23	24	26

DISCUSSION

OSCE has evolved as a successful and practical method of evaluating students' competencies over the years [7]. Considering the key position of assessments in a curriculum, it should be evaluated for its quality. Criteria for assessment of OSCE have been laid down and should be considered for evaluation [2].

Involvement of senior students in assessment of junior students had several advantages; cost effectiveness, promote collaborative attitudes and contribute for learning of senior students [8, 9]. Student feedback is very valuable in any form of teaching program [4, 5, 6]. However the value of student's feedback is overlooked in examinations. Student's feedback further encouraged this current format of the OSCE. On a par with the Jamaican students[8], our students also felt that the OSCE was comprehensive and fair. Comprehensiveness was achieved because of the wide sample. Developing a blue print that addresses the syllabus adequately and selecting deferent test formats within the same OSCE ensured the content validity. Variable assessment time; 7 minutes for communication, 4 minutes for clinical skills and 1-2 minutes for picture test and rotating students in 4 large groups contributed for efficiency of the OSCE.

Using senior students as examiners was a challenge due to concern over reliability and fairness [8, 9]. Developing comprehensive assessment checklists and advanced training, supervision by the senior examiners during the OSCE contributed for its reliability [4] and students' perception about the fairness of the OSCE. Acceptable difficulty index and discrimination index supported the reliability of the OSCE [11]. Picture test was the most difficult and discrimination index was 19. Discrimination index was positive in all the station indicating none of the stations would have ben confusing. However due to the formative nature of the assessment a marginal compromise on the reliability was considered acceptable.

Students felt that OSCE encourage learning; early introduction of structured evaluation forms for students to familiarize with them during the introductory appointment would have contributed for pre evaluation learning giving a written feedback from assessors would have contributed for post evaluation educational effect [10].

Compared to 67% of Jamaican students, only 38% of our students found the OSCE very stressful. Stress in examinations is unavoidable and expression of stress is culture and situation dependant. However recruiting senior students as examiners and simulated patients created a challenging situation. Senior student's assessors were trained and made to understand the importance of providing genuine and fair feedback and professional behaviour as an assessor. All these probably would have contributed for less stress among our students.

Recruiting senior students to perform as simulated patients and assessors was vital to overcome the dearth of resource persons. However inputs from all the senior academics at the stage of developing assessment tools and training assessors ensure the quality of the assessment.

Feasibility was a major concern in the OSCE. Unsatisfactory space, limited academic and non-academic staff, lack of clinical material, patients or simulated patients and limited funding were major constrains.

Selecting four large nearby halls helped to transfer groups of 55 students swiftly between sections and facilitate entrusting the management of each section by two senior academic staff to accomplish the task of testing 55 students within 60 minutes. Each group of students were entrusted to one non-academic staff member to guide them between four sections.

CONCLUSIONS

Fairness, suitability, acceptability and comprehensiveness of OSCE as perceived by our students are satisfactory. This encourages the faculty to establish OSCE as a method of assessment in future.

Recommendations

The faculty should use OSCE more often in evaluating students.

Acknowledgements

Wickramatunga P.G.I.S, Ganearachchi I.N,Samaranayake P.G.W.S for coordinating and supporting in data collection

REFERENCES

1. Miller, G. E. (1990). The assessment of clinical skills/competence/performance. *Academic medicine*, 65(9), S63-7.
2. Norcini, J., Anderson, B., Bollela, V., Burch, V., Costa, M. J., Duvivier, R., ... & Roberts, T. (2011). Criteria for good assessment: Consensus statement and recommendations from the Ottawa 2010 Conference. *Medical teacher*, 33(3), 206-214.
3. Gormley, G. (2011). Summative OSCEs in undergraduate medical education. *The Ulster medical journal*, 80(3), 127.
4. Wass, V., Van der Vleuten, C., Shatzer, J., & Jones, R. (2001). Assessment of clinical competence. *The Lancet*, 357(9260), 945-949.
5. Burgess, A., Clark, T., Chapman, R., & Mellis, C. (2013). Senior medical students as peer examiners in an OSCE. *Medical teacher*, 35(1), 58-62.
6. Epstein, R. M. (2007). Assessment in medical education. *New England Journal of Medicine*, 356(4), 387-396.
7. Harden, R. M., Stevenson, M., Downie, W. W., & Wilson, G. M. (1975). Assessment of clinical competence using objective structured examination. *BMJ*, 1(5955), 447-451.
8. Pierre, R. B., Wierenga, A., Barton, M., Branday, J. M., & Christie, C. D. (2004). Student evaluation of an OSCE in paediatrics at the University of the West Indies, Jamaica. *BMC Medical Education*, 4(1), 22.
9. Burgess, A., Clark, T., Chapman, R., & Mellis, C. (2013). Senior medical students as peer examiners in an OSCE. *Medical teacher*, 35(1), 58-62.
10. Cilliers, F. J., Schuwirth, L. W., & Van Der Vleuten, C. P. (2012). Modelling the pre-assessment learning effects of assessment: evidence in the validity chain. *Medical education*, 46(11), 1087-1098.
11. Rasiah, S. M. S., & Isaiah, R. (2006). Relationship between item difficulty and discrimination indices in true/false-type multiple choice questions of a para-clinical multidisciplinary paper. *Annals Academy of Medicine Singapore*, 35(2), 67-71.