Group OSCE (GOSCE) as a formative clinical assessment tool for pre-clerkship medical students at the University of Sharjah

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Abstract

Objectives: Continuous formative assessment with appropriate feedback is the pillar of effective clinical teaching and learning. Group Objective Structured Clinical Examination (GOSCE) has been reported as a resource-effective method of formative assessment. The present study aims to describe the development and evaluation of GOSCE as a formative assessment for pre-clerkship medical students.

Methods: At the University of Sharjah, GOSCE was introduced to medical students in Years 1, 2, and 3. The GOSCE was conducted as a formative assessment in which groups of 4–5 students were observed while they performed various clinical skills, followed by structured feedback from clinical tutors and peers. GOSCE was evaluated both quantitatively and qualitatively and appropriate statistical analysis was applied to evaluate their responses.

Results: A total of 232 students who attended the GOSCE responded to the questionnaires. Most of the students and clinical tutors preferred formative GOSCE over individual feedback. Both students and clinical tutors valued the experience as it helped students to identify their weaknesses.

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Introduction

Feedback is a pillar of effective clinical teaching and learning. It aims to reinforce good practice, correct poor performance and identify the path to clinical improvement. Studies have shown that feedback during clinical training improves interviewing and communication skills, physical examination skills, procedural skills, problem-based learning, team building, and personal and professional behaviours. Incorporating activities that will foster a culture of effective feedback as part of learning and teaching is a necessity.

Formative Objective Structured Clinical Examination (OSCE) has been used to provide feedback to students on their clinical skills, aiming to enhance learners’ behaviour and help students to recognize their weaknesses. However, OSCE is resource-consuming in terms of personnel, facilities, finances, and time.

The Group Objective Structured Clinical Examination (GOSCE) is a variation of the traditional OSCE format which has been reported in a few studies in the medical education literature. In GOSCE, learners are assigned to groups rather than individually as they rotate around the OSCE stations, aiming to enhance learners’ behaviour and help students to recognize their weaknesses. However, OSCE is resource-consuming in terms of personnel, facilities, finances, and time.

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GOSCE design

A blueprint for each GOSCE is prepared according to the clinical curriculum and all stations are mapped according to each clinical competency. The GOSCE stations consist of different clinical tasks that match the clinical curriculum. The stations used during the GOSCE assess history taking, explanation, physical examination, procedures, and data interpretation skills, as listed in Table 1.

All requirements needed for each GOSCE station are prepared and reviewed in advance by the clinical skill team. These include students’ instructions, checklists to assess students’ performance, other equipment needed for each station such as stethoscopes, sphygmomanometers, measuring tapes, etc., and trained simulated patients.

Layout of the GOSCE

Before the GOSCE, an announcement is sent to the students informing them to prepare and practice their skills. Clinical tutors review the stations and have a standardization session during which they agree on how to conduct the GOSCE and how to evaluate students and give feedback. On the day of the GOSCE, students are briefed on how GOSCE is conducted and what to expect after completing it. Students are then sub-divided into groups of four to five and allocated to more than one station and receive feedback from their peers.
to the stations. The first student is examined on the assigned task while being observed by the other students and the clinical tutor, as portrayed in Figure 1.

The total time allotted for each group/station was 12 min: 7 min for the student to perform the task and 5 min for feedback. The feedback is structured to allow for self and peer assessment. The clinical tutor first asks the student to comment on his/her own performance, then his or her peers are asked if they have suggestions for improvement. Finally, the clinical tutor provides feedback. The students then take turns performing the assigned tasks as they move around the stations. After completing the formative OSCE, students evaluate the GOSCE by filling out a paper-based questionnaire to record their opinions. The questionnaire was developed and reviewed by several members of the clinical skill team and head of the clinical skill program, then tested in a pilot study.

Data collection

The questionnaire comprised of seven questions exploring students’ opinion on the GOSCE; five questions are scored on a 5-point Likert scale from 1 = strongly disagree to 5 = strongly agree. One question asks students whether they prefer to receive feedback on their performance in a small group or individually (alone). This was followed by an open-ended question for students to express why they prefer formative OSCE in a group or as individual feedback (the questionnaire is included as Appendix 1). Clinical tutors were asked to provide their feedback on the GOSCE by providing responses to three open-ended questions, which were sent to all clinical tutors by email (the questionnaire is included as Appendix 2).

Data analysis

A chi-square goodness-of-fit test was used to examine whether medical students prefer formative Objective Structured Clinical Examination (OSCE) in groups or individually and to compare it with a didactic clinical skills revision session and determine what type of feedback they prefer. Analyses were performed using Statistical Package for the Social Sciences (SPSS) version 23 (IBM Corp, New York, USA).

Qualitative data extracted from students’ answers to the open-ended questions were entered into an Excel sheet to assist in quantifying the data. Through an iterative process of reading, coding, and categorization, authors S.S. and M.D. independently analysed the data from students answers to the open-ended questions, while authors N.A. and S.S. independently analysed the data from clinical tutors. Final categories were reviewed and agreed on by all authors.

Figure 1: Virtual depiction of the GOSCE setting.
Results

Students' quantitative data analysis

Of the 232 students recruited to the study, 114 (49.1%) were from Year 1, 64 (27.6%) from Year 2, and 54 (23.3%) from Year 3. More than two-thirds of the respondents were female (69.2%). A majority of the students preferred formative OSCE over a didactic clinical skills revision session, 108 (94.7%) from Year 1, 56 (87.5%) from Year 2, and 44 (81.5%) from Year 3, with no significant difference between the years, \( \chi^2(4, N = 232) = 8.441, p = .077 \). A majority of students in all three years thought that the feedback they received was informative. Most of the students preferred small group feedback over individual feedback, 104 (91.2%) from Year 1, 55 (85.9%) from Year 2, and 49 (90.7%) from Year 3, \( \chi^2(4, N = 232) = 3.490, p = .515 \). Year 1 and Year 3 students considered the timing of each station adequate; however, only 60.9% of Year 2 students thought so, compared to 93% from Year 1 and 98% from Year 3, \( \chi^2(4, N = 232) = 45.445, p < .0001 \). We did not find any statistical differences between men and women in our sample on any of the surveyed items.

Clinical tutors' qualitative data analysis

Most of the clinical tutors were satisfied with the organization, timing, and setup of the Formative OSCE. They preferred Formative OSCE in small groups for different reasons. One reason was the learning opportunity provided, which was noted by most tutors. Another reason noted was greater resource effectiveness, as per the comment of one clinical tutor. Selected tutor comments are given in Table 4.

Discussion

In this study, we demonstrated the feasibility of providing feedback to individual medical students in small groups during the first three years of the (pre-clerkship phase) curriculum. Feedback is a fundamental core component of the clinical skills program in our college. The feedback, which

| Table 2: Content analysis of students' responses to open-ended questions for preferring GOSCE. |
|----------------------------------|--------|--------|--------|--------|----------------|
| Categories                        | Year 1 | Year 2 | Year 3 | Total  |
| Learning from peers               | 26     | 14     | 9      | 49     |
| Feedback                          | 50     | 8      | 10     | 68     |
| Identify gaps                     | 4      | 0      | 4      | 8      |
| Less nervous                      | 1      |        | 1      | 2      |
| Confident                         | 0      | 0      | 1      | 1      |
|                                   | 81     | 22     | 20     | 123    |

| Table 3: Content analysis of students' response to open-ended questions for preferring individual OSCE. |
|----------------------------------------|--------|--------|--------|--------|----------------|
| Categories                            | Year 1 | Year 2 | Year 3 | Total  |
| Self-assessment                       | 0      | 1      | 1      | 2      |
| More comfortable                      | 0      | 1      | 1      | 2      |
| More practice                         | 1      | 1      | 2      |        |
| More interaction                      | 0      | 1      | 2      |        |
| Avoid embarrassment                   | 1      | 1      | 2      |        |
| Similar to exam                       | 0      | 1      |        | 2      |
| More feedback                         | 0      | 1      |        | 2      |
| Focus                                 | 1      |        |        |        |
| Tutor feedback                        | 1      | 1      |        |        |
| Avoid distraction                     | 1      |        |        |        |
| More confident                        | 1      |        |        |        |
| Identify gap                          | 1      |        |        |        |
|                                       | 7      | 3      | 4      | 14     |
and regular feedback. Teachers, unlike students, believe that they give adequate feedback given to them by the clinical tutors on various clinical skills, including communication and history taking, physical examination, procedural skills, patient safety, and professionalism. This is similar to the findings of other studies of feedback. A majority of our students preferred to receive feedback in small groups during the formative GOSCE. The reasons given included the chance to receive multiple feedback from peers and tutors on individual performance as well as the benefit of observing the performance of peers and providing feedback to them. Students mentioned that their peers can add to their knowledge by noting their mistakes and that GOSCE helps them remember the feedback given by peers better than individual feedback during the traditional OSCE does. The results are similar to those of a previous study that reported a 2.5-hr communication skills GOSCE session to be an efficient learner-centred method for clerkship students to give feedback and to apply self-assessment in a formative setting. Moreover, students also realized that a 2.5-hr communication skills GOSCE improved their level of confidence in communicating with patients. In our study, we did not assess our students’ perceived confidence before and after the GOSCE; however, we would expect the GOSCE to positively impact our students’ confidence in performing various clinical skills, including their communication skills.

It is to be expected that well-prepared students would be confident in performing the skills individually and in groups, unlike weaker and less-prepared students, who would be more confident during individual sessions than in groups.

Most of the students’ feedback on GOSCE was echoed by that of the clinical tutors, who reported that the majority of students preferred GOSCE and valued learning from their reflections on action as well as reflections in action. The peer feedback provided an extra dimension and value for each student which is lacking in individual OSCE. The tutors’ overall specific and comprehensive feedback is provided in both OSCE and GOSCE; however, during GOSCE the tutor provides individual as well as collective feedback on the performance of the group. Furthermore, during GOSCE, the exchange of the groups of students between clinical tutors when rotating from one station to another provided the added value of exposing the students to other aspects of their performance that might be overlooked by the first tutor.

The clinical tutors provided their insights into other advantages of the GOSCE. In general, while the logistics of conducting GOSCE and OSCE are similar, the overall time spent is less and there are fewer tutors/examiners in GOSCE than OSCE, making it more feasible for the pre-clinical years as well as for clinical clerkships. The clinical tutors also commented that the peers provided support to each other and their time was more enjoyable during GOSCE. Additional skills learned included teamwork and the ability to provide feedback.

However, in our study, not all students preferred GOSCE. A small proportion of students (about 10% of Year 1 and Year 2 students and 14% of Year 3 students) preferred to receive feedback individually. Reasons given included that they avoided embarrassment and had a more relaxed feeling, they received more time and focus for the individual student, and there were more questions to ask, as well as the view that individual stations reflected a real summative OSCE. Another factor is that in our GOSCE not all students participated in all tasks, as they did in OSCE.

### Limitations

Our study is not without limitations. First, we did not investigate the relation between formative GOSCE and summative grades, and second, our study focused only on the pre-clerkship phase. We would have liked to have included the simulated patients’ feedback as well, but that was not feasible in our organization.

### Conclusion

In conclusion, our study demonstrated that students and tutors viewed GOSCE favourably because it provides the opportunity for each student to observe and reflect on his or her own performance and to receive feedback from his or her peers as well as from the tutor. The logistics of GOSCE is more efficient than OSCE in terms of requiring less time and fewer examiners. Moreover, in GOSCE, peers provide a supportive as well as enjoyable learning environment.

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**Table 4: Content analysis of clinical tutors’ comments regarding GOSCE.**

| Area of feedback                | Notes                                                                                                                                 |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| 1. Learning Opportunities      | L.E. ‘I think that the feedback will be more informative for the students and will be from different points of view because it will reflect the self and peer evaluations in addition to the tutor’s feedback’  |
|                                | L.E. ‘Most of the students feel more supported by their colleagues and the experience is more enjoyable’                           |
|                                | M.D. ‘Because they are in small groups, students will be able to learn more, not only from their own mistakes but also from their colleagues’ mistakes’ |
|                                | N.H. ‘Gives students the chance to practice’                                                                                  |
| 2. Resource Effectiveness      | L.E. ‘A shorter time was taken by the groups. The time taken to finish the evaluation and give feedback will be less than the time consumed in an individual formative OSCE, in addition to the tasks that will be covered by each student either observing or doing the skills by himself’ |
| 3. Disadvantages of            | L.E. ‘A few students may feel uncomfortable being evaluated in front of others and not all skills may be performed by a given student’  |
| Formative OSCE in Groups       | M.D. ‘For some of the students it’s considered embarrassing’                                                                  |
|                                | A.H. ‘Not all students have the same chance to practice the full skill’                                                        |
|                                | N.H. ‘Some students will not consider it a real exam so they will not be prepared’                                           |
Recommendation

The study advocates using GOSCE because it can provide feedback regarding clinical competencies at various stages of the curriculum. Furthermore, using GOSCE on a broader scale can improve academic competencies. Moreover, GOSCE could offer a solution to the problem of limited resources in terms of tutors and time. Hence, future research can focus on utilizing peers to provide a structured formative assessment.

Conflict of interest

The authors have no conflict of interest to declare.

Authors’ contributions

NDS and AMA initiated the research idea and formulated the research topic and SIS, NYA, MTD and IEM contributed to the qualitative and quantitative data analysis. All authors equally contributed to writing and critically reviewing the final manuscript. All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

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Appendix A. Supplementary data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.jtumed.2018.06.003.

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