A trial of the objective structured practical examination in physiology at Melaka Manipal Medical College, India

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Abstract

A trial of the objective structured practical examination in physiology at Melaka Manipal Medical College, India. Adv Physiol Educ 33: 21–23, 2009; doi:10.1152/advan.90108.2008.—A single examination does not fulfill all the functions of assessment. The present study was undertaken to determine the reliability and student satisfaction regarding the objective structured practical examination (OSPE) as a method of assessment of laboratory exercises in physiology before implementing it in the forthcoming university examination. The present study was undertaken in the Department of Physiology of Melaka Manipal Medical College, Manipal Campus, India. During the OSPE, students were made to rotate through 11 stations, of which 8 stations were composed of questions that tested their knowledge and critical thinking, and 2 stations were composed of skills that students had to perform before the examiner. One station was kept as the rest station. Performance of the students was assessed by comparing the students’ scores in the traditional practical examination (TPE) and OSPE using “Bland-Altman technique.” Student perspectives regarding the OSPE were obtained by asking them to respond to a questionnaire. The Bland-Altman plot showed that ~63% of the students showed a performance in the scores obtained using the OSPE and TPE within the acceptable limit of 8; 32% of the students scored much above the anticipated difference in the scores, and the rest scored below the anticipated difference in the scores on the OSPE and TPE. Feedback indicated that students were in favor of the OSPE compared with the TPE. Feedback from the students provided scope for improvement before the OSPE was administered for the first time in the forthcoming university examination.

Methods

At MMMC, there are two admission intakes per year: one in March and another in September. The first-year curriculum is divided into four blocks. At the end of each block, students undertake two examinations, both in theory and laboratory exercises. The present study was undertaken for the March 2007 group of students (n = 125 students) at the end of the third block (in November 2007). These students had undertaken the traditional practical examination (TPE) at the end of the first and second blocks. The TPE in physiology consisted of two components: computer-assisted OSPE (COSPE) (12) and performance exercises. In COSPE, 10 PowerPoint slides focusing on the interpretation of graphs, diagnosis of clinical conditions from photographs, identification of blood cells, reading the packed cell volume (PCV)/erythrocyte sedimentation rate, problems on the calculation of clearance/forced expiratory volume in the first second, etc., were projected onto a LCD screen with an autodisplay that projected a new slide every 3 min (each slide represented an original OSPE station). Each of these stations had questions carrying four marks. After finishing the COSPE, which took ~30 min, students had to undertake the performance examination. In the performance examination, students were given two tasks (for example, determination of vital capacity, blood pressure recording, etc.). Students were required to perform these tasks in the presence of the examiner followed by a viva voce on the experiments that they had performed. The OSPE was introduced at the end of the third block. During OSPE examination, the same students (March 2007) were divided into three groups, and each group was required to report at a different time. In each group, four subgroups (with each subgroup consisting of 10 students) were made. Students were made to rotate through 11 stations. Eight stations were composed of questions that tested students’ knowledge and critical thinking, and two stations were composed of skills that students had to perform before the examiner. One station was kept as the rest station. The two stations in which students had to perform a task were composed of questions such as focusing the red blood cell-counting area in a Neubauer’s chamber, palpation of apex beat, determination of the systolic blood pressure, etc. Students were given 3 min at each station. The entire examination was conducted in 1 day in three sessions with each session consisting of four circuits. Questions were on topics from all three blocks. Student performance in the TPE and OSPE was compared using “Bland-Altman technique” (Fig. 1). Student perspectives regarding the OSPE were obtained by asking them (March 2007 students) to respond to a questionnaire (Table 1).
felt that the clinical pictures shown were not clear. too short, especially for the performance exercises. They also less, 56.6% of the students felt that the time given (3 min) was examinations (COSPE and performance exercises). Neverthe-

With the TPE, where they had to go through two separate

improvement in the mean scores for the laboratory component of final examinations in the physiology courses at King Faisal University Medical School. The block-end practical examination at MMMC used to be conducted in four sessions (1 session for COSPE and 3 performance sessions), which required 1 whole day. The university examination used to be conducted in both before-noon and afternoon sessions for 3 consecutive days. In the university examination, external examiners used to complain about the extensiveness of the examination. Students used to complain about the irrelevant questions asked by the examiners and also the subjectivity of the examination. They used to complain that the questions asked in the performance exercises varied in difficulty, giving rise to much variation in the scores. OSPE was adopted as a method of assessment with the intention of restricting the examination only in the before-noon sessions, thereby reducing the total time, to make the assessment uniform for all students and also to reduce the stress of students by making them go through only one round of examination instead of two rounds.

From the students’ point of view, the OSPE was acceptable and generated wide appreciation. In a study conducted by Malik et al. (5), OSPE was rated by the students as a reliable, effective, useful, interesting, and challenging examination, although it was considered taxing, both mentally and physically. Feedback from the students (March 2007) indicated that students were in favor of the OSPE compared with the old method (TPE). OSPE is more stressful compared with the old method (TPE).

Table 1. Comparison of the performance of students in the OSPE and TPE

<table>
<thead>
<tr>
<th>Questions</th>
<th>Yes</th>
<th>Percentage</th>
<th>No</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The questions asked were relevant.</td>
<td>116</td>
<td>95.08</td>
<td>6</td>
<td>4.91</td>
</tr>
<tr>
<td>2. Sufficient time was given to each student.</td>
<td>53</td>
<td>43.08</td>
<td>69</td>
<td>56.6</td>
</tr>
<tr>
<td>3. The activity stations that were used to demonstrate skills were relevant.</td>
<td>109</td>
<td>89.3</td>
<td>13</td>
<td>10.7</td>
</tr>
<tr>
<td>4. OSPE is the same as the earlier pattern of examination (TPE).</td>
<td>12</td>
<td>9.8</td>
<td>110</td>
<td>90.2</td>
</tr>
<tr>
<td>5. OSPE covered a wide range of knowledge compared with TPE.</td>
<td>105</td>
<td>86.06</td>
<td>17</td>
<td>13.9</td>
</tr>
<tr>
<td>6. OSPE is more stressful compared with the old method (TPE).</td>
<td>52</td>
<td>42.6</td>
<td>70</td>
<td>57.4</td>
</tr>
<tr>
<td>7. OSPE is fair compared with TPE.</td>
<td>96</td>
<td>78.68</td>
<td>26</td>
<td>21.3</td>
</tr>
<tr>
<td>8. OSPE is easier to pass compared with TPE.</td>
<td>45</td>
<td>36.88</td>
<td>77</td>
<td>63.1</td>
</tr>
<tr>
<td>9. OSPE should be followed as the method of assessment of laboratory exercises in physiology henceforth.</td>
<td>93</td>
<td>76.22</td>
<td>29</td>
<td>23.8</td>
</tr>
</tbody>
</table>

n = 122 students total that responded to the questionnaire.
ACKNOWLEDGMENTS

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REFERENCES